



## THE NATURE OF PARASUICIDE IN DAR ES SALAAM, TANZANIA

N. K. NDOZI and M. C. WAZIRI

Department of Psychiatry, Muhimbili University College of Health Sciences, Dar es Salaam, Tanzania

**Abstract**—In a two year period, 300 parasuicides were admitted at Muhimbili Hospital. Socio-demographic, clinical characteristics, trigger factors and employed methods were analyzed and discussed with reference to other studies. Parasuicides were found to be young adults of mean age 23.7 years. The ratio of females to males was 2.2. The majority had seven years of education and were unemployed or underemployed. Four-fifths of attempts were triggered by acute social conflicts, psychiatric and physical illnesses in socio-economic deprivations partly aggravated by alcohol intake. Two-thirds of parasuicides ingested overdoses of medicaments of which chloroquine constituted 65% of all drugs. Nearly a third of all the attempters had neuropsychiatric illnesses, while 4.3% had physical disorders. Nearly one-fifth or 18.3% of the parasuicides had a history of mental illness in their families, and 12% had individual or family history of previous suicidal attempts. Forty percent of the attempts were categorized as demonstrative, 31% as genuine, 10.3% were equivocal and 18.3% were not clarified. Copyright © 1997 Elsevier Science Ltd

*Key words*—parasuicides, socio-demography, why, how

### INTRODUCTION

Attempted suicide, commonly referred to as parasuicide or deliberate self-harm, is defined as a non-fatal act in which an individual deliberately initiates a non-habitual behavior that, without interventions from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage, and which is aimed at realizing changes which the subject desires via the actual or expected physical consequences [1]. According to Tanzanian law, attempted suicide is a punishable offense. Parasuicide is a complex social behavior with rich meanings and interactions that are deeply rooted in culturally patterned forms of thought and emotional behavior [2]. Suicide attempts help to evaluate the capacity of various social systems to procure happiness and security for their members [3]. The behavior may begin in adolescence and may persist for decades and result in great personal and social morbidity. Although in a few cases it has been underrated as a distinct syndrome of low lethality and repetitive, direct self-destructive behavior [4], parasuicide is one of the strongest predictors of suicide and should be treated seriously [5]. It is one of the commonest emergencies in hospital practice [6], and it is thought to be 10–20 times higher than rates for suicide [7, 8].

Many traditional African cultures consider life as sacred, and suicidal behavior is not only frowned upon but also morally condemned. However, rapid social changes in these societies, especially in urban populations, are leading to moral instability and the

loss of familiar norms which inhibit suicidal behavior. Although cross-cultural comparisons of parasuicide between countries are difficult, circumstances under which the attempt was made and the choice of means can give some clue as to the seriousness of the risk. It is important to understand the way people explain it so as to enable clinical and community programs to increase awareness of social contexts in which they occur and to provide relevant and effective interventions.

From biological studies, DSH-serotonergic dysfunction has widely been implicated in suicide, an act of aggression toward oneself, acts of impulsiveness and aggression toward others especially in personality disordered individuals. It is unclear whether abnormally low cerebral serotonin levels relate directly to suicidal behavior, aggressiveness or severity of depression [9, 10]. Identified common precipitant factors of vulnerability include a past psychiatric history, past parasuicide, drug and alcohol abuse, past criminal and violent behavior, low self-esteem, unstable family atmosphere characterized by poor relationships, violence and frequent quarrels, lack of social support and child abuse [7, 11].

Economic problems of Tanzania associated with rapid urbanization continue to cause higher stress rates among the youth and the unemployed. Population mobility due to socio-economic shifts, the break of traditional family structures, alcohol and drug abuse, famine and other deprivations are among frequent predisposing factors to parasuicide [12]. The extent and severity of suicidal behavior can be studied by investigating antecedents of

suicidal ideation, plans, threats and deliberate self-harm [13]. From clinical observations, suicide attempts in Dar es Salaam appear to be on the rise. This descriptive study aims at finding out the nature of suicide attempts in Dar es Salaam, the contributory risk factors and the psycho-social circumstances surrounding the acts.

#### PATIENTS AND METHODS

This study was conducted in the city of Dar es Salaam, the commercial capital of Tanzania with an estimated population of 2.5 million people. From 1 January 1991 to 30 June 1993 all consecutive suicide attempters identified by doctors working at casualty in the Department of Emergency Medicine of Muhimbili Medical Center, the largest referral hospital in Tanzania as well as the main university teaching hospital, were reported to the authors within 24 hours after admission.

Three-hundred-and-twenty-eight identified subjects were referred to Muhimbili hospital from the three districts of the city of Dar es Salaam. Of these, 304 subjects suffered less severe physical injuries and were admitted and treated in the medical ward, 13 cases with lacerations and sprains were admitted to the surgical ward, eight critically ill subjects were admitted to the intensive care unit and three patients suffering from acute mental symptoms were admitted to the psychiatric unit.

When the patients had recovered from adverse effects of parasuicide and had attained full consciousness, the purpose of the study was explained to patients, close relatives and friends. Informed consent to participate in the study was sought from the patients and/or carers for those patients who exhibited mental symptoms with diminished insight and judgement at the time of admission. Initially, 328 patients consented to participate in the study but in due course, 28 absconded or did not report in the follow-up as expected. The study cohort was thus reduced to 300.

A semi-structured interview technique was used to collect the individual socio-demographic data, the means employed to attempt suicide, the number of previous attempts by the patients, their parents, siblings and second-degree relatives. The attempters and their close relatives were also interviewed in depth about people who had committed suicide in their families. The kinds and amounts of alcohol taken by each parasuicide six hours prior to the attempts were also enquired from the patients and attendant relatives or friends. In depth interviews focusing on the psycho-social circumstances surrounding parasuicide were conducted on each subject and key informants by the investigators to elicit the motives and risk factors underlying suicidal attempts. The key informants were people who knew about the events leading to deliberate self-harm relatively well and were present at the time of

the act. A thorough physical examination was then conducted on each patient. Consultation with the attending physicians was also sought where necessary to delineate the clinical findings at admission.

All the patients who had significant mental symptoms had an in depth psychiatric history taken and a formal mental state examination by each investigator to establish working psychiatric diagnoses before treatment. These patients were followed in the outpatient psychiatric clinic at intervals of one week and four weeks after discharge. A few psychotic patients whose compliance was irregular with slow treatment response were followed up to six months to ensure recovery from suicidal ideation. The clinical symptoms of the mental patients were compared and discussed by the investigators so as to diagnose one most likely diagnosis. The psychiatric diagnoses were confirmed using guidelines in ICD 10 [14]. Except for the mental patients and the severely injured attempters, the majority of patients were admitted for an average duration of three days. The results are tabled below.

#### RESULTS

##### *Socio-demographic characteristics of suicide attempters*

The average age of all the parasuicides who comprised 57 ethnic groups was 23.7 years (range 13–60 years). The average age for the 94 males was 25.7 years, while that of 206 females was 22.8 years. The proportion of females to males was 2.2. As shown in Table 1 below, 62 of 189 singles were students, 104 subjects were married and seven divorced; 55.7% of the patients were Christians, of whom Catholics were the majority; Moslems comprised

Table 1. Socio-demographic characteristics of parasuicides

	N	%
<i>Sex</i>		
Females	206	68.7
Males	94	31.3
Total	300	100.0
<i>Marital status</i>		
Singles	189	63.0
Married	104	34.7
Divorced	7	2.3
Total	300	100.0
<i>Religion</i>		
Christians	167	55.7
Moslems	130	43.3
Others	3	1.0
Total	300	100.0
<i>Employment status</i>		
Employed	143	47.6
Unemployed	95	31.7
Students	62	20.7
Total	300	100.0
<i>Educational level</i>		
0–4	32	10.7
5–7	188	62.7
10–14	76	25.3
University	4	1.3
Total	300	100.0

Table 2. Reported triggers of attempted suicide

Trigger	N	%
Social conflicts	242	80.7
Financial problems	25	8.3
Chronic mental illness	15	5.0
Chronic physical illness	13	4.3
Bereavement	5	1.6
Total	300	100.0

43.3% of parasuicides, and three attempters belonged to other religions; 47.6% of the respondents were simple skilled workers and petty businessmen. The unemployed, who were predominantly women, comprised 31.7% of the study cohort. Nearly three-quarters of the suicide attempters had primary school education and the rest secondary school education and higher.

#### Triggers of attempted suicide

Social conflicts were found to trigger or to contribute to attempted suicides in about four-fifths of cases, as shown in Table 2. The conflicts were comprised of interpersonal strains between parents and children (17.3%), infidelity largely committed by male partners (17%), other marital misunderstandings (17%), quarrels among siblings (16%), conflicts with other people (8.3%) and unwanted pregnancies (5%). Other contributory factors included severe poverty and acute financial problems (8.3%), recurrent mental illnesses (5%), chronic physical illnesses (4.3%), and bereavement (1.6%).

#### Means employed by suicide attempters

Of the 272 parasuicides who swallowed overdoses of medicaments and poisons, 198 were females. Of medicinal drugs employed 65% were chloroquine tablets (average dose 1.5 gm), as shown in Table 3. Antibiotics, aspirin, Panadol and psychotropic drugs were the other types of drugs employed. Rat poisons, dilute sulfuric acid, kerosine and antiseptic solutions and glass were ingested by 74 patients (24.7%). Twenty patients employed hanging, stabs with knives, jumping from heights, head-banging and shooting. Of these patients, 17 were males.

Table 3. Means employed by suicide attempters

Means	N	%
Medicaments	206	68.7
Poisons	66	22.0
Ingestion of glass	8	2.7
Hanging	8	2.7
Stabs with knives	4	1.3
Jumps from height	4	1.3
Head-banging	3	1.0
Shooting	1	0.3
Total	300	100.0

Table 4. Mental and physical disorders in parasuicides

Disorders	N	%
Psychosis	37	12.3
Major depression	27	9.0
Neurotic disorder	23	7.7
Drug abuse	12	4.0
AIDS	12	4.0
Epilepsy	5	1.7
P.T.B.	1	0.3
Total	117	39.0

#### Mental and physical disorders

As shown in Table 4, 104 suicide attempters had significant neuropsychiatric disorders. These consisted of acute episodes of recurrent schizophrenic psychoses (12.3%), major depression (9.0%), neurotic disorders (7.7%), alcohol, cannabis and heroin abuse (4%), and epilepsy (1.7%). Twelve patients (4%) who had advanced AIDS with scanty means of living and poor social support had attempted suicide to end their suffering, and one grossly emaciated patient with pulmonary tuberculosis lost hope of recovery and swallowed an overdose of anti-TB drugs.

#### History of mental illnesses, parasuicide and suicide in patients and family

At total of 18.3% of all cases had a history of family mental illness. In 3% of cases, parents had suffered from major mental illnesses, while in 4.3% siblings had been afflicted, and in 11%, second-degree relatives had suffered from mental disorders.

Eleven subjects had previously attempted suicide once, four had made two attempts, and one patient had attempted thrice. In four cases, parents had attempted suicide once, and in 12 subjects, second-degree relatives had attempted suicide once. Two suicide attempters had lost parents through suicide, while three had each lost a sibling through suicide.

#### Intentions of suicide attempters

Analysis of the interviews regarding the suicidal intent yielded the categories in Table 5. Forty percent of respondents made their attempts to solicit help and social sympathy during acute social problems, while 31.3% of them claimed to have had the intention to take their lives. Thirty-one patients (10.3%) could not clearly specify their motives. They claimed both to have been overwhelmed by acute emotional pain and to have acted impulsively.

Table 5. Intentions of suicide attempters

Intentions	N	%
Demonstrative	120	40.0
Death wish	94	31.3
No response	55	18.3
Uncertain motive	31	10.3
Total	300	100.0

The remaining subjects refused to render any information regarding their motives of attempted suicide.

Finally, 73 patients had drunk various amounts of alcohol (industrial beer, local brews, cognac, illicit brew) about six hours prior to attempting suicide and most of them smelled of alcohol at admission.

## DISCUSSION

### *Socio-demographic characteristics*

To understand the nature of parasuicide, it is necessary to identify various underlying factors which enhance and precipitate it. In this study, suicide attempters were found to be young people of average 23.7 years. The ratio of females to males was 2.2. Females were slightly younger than men. In the majority of African cultures, females are usually expected to bear greater family responsibilities which expose them to greater psychological distress particularly in poor, overcrowded and challenging city environments. The majority of the unemployed and underemployed subjects were women with lower education. Their young age is likely to have strained their adaptive capacities of coping with the overwhelming psychological stresses they experienced. Studies from Singapore, Western Europe, North America, Nigeria, and South Africa [15, 8, 16–18] found the age of parasuicides to be between 20 and 30 years. The prevalence of depression as a symptom or clinical disorder among young women is known to be high and consistently more common in women than men [19–22]. Two-thirds of the 27 depressed parasuicides were females.

Unemployment featured in 31.7% of adult parasuicides. The urban population in Tanzania has increased from 7% to 34% of the total population in the last 30 years, and over half the increase of this population has occurred in the city of Dar es Salaam by deteriorating national economy, which severely limited the procurement of basic amenities of life [23]. Forty percent of the city population is currently either unemployed or underemployed. Unemployment creates feelings of hopelessness which adds further stress to the economically and psychologically vulnerable individuals [24]. Unemployed men have been found to be at 3.4 times greater risk of suicide than the employed. A strongly significant association has been found between unemployment and self-poisoning [25]. However, it is unclear to what extent unemployment itself contributes to suicide risk. The effects of unemployment on mental health could increase suicidal risk, but it is also true that people with poor mental health are at increased risk of becoming unemployed [26]. Even though the impact of religion on parasuicide has not yielded consistent results [27], among the attempters in this study, 167 were Christians, of which two-thirds were Catholics,

while their proportion among Christians in Dar es Salaam city is less than half.

### *Psycho-social risk factors*

Over 80% of suicide attempters were found to have high stress emanating from severe social conflicts. Quarrels between parents and children characterized by lack of parental warmth, authoritarian parenting, firmly enforced rules, control of autonomy and harsh punishments were found in 17.3% of the attempters. Sixteen percent of parasuicides occurred when elder siblings assumed parental roles of punishing their younger ones for deviant behavior. Three percent of these cases had received severe beatings. The lack of family support, feelings of hopelessness coupled with low self-esteem and acute emotional pain are among risk factors which enhance suicidal behavior [28]. Infidelity, particularly among male partners, and other marital misunderstandings led to hostility, and intolