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DEPRESSION AND SUICIDAL BEHAVIOR IN UGANDA

Validating the Response Inventory for Stressful Life Events (RISLE)

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To My Loving Wife Elizabeth Nandaula Ovuga and Children: Alfred Alumai, Denis Drici, Harriet Mindraa, Ivan Luke Leku, Alex Bombom Jr, Anne Palma Abio, Carolyne Oleo, Savior Onama, Felix Jurugo and Nephew John (McGyver) Ssuna
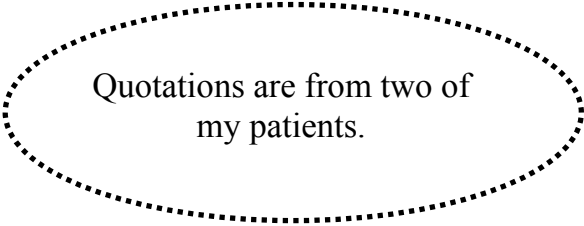
DEDICATION

TO ALL IN SEARCH OF PEACE OF MIND

> *"When the (suicidal) force comes over me it is so strong that I cannot overcome it. But when it goes I realize that it would have been bad if I had done it."*

In the face of overwhelming despair and intolerable mental pain death offers itself as an alternative to a life full of pain and suffering, and suicide may seem *"like shinning a torch into the dark"*. However *"No man can think like that"* and suicidal feelings may be temporary if only they are recognized and, time is given the chance to be the natural healer.

The challenge is how to detect and understand the silent sufferer and potential suicide in our midst.

Quotations are from two of my patients.

Abstract

Background Depression and suicide ideation are prevalent in the general population but their recognition and detection in primary care is problematic. The present study investigated the reliability and validity of the RISLE and its potential use in detecting depressed and/or suicidal individuals in the general population.

Methods of study Members of the general population in two districts of Uganda, Adjumani and Bugiri, and fresh students at Makerere University, participated in the study. Two pilot studies were conducted before the collection of data: at Makerere University among fresh students sampled from all faculties in 2001, and in each of the districts in the course of interviewer and research assistants' training in 2002. Makerere University, Uganda National Council for Science and Technology and the Ethical Committee at Karolinska Institutet approved the study. The Dean of Students and the health and civic leaderships of the respective study sites granted further permission for the study.

Analysis Data analysis comprised of general descriptive analysis. Principal component analysis and discriminant function analysis were used to refine the RISLE and construct a shorter 36-item version. Receiver operating characteristic curve was constructed to determine sensitivity and specificity of the short RISLE. The determination of sensitivity, specificity, predictive values, and likelihood ratios, and Cohen's kappa values at several cut-off points were made to determine the level of agreement between the RISLE and clinical interview method as the gold standard in the study. Validity was assessed by comparing results obtained with the RISLE to results obtained with the 13-item Beck Depression Inventory (BDI) and the 21-item Beck Scale for Suicide ideation (BSS).

Results Results revealed good concurrent validity and reliability of both the longer and shorter versions of the RISLE and high correlations between both versions. The probability of a correct detection of an individual with current depressive disorder was 79%, any current psychiatric disorder was 83% and past month suicidality was 83%. Cut-off points varied according to the nature of population studied. The cut-off point for the population in Adjumani district was 10 for any current psychiatric disorder, and 6 for any psychiatric disorder among students. Sensitivity and specificity of the RISLE at cut-off points 10 and 6 were 74.6% and 77.1%, and 88.1% and 60.4% respectively. Positive predictive values for current psychiatric disorder were 82.0% and 75.6% at cut-off points of 10 and 6 respectively. Agreement between the RISLE and clinical interview method was 0.508 at cut-off point 10 for the general population and 0.501 at cut-off point 6 for students.

Thirty six percent of the respondents in the general population reported a lifetime experience of suicide ideation and 13% had experienced this in the previous week. The overall prevalence of probably clinically significant depression (BDI score of 20-39) in the general population was 17.4%. Higher rates of suicide ideation and depressed mood were found in females and residents of Adjumani district. Students entering Makerere University showed high prevalence of mental health problems.

Conclusions The results of the present study show that the RISLE may be used in conjunction with clinical interview method in the detection and confirmation of individuals with current psychiatric illness and suicidal feelings in the general population. Further work is required to establish its worth as a screening device and its performance in different populations.

Key words: Depression, Suicide ideation, Suicidal thoughts, and Suicide attempt, RISLE, validation

ORIGINAL PAPERS

This thesis is based on the following papers.

I.   E. Ovuga, J. Boardman & D. Wasserman. Prevalence of suicide ideation in two districts of Uganda. *Archives of Suicide Research* (Accepted for publication)

II.   E. Ovuga, J. Boardman & D. Wasserman. The prevalence of depression in two districts of Uganda. *Social Psychiatry and Psychiatric Epidemiology* (Accepted for publication)

III.   E. Ovuga, J. Boardman & D. Wasserman. Student mental health at Makerere University. (Submitted)

IV.   E. Ovuga, J. Boardman & D. Wasserman. The Response Inventory for Stressful Life Events (RISLE) I: Refinement of the 100-item Version. *African Health Sciences* (Accepted for publication)

V.   E. Ovuga, J. Boardman & D. Wasserman. The Response Inventory for Stressful Life Events (RISLE) II: Validation of the 36-item Version. *African Health Sciences* (Accepted for publication)

I

EXPECTATION

My early clinical impressions showed that suicidal feelings were common among patients that I saw for the first time. However the subject of suicide had not been discussed in detail in the course of my apprenticeship and screening instruments for the detection of suicidal persons relevant to my cultural background were not available to researchers and clinicians. I developed the Response Inventory for Stressful Life Events (RISLE), which is the subject of the present study in the hope that it would be used to detect suicidal persons early so that such individuals would be helped long before they harm themselves. It is hoped that the results of this study will stimulate further research to better understand the complex nature of suicide behavior in the general population.

Declaration of Interest

This work was supported by a grant from Sida/SAREC.

Photograph 1: Influence of cultures on depression, suicide behavior and mental illness

Unrecognized depression and suicidal feelings that cause untold suffering, and unnecessary loss of valuable life often hide behind a protective shield of cultural denial and inattention that hinder early diagnosis and appropriate care.

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Abbreviations

BDI	Beck Depression Inventory
BSS	Beck Scale for Suicide ideation
MINI	Mini International Neuro-Psychiatric Interview
RISLE	Response Inventory for Stressful Life Events
SOC	Sense of Coherence
WHO	World Health Organization
WHO-5	World Health Organization Index of Well-being (5-item Version)

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INTRODUCTION

A challenge for psychiatric epidemiology has been to develop highly sensitive and highly specific screening instruments, which can detect individuals with psychiatric disorder in the general population (Mulrow et al., 1995). It has, however, become clear that the detection of psychiatric disorder in this way may not be the same thing as detecting people who need psychiatric care (Bebbington, 1990; Craig & Natta, 1976; Narrow, Rae, Robins, & Regier, 2002). An editorial in the *British Journal of Psychiatry* (Weich & Araya, 2004) has questioned whether the people identified in epidemiological studies can be helped at all. This is due in part to who defines what constitutes psychiatric disorder at population level (Goldberg, 1972; Goldberg, 1979; Goldberg & Hillier, 1979; Mojtabai, et al., 2002; Narrow et al., 2002). A limitation in many studies has been heavy reliance on core DSM-IV (American Psychiatric Association, 1992) and ICD-10 (WHO, 1992) symptom criteria alone to diagnose depression (Bolton, et al., 2004). A variety of criteria have been suggested to define clinically significant psychiatric disorder including the persistence of symptoms for at least three days in the past week, the experience of symptoms as distressing, help seeking behavior, report of symptoms to a professional or other health care provider, and the experience of functional impairment with daily activities due to the reported psychiatric symptoms. In addition problems for psychiatric epidemiology stem from the need to differentiate normal from the abnormal, based on the concepts of trait or state as well as on cultural diversity (Beck & Steer, 1987; Beck, et al., 1996; Beck, et al., 1961; Goldberg, 1972; Goldberg, 1979; Goldberg & Hillier, 1979). The need to design specific screening tests for specific disorders probably remains one of the biggest challenges. Certain psychiatric disorders share common symptoms; some symptoms may be the transient manifestations of daily human experience in the general population and poor health conditions. Thus teasing out groups of symptoms of distress, whether through clinical interview or by the use of screening instrument, at population level remains problematic as revealed in varied prevalence rates of common mental disorders within the same country (Vincente et al., 2004) and across cultures (Simon, et al., 2002). The present study has investigated whether it would be feasible to detect depressed and or suicidal individuals in the general population in Uganda using the Response Inventory for Stressful Life Events (RISLE) (Ovuga & Mugisha, 1990; Ovuga, et al., 1995; Ovuga, et al., 1996; Tusiime, 1998). The study tested the RISLE, investigated its properties and estimated its validity as a potential tool in population surveys.

LITERATURE REVIEW

Depression

Depression is prevalent in all cultures (Kessler et al., 2003; Simon et al., 2002; The WHO World Mental Health Survey Consortium, 2004; Vincente et al., 2004; Weissman et al., 1996; Williams, et al., 2002), leads to considerable burden (Murray & Lopez, 1996; Murray & Lopez, 1997) and impairment in social functioning, low productivity, lost income (Bolton et al., 2004; Pincus, Zarin, & First, 1998; Ustun, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004), is often recurrent (Kanai et al., 2003) and is a major cause of premature death, mainly through suicide. Maternal depression has been reported to lead to poor infant health and growth (Rahman, Iqbal, Bunn, Lovel, & Harrington, 2004).

In Uganda a few community-based surveys to determine the prevalence of depression and other mental disorders have been conducted (Barton & Mutiti, 1998; Bolton et al., 2004; Kasoro, et al., 2002; Orley & Wing, 1979). In their study of two villages in central Buganda Orley and Wing (1979) reported the prevalence of depression among females as 22.3% and males as 14.6%. Bolton et al reported in 2004 that the prevalence of depression in southwestern districts of Masaka and Rakai as 21%. Barton and Mutiti reported high levels of general psychosocial morbidity in war-torn northern Uganda but did not provide prevalence figures for any specific psychiatric disorders. Kasoro et al reported in 2002 that 30.7% of adults interviewed reported an episode of severe mental illness among adult family member during the preceding year. These authors too did not provide information on specific psychiatric disorders as they did not conduct clinical interviews for the purpose. In neighboring Rwanda Bolton with colleagues (Bolton, Neugebauer, & Ndogoni, 2002) reported the prevalence of depression as 21%.

The prevalence and patterns of reporting symptoms of depression vary significantly between the regions of the world (Simon et al., 2002), with life time prevalence rates ranging from 1.5% in Taiwan to 19% in Beirut (Weissman et al., 1996) and past year prevalence ranging from 4.3% in Shangai to 26.4% in the United States (The WHO World Mental Health Survey Consortium, 2004). It is interesting that Bolton and his colleagues (Bolton et al., 2002; Bolton et al., 2004) reported similar prevalence rates for depression of 21% from Rwanda and Uganda with distinctly different ethnic, cultural and linguistic backgrounds. Despite the wide differences in prevalence rates reported in other studies, depression is one of the commonest chronic illnesses that impact heavily on the lives of its victims.

Suicide ideation, suicide attempt and completed suicide

The prevalence of suicidal thoughts, also referred to in this thesis as suicide ideation, varies from 14% - 33% of the general population (Claussen, 1998; Gex, et al., 1998; Gliatto & Rai, 1999; Goldney, et al., 1998; Mehlum, 1998; Pirkis, Burgess, & Dunt, 2000; Ramberg & Wasserman, 2000; Weissman et al., 1999).

For purposes of this thesis, suicide ideation is defined as a spectrum of self-destructive thoughts or ideas comprising transient wishes to die, suicide wish or urge, contemplating a suicide act, making a suicide plan and communication of the suicide wish, urge or plan to someone (Bolt, 1988; Ovuga & Mugisha, 1990; Persson, 1999).

Suicide ideation is an important public health problem (Pirkis et al., 2000) and a precursor for attempted suicide and suicide (Esposito & Clum, 2002; Hultén et al., 2001; Ramberg & Wasserman, 2000; Goldney et al., 1998; Pirkis et al., 2000; Weissman et al., 1999). Among young people in Western countries the lifetime prevalence of suicide ideation ranges from 9% - 65%, the rates reported depending on the definition of suicide ideation.

Esposito and associates have reported that mood disorder along with symptom severity were the strongest predictors of suicide ideation (Esposito & Clum, 2002). Other identified risk factors include: previous suicide attempt and the use of hard methods during previous suicide attempt (Hultén et al, 2001), being unmarried or divorced/separated (Pirkis et al., 2000; Weissman et al., 1999), being unemployed (Claussen, 1998; Hintikka et al., 1998; Pirkis et al., 2000), inability to meet one's financial obligations (Hintikka et al., 1998) and being disabled (Pirkis et al., 2000).

Suicide is complex and is influenced by several interacting factors (Bertolote, et al., 2004; McKenzie, Serfaty, & Crawford, 2003) whose individual roles may not be easy to discern for effective mental health and suicide preventive purposes. Based on a review of data published from 1959 to 2001, Bertolote with colleagues have recently reported that though depression has been recognized as the main psychiatric condition predisposing to suicide behavior, other psychiatric disorders need to be considered in the comprehensive multidisciplinary approach to suicide preventive activities. Genetic variability, (Wasserman et al., 2005) and acquired susceptibility to environmental stressor and various adverse life events appear to be characteristic factors in suicide attempts and suicide ideation. Gunnell and colleagues have reported that low intelligence at the age of 18 years predicted subsequent suicide among a military conscripts (Gunnell, Magnusson, & Rasmussen, 2005), while Boyle et al reported increased suicide rates among younger adults from deprived neighborhoods in Scotland compared with older adults from wealthier communities (Boyle, et al., 2005). Värnik, Kõlves and Wasserman have reported increased suicide rates among Russian minority group in Estonia (Varnik, Kolves, & Wasserman, 2005). The authors

explained this finding on the basis of loss of the privileged position the Russian minority group had held before the independence of Estonia after the breakup of the Soviet Republics.

Research on the broader concept of suicidal behavior from Africa is sparse as suicide in many African countries is a criminal offence, highly stigmatized and is considered to be a taboo subject. Suicide in Uganda is a criminal offence as it contravenes divine law against killing, devalues human life and violates the country's Penal Code of 1970; is unconstitutional according to the 1995 Constitution; and deprives children and adolescents of their right to protection and care (according to the Children's Statute of 1998) from their parents if such parents commit suicide. For these reasons official sources of documentation under-report suicide rates as those who die of suicide are not accorded decent burial, the families of suicide victims are shunned, survivors of suicide attempts are shunned and shamed (Bolla, 2002) and those who are employed do not have their terminal benefits paid to their surviving family (Tusiime, 1999).

A recent sensitization seminar for district and community leaders in Adjumani district of Uganda reported the dramatic effect of under-reporting of attempted suicide – 4 persons had been charged with attempted suicide in the district Grade One Magistrate's Court though 42 cases had been treated at the district Hospital over the same period of time in 2004. Orley reported in 1970 that suicide was rare in Uganda at an estimated rate of 1-2 per 100,000 inhabitants per annum (Orley, 1970). German estimated in 1982 that the incidence of suicide attempts in Busoga in eastern Uganda where part of the current study was conducted was 8.5 per 100,000 inhabitants (German, 1982), and Okasha and Lotaif estimated the incidence of suicide attempts in Egypt at 38.5 per 100,000 of the population (Okasha & Lotaif, 1979).

In 1999 Tusiime (Tusiime, 1999) reported that the annual rate of completed suicide in the Uganda military, the Police and the Prisons were respectively 0.08%, 0.18% and 0.14% of deaths in the Uganda armed forces. The figures were based on 36 completed suicides out of 173 cases of unnatural deaths in the military over a ten-year period 1988-1998, 26 completed suicides out of 2,264 reported deaths over a ten-year period in the Uganda Police. One suicide was reported per year in the Uganda Prisons during the period 1988 to 1998 over which period 376 deaths were reported in the Prisons. Using the snowballing effect Bolla in 2002 estimated 99 suicides per 100,000 inhabitants and 518 suicide attempts per 100,000 inhabitants in Adjumani Town Council in Adjumani district.

The figures of suicide in the Uganda armed forces reported by Tusiime probably highlight the impact of under-reporting of suicides even within the institutions of government, and negative societal attitudes toward suicide; 26% of military personnel who participated in Tusiime's 1998 study believed that those who commit suicide were weak and cowardly (Tusiime, 1999). In contrast Bolla (2002), a senior nurse practitioner and administrator in Adjumani district traced cases of suicide attempt

admitted to Adjumani district hospital for resuscitation to their homes to collect qualitative data on suicide attempt. In the course of data collection, respondents, their families or village leaders identified more cases to participate in the study perhaps suggesting that negative societal attitudes towards suicide may change as its magnitude in the community is recognized (Berman, 1994). Kinyanda and colleagues while not reporting on prevalence figures showed that suicide attempts as seen in three large hospitals in Kampala city were associated with single marital status, higher educational status, higher income, and problems with housing (Kinyanda, et al., 2004).

Despite depression and suicide ideation being common in the general population, their recognition remains problematic (Williams et al., 2002), uncertainties about their prevalence are high (Kessler et al., 2003) and the need for treatment based on available diagnostic paradigms from epidemiological surveys remains questionable (Ustun et al., 1998). Alexopoulos et al (2002) cite several reasons for poor recognition including professional training and background; cultural concept and definition of psychiatric disorder; gender; social class; level of educational attainment; problems with language and semantics; fear of shame stigma and discrimination; and the need to remain strong in the face of personal problems. Reasons for diagnostic uncertainty include previous time-limited experience of similar illness and expectation that the current episode will resolve spontaneously (Puertas et al, 2004). Behavioural, emotional and intellectual difficulties in childhood and adolescence may be interpreted as the process of growing up difficulty instead of as a sign of depression. Policy issues that impact negatively on the recognition of depression and access to care include low mortality associated with mental health problems; lack of obvious impact on the physical health of the sufferer; and initial lack of impairment in social functioning.

A key issue in culturally sensitive psychiatric epidemiology is selecting research and/or clinical instruments that are valid and distinguish cases from non-cases to a high degree of accuracy. Several standardized tools exist, such as the Mini International Neuro-psychiatric Interview (Sheehan et al., 1998), and the Schedules for Clinical Assessment in Neuropsychiatry (Wing et al., 1990). Many of the available clinical instruments are too large and are not suitable for large-scale community-based surveys. Several shorter symptom-based screening questionnaires exist for the detection of cases in primary care (Williams et al., 2002). However few screening instruments have been developed or validated in low-income countries (Bolton et al., 2004). The Response Inventory for Stressful Life Events (RISLE), the test instrument in the present study was developed specifically for use in an African setting (Ovuga & Mugisha, 1990; Ovuga, et al., 1995; Ovuga, et al., 1996; Tusiime, 1998). The instrument is not symptom-based but uses the concepts of psychosocial distress associated with psychosocial adversity in everyday life; personal vulnerability and poor personal tolerance for stressful events and poor coping ability when faced with personal difficulties.

MATERIALS AND METHODS OF STUDY

UGANDA

Figure 1 depicts the position of Uganda on the African continent. Uganda is one of three East African countries and is bordered by the Sudan to the north, Kenya to the east, Tanzania to the south, Rwanda to its southwestern tip, and the Democratic Republic of the Congo (DRC) to the west. Named the Pearl of Africa by Sir Winston Churchill, Uganda is a beautiful country with five fresh water lakes, varied vegetation from the semi-arid vegetation in the northeast to the flush ever green shores of Lake Victoria, the second largest fresh water lake in the World, out of which the River Nile emerges to commence its long journey to the Mediterranean Sea.

Fig. 1. Position of Uganda on the African Continent

Brief Description of the History of Uganda and its Peoples and economy

History

The Bantu people moved from the direction of present Democratic Republic of Congo (DRC) and settled in the rich farmlands of the lake basin of Uganda in around 500 BC. By the 14th century these people had established several kingdoms known as the Cwezi states. Nilotes from the Bahr el Gazal region of the Sudan settled in the north and northwestern Uganda around the year 1500 AD and established the Binto dynasties of Buganda, Bunyoro and Ankore within the Cwezi states. Later in the 16th century other Nilotic people conquered northern Uganda and formed Alur and Acholi ethnic groups Advance parties of the Nilotes subsequently moved on and settled in parts of eastern Uganda and the present day western Kenya and northern Tanzania. In the 17th century the Lango, Teso and Karimajong ethnic groups migrated into Uganda and settled in the northeast and eastern parts of the country. Hamitic tribes from the Ethiopean Highlands moved through northeastern Uganda and settled in the northeast and eastern Uganda.

During the 16th and 17th centuries Bunyoro was the strongest Cwezi state and controlled a large expanse of territory that extended into present day Rwanda and northern Tanzania. However by the 17th century Buganda began to expand taking territory from Bunyoro and by 1800 Buganda controlled a large territory bordering Lake Victoria from Victoria Nile to Kagera River. Buganda had a strong administration, a powerful army and raided widely for cattle, ivory and slaves.

Arab traders from the India Ocean coast were the earliest foreigners to come to Uganda in the 1840s and they exchanged items such as guns, cloth and beads for slaves, and ivory. From the beginning of 1869 Bunyoro Kingdom under Kabarega, using guns from Arab traders from Khartoum, challenged Buganda Kingdom. However, the Arab traders from Khartoum were ruthless, and evidence of their massacres of communities in northwestern Uganda remains in Dufile to this day. By the middle of the 1880s Buganda regained its dominance in southern Uganda.

The next group of foreigners who came to Uganda in 1862 was British explorers who were searching for the source of the River Nile. At the request of Kabaka Mutesa I of Buganda to the British Mornachy for military assistance, the Church Missionary Society (CMS) from London instead arrived in 1877 to provide education. The French Roman Catholic White Fathers arrived later in 1879, and like the protestant CMS, began to convert the local population to Christianity. Unfortunately the two Christian groups and their converts soon became fierce antagonists for the control of the kingdom and the populace. At the same time the number of Ganda converts to Islam grew though they were numerically too few to command any serious threat to the two Christian groups.

Following the death of Kabaka Mutesa I in 1884, Kabaka Mwanga began to persecute Christians out of fear for his own security. In 1888 Kabaka Mwanga was deposed by the combined force of Christians and Moslems and replaced by one of his brothers. A year later Mwanga regained the throne but soon lost it to the Moslems after a few weeks. In early 1890 Mwanga permanently regained the thrown but lost much of his powers to the Christian Chiefs.

In a bid to acquire and control large territories of land, the British used Buganda Kingdom first to conquer the Kingdom of Bunyoro-Kitara to the north of Buganda. In addition the British used a mix of diplomacy and force with the help of Buganda to acquire more territory that stretched east to present day Naivasha in Kenya; to Juba in Sudan; and the Ituri region of DRC. In 1894 Uganda officially became a British Protectorate. Revisions following negotiations with other colonial powers and following the events of the First World War finally resulted in the establishment of present day international borders of Uganda in 1914. A legislative council for the protectorate was established in 1921 and an African member to the council was elected for the first time in 1945. In 1945 Kabaka Mutesa II was deported to the Indian Ocean Island of Seychelles for not cooperating with the British and only allowed to return to Uganda in 1955.

As a consequence of its contacts with European explorers and missionaries the Baganda became the first ethnic group in Uganda to receive formal education. The Baganda were thus the first to fill teaching, clerical and administrative positions under British rule in Uganda. The special status that Buganda enjoyed in the Protectorate led to a serious rift between it and the rest of Uganda even though the British considerably reduced the independence of Buganda.

In order to control trade in East Africa, the British established the British Imperial East Africa Company (BIEAC). The East African railroad was constructed from the Port of Mombasa in Kenya to link the mining town of Kilembe in western Uganda to the outside world. Cotton, tea and coffee were introduced and the agriculturally fertile regions of southern Uganda soon developed leaving the northern and northeastern regions relatively poorly developed.

Since independence from Britain in 1962, Uganda has passed through a bloody political history characterized by military coups and the formation of several armed groups aimed to topple the governments of their time. The country has lost massively in human life and the emotional burden resulting from armed rebellions has affected literally every family. Economic infrastructure has been largely destroyed particularly during the reign of former President Idi Amin Dada in the 1970's. Northern Uganda is still affected by the world's most brutal but forgotten civil war in which the Lord's Resistance Army (LRA) of Joseph Kony is fighting the Uganda People Defence Forces (UPDF). An estimated 1.8 million civilians have fled their homes to live in internally displaced peoples (IDP) camps across northern Uganda and live in squalid

conditions without adequate requirements for good health, socialization process and the protection of the cultures of the people of northern Uganda. As a result social support systems of the people in IDP camps have been severely weakened and males exhibit signs of alienation from their own families. Though many of the victims of the current fighting in northern Uganda are women up to 20,000 children have been kidnapped to serve as laborers, transporters, wives, or child soldiers for the LRA.

The People

There are about 50 different ethnic groups and distinct languages in Uganda, making Uganda a complex socio-cultural country for research. People hold their allegiance primarily to their clans, then their families. There are nine ethnic groups that have strong traditional cultural institutions and these include the Acholi, Ankole, Baganda, Bakonzo, Banyoro, Baruuli-Banyala, Basoga, Batooro, and Etesot. The government of President Museveni for cultural and political reasons has not revived the kingdoms of Ankole and Bakonzo in the Rwenzori mountains in western Uganda. Major tribes that do not have unifying cultural institutions of the size of the nine tribes mentioned above include the Luo speaking tribes of Lango, and the Madi, Lugbara, Kakwa, the nomadic Karimajong tribe in northeastern Uganda, and the Bagishu in Eastern Uganda. There are several smaller other tribes that exist and these include the Gimaka, Reli and Aliba in Moyo district; the Lamwor in Kotido district in northeastern Uganda; and Bakenyi in Kumi and Nakasongola districts.

Demography

Uganda's population according to the 2002 census was 24.6 million people and it is estimated to be 28.6 million people on 30th June 2005 (Uganda Bureau of Statistics, 2002). Of this there are 96 males for every 100 females though the sex ratio at birth is 1.03 males/females. The median age of the total population is 14.8 years, somewhat lower for females at 14.7 years than males at 14.9 years. The population growth rate is 2.97 % while total fertility rate is 6.64 children born per woman and crude death rate is 16.61 deaths per 1,000 population according to 2004 estimates. Infant mortality rate is 86.15 deaths per 1,000 live births. The national overall life expectancy at birth is 45.28 years; 43.76 years for males; and 46.83 years for females. The proportion of the population aged 15 years who can read and write is 69.9% overall, 79.5% of males and 60.4% of females.

Thirty three percent of the population is Catholic, 33% Protestant, 16% Muslim and 18% indigenous and other religions.

Geography

Uganda is a landlocked country and lies across the equator in Eastern Africa west of Kenya, north of Tanzania and Rwanda, south of the Sudan and east of the DRC. Uganda's total surface area is 236,040 square km with a land surface area of 199,710 square km and water surface area of 36,330 square km.

Much of the country comprises low-lying basin that includes the five lakes of Lake Victoria to the south, Lake Kyoga in the center, and lakes Albert, George and Edward in the west. The country has mount Elgon to the east across the border with Kenya, the Rwenzori Mountains on the border with the DRC and a long range of relatively low lying mountains along the border with the Southern Sudan.

Twenty five percent of Uganda is arable land, 9% is under permanent crops; 9% more is permanent pastureland; 28% is forests and woodland and 29% is savannah and swamps.

Economy

Uganda has several natural resources including copper, cobalt, hydroelectric power, and limestone, salt and arable land. Agriculture is the leading sector of the economy and employs over 80% of the workforce. Many of the farms are small and supply domestic need. The main foods are cassava, sweet potatoes, plantains, millet, sorghum, corn, sesame, and groundnuts and beans. Coffee, tea, sugarcane and tobacco are the major export crops and account for the bulk of export revenues; followed by tourism, light industry and service industry. Many families rear poultry, cattle, goats, sheep and pigs mainly for commercial purposes and for use in executing cultural and social activities such as marriage, and customary and cultural rites. There is a sizeable amount of fishing and hard wood industry.

Uganda is well covered with road network and travel by motor vehicle is the most readily available. Air travel is the quickest means to reach remote districts of Karamoja region, and northern and northwestern regions.

Traditional Beliefs of Mental Illness in Adjumani district

Various communities in Uganda attribute the causes of mental illness to the influences of evil spirits (*mayembe*); the spirits of angry ancestors; or supernatural powers (gods of the land). Orley has presented an account of the beliefs of the Baganda about mental illness and epilepsy (Orley, 1970).

The Madi people who live in Adjumani and Moyo districts recognize three types of mental health problem. *Ori* (possession state), which affects young women is akin to dissociative states that arise in response to social and or personal emotional crises.

During an episode of *ori* the young woman falls to the ground screaming and goes into convulsive episode not typical of tonic clonic epilepsy. A spirit of of the woman's dead relative or other ancestor then uses her as a medium to express their grievances and demands. *Joki* is a special form of possession state that affects both females and males alike. During an episode of *joki*, spirits who are not related to the spirit medium take control of the person in order to acquire a home to live in. An episode of *ori* or *joki* may each be followed by amnesia for the entire period. Individuals who suffer from *ori* may meet diagnostic criteria for an anxiety state, dysthymia or sub threshold depressive disorder. Those who manifest features of *joki* may meet diagnostic criteria for major depressive disorder or transient psychotic illness (usually hypomania or psychomotor seizure disorder). A small proportion of individuals who suffer from *ori* or *joki* may subsequently become traditional healers in their communities once the appropriate ceremonies are performed.

In childhood supernatural forces cause moderate to profound mental sub normality. In adults these forces may cause severe mental illness (chronic psychosis – *ababa*, which means "confusion" and conveys the sense of the affected individual as having been totally shattered into pieces and then scattered all over; being incapable of reason or purposeful behavior). Suicide is a special form of mental health problem that is believed to run in families and results from a serious crime an ancestor committed generations back. Epilepsy (*leke*, meaning "curse"; *alili*, meaning dizziness that precedes the falling attack) is believed to signify punishment to a family for serious crimes including the killing of someone from another family for no justifiable reason. Alcohol dependence is not usually considered a mental health problem unless it is associated with *ababa*.

Other than these, there are no specific words for diagnostic categories as specified in DSM-IV or ICD-10. Occasionally the metaphor of the heart having fallen onto the foot or under the sole of the foot may be used to refer to a condition that is akin to major depressive illness. Often the individual uses long winding descriptions to convey his or her sense of distress. Examples of these are presented in a later section on depression and suicide behaviour from Adjumani and Bigiri districts (see table 11). Similar account of the belief systems from Bugiri is not available and subsequent study to document these is needed.

Ori and *joki* are amenable to traditional forms of treatment that involve public confession of wrongs, sins and failures; public reconciliation; performance of customary and cultural rites and ceremonies; animal sacrifice; the use of herbal preparations; and or the performance of special initiation rites to turn an affected person into a traditional healer (*ojo*).

In each extended family system special elders offer sacrifice to ancestral spirits, witnessed by the entire family on a regular basis to maintain the good health of the living and prevent suicide reoccurrence in an affected family.

Health Situation in Uganda

HIV/AIDS epidemic, bloody civil and political unrest, high levels of unemployment, poverty in the countryside and corruption affect the country.

There are high levels of psychosocial and psychiatric morbidity amongst adults. Twenty five to 30.7% of adults (Barton & Mutiti, 1998; Bolton et al., 2004; Kasoro et al., 2002), and 19-21% of children and adolescents (Derluyn, et al., 2004; Nalugya, 2004) are affected. Kizza (2004) reported that 30% of children admitted to non-psychiatric pediatric wards of Mulago national referral and teaching hospital had mental disorder (Kizza, 2004).

Eighty-seven percent of the population (Uganda Bureau of Statistics, 2002) lives in rural areas where access to health services is available to only 20%. The levels of health care coverage and economic development vary greatly by regions. The per capita Gross Domestic Product for Uganda is US$ 234 (Uganda Bureau of Statistics, 2003). Current health service delivery is characterized by inadequate level of mental health services; there are only 17 psychiatrists in Uganda and only two of this practice outside the capital city, Kampala.

Study Area

The study took place in Uganda between 2001 and 2003 and two population samples participated: members of the general population in Adjumani and Bugiri districts, and university students from Makerere University.

Figure 2 below presents the locations of the two districts, Adjumani and Bugiri, where the study was conducted. The two study districts were created in 1997 in a nationwide decentralization process for the purpose of bringing political and social services closer to the rural population.

Fig. 2. Adjumani, Bugiri and Kampala Districts of Uganda
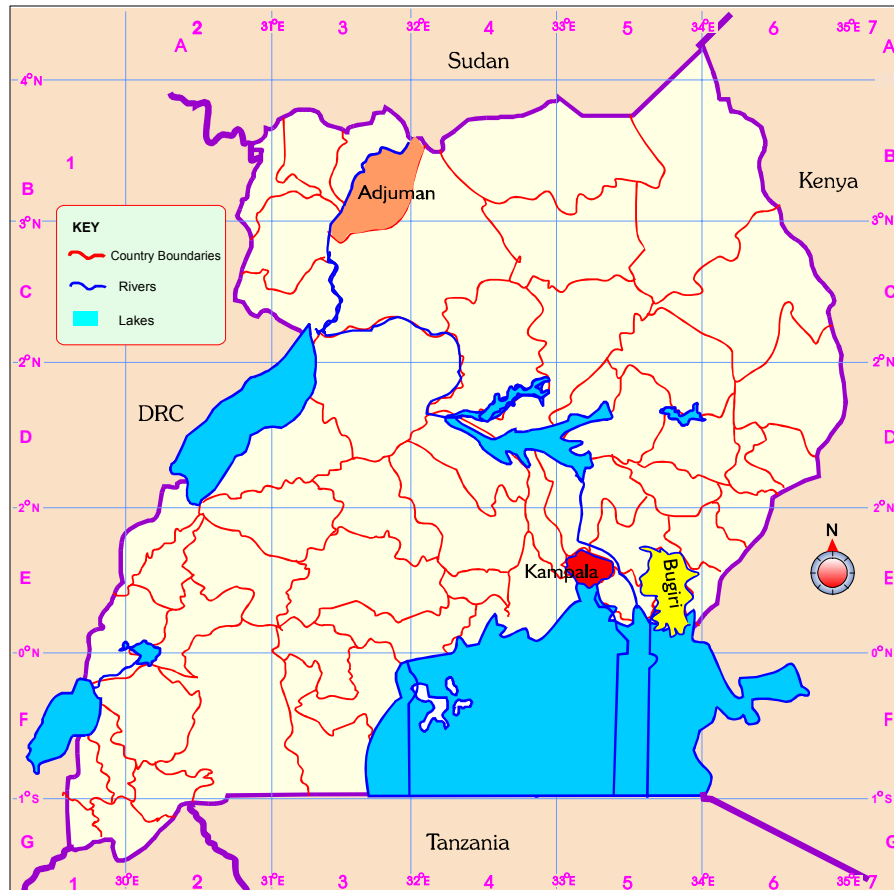
Adjumani district

Adjumani District, with population of 202,491 (Uganda Bureau of Statistics, 2002) lies in the northern part (more accurately, West Nile Region) of Uganda, has a semi-arid climate and is the home of the Madi tribe that also reside in Moyo district. The Madi people who speak *Madi* do not have one unifying kingdom but have several little clans that hold families of the same ancestry loosely together. With the advent of independence, education, modernization, economic hardships, political turmoil, wars and experience in exile from 1979 to 1986 in Southern Sudan, allegiance to clans has undergone severe strains and individuals in Adjumani district appear to be socially alienated from their social support systems.

Adjumani District has suffered from the impact of recurrent armed conflict since 1979 following the ouster of President Idi Amin; the population spent at least 7 years in

13

exile in Southern Sudan between 1979 and 1986. At the time of the survey 75% of the population comprised of the Madi ethnic group and the remaining 25% were refugees from Southern Sudan though 95.6% of those who participated in the present study were Uganda nationals and only 4.4% were Sudanese nationals. Adjumani district continues to experience the impact of the ongoing war between the government and rebels of the Lord's Resistance Army (LRA) of Joseph Kony in northern Uganda.

The main source of economic livelihood of the district is agriculture. Living conditions are poor with annual household income of most residents being less than the equivalent of US$10.00. The standards of health are low with infant mortality rate of 108 per 1000 live births, and maternal mortality being 504 per100, 000 live births; population growth rate is 6.3% and fertility rate, 6.8%. Life expectancy for females and males are 43.7 years and 38.5 years respectively against the national figures of 43.8 years for males and 46.8 years for females. Dysentery and many tropical diseases such as malaria, sleeping sickness, river blindness disease, schistosomiasis, and intestinal helminthiases are prevalent. While the top national health priority is currently HIV/AIDS, recent hospital statistics from Adjumani district Hospital suggest that liver cirrhosis is the leading general medical cause of morbidity and suicide is the number one killer and public health problem in the district.

Bugiri district

The population of Bugiri District is 239,307 (Uganda Bureau of Statistics, 2002); *Lusoga* is the language of the people in Bugiri. The people of Busoga of which Bugiri district is part have a strong kingdom with a strong cultural institution to which the people hold their allegiance. The Busoga people number 439,000 people and occupy five districts; namely, Bugiri, Iganga, Jinja, Kamuli, and Mayuge. Unlike in Adjumani district, individuals from Bugiri district appear to rely heavily on their social support systems. The district is situated on the shores of Lake Victoria and has weather conditions more conducive to agricultural practice than that in Adjumani District. The district has suffered relatively little from the impact of armed insurgency and the ensuing traumatic social and political consequences that has characterized civilian life in northern Uganda since 1986. The population growth rate is 3.4%, fertility rate, 6.7% and life expectancy for females and males are respectively 44 years and 47 years. Sleeping sickness, once a major public health problem in the region is currently on the decline.

Makerere University

Established in 1924 and situated in the capital city Kampala, Makerere University currently has 18 faculties with a student population of about 35 thousand and the

Photograph 2. Makerere University Main Building

female to male ratio of 1:3. Approximately 7,000 students are admitted on various programs annually and one third of the student enrolment is on government sponsorship and the rest pay for themselves on various courses and programs. The University has one hospital with a Counseling and Guidance Center for both students and staff. A separate counseling system has been established at the Faculty of Medicine where students are trained to provide counseling for their peers who experience emotional and psychosocial difficulties.

Aims

My early clinical experience showed that one in every seven patients that I saw for the first time reported active suicidal feelings and passive death wishes. I noticed that these feelings were related to distressing personal and psychosocial life situations of the individuals concerned. Helping people to talk about their suicidal feelings and death wishes in relation to their situations often led to improved mental health. However recognizing people in distress was not easy in the absence of an appropriate screening instrument. In order to fill this need I constructed the Response Inventory for Stressful Life Events (RISLE) as a screening tool for suicide ideation. Since suicide behavior occurs against the background of mental disorder and depression, I expected that the RISLE would also be able to detect individuals with these conditions in non-clinical settings. This study aimed to validate the RISLE for use as a screening

instrument for high-risk suicide ideation and probable depression in the general population.

Objectives

The study was conducted:

1. To describe the properties (general population mean, standard deviation, range and skewedness) of the RISLE in relation to the Beck Depression Inventory (Beck et al., 1961) and the Beck Scale for Suicide ideation (Beck, Kovacs, & Weissman, 1979).
2. To refine the RISLE by identifying the factors with high loadings on factor analysis.
3. To test the RISLE items that together can distinguish individuals at population level, who are depressed and or highly suicidal from those who are not.
4. To determine if the RISLE could detect individuals with clinically significant depressed mood in the general population.
5. To determine if the RISLE could detect individuals with high-risk suicide ideation in the general population.

Study Questions

This study was based on the following questions, namely:

1. To what extent does the RISLE correlate with the Beck Depression Inventory?
2. To what extent does the RISLE correlate with the Beck Scale for Suicide ideation?
3. Is the RISLE able to detect individuals outside of the health care system, but who suffer from clinically significant depression in the general population?
4. Is the RISLE able to detect individuals in the general population who experience high-risk suicide ideation?

Validation of the RISLE

The main methods, which I used to validate the RISLE (i.e. compare the RISLE to the BDI, BSS and diagnostic categories derived from clinical interviews with the Mini International Neuro-psychiatric Interview (MINI) were:

1. Examination of the main properties of the 100-item RISLE.
2. Comparison of the 100-item RISLE with the BDI and the BSS.
3. Examination of factor strata of the RISLE to determine main questions loading on factors. This was done in an attempt to refine and reduce the size of questionnaire.

4. Test the new reduced RISLE using:
   a. Descriptive statistics
   b. Reliability analysis
   c. Receiver operating characteristic curve construction
   d. Sensitivities, specificities, predictive values, false positive and false negative rates and likelihood ratios to test the ability of the new RISLE to detect cases.
5. Determine the clinical efficacy of the revised 36-item RISLE
   e. Cohen's kappa
   f. Clinical validation

The specific means by which this was checked is described in more detail below.

Definitions applied in the study

Depressed mood was as a clinical state defined in this study on the basis of DSM-IV (American Psychiatric Association, 1992) criteria for any current major depressive episode or Dysthymia. The DSM-IV criteria for a diagnosis of a major depressive episode care are:

- Either or both of depressed mood or loss of interest in most things most of the time for the past two weeks.
- Three other symptoms including significant change in appetite and or weight, significant change in sleep pattern, social isolation, fatigability, ideas of worthlessness, loss of interest in performing usual pleasurable activities, history of suicide attempt.
- Symptoms have interfered significantly with the social and occupational functioning of the respondent.
- Symptoms are not due to any recognizable medical problem.

In addition the following items were considered in the determination of clinical significance of symptoms and the need for immediate medication.

- Significant preoccupation with symptoms as distressing or impairing
- Presence of conversion symptoms

A DSM-IV (American Psychiatric Association, 1992) diagnosis of Dysthymia was made if the individual did not report either depressed mood or significant loss of interest for most things for most of the time for the past two weeks, but reported four or more of the symptoms listed under criteria for major depressive episode for most of the time over the past two years.

High risk suicide ideation was defined according to the MINI (see below) (Sheehan et al., 1998) and DSM-IV (American Psychiatric Association, 1992) as a spectrum of suicide behavior comprising of one or more of (1) recurrent suicide wishes or urges (2)

recurrent death wishes (3) an active plan to end one's life by suicide (4) a positive personal history of suicide attempt.

In this connection, *past month suicidality* was evidenced during clinical interview with any one or more of the following during the past month: a) death wish b) suicide wish c) suicide urge d) plan to commit suicide e) an episode of suicide attempt and f) lifetime history of suicide attempt.

Suicide wish was defined as a wish to be dead rather than live, characterized by active and implementable plans to bring about one's death through a self-destructive action the outcome of which is actual death. In the original formulation of the RISLE items related to this concept were termed as *active death wishes*.

Death wish was defined as a wish to be dead rather than live without active plans to use a self-destructive action to terminate one's life. This concept was initially referred to as *passive death wishes*.

Sample size determination

General population

Questionnaire surveys

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 suicidal individuals *(the individuals being the subject of detection in the present study)* in the general population of Uganda is yet unknown. As depression is the leading psychiatric disorder associated with suicide (Angst, Angst, & Stassen, 1999; Blair-West, Cantor, Mellsop, & Eyeson-Annan, 1999) its prevalence rate was used as a proxy to estimate the proportion of suicidal persons in the general population. According to Barnett (1986: p44), the sample size (n) can be obtained from the formula (Barnett, 1986):

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

Using the estimated value of P=0.10 or 10%, (which is the accepted estimate of the proportion of depressed individuals) (Depression Guide Panel, 1993; Vorcaro, Costa, Barreto, & Uchoa, 2001; Weissman et al., 1996), 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.

Clinical interviews

Based on pilot depression prevalence rate of 17% in Adjumani district, a sample size for adults aged 18 years or older was calculated with the Statcal software of the Epi Info program version 6.04. At a worst acceptable error of 2.5%, confidence interval of 95% and power of 80%, the sample size was 27. Given the time and resources available for the fieldwork the final number of interviewees was 57.

Students

The student sample was selected purposively, and fresh students at Makerere were selected for the assumed ease of maximizing response rate in the study.

Ethical clearance

Permission to conduct the study was granted by the Ethical Committees of the Faculty of Medicine and the School of Postgraduate Studies at Makerere University, and the National Council for Science and Technology. The Dean of students and the relevant authorities of the districts, which participated in the study, granted further permission. The Ethical Committee at Karolinska Institutet granted independent clearance for the study (Clearance No 03-131 of 2003-05-16).

Instruments

The RISLE

The RISLE (EBL Ovuga, Buga, & Guwatudde, 1995, 1996; E. B. L. Ovuga & Mugisha, 1990; Tusiime, 1999) comprises 100 items. Each respondent is instructed to respond to every item with one of four answers, namely, 1 for "I strongly disagree", 2 for "I disagree", 3 for "I agree", or 4 for "I strongly agree". In doing so, every respondent is asked to take into account his or her lifelong experiences that he or she had passed through in addition to how he or she currently feels. The instrument also comprises socio-demographic background of respondents and health history, which include family history of mental illness, family history of suicide or suicide attempt, personal history of suicide attempt, personal lifetime history of suicide wish or death wish, and past week experience of death or suicide wish.

The Beck Depression Inventory (BDI)

The BDI (Beck & Steer, 1987; Beck et al., 1996) is comprised of 13 items, six of which form part of the nine DSM-IV diagnostic criteria for major depressive episode. Every respondent is instructed to respond to each item with one of four possible

answers coded 0-3, with 3 representing the highest level of distress on a given item. Respondents are instructed to take into account how they presently feel.

The Beck Scale for Suicide Intent *(BSS)*

The BSS (Beck et al., 1979) is comprised of 21 items, and was developed to assess the risk of suicide. Respondents are instructed to give their answer to every item with one of three possible answers 0-2, with 2 representing the highest level of risk on a particular test item.

The Mini International Neuropsychiatric Interview (MINI)

The MINI (Sheehan et al., 1998) is a standardized clinical diagnostic interview schedule for DSM-IV disorders. The instrument is a highly structured interview schedule, which uses diagnostic algorithm based on ICD-10 (WHO, 1987) (WHO, 1992), and DSM-1V (American Psychiatric Association, 1992). With appropriate training, lay interviewers can reliably administer it.

Fifty-seven respondents from Adjumani district, and 58 fresh students at Makerere University were interviewed using the depression, manic, anxiety, alcohol dependence, post-traumatic stress disorder, and past month suicidality modules of the schedule. DSM-IV diagnoses are made according to diagnostic algorithms, which require a fixed number of symptoms, with minimum duration of symptoms as distressing, and a definite impairment of social functioning as a result of symptoms.

The MINI was translated by independent translators; translated back and forth into the local languages of the participating communities by the interviewers under the supervision of the present author, 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 and its administration where necessary.

Subject feed-back

Respondents were asked: "Are the questions on the RISLE relevant to everyday life situations?" Answers to this question were recorded by respondents at the end of RISLE survey administration and were analyzed manually for common themes.

Establishing gold standard

Two standards were used to compare with the RISLE: 1) depression estimates at clinical interview and 2) suicide ideation at clinical interview. The BDI and BSS were

also used in comparison (correlation), but not as gold standard as those instruments have not been validated in Uganda.

Measurement of Depression

The Mini International Neuro-psychiatric Interview (MINI) was used to make DSM-IV (American Psychiatric Association, 1992) or ICD-10 (WHO, 1992) psychiatric diagnosis of depressive disorder among respondents who took part in clinical interviews. The outcome of clinical interviews was subsequently used in the validation of the RISLE. The depression module of the MINI was used to make clinical diagnosis of any depressive disorder.

Measurement of suicide ideation

The proportion of respondents with suicide ideation, and risk of suicide potential among respondents over the preceding month was estimated using the suicidality module on the MINI (Sheehan et al., 1998). The proportions of lifetime suicide attempt, death wish and suicide ideation, and past week experience of suicide ideation among respondents were estimated with specific questions for history of suicidality contained within the RISLE itself.

Measurement of the intensity of depressed mood and suicide ideation

The intensity of depressed mood was measured using the BDI, which was scored along a 4-point scale, 0-3, giving a possible range of 0-39. The outcome of BDI scores was used to estimate the prevalence of depressed mood in the general population and among students. The 21-item Beck's suicide ideation scale (Beck et al., 1979) was used to estimate the intensity of suicide ideation among respondents.

Selection of Study Participants

General Population Sample

The modified stratified cluster sampling method with probability proportional to size, which has been widely used in rural settings of developing countries (Bennet, Woods, Liyanage, & Smith, 1991; Lemeshow & Robinson, 1985; Macfarlane, 1996) was used to select a sufficient number for representative analyses of 864 eligible residents aged 18 years and older in two districts of Uganda.

To select households, a central location in a randomly selected village was chosen. This was a market place, a church, community resource center, 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 color were cut from 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. As interest among eligible adult respondents to participate was overwhelming the actual number was 999 out of who 939 had complete data for analysis.

Student sample

All 180 students in their first year of study in the Faculty of Medicine were approached through their lecturer at the end of a lecture, and invited to participate in the study. After a full explanation of the study including its aims, procedure, risks and benefits, students who did not wish to participate in the study were asked to leave the lecture room. The students who agreed to participate in the study were informed that they would participate in a second stage clinical interview within one week of completing the RISLE, BDI and BSS. In this way 101 students remained giving a response rate of 56.1%. Fifty-eight students out of the 101 students (57.4%) agreed to participate in clinical interview later on.

Moreover, 300 fresh students admitted to all faculties at the university in the academic year 2000-2001 were selected by a simple random sampling procedure. Forty-seven students out of the 300 refused to participate and results on general mental health and socio-demographic aspects were available for 253. As the survey among the 253 students was conducted to pilot the RISLE administration the results of that survey were not used in validation analysis.

RESULTS

SUMMARY OF PAPERS

Paper I. PREVALENCE OF SUICIDE IDEATION IN TWO DISTRICTS OF UGANDA

Uganda has been affected by bloody civil unrest and wars intermittently since the time of independence in 1962, and by HIV/AIDS epidemic. Under the circumstances it was expected that the prevalence of self-reported suicide ideation in the general population in Uganda would be high. The aim of the present study was to determine the point prevalence of self-reported suicide ideations in two ethically diverse districts of Uganda.

The method employed a systematic sample of adult respondents who were aged 18 years or older living in Adjumani (northwestern Uganda) and Bugiri (southeastern Uganda) districts. Data were collected using the Beck Scale for Suicide ideation (BSS) and specific questions about the experience of suicidal feelings. 36.1% of the sample reported a lifetime experience of suicide urge and 13.1% reported the experience during the week preceding the survey. 20.4% of the sample scored 10 or higher on the BSS. Higher rates of suicide ideation were found in females, peasant farmers and in Adjumani district. Fewer males than females reported suicide urges as a possible reflection of the need for males in Uganda to be strong in the face of stress situations. The higher rates of suicide ideation in Adjumani district might reflect the impact of many years of political turmoil and poor economic conditions in northwestern Uganda.

Paper II. THE PREVALENCE OF DEPRESSION IN TWO DISTRICTS OF UGANDA

Depression is common in all communities, imposes a significant burden on all nations, but remains largely under-recognized and under-treated. As a result of the troubled political history of Uganda, and the advent of HIV/AIDS, the prevalence of depression would be expected to be particularly high. The present study aimed to determine the point prevalence of probable depressive disorder among adults aged 18 years or older in two districts of Uganda. Nine hundred and thirty nine of nine hundred ninety nine adults selected by a systematic sampling strategy participated. Data were collected using the 13-item Beck Depression Inventory (BDI). Seventeen percent (17.4%) of the sample attained a BDI score of 20 or higher signifying the rate of probable clinical depression. Respondents from Adjumani district (26.3%) were more than 7 times as likely as those from Bugiri (6.0%) to attain a BDI score of 20 or higher. Females (35.5%) from Adjumani district were more than 2 times as likely as males (20.7%) in that district to attain a BDI score of 20 or higher. The point prevalence of depression

varies according to the regions of Uganda but are in line with those of Orley and Wing (Orley & Wing, 1979) and Bolton and colleagues (Bolton et al., 2004). It is possible that there is no difference in the rate of depression between the sexes if common expressions for emotional distress are used in the detection of depression, an issue that the present study attempted to incorporate in the translation of the BDI. Observational studies are recommended to determine treatment need and course and outcome of depression in the Ugandan general population.

Paper III. STUDENT MENTAL HEALTH AT MAKERERE UNIVERSITY

There is little information on the mental health of university students in Uganda. However the prevalence of mental health problems in students would be expected to be high as a result of Uganda's troubled political history, the HIV/AIDS epidemic, economic hardships, troubled family relations, and academic pressure. The aim of the present study was to estimate the point prevalence of depressed mood and suicidal behaviors among students at Makerere University. Two samples participated. Sample I comprised of 253 out 300 fresh students from the entire university in 2000/2001 academic year selected using simple random sampling strategy. Sample II comprised 101 out 180 fresh students who agreed to participate from the Faculty of Medicine during the academic year 2002/2003. Prevalence of depressed mood was measured using the 13-item BDI. Specific questions on history of mental illness and suicide behaviors were used to determine personal and family history of mental illness and suicide behaviors. Significantly more students from sample I than sample II (16.2% vs 4.0%) attained a BDI score of 10 or higher. Sample I students were almost 4 times as likely as sample II students (62.8% vs 16.8%) to report family history of mental illness, and 2 times as likely as sample II students to report family history of completed suicide (35.9% vs 17.8%). There was no statistically significant difference between the two samples in relation to personal history of suicide attempt. The prevalence of mental health problems among students joining Makerere University is high and is significantly higher among sample I students than those entering the Faculty of Medicine.

Paper IV: THE RESPONSE INVENTORY FOR STRESSFUL LIFE EVENTS (RISLE): REFINEMENT OF THE 100-ITEM VERSION

No indigenous screening instruments are available for the detection of depressed and/or suicidal persons in Uganda. The Response Inventory for Stressful Life Events (RISLE) was developed for use as a screening tool for depression and suicide ideation. The present study aimed to refine the 100-item version of the RISLE to a shorter but equally efficient version. Complete data were gathered from two general population samples of Adjumani district (N=524 of 571) and Bugiri district (N=415 of 428), and a student (N=101 of 180) sample from Makerere University. RISLE scores were subjected to Principal Component Analysis (PCA) and Discriminant Function

Analysis (DFA) to derive a shorter 36-item version. Pearson's correlation (r) coefficients between the short and long forms and between these and the BDI and BSS were determined to assess concurrent validity. Thematic analysis of the 36-item instrument was performed to determine the main factors in suicide ideation. Internal consistencies of the 100-item alpha=(0.9171) and the 36-item (alpha=0.8693) RISLE versions were high. The 36-item RISLE correlated highly with the 100-item version for the whole data set (r = 0.918, p = 0.000), the general population sample (r = 0.820, p = 0.000), and the student sample (r = 0.820, p = 0.000). The 36-item RISLE correlated better than the 100-item version with both BDI and BSS for the general population samples and for both samples combined. Thematic analysis revealed four factors in suicide ideation – *anger, hostility and aggression; fear of harm, loss, shame and rejection; general distress, depression and lack of pleasure; and suicide ideation as a coping strategy*. Correlation between the 36-item RISLE with the long form remained high even after reducing the short form further to 25 items suggesting that factor reduction of the 100-item version did not compromise the instrument's efficiency as a screening tool. The 36-item RISLE appears to be an advance on the 100-item version, being shorter but retaining the latter's internal consistency and concurrent validity.

Paper V. RESPONSE INVENTORY FOR STRESSFUL LIFE EVENTS (RISLE) II: VALIDATION OF THE 36-ITEM VERSION

The 36-item RISLE maybe an appropriate for use in large samples than the 100-item version from which it was derived in view of its relative brevity. The aim of the present study was to compare responses of the 36-item version of the RISLE, to interview derived psychiatric diagnoses and suicidal ideation in a sub sample of the general population and student samples reported in paper IV. Fifty-seven respondents from the general population in Adjumani district and 58 students from the Faculty of Medicine who agreed to participate in the study were interviewed using the Mini International Neuro-psychiatric Interview (MINI) to derive DSM-IV diagnoses. Receiver Operating Characteristic (ROC) curves were constructed for any current depressive disorder, any current psychiatric disorder and past month suicidality. Sensitivities, specificities, false positive and false negative rates, predictive values and likelihood ratios were calculated at various cut-off points. Cohen's kappa values were calculated to determine the level of agreement between the RISLE and clinical interview method.

Sixty-one percent (61.4%) of respondents from the general population and 15.5% of students met criteria for any current depressive disorder. Eighty-six percent (86.0%) of the general population and 32.8% of the student sample met criteria for any current psychiatric disorder for both samples combined. The RISLE correctly detected 79% of any current depressive disorder, 83% of any current psychiatric disorder and 83% of cases of past month suicidality. Cohen's kappa was 0.508 for any current psychiatric

disorder at cut-off point of 10 for the general population and 0.501 for the student sample at a cut-off point of 6.

At cut-off point of 10 for the combined samples for any current psychiatric disorder, sensitivity was 74.6% and specificity was 77.1%, positive predictive value was 82%, and positive likelihood ratio was 3.6. A score of 10 or higher on the 36-item RISLE was associated with past history of suicide attempt; lifetime experience of suicide urge; lifetime experience of death wish; and past week experience of suicide ideation.

Though numbers were too few to support statistical analyses and valid interpretations, respondents with false positive results tended to more frequently report lifetime experience of suicide ideation, personal history of suicide attempt and family history of suicide or suicide attempt.

The 36-item RISLE appears to have good concurrent validity and may be a reasonable screening instrument for psychological distress in the Ugandan general population. It appears to be a better measure of overall psychological distress than specific depressive symptomatology. Further work is required to establish its worth as a screening instrument and its performance in different populations.

DETAILED RESULTS

Attrition rate

General Population

Response among members of the general population to participate in the study was overwhelming. Five hundred seventy one questionnaires were collected from Adjumani district and 428 from Bugiri. Forty-seven questionnaires from Adjumani and 13 from Bugiri were discarded for being incomplete, leaving available for analysis 524 (91.7%) questionnaires from Adjumani and 415 (97.0%) questionnaires from Bugiri.

Students

Out of 180 students from the Medical Faculty in 2003, 101 (56.1%) agreed to complete questionnaire sets, and 58 (57.4%) of these participated in clinical interviews.

Out of 300 fresh students admitted to all faculties at Makerere University 253 completed questionnaires in 2001. However as this sample was used to pilot the RISLE data from this group was not used in validation analyses.

Results of clinical interviews were used along with those for 57 adults from the general population in the validation of the RISLE.

Clinical care: General Population and Students

The need for medication for any current episode of depressive disorder was determined on the basis of one or more of the following clinical criteria, namely, recurrent suicidal feelings, the presence of conversion symptoms, symptoms being a source of pre-occupation for the respondent, symptoms being a source of distress, and the presence of impairment in social functioning. Fourteen respondents who participated in clinical interviews from the general population in Adjumani district met one or more of these criteria, and they were provided immediate counseling and medication.

Nineteen students met criteria for any current psychiatric disorder and all but one student who participated in clinical interviews received information on the outcome of interview. One student out of the 19 with a current psychiatric disorder received psychotherapy.

Exclusion rate

1. One highly suicidal person with history of three previous suicide attempts and with active current suicide wishes was excluded from the study but provided counseling and advised to take anti-depressant medication.
2. Two persons with obvious intoxication with alcohol were excluded.
3. A male person with obvious anti-social personality traits was excluded when he became rowdy and demanded compensation in the course of questionnaire survey.

The persons concerned were given clinical advice.

Descriptive statistics of the RISLE, BDI and BSS
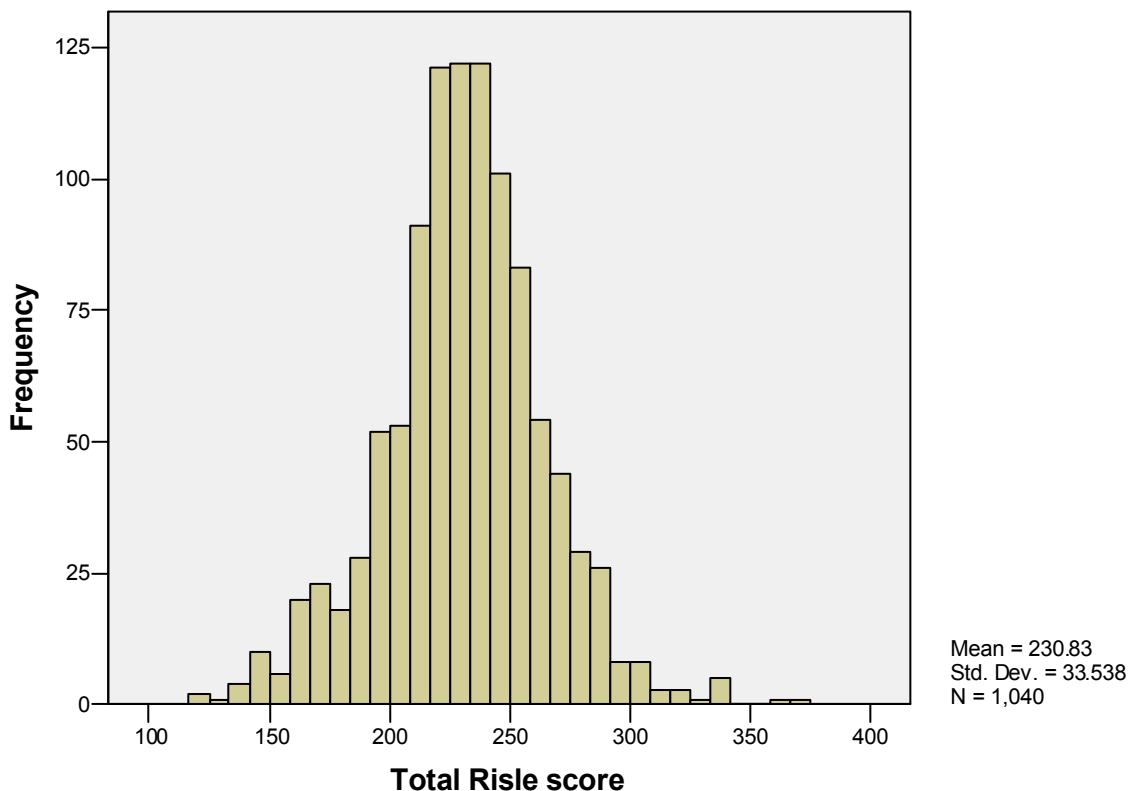
Figure 3: Frequency distribution of 100-item RISLE scores among 1040 respondents

The results indicate that the distribution of the scores on the 100-item RISLE was normal. The population mean for the 100-item RISLE was 230.8 (SD=33.5) (See figure 3). The reasons for this pattern of distribution are not immediately clear.

However the results suggest that the experiences under investigation are uniformly distributed in the population, and that the questionnaire might apply equally to both cases and non-cases (Goldberg, 1972).

Table 1: Descriptive features of the 100-item RISLE, BDI, and the BSS

Descriptive	100-item RISLE	BDI	BSS
Mean	230.8	10.4	5.0
Median	231.5	9.0	2.0
Mode	229	0	0
Standard Deviation	33.5	7.9	6.8
Range	251	39	42.0
Minimum	121	0	0
Maximum	372	39	42.0

A feature of the properties of the survey instruments is that the mean and median were similar for each instrument. It is possible that a screening cut-off could be set at the median, and that a clinically significant cut-off point on either of the instruments could be set at one standard deviation from this to reduce false positive rates. See table 1 for a display of mean, median and mode as well as score range, and minimum and maximum scores.

Correlation

Pearson correlation coefficients were calculated between the 100-item RISLE and the BDI and BSS and the results are shown in table 2.

Table 2: Pearson correlation coefficients between the 100-item RISLE and the BDI, and BSS

	100-item RISLE		
Survey Tool	General Population	Students	Overall
BDI	r = 0.312 (p = 0.000)	r = 0.508 (p = 0.000)	r = 0.395 (p = 0.000)
BSS	r = 0.269 (p = 0.000)	p = 0.359 (p = 0.000)	r = 0.319 (p = 0.000)

100-item RISLE and the BDI

The 100-item RISLE was significantly but moderately correlated with the 13-item BDI at the 1% level for the total sample (Pearson r = 0.395), for the general population (Pearson r = 0.312), and for students (Pearson r = 0.508).

100-item RISLE and the BSS

The 100-item RISLE was significantly but moderately correlated with the BSS at the 1% level for the total sample (Pearson r =0.319), for the general population (Pearson r = 0.269), and student population (Pearson r = 0.359).

Reliability analysis

Internal consistencies for the 100-item RISLE instrument was 0.9171. Details of this are presented in paper IV.

Factor analysis

Principal component analysis (PCA) without the use of any selection variable yielded 18 functions with 49% of the total variance. No selection variable was made to ensure that the RISLE items derived would apply equally to both cases and non-cases. Details of this are presented in paper IV.

Discriminant function analysis and content analysis of the risle

How I refined the 100-item RISLE

This section describes the process through which the original 100-item RISLE was refined and reduced to 36-items. The exercise also examined the contents of the items on the newly derived 36-item RISLE to determine the probable themes that could be used to describe suicide ideation in the general population.

Selection of component items from the first 18 functions derived from principal factor analysis yielded 36 items with a loading of 0.500 or higher and eigenvalues set at 1. The first function accounted for 98.7% of the total variance with eigenvalues of 106.1. Discriminant function analysis (DFA) yielded a heterogeneous mix of factors that was made up of four themes, namely, *general distress, depression and lack of pleasure; anger and hostility; surrender and suicide ideation* as a way of coping; and *fear of harm, loss, rejection and shame.* Anger and hostility, and fear of harm loss, rejection and shame formed the bulk of the instrument's themes in suicide ideation. In the face of hardships, the suicide-prone individual surrenders to fate and considers death or suicide either as a coping strategy to attain peace, rest or comfort in life here and after or to mobilize appropriate response from the social support network system.

The description of these themes, also referred to as factors in the present study, was arbitrary and may well be described differently under different circumstances (Goldberg, 1972). In keeping with the conceptual framework of the present study, the themes that best approximated the suicidal response patterns of people in distress appeared to fit well with the content of this heterogeneous function. The actual grouping of items into the proposed themes was derived by studying the content and possible interpretation of what they might represent in the understanding of suicide ideation in the general population in Uganda.

Table 1 in paper IV represents the thematic content of the refined 36-item RISLE. The first row describes the factors, and the columns comprise the response items that collectively describe the respective factors. Item numbers on the original 100-item version appear in parentheses next to the respective response items.

Properties of the 36-item RISLE
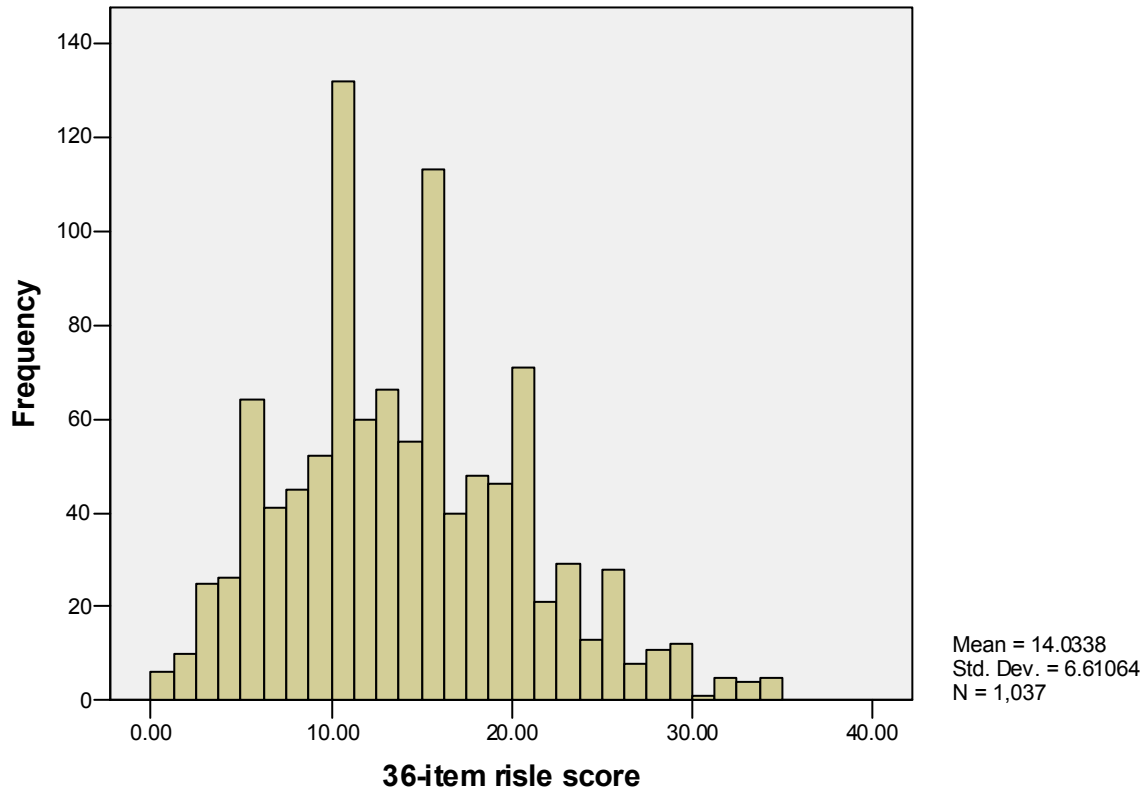
Figure 4: Frequency distribution of 36-item RISLE scores among 1040 respondents

Figure 4 suggests that the distribution of scores on the 36-item RISLE in the general population is skewed to the right indicating that the instrument is perhaps able to detect individuals with significant psychosocial distress.

Correlation

Pearson's correlation coefficients were derived between the 36-item RISLE, the 100-item RISLE, the BDI and BSS to examine correlations between them. Correlations are shown in table 3.

Table 3: Pearson correlation coefficients between the 36-item RISLE and the BDI, BSS, and the 100-item RISLE

	36-item RISLE
Survey Tool	Overall (General and student population)
BDI	r = 0.434 (p = 0.000)
BSS	r = 0.350 (p = 0.000)
100-item RISLE	r = 0.918 (p = 0.000)

100-item RISLE and 36-item RISLE

The 100-item and 36-item RISLE forms were highly correlated with each other at the 1% level (Pearson r = 0.918).

36-item RISLE and the BDI

Whole data set

The 36-item RISLE was significantly but moderately correlated with the BDI at the 1% level (Pearson r = 0.434).

General population

The 36-item RISLE was significantly but moderately correlated with the BDI at the 1% level for members of the general population (Pearson r = 0.374).

Students

The 36-item RISLE was significantly but moderately correlated with the BDI at the 1% level for students (Pearson r = 0.436). Correlation between the 36-item RISLE and BDI was strongest for students.

36-item RISLE and the BSS

Whole data set

The 36-item RISLE was significantly but moderately correlated with the BSS at the 1% level (Pearson r = 0.350). However many respondents negatively evaluated the BSS, and the majority of students did not complete it; no further analysis based on the BSS other than correlation.

General population

The 36-item RISLE was significantly but moderately correlated with the BSS for members of the general population at the 1% level (Pearson r = 0.300)

Students

The 36-item RISLE was significantly but moderately correlated with the BSS for students at the 1% level (Pearson r = 0.418).

Reliability analysis

Alpha value for the 36-item RISLE was 0.8693. Details are presented in paper IV.

CLINICAL INTERVIEWS, CLINICAL VALIDATION

Current depressive disorder, any current psychiatric disorder

All cases that did not meet clinical diagnostic criteria for current psychiatric disorder episodes, such as lifetime episodes, past episode of psychiatric illness, and symptoms that did not significantly interfere with psychosocial functioning or did not last for the mandatory stipulated time frame were considered as non-cases during analysis.

General population

Clinical interviews identified 35 of 57 respondents who met clinical diagnostic criteria for any current psychiatric disorder according to the MINI in Adjumani district. (see table 4).

Fourteen of 35 individuals who met clinical criteria for psychiatric disorder received immediate anti-depressant medication on one or more of the following grounds: 1) persistent suicidal feelings 2) presence of conversion symptoms 3) symptoms being a significant source of pre-occupation (as observed during interview) 4) report of functional impairment on account of symptoms and 5) experience of symptoms as distressing. All 14 respondents subsequently continued with follow-ups and field reports indicated that they all experienced relief from their condition. The reasons for 22 out of 35 who met clinical criteria for psychiatric disorder not requiring anti-depressant medication are not clear. It appears that making a clinical diagnosis at general population level does not imply need for medication or even professional psychosocial intervention (Narrow et al., 2002; Spitzer, 1998).

Table 4: Distribution of different types of current depressive disorder in Adjumani district

Type of depressive disorder	Frequency (n=57)
Major depressive episode	11
Major depressive episode with melancholic features	22
Major depressive episode with psychotic features	1
Dysthymia	1
Total	**35**

Student population

Out of 101 students who completed study questionnaires, 58 (57.4%) accepted to be interviewed. Clinical interviews were conducted blind to the results of the RISLE screening test results as for the general population. Clinical diagnosis of current psychiatric disorder was made in 19 out of 58 students. In 16 of 19 cases, students had two or more diagnoses (see table 5). Only one student with post-traumatic stress disorder co-morbid with panic disorder received psychotherapy. The demographic characteristics of the students who participated in clinical interviews were similar to the background of those who did not take part in clinical interviews.

Table 5: Distribution of different types of current psychiatric disorder among nine students

Current clinical diagnosis	N
Major depressive episode	3
Major depressive episode with melancholic features	3
Dysthymia	3
Bipolar affective disorder (II)	2
Agoraphobia	13
Social Phobia	6
Obsessive compulsive disorder	3
Post-traumatic stress disorder	1
Alcohol dependence	1

Note: The total number of diagnoses exceeds 19 students with current psychiatric disorder because of multiple overlapping diagnoses.

Receiver operating characteristic curves

The refined 36-item RISLE was subjected to receiver operating characteristic (ROC) curves to determine its ability to detect current episodes of depressive disorder, psychiatric illness and past month suicidality in the study sample.

The 36-item RISLE performed reasonably well in the detection of cases among the interviewed participants when data were pooled together. The total number of interviewees was 115 (57 adults from general population and 58 students). Figures 1-3 in paper V depict ROC curves for current depressive disorder, past month suicidality, and any current psychiatric disorder respectively.

The results indicate that the RISLE is better suited for the detection of any current psychiatric disorder than current depressive episode. Probability to distinguish cases of current depressive disorder from non-cases was 79.2% When used in the detection of any current psychiatric disorder, the probability that the RISLE will correctly

distinguish cases from non-cases was 83.6%, which was similar to the probability of 83.4% for past month suicidality, i.e. the 36-item RISLE performed equally well with respect to any current psychiatric disorder and past month suicidality. However the number of past month suicidality were few, and the results with regard to this variable are inconclusive.

CUTOFF POINTS AND LIKELIHOOD RATIOS

Current depressive disorder

Table 6 presents sensitivities, specificities, predictive values, false negative and false positive rates, and likelihood ratios for current depressive disorder on the 36-item RISLE at cutoff points of 5, 6, 10, 12, 15, 19 and 20. Likelihood ratio was highest at cut point 6 with sensitivity 97.6% but a low specificity of 35.7%. At a cut-off point of 20, sensitivity was low at 38.1% with a specificity of 86.1%. Visual inspection of table 6 reveals that the indices of the RISLE for current depressive episode are poor. An optimal cut-off point appears to be 10 with sensitivity of 83.3%, specificity of 65.3% and likelihood ratio of 3.4.

Table 6: Cut-off points and likelihood ratios on the 36-item RISLE for current depressive disorder

Risle cutoff	Sensitivity (%)	Specificity (%)	Positive Predictive value (%)	Negative Predictive value (%)	False Positive Rate (%)	False Negative Rate (%)	Likelihood Ratio
5	97.6	26.0	43.2	95.0	2.4	74.0	0.6
6	97.6	35.7	51.3	94.6	52.1	4.8	10.7
10	83.3	65.3	57.4	87.0	35.6	16.7	3.4
12	76.2	70.8	59.3	83.6	30.1	23.8	2.5
15	69.0	76.4	61.7	80.9	61.7	31.0	2.0
19	45.2	84.7	61.3	72.6	54.8	16.4	3.7
20	38.1	86.1	59.3	84.9	61.9	15.1	3.9

Past month suicidality

Table 7 presents the properties of the 36-item RISLE for past month suicidality. While sensitivity values ranged from 100% at cut-off point 5 and 6 to 50% at cut-off point of 20, predictive values were very low and likelihood ratios were unacceptably low. The results revealed that the RISLE is poor at detecting suicidal thoughts in the general population. One reason for this might have been the few numbers of respondents involved. On the basis of a likelihood ratio of 1.5 at cut point of 12, the cut-off point of 12 appears to be the optimal choice. However further studies involving larger samples for clinical interviews are required to reach a definitive conclusion on probable cut-point for suicidal thoughts in the general population.

Table 7: Cut-off points and likelihood ratios on the 36-item RISLE for past month suicidality

Risle cutoff	Sensitivity (%)	Specificity (%)	Positive Predictive value (%)	Negative Predictive value (%)	False Positive Rate (%)	False Negative Rate (%)	Likelihood Ratio
5	100.0	25.0	8.3	100.0	91.7	Nil	--
6	100.0	40.5	10.2	89.8	59.5	Nil	--
10	90.0	58.5	12.3	98.8	43.2	10.0	1.2
12	90.0	66.7	14.8	99.0	35.1	10.0	1.5
15	80.0	72.1	15.4	98.1	29.7	20.0	0.8
19	60.0	83.7	19.4	96.9	40.0	16.9	1.1
20	50.0	85.7	18.5	96.2	50.0	14.9	1.2

The results shown in table 7 imply that though the probability of a correct detection of high-risk suicide ideation is good at 83%, the RISLE still needs further refinement to improve its detection ability for not only suicide risk but also for depression and other signs of general psychosocial distress.

Current Psychiatric disorder

The indices of the 36-item RISLE for the possible detection of any current psychiatric disorder in the general population were reasonable with the most optimal values being those at cut-off point of 10 (see table 1 in paper V).

Agreement between clinical interview results and RISLE cut of points

To determine the extent to which 36-item RISLE cut-off categories agree with diagnostic categories derived from clinical interviews with the MINI, cross-tabulations were made between various cut-offs on the 36-item RISLE and diagnostic status with respect to current depressive disorder and current psychiatric illness among respondents who participated in clinical interviews. The results are shown in table 8.

Clinical agreement was highest with a value of 0.508 cut point of 10 suggesting that this may be the optimal cutoff point to use in population surveys to estimate the prevalence of clinically significant depressed mood in the community (see table 8). This suggestion is supported by optimal balance between the figures for 36-item RISLE sensitivity, specificity, positive and negative predictive values and positive likelihood ratio at cut point 10 as shown in tables 6 above and in table 1 in paper V.

Table 8: Levels of diagnostic agreement for depressive disorder and any current psychiatric disorder between the 36-item RISLE and clinical interviews with the MINI in Adjumani district at different out-of points

36-item RISLE cut off point	Any depressive disorder		Any current psychiatric disorder	
	Kappa value	P value	Kappa value	P value
Cut point 5	0.186	0.000	0.298	0.000
Cut point 6	0.365	0.000	0.501	0.000
Cut point 10	0.435	0.000	0.508	0.000
Cut point 12	0.434	0.000	0.501	0.000
Cut point 15	0.433	0.000	0.460	0.000
Cut point 19	0.305	0.000	0.289	0.000
Cut point 20	0.249	0.000	0.264	0.000

RISLE performance in the clinical study sample

Prevalence rates for depressed mood were determined using the 36-item RISLE at various cut points in order to compare prevalence rates in the general population according to survey method with that determined during clinical interviews. It was expected that this would provide further information on the performance of the RISLE as a screening instrument. A good agreement between the 36-item RISLE and clinical interview method would provide support to use optimal cut-off values in screening to estimate a respondent's likelihood of a positive clinical diagnosis.

Table 9 below provides frequencies of depressed mood at cut-off points of 6, 10, 12, 15, 19 and 20 on the RISLE compared against frequency rates for any current depressive disorder and any current psychiatric disorder derived from clinical interviews with the MINI for Adjumani respondents and students. To make comparison easier, the rates according to clinical interviews for current depressive disorder and any current psychiatric disorder are juxtaposed respectively next to RISLE cut points of 10 and 15 for the general population, and cut points 6 and 10 for students. The impossibly high prevalence rates for the general population and the conceptual difficulties in assigning significance and meaning to what may or may not be depressive illness requiring medication or other forms of professional psychosocial intervention are immediately obvious from the data from the general population survey in Adjumani district.

Nevertheless two conclusions can be drawn. In the general population it appears that cut-of point for clinically significant depressive disorder is 15. Among students the cut-of point for clinically significant depression appears to be 10.

Table 9: The frequencies of any current depressive disorder and any current psychiatric disorder in the general population and among students according to the RISLE and clinical interview method using the MINI

36-item RISLE cut-off point	Adjumani district		Students	
	Proportion (%) with diagnosis (36-item RISLE)	Proportion (%) with diagnosis (MINI)	Proportion (%) with diagnosis (36-item RISLE)	Proportion (%) with diagnosis (MINI)
6	97.9		41.6	31.0 (APD)
10	89.5	86.0 (APD)	19.8	13.8 (CDE)
12	77.9		9.9	
15	61.1	61.4 (CDE)	5.0	
19	37.8		1.0	
20	31.9		1.0	

Key: APD = any current psychiatric disorder; CDE = any current depressive episode.

Relationship of Psychosocial distress to suicidal behavior

Table 10: Relationship between 36-item RISLE score cut points and suicidal behaviour among all respondents (N = 1040)*

Suicide behavior	RISLE score					
	Score < 10		Score ≥ 10			
	N	%	N	%	OR	95% CI
Past suicide attempt	19	1.8	115	11.1	2.25	1.34-3.96
Lifetime suicide urge	38	3.7	301	29.0	3.86	2.60-5.67
Lifetime death wish	45	4.3	285	27.4	2.87	2.00-4.18
Past week suicide ideation	15	1.5	108	10.4	2.71	1.54-5.11

* Respondents from the general population (939) and students from the medical faculty (101) were combined for this analysis.

To determine if the 36-item RISLE scores were significantly related to psychosocial distress, cross-tabulations were performed between the 36-item RISLE score cut-offs and types of suicidal behavior, which is used in the present study as a proxy for psychosocial distress (see table 10). The results consistently showed that scores of 10 or higher on the 36-item RISLE instrument were more than 2 times likely to be associated with a *personal history of suicide attempt* ($X^2 = 9.61$, df = 1, P = 0.002), more than 3 times likely to be associated with *lifetime suicide urge* ($X^2 = 53.01$, df = 1, P = 0.0000), more than 2 times likely to be associated with *lifetime death wish* ($X^2 = 35.43$, df = 1, P = 0.0000), and more than 2 times to be associated with *past week suicide ideation*. It appears that though the prevalence rates of any current psychiatric disorder or any current depressive disorder determined at a RISLE cut point of 10 were alarmingly high, the individuals concerned were probably experiencing significant distress and were at increased risk of suicidal behavior.

Further work is needed to verify optimal cut-off points in different population settings using larger samples in clinical interviews.

Subject feed-back

In response to the question "Are the questions on the RISLE relevant to everyday life situations?" eighty percent of the respondents believed the instrument was relevant to their daily life situations. Respondents reported that the RISLE provided them with emotional relief; enabled them to examine how they had coped with negative life events before; and educated them in how to handle life situations in the future. Most respondents completed the instrument with enthusiasm and only one youth with obvious personality disorder exhibited hostile outbursts in the course of administration; this particular interview was terminated and the partial data was excluded from data entry.

DISCUSSION

Introduction and general findings

This study was conducted to determine the feasibility of detecting individuals who experience high-risk suicide ideation, and or experience severe depressed mood in the general population that look normal. The study participants included 524 respondents from Adjumani district, 415 from Bugiri district and 101 from Makerere University. A Clinical interview method using the MINI (Sheehan et al., 1998) was used as the gold standard. Students differed from respondents from the general population in being young, having a higher level of educational attainment, and a higher proportion being single. The 100-item RISLE score distribution was normal in the study sample but the distribution of scores on the BDI and the BSS were skewed. The reason for the normal distribution of scores on the RISLE are not clear as it is normally expected that scores on screening instruments should be skewed with the majority of the population attaining scores near zero. It is possible that the observed distribution of scores reflects the normal distribution pattern of suicide ideation in the general population and the normal distribution might be due to the scores on the RISLE having both positive and negative values.

Using principal component analysis and discriminant function analysis, the 100-item RISLE was reduced to a short 36-item version. A comparison of the 100-item RISLE revealed that it correlated significantly but moderately with the BDI and BSS in the general population. The revised 36-item RISLE was highly correlated with the 100-item long form, which would require considerable time in its administration, a factor that is a serious disincentive in population surveys if the 100-item version were used. The high correlation between the short and long forms of the RISLE suggests that screening with the short form might achieve reliable prevalence rates in the general population. Correlations were better between both the 100-item and 36-item RISLEs and the BDI than the BSS suggesting that the RISLE and BDI share common properties, and therefore overlap somewhat in their ability to detect cases of depressed mood and or current psychiatric disorder. The weaker correlation between the RISLE and BSS suggests that the two instruments share few properties and overlap between them is narrow. A probable reason for this is that the RISLE tags suicidal feelings and or responses to the possible occurrence of negative life events common in respondents' daily lives and assess people's responses to negative life events. It appears that this approach promoted rather than inhibit personal disclosure using the RISLE.

Methodological issues

Representativeness

More males participated in the population surveys compared to females due to the heavy involvement of women in domestic activities and peasantry. Males in Uganda have traditionally exhibited more readiness to participate in community activities than females. It is possible that females perceived the present study as a community activity and opted to attend to other pressing domestic and family activities at the time of interviews. The results presented in this study may be skewed towards males. Contrary to the results of the present study, research on post-traumatic stress disorder among 3,323 adult Ugandan and Sudanese nationals and refugees from 1,842 households from Arua district in the West Nile region of Uganda (Arua district neighbors Adjumani district) revealed that 73.3% of the Uganda nationals, 75.3% of Sudanese nationals and 77.9% of Sudanese refugees were female (Karunakara et al., 2004). One possible reason for the over representation of women compared to men in the Karunakara et al (2004) study might relate to the fact that males in Arua district are traders who transport merchandise to and from neighboring villages and districts, and the men were probably not available to participate in the Karunakara et al (2004) study. Among Sudanese refugees and nationals the probable involvement of men in the war between the Sudanese People Liberation Army and the Government of Sudan might have been an additional reason for the little male participation in that study. The two studies appear to illustrate the difficulties in conducting field research in rural settings in Uganda and may not reflect flaws in sampling strategy in the present study.

Sampling

Villages in rural Uganda are often scattered over large expanse of the district, may often shift geographic location, and no census or other forms of identification are available. Sampling using computerized programs or table of random numbers is impossible under the circumstances and would require heavy financing to support travel and accommodation for research staff in the field. The method employed in the present study (Bennet et al., 1991; Lemeshow & Robinson, 1985; Macfarlane, 1996) has been widely used by UNICEF and the World Health Organization in sampling respondents in rural settings. However the method adopted might have led to two possible biases. First it is possible that the involvement of females in labor activities outside the home led to the over-representation of males in the present study. Secondly it is possible that those who participated in the study were sicker than those who were probably healthier and were away engaged in various social and other activities. The net effect of this bias could be that the prevalence of depressed mood or suicide ideation in the sample was higher than should have been. The converse is also possible; that is, those who were available to participate in the study were in fact healthier, and sicker members of the communities stayed away as a result of stigma

associated with mental health problems and suicide behavior. It can therefore be argued that the prevalence of depressed mood and suicide ideation either approximated the true value of the prevalence rates or was in fact lower than reported. Nonetheless adjustment for sex has probably ruled out the problems of under-representation and over-representation. In future studies, however, sampling will be based on full lists of adult membership of existing households, equal representation of both sexes in samples, and attempts to trace sampled adults who happen to be absent from home will be made before substitutions are made (Bolton et al., 2004).

Exclusion criteria

Individuals who were obviously psychotic or were dependent on alcohol at the time of the study were excluded including two individuals with alcohol intoxication, and one high-risk suicidal person with two previous episodes of suicide attempt. The RISLE was designed to detect individuals without obvious signs of mental health problems and who are silently suicidal. For individuals with obvious psychotic illness it would be a waste of time to administer the RISLE and the confirmation of caseness of individuals concerned should be based on direct interview right away.

Clinical interviews

Clinical interviews were conducted among only 57 general population respondents and 58 students based on pilot prevalence rates. It turns out, based on the results of clinical interviews in this study, that more interviews, including in Bugiri district, should have been conducted to improve the precision of the results of clinical validation.

A major problem factor in the general population survey was the limitation of resources and time in the field. The number of clinical interviews among students and the general population were few. Among students all efforts were made including interviewing willing students in the dissecting room to maximize response rate. The best approach adopted for the general population was to conduct clinical interviews immediately after the administration of survey questionnaires to prevent loss of respondents if a separate visit were arranged following questionnaire survey. It is suggested that further validation studies be carried out to verify the present results.

These shortcomings notwithstanding a score of 10 or higher on the RISLE was associated with a 2 times likelihood of personal history of suicide attempt. Individuals who scored 10 or higher on the 36-item RISLE were more than 3 times likely to be associated with lifetime suicide urge, more than 2 times likely to be associated with lifetime death wish, and more than 2 times likely to be associated with past week experience of suicide ideation. The RISLE appears to be effective in detecting individuals with significant psychosocial distress manifesting in the form of suicide ideation and or depressed mood.

Depression, suicide and culture-specific terminology

The communities in Adjumani and Bugiri districts do not have specific words for depression and suicide but there are well-articulated descriptions of the concept. Depression and suicide are taboo subjects, which are not readily discussed with strangers. The closest expressions for depressed mood as opposed to everyday disappointment and sadness are *"heavy pain in the heart"* or *"thinking too much"*. In Bugiri district an aspect of intensity of depressed mood with impairment in social relationships is often evident in the Lusoga (the language spoken) descriptions of depression, for example *Okuba mu birowoozo ebiita* (deep thought with loss of pleasure), *Omntu okuba nga takasanusibwa 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 kikolwa ekibi ekikugemaku* (sadness in excess of past events). It is possible that many of the positives recorded to various response items on the RISLE related to experiences not associated with depressed mood or any current psychiatric disorder, but the experience of general psychosocial distress. It is possible that this difficulty might have accounted for the high prevalence rates reported in this thesis for both current depressive disorder and any current psychiatric disorder.

Table 11 depicts a wide range of terminologies and expressions for suicide, attempted suicide, suicidal threats and suicidal thoughts or feelings in Adjumani district (Madi language) and Bugiri district (Lusoga language). Both communities have well-articulated concepts of suicide and its precursors, suicide attempt, suicidal threat and suicide feelings and have more than one way to communicate the idea of self-destructive behavior. The issues of taboo and stigma arise from the cultural concept of suicide as being punishment for wrongs committed against ancestral spirits or one's social environment; suicide is believed to run in families. The fear associated with public discussion or recognition of suicide appears to signify active denial to avert shame over personal or family history of suicide behavior. However as the frequency of suicide in the community rises, this fear appears to dissipate and individuals discuss their feelings more freely in an emotionally supportive environment, particularly in Adjumani district.

Table 11: Terminologies for suicide ideation complex in Adjumani district (Madi) and Bugiri district (Lusoga)

Suicide ideation	Adjumani district (Madi)	Bugiri district (Lusoga)
Suicide (as a subject matter)	- Lidri nyidri duka pi andidru nyangasi (Taking away your own life purposely) - Nya nyidika pkwo nyangasi andidru (Killing yourself purposely) - Rudika pkwo nyangasi (Killing oneself) - Ridraka (Harming or injuring oneself) - Lidri duka pi (Taking away life) - Rutika (Hanging oneself) - Iba koka (Taking a rope to hang oneself) - Erwa mnvuka (Taking drugs or poison)	- Okweita (Killing oneself) - Okwetuga (Killing oneself by hanging) - Yeghaire obutwa (Killing oneself by poisoning) - Anhweire obutwa (Has taken or drunk poison) - Yefumite (Has stabbed him/herself) - Yekubye esasi (Has shot him/herself with a gun) - Yemazeegho (Has harmed him/herself)
Completed suicide	- Odu ana lidri ni pi (He/she has committed suicide) - Oti ani pkwo (He/she has committed suicide by hanging)	- Yetwaire e wakitaka (He/she has taken away his/her own life)
Suicide attempt	- Oko iba dria ra (Has ever taken a rope) - Omnvu inyanya ra (Has ever taken or drunk poison) - Obi ana lidri ni duka pi (Has attempted to take his/her life away)	- Okugezaaku okweita (Has attempted suicide)
Suicidal threat	- Marunziede (I shall kill myself for you) - Maruti nyini pkwo (I shall hang myself for you)	- Nkha kweita (I shall kill myself)
Suicidal thoughts	- Ta uraka lidri duka pi nidri (Having suicidal thoughts) - Ta uraka ru tika pkwo adriga (Thinking about suicidal feelings)	- Okuba ne kirowoozo ekyokweita (Having suicide feelings) - Akoye ensi (He/she is tired of the world) - Ayenda kujja wakitaka (He/she intends to commit suicide) - Nkoye ensi (I am tired of the world)

RISLE

The RISLE was reduced in length from 100 items to 36, and the main themes in suicide ideation were determined. Reliability analysis revealed high levels of internal consistency ranging from .86 to .92 for full data set and randomly selected sub-samples. Since the instrument was derived from clinical materials in suicide behavior, the short form of the RISLE was heavily biased toward the detection of suicide ideation. Thematic analysis of the instrument revealed four areas in suicide ideation including depression, general distress, and lack of pleasure; anger and hostility; fear of harm shame, loss, and rejection; and suicide ideation as a coping strategy. Content analysis of the four major themes suggests that suicidal thoughts are probably used as coping strategies in the face of adversity. In addition, it suggests that fear of rejection, and anger and hostility, are important existential determinants of suicidal thoughts that place responsibility for personal difficulties in the external social world, which is expected to assume responsibility for finding solutions to personal troubles.

Comparison with other studies

In a review of studies involving 18 case-finding instruments, Mulrow and colleagues reported that sensitivities and specificities for detecting major depression ranged from 67% to 99% and 40% to 95% respectively. Overall sensitivity was 84% and specificity, 72%. In another review of the accuracy and precision of depression questionnaires and clinical examination, Williams and colleagues reported that the median positive likelihood ratio for major depression was 3.3 with a range of 2.3 to 12.2 (Williams et al., 2002). These results are in overall agreement with the RISLE sensitivity, specificity and positive likelihood ratio for any current psychiatric disorder of 74.6%, 77.1% and 3.6 respectively at cut point of 10.

Eaton and colleagues have suggested that agreement between questionnaire surveys and clinical interview results was poor with agreement between the two methods being fair at a kappa value of 0.20. Similarly Regier and colleagues have reported that clinical interviews produced consistently higher prevalence rates for major depression than population-based surveys involving the use of questionnaires (Regier, 2000). These findings have not been replicated in this study, which has produced a kappa value of 0.508 for any current psychiatric disorder. The present study has also revealed that survey method with the 36-item RISLE produced higher figures than clinical interview method for both students and the general population. Higher prevalence figures on the 36-item RISLE than according to clinical interview method using the MINI might be related to the impact of general psychosocial distress, the expression of this distress in Uganda and specificity of the RISLE for Ugandan cultures. However according to Beck and colleagues (Beck & Steer, 1987; Beck et al., 1996), extremely high scores on screening instruments might be related to problems of adjustment.

Agreement between the two methods of estimating the prevalence of any current psychiatric disorder at cut points of 5, 6, 10, 12, 15, 19 and 20 were 0.298, .501, 0.508, 0.501, 0.460, 0.289, and 0.264 respectively. Agreement was optimal at cutoff point of 10 with a kappa value of 0.508, followed by that at cut point 6 and 12 with a kappa value of 0.501, indicating the difficulty in determining an optimal cut point to indicate caseness in population surveys. Considerable time lag between questionnaire administration and clinical interviews may exacerbate this difficulty as demonstrated in only a fair agreement between the two methods (Regier, 2000). Agreement in the present study was better at cut points of 6, 10, and 12 on the 36-item RISLE for any current psychiatric disorder than that demonstrated in previous studies possibly because clinical interviews among the respondents in Adjumani district were conducted at the same sitting as questionnaire surveys and among students within one to three weeks. However diagnostic frequency distribution according to 36-item RISLE score categories and population source revealed that RISLE scores did not correspond in a linear manner with the possibility of a psychiatric diagnosis both in the general population and among students (see table 9). That is correspondingly higher RISLE scores did not signify the probability of making a diagnosis of a psychiatric disorder depending on the population source. Conversely lower and lower scores on the RISLE did not eliminate a diagnosis of a psychiatric disorder. No student with a diagnosis of any current psychiatric disorder had a score above 14. In Adjumani district most diagnoses were made among individuals with scores of 15 or higher though diagnoses were also made among low scorers. Thus results suggest that it is impossible to do away with the problems of false negatives or false positives and a trade-off is the best that can be done to provide care to those in need of psychiatric care without alarming those who are less likely to be cases. In the present study it is recommended that for screening purposes, a useful cut-off point for any current psychiatric disorder in the general population is 15. For clinical purposes, however, a useful cut-off point is 20; 21.1% of the overall interviewed sample had any current psychiatric disorder at a cut-off point of 20. Among students, the cut-point for both screening and clinical diagnosis may be set at 6 (see table 1, paper V).

Risle and Other Instruments

The RISLE and BDI

The observation that correlations between the two forms of RISLE and the BDI were not stronger than 0.376-0.436 indicates that the RISLE and the BDI measure different aspects of depressed mood and effects of general psychosocial distress. The construction of the BDI on material obtained in Western societies was based on Beck's cognitive theory of depression, which comprises of cognitive, affective, motivational and behavioral aspects. The BDI seeks to detect persons with established depressive symptomatology and a high probability of clinical caseness. The RISLE in contrast was designed to tap Ugandan respondents' routine coping styles to stressful life events based on their existential interpretations of negative life events in vulnerable

individuals. The RISLE sets out to identify areas in daily living in Uganda that evaluate respondents' perceptions of the quality of their life situations, the quality of interpersonal relationships, and typical suicidal response patterns to negative life events. The instrument identifies stereotypical response patterns in Uganda in relation to depression and suicide risk triggered by the experience of psychosocial stressors.

Correlation was strongest between the 100-item RISLE and the BDI for students at a Pearson correlation coefficient value of 0.508. Reasons for this are not immediately clear though it is possible that the levels of psychosocial distress among students might be lower than in the general population and as a result of this student lifestyles are more similar to lifestyles in Western societies. Higher correlation coefficient between the RISLE and the BDI in students might also be due to the higher variability in student data than in the general population data. Methodological differences in survey questionnaire administration might also be responsible for this observation; students self-administered all survey questionnaires but other community members in the administration of the instruments assisted some general population respondents who could neither read nor write.

The RISLE and BSS

Correlations between the 100-item and 36-item RISLE versions with the BSS were weaker than their correlations with the BDI because of the additional problems of negative cultural and societal attitudes and taboos associated with suicide. Whereas the BSS addresses itself directly and explicitly to suicide behavior and suicide risk assessment, the RISLE uses indirect clues in the form of common response patterns associated with suicide potential during stress situations. The RISLE describes suicidal responses to negative life events in the form of alternative problem solving strategies in the face of social and general adversity typified with real life examples of such as arguments within family systems, failure of significant family members to fulfill obligations and responsibilities, breakup of relationships, a diagnosis of HIV/AIDS, bereavement and business collapse, etc. While the BSS and the BDI serve the functions of detection and risk assessment, the RISLE seems to have an additional therapeutic effect on respondents in the course of its administration. In its evaluation, respondents reported that the RISLE helped them to evaluate their response patterns whenever they experienced problems, led them to experience emotional relief, and taught them alternative strategies to solving personal difficulties that might otherwise increase the risk of suicide.

RISLE and Interview for Recent Life Events (IRLE)

The Interview for Recent Life Events (IRLE) (Paykel, 1997) was designed to elicit discrete recent changes in the social and personal environment of the individual (Paykel, 1983). The IRLE sets out to *list recent life events and to establish the role of life events* in the onset and maintenance of psychiatric ill health. The RISLE, unlike the IRLE, *assesses the individual's coping style in the face of cumulative negative life*

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events and current stressful situations. The RISLE posits potential stressful events that are common in daily life in the community, some of which might have been experienced by the respondent already and some of which generate associations with similar or related negative events. The RISLE is self-administered unless the respondent cannot read or write. The outcome of self-administration of the RISLE is based on the respondent's personal evaluation of his/her life history and current situation and independent of the value judgment and interpretation of the significance of negative life events by an interviewer in situations where suicide and mental health problems are highly stigmatized. Scores on the RISLE are useful in the recognition of potential cases of suicide and mental illness. This is not to suggest that the RISLE is superior to the IRLE. It is suggested that in research the two instruments could be used concurrently so that information derived by the use of one is complemented by information obtained by use of the other.

RISLE and Sense of Coherence (SOC) of Antonovsky

Based on work describing experiences from Nazi concentration camps, Aaron Antonovsky's Sense of Coherence (SOC) posits that individuals who perceive their negative life situations as *comprehensible* or understandable, *manageable* and *meaningful* and have high level of *general resistance resources* to resist the impact of their negative situations are generally able to survive and not succumb to psychological ill health (Nilsson, Holmgren, Stegmayr, & Westman, 2003; Sagy, Antonovsky, & Adler, 1990). SOC is a model that explains what promotes recovery from distress, and health and resilience in times of psychosocial adversity. SOC postulates that individuals who have high levels of general resistance resources (GRR) are able to activate resources that enable them to survive the negative impact of psychosocial adversity but that individuals with low GRR tend to experience high anxiety levels when they experience negative life events. The RISLE like the SOC is based on the assumptions that individuals who succumb to adverse life events tend to experience high anxiety and distress levels, experience their life situations as unpleasant, and have poor coping skills. Unlike the SOC, RISLE seeks to highlight stereotyped negative response aspects of the coping response patterns of individuals in distress. It appears that while successful individuals with high SOC levels are able to mobilize resources needed to survive stress situations, other individuals in similar situations seem to have low levels of GRR and use suicidal response patterns to paradoxically stay alive by using the ultimate attempt on their lives to elicit help from their social support systems, striving to find alternative solutions to their current life problems, modifying harmful life situations or by dying in order to join the supportive company of their dead relatives. While successful individuals with high GRR have a central locus of control in the face of social adversity, the RISLE assumes that suicidal individuals have an external locus of control. According to this thesis, suicidal individuals appear to place responsibility for their distress in their social world and expect their social world to take responsibility to solve their personal life difficulties. Suicidal behavior is promoted by a combination of fear of harm, injury, death,

rejection or loss of love object; anger and hostility; and lack of pleasure and intolerance to distressing life situations. Stressful situations do not make sense, undermine personal security and well-being and deprive the individual of meaning, purpose, worth and satisfaction in life. In short suicide attempts appear to follow narcissistic injury (Wasserman, 2001) against the background of poor ability to mobilize supportive resources and alternative coping strategies (Mehlum, 1998). The following reports by survivors of suicide attempts in Adjumani district illustrate this proposition (Bolla, 2002).

> *"My wife looks at me as a simple man because I am not working now and therefore I have no money now. She minimizes me, abuses me and does not listen or do what I tell her to do. What precipitated my attempt on my life was just a combination of drugs and my body weakness. I have anger due to my lack of money these days, and my wife's love seems to be fading. As a result she can love another man and leave me, or sleep with another man and bring us Aids."*

> *"I was abused, criticized, molested, and minimized by my stepmother. My stepmother abused me saying that I am now becoming a woman; I will not be able to buy for myself even an under wear. What made me attempt to end my life was the daily abuse, criticism, molestation by my stepmother instead of educating, teaching and advising me and giving me proper guidance for the future. The abuse, criticism, and being molested should not be extended to my mother who is not there but only to me; that is what troubled me most."*

> *"Failure of my husband to give me any assistance which led to the death of my child; another child is now sick, who will also die because of no assistance; and my husband is fooling my parents as he used to fool me. Death after death! Why don't I die myself instead of facing all these problems and suffering?"*

> *"My brother who was paying my school fees died. My school fees were all used up. My mother was seriously ill almost dying and I had no money. There was no money to buy drugs, to continue with school and my mother was sick almost dying and could not be taken to hospital. Nothing could be done. Due to poverty I had nothing to do even if my mother died there was no food or any other help. I thought death was the only solution. My most troubling difficulties were poverty, there was nowhere I could get help, even my brother who was helping me is dead and the money, I had was misused by my other brother. Generally I was hated in my family even when my brother was helping me."*

It is concluded that the RISLE and SOC essentially assess the same problem in human experience but from opposite perspectives, i.e. from the external or internal locus of support respectively. If supported by future research these formulations might explain why research into the roles of various risk factors *per se* in suicide behavior have yielded conflicting results (McKenzie et al., 2003) and the age-old advice such as "Don't descend into bitterness and self-pity" (Abbasi, 2005) may not work with the average suicidal individual.

Wolfgang Rutz's scale for male depression

Wolfgang Rutz has developed a male depression screening instrument that includes distress items on irritability, aggression and alcohol use in depression (Zierau, Bille, Rutz, & Bech, 2002) in the belief that if these items are taken into account in the estimation of depression prevalence there would be no difference in the prevalence rates of depression between males and females. The RISLE was constructed in a way that it applies to males and females alike.

WHO (Five) Well-Being Index (1998 version)

The World Health Organization has developed a 5-item index of well-being (Psychiatric Research Unit, 1998) in screening for depression. Many of the items on the scale are non-specific and might also screen positive in individuals with general medical conditions. It is expected that the WHO (five) Index will be highly sensitive in the Ugandan rural setting with low standard of care, poor health status and low quality of life. It is expected that the specificity of this instrument will be low and will require validation. However it would be interesting to test this scale in Uganda in order to compare its performance with the 36-item RISLE and to compare gender differences in suicide behavior.

Comparison with other instruments

Since Antonovsky's SOC measures coping styles, it is possible that scores on the SOC may correlate with scores on the RISLE despite the fact that the two instruments measure different aspects of coping style in relation to negative life events. Comparisons could also be made in future studies between the RISLE and the WHO (five) Index of Well-being and Wolfgang Rutz's scale for male depression to determine the suitability of using these other two instruments in addition to the RISLE in the Ugandan situation.

Other Suicide Risk Assessment Scales

Several other instruments for the assessment of suicide risk have been described (Retterstøl & Mehlum, 2001; Bech et al., 2001). Future studies comparing the performance of these scales with the 36-item RISLE would further validate the RISLE for use both as a clinical instrument and in research to monitor the mental health of communities in Uganda.

Feasibility

The ability of the refined 36-item RISLE to distinguish between cases and non-cases of depressed mood and suicide ideation was tested using reliability analysis, the construction of receiver operating characteristic curves, and the determination of sensitivities, specificities, predictive values and likelihood ratios. Psychiatric diagnoses were determined with clinical interview method with the MINI as the gold standard.

Results indicate that the RISLE is poor at detecting individuals with clinically significant depressed mood and high-risk suicide ideation defined in terms of past month suicidality in the general population, and high false positive rates were demonstrated as a major drawback for the RISLE in relation to depressed mood and suicide ideation (see tables 6 and 7). This observation may be explained by the fact that depressed mood and suicide ideation may also reflect personal experience of general psychosocial distress and high scores may not necessarily indicate the presence of depression or suicide ideation. However it has been reported that individuals with false positive rates on screening might have Dysthymia or sub-syndromal depressive disorders and might benefit from treatment or closer monitoring (US Preventive Services Task Force, 2002) (see table 10). Likelihood ratios for the 36 variables of the 36-item RISLE version did not vary uniformly with changes in sensitivity and specificity. Agreement between clinical interviews and RISLE was only fair at an optimal kappa value of 0.435 at a cut point of 10 for current depressive episode (see table 8). It is possible that changes in the rates of these two variables were not a direct function of scores on the RISLE. Despite these drawbacks the RISLE may be used in population surveys to estimate the prevalence of depressed mood and high-risk suicide ideation using appropriate cut-off points.

The RISLE did better at detecting any current psychiatric disorder. Agreement between the instrument and clinical interview with the MINI was good with a kappa value of 0.508 at a cut point of 10 (see table 8). At this cut point the RISLE correctly detected 46 of 50 respondents (83.3%) from the general population with any form of current psychiatric disorder. Among the student population, however, the RISLE correctly detected only 5 of 19 students who met criteria for any current psychiatric disorder at a cut-off point of 10. The performance of the RISLE improved when the cut point for students was lowered to 6 at which the kappa value was 0.501 (see table 8), and the instrument correctly detected 14 out of 19 with any current psychiatric disorder. The results suggest that the performance of the 36-item RISLE was determined by the nature of the population in which it was used, and that useful cut-off points need be set according to the setting where screening is being conducted. Thus among members of general population in Adjumani district, the majority of cases of any current psychiatric disorder had a score of 15 or higher on the RISLE while among students none of the cases of current psychiatric disorder attained a score of 15 or higher.

Rather than detect depressed mood and suicide ideation, the results suggest that it is feasible to detect individuals with any current psychiatric disorder in the general population. That is, a positive screening result on the RISLE appears to suggest the presence of some form of common mental health problem that will need to be identified with full clinical interview. Nevertheless the results show that there are considerable difficulties in setting appropriate cut-off points depending on the type of population. Though sensitivity, specificity and likelihood ratios for any current psychiatric disorder were optimal at cut point of 10, high false positive rates remain a problem. Raising the cut point to 20 with a likelihood ratio of 14 will be associated with the risk of missing a number of individuals who might be in genuine need of appropriate psychiatric care. However for screening purposes it is recommended that the cut-point for the general population be 10, and among students this may be set at 6.

A comparison of the performance of the RISLE and the MINI revealed that the RISLE produced considerably higher prevalence levels for depressed mood both in the general population and among students (see table 9). Prevalence figures for the general population were respectively 89.5% for depressed mood for the RISLE compared to 86.0% for any current psychiatric disorder and 61.4% for any current depressive disorder according to the MINI. Among students the prevalence of depressed mood was 41.6% according to the RISLE and 31.0% for any current psychiatric disorder and 13.8% for current depressive disorder according to the MINI.

The prevalence figures obtained in the present study are high, and several reasons are proposed for this. First the results probably reflect high levels of self-disclosure on self-report questionnaires among respondents in Uganda. Secondly it is possible that the respondents who took part in the study, particularly clinical interviews, were more ill than those who did not. A third source of the high prevalence figures might have been systematic sampling bias arising from selection procedure used by interviewers who sampled interviewees for clinical interviews. One possible solution for this is for serial population surveys in the communities to verify the results in the present study. Besides the above explanations, a positive screening test result on the RISLE might be due to a sub-threshold mental disorder, a residual psychiatric disorder, the psychosocial impact of general medical disorder, the consequence of an existing general psychosocial stressor, and latent vulnerability to suicide behavior and or psychiatric disorder. Though a positive test result was associated with an 83.3% probability of a clinical diagnosis of any psychiatric disorder, a second stage clinical interview is required to ascertain the exact nature of any such psychiatric disorder and verify the potential role of these factors.

Though the rate of false positive test results might seem to compromise the potential utility of the RISLE, the results from this study suggest that respondents with false positive test scores were as likely as those with true positive results to report a personal history of suicide attempt, a lifetime experience of suicide urge, a family history of mental illness and a family history of suicide behavior. The U.S. Preventive

Services Task Force (2002) has expressed a similar opinion saying that individuals with false positive results are more likely to report history of Dysthymia or sub-threshold depression than those without history of Dysthymia or a sub-threshold depressive disorder (US Preventive Services Task Force, 2002). These results seem to suggest that false positive test scores might be useful predictors of potential suicide behavior and or active mental disorder in the future.

Socio-economic, demographic and other factors

The present study did not specifically evaluate the roles of various demographic and other socio-economic factors and negative life events in the etiology of depressed mood or suicide ideation in the Ugandan context and the study aimed to validate and determine the feasibility of using the RISLE as a potential screening instrument. Nonetheless some observations are made in relation to selected socio-demographic variables.

District of residence

Being a *resident of Adjumani district* was associated with more than 7 times the risk of experiencing depressed mood and more than 4 times the risk of attaining a BSS score of 10 or higher (see table 2, paper II).

Sex, depression and suicide behavior

The high rates of self-reported depressed mood and suicide ideation in Uganda are surprising as suicide is a taboo subject, and like depression, carry a high level of stigma. However the results appear to be the minimum available evidence of the extent of psychosocial distress in Uganda in spite of probable under-reporting. Traditionally women are disadvantaged in the Ugandan society, which probably explains the higher rate of suicide ideation among females compared to males (see figure 1, paper I). The results showed that the rates of depressed mood between males and females in each district were almost the same. The reasons for this are not immediately clear but appear to suggest that there are probably no differences in the prevalence rates of depression between males and females if the elements of irritability, aggression, and alcohol abuse among males are included in diagnostic criteria for depression (Zierau et al., 2002). In the present study, *female* respondents were more than 2 times as likely as males to attain BDI score of 20 or higher.

Marital status, depression and suicide behavior

Exact figures are not available regarding *polygamy* in Uganda but it is estimated that 30-40% of married Ugandans live in polygamous marital relationships (Uganda Bureau of Statistics, 2002). It is possible that this factor was partly responsible for the lack of a statistically significant relationship between marital status and depressive

disorder as the numbers of separated, widowed or single were too small to support meaningful analysis.

Unemployment, depression and suicide behavior

Unemployment in Uganda traditionally meant being unemployed in the paid service of government. With liberalization of the labor market employment is offered by a wide variety of agencies including private security firms, building constructors, transport industry, non-government organizations, private schools, and private households, etc. Despite this many rural inhabitants who are peasant farmers have no access to formal paid employment as defined in this study and they regard themselves as unemployed even though they might get income from their agricultural produce. The present results failed to demonstrate any relationship between employment status and depression most likely because nearly everyone was unemployed. However peasant farmers were 2 times as likely as the employed to report a lifetime history of suicide urge.

Age, depression and suicide behavior

Most respondents were young, and the present results indicated that *those aged 31 years or older* were more than 2 times as likely as younger individuals to attain BDI scores of 10 or 20 and higher. Thus though the relationship between socio-economic and demographic characteristics was not the subject of this study, preliminary results indicate that being in the age bracket 31 years and older, being unemployed, being female and being a resident of Adjumani district were significant risk factors for depressed mood and suicide ideation. It is possible that these higher rates for depressed mood reflect the impact of psychosocial difficulties associated with social responsibility in older age groups in Uganda. In-depth observational studies are recommended to fully understand and determine the process and outcome of depressed mood and suicide ideation in relation to these and other socio-demographic factors in the Ugandan general population in relation to various social factors.

Studentship, depression and suicide behavior

The data on student mental health revealed different patterns of mental health problems between two student populations. The results suggest that sample I students probably came from troubled and less stable family backgrounds with more reports of family mental illness and completed suicide, and personal history of lifetime and past week suicide ideation compared to sample II students who were recruited from medical faculty. Medical students generally came from economically higher status, had attained higher overall grades in high school and had brighter future professionally to look to than sample I students many of who were undertaking non-professional courses at the university.

HIV/AIDS depression and suicide behavior

Approximately 8% of general population in Adjumani district screen positive for HIV but the relationship between this and suicide ideation and depression was not evaluated in the present study and it is not possible to draw any conclusions between prevalence rates and HIV sero-status.

Possible implications

Prevalence rates and 36-item RISLE cut-offs

This study has explored the feasibility of using the RISLE in screening for depressed mood and suicide ideation in the general population. High prevalence rates 42.1% (24/57) for severe depression and 86.0% for any current psychiatric disorder have been documented. It is possible that these high prevalence rates were a reflection of overrepresentation of persons with mental disorders (self-selections) and with the high level of psychosocial distress in the general population as supported by very strong statistical relationships between prevalence rates of suicidal behavior and RISLE scores categories of <10 and ≥10 (table 10). Taken together with the kappa value of 0.508 at 36-item RISLE cut point 10 and optimal sensitivity, specificity, positive predictive value and a likelihood ratio of 3.6 at cut-off of 10, it would appear that reliable estimates of the prevalence of current psychiatric disorder can be determined using the 36-item RISLE.

RISLE cut-off points and clinical significance

A serious problem arises as to the clinical significance of these high prevalence figures, and suggests that the concept of disease among the population may not be similar to the psychiatric definition of disorders requiring treatment. Among all respondents who met diagnostic criteria for any current depressive disorder in Adjumani district, only 14 out of 35 (24.6%) received anti-depressant medication on the basis of the clinical severity of their conditions in terms of pre-occupation with symptoms; functional impairment; and or the presence of conversion symptoms, which is similar to the rate of clinically significant current psychiatric disorder derived at a cut-point of 20 on the 36-item RISLE. A review of RISLE scores indicated that each of these attained a score of 15 or higher, representing 30.4% (14/46) of those with a score of 15 or higher (range 15-33). Among students, all those who met diagnostic criteria for any current psychiatric disorder agreed to report for treatment if their symptoms continued to trouble them or if they continued to experience functional impairment as a result of their symptoms. However, only one respondent out of 19 cases of current psychiatric disorder, with current panic disorder co-morbid with chronic post-traumatic stress disorder sought treatment. The present results seem to suggest that 5-30% of those who screen positive (depending on the population source) may need immediate medication, a point that may be useful for health policy

formulation and planning in Uganda. Decision to provide treatment should be based on the respondent's own assessment of his or her situation and the judgment of the clinician. Useful criteria for clinical intervention derived from the present study are lack of enjoyment of oneself and the experience of distress, and the loss of one's capability to carry out usual activities or fulfill personal obligations.

Unmet need

These results seem to suggest high level of unmet need. An independent study reported 39.8% of adults had ever witnessed suicidal behaviors and that 16.0% of the respondents had witnessed suicidal behaviors in the past year in Arua district that neighbors Adjumani (Karunakara et al., 2004). These results seem to suggest that suicide behavior is prevalent in Uganda contrary to earlier reports that suggested that suicide was rare.

Possible use of RISLE in Primary Care

Despite the apparently wide gap between the existence of psychiatric problems in the community and the motivation to receive care, it is anticipated that the RISLE may become available to clinicians in primary health care to improve the recognition of psychiatric problems and psychiatric illness and suicide potential among those who seek treatment, and to researchers and public health specialists in serial population surveys to provide the basis for planning, provision, monitoring and evaluation of mental health services at community level.

Future of Mental Health in Uganda

According to Uganda's health policy (Ministry of Health, 1999) mental health is an essential component of the minimum health care package and mental health like any of the other components, has been decentralized to districts. Plans underway to implement the policy include the in-service training of primary health care providers and ensuring the availability of essential psychiatric drugs to health units in the district. Additional measures include continuing professional education in mental health, the production of mental health educational materials for the public and primary health care providers, provision of outreach services, and support supervision for district health staff from the center. Plans to train volunteers and household representatives per parish have been drawn in Adjumani district with financial and Technical support from THET International as well as the Sheffield Care Trust in the United Kingdom. It is anticipated that a surveillance system to maintain contact with vulnerable individuals and households in distress will be established in the district to pilot the implementation of the decentralization of mental health services as a component of Uganda's minimum health care package.

Possible future role of the RISLE

In support of this the RISLE when further tested might become a useful tool in 1) the assessment of suicide risk among primary health attendees 2) detection of probable cases of clinically significant psychiatric illness 3) the periodic estimation of the prevalence of depression and high-risk suicide ideation in the district 4) the assessment of the impact of programs for the prevention of depression and suicide 5) the promotion of mental health at community level and 6) provide evidence base for policy formulation and reform to support the development of community mental health activities at district and household levels.

Specific examples in which the RISLE might be used in the prevention of depression and suicide include the assessment of suicide risk and the detection of probable mental illness among individuals with HIV/AIDS; remand prisoners; pregnant women; individuals who have attempted suicide; and survivors of suicide victims and victims of man-made disasters.

Recommendations

It is recommended that further studies be carried out to refine the RISLE to improve its performance at population level. Qualitative studies of the concept and definition of mental illness and suicide ideation to enhance communication between researchers and decision makers at clinical level are needed.

Future research

Establishing sensitivity, specificity, predictive values and likelihood ratios using cohort studies

The present study has investigated the feasibility of using the RISLE as a screening instrument in depression and suicide ideation in psychiatrically normal and healthy people in Uganda. The results suggest that it is possible to screen for general psychiatric ill health with the RISLE and that the sensitivity, specificity and predictive values of the instrument depend on the prevalence of mental illness and suicide ideation, on the regions of Uganda and type of population studied.

However the present study shows that the RISLE is not particularly good as a screening instrument for depression and suicide ideation but fairs better in screening for overall psychiatric disorder, as does the General Health Questionnaire (Goldberg, 1972; Goldberg, 1979; Goldberg & Hillier, 1979). The rather unsatisfactory performance of the RISLE in the present study may be explained on the use of only two populations and small sample numbers for clinical interviews; many of the interviewees turned out to be cases probably as a result of those with mental health

problems in the study populations wishing to seek help for their perceived sense of distress.

It is suggested that further studies are required to refine and validate the RISLE through the following strategies:

1. Select large population samples with a number of cases and non-cases to minimize the impact of selection bias.
2. Use a variety of population sources to sample from, e.g. general population from different districts, several primary care settings, general hospitals, different student populations, and workers.

In these studies the objective will be to determine the predictive power of the RISLE in correctly detecting individuals with abnormal scores who will subsequently develop psychiatric ill health and/or seek mental health care from a health facility. By using a surveillance system within which the proposed future validation studies would be conducted, it might be possible to examine changes in the health of the population over time.

The need for future clinical validation studies rests on the observation that the use of psychiatric services does not rest on the mere presence of a psychiatric disorder and other factors appear to operate that determine when the experience of personal distress requires professional help (Bebbington, 1990; Mojtabai et al., 2002). It appears that the appropriate cut-off points on the RISLE will depend on the clinically significant experience of psychosocial distress and nature of the population in which the instrument will be used to estimate the prevalence of depression and suicide ideation.

To estimate the future clinical predictive ability of the RISLE the best gold standard for estimating cut-off points, sensitivity, specificity, predictive values and likelihood ratios need to be determined using cohort studies in each region of Uganda. The overall objectives of these studies will be:

1. To determine the predictive ability of the RISLE in detecting individuals with diagnosable mental illness requiring treatment in the general population
2. To determine the course, outcome and help seeking behavior for mental illness
3. To determine factors in the general population that determine:
   a. Persistence of mental illness
   b. Recovery from mental illness
   c. Cumulative incidence rate for mental illness
   d. Help seeking behavior for mental illness
   e. Factors that determine clinical significance course and outcome of psychiatric disorder and suicide ideation
4. To achieve these special emphases will be placed on collecting basic data on the nature and patterns of social support, and socioeconomic and poverty levels in study populations to determine the potential role of these factors in the etiology of

depressed mood and suicide ideation, and their potential in promoting recovery from various psychosocial disorders.

Potential for bias will mainly arise from *loss of subjects to follow-up*. This problem could be minimized with the introduction of service provision including provision of psychosocial support to individuals and families in distress; provision of appropriate medication whenever indicated; provision of support supervision; and strict observance of confidentiality. *There is potential risk for bias when selecting* in rural communities in Uganda (Karunakara et al., 2004). Listing all adults in each sampled household should minimize this bias and one then selects one adult randomly from the household. If the sampled adult is not at home, one interviewer should visit the household on appointment and interview him or her; if the sampled individual refuses to participate, no one else from the household should be interviewed and a new household should be sampled instead. Potential for information bias arising from *memory error* could be minimized by asking respondents about their current status of feeling and how they have generally experienced life to be. *Prior training of interviewers and the in-charges of health care facilities can improve quality of data*; the RISLE has been translated and pre-tested in Adjumani district.

Conclusions

The 100-item RISLE was refined and reduced to a short 36-item version that was tested, based on the need for such an instrument in an African setting. The results show that:

- The 36-item RISLE appears to be a good measure of general psychopathology.

- The 36-item RISLE combines detecting symptoms of both depression and suicide, which have hitherto required two different instruments to screen for, e.g. the BDI and BSS.

- Though the small sample size in the present study gives results that do not permit generalization, the 36-item RISLE may be useful as a screening instrument in large populations combined with the clinical interview of those who screen positive for mental disorder, depression and high-risk suicide ideation.

- There is an urgent need to get different cut-off points for the 36-item RISLE in different population samples.

- There is thus a need for further work on the screening ability of the 36-item RISLE in different populations and on the predictive value of RISLE scores derived from cohort studies, and to study changes over time in cohort populations.

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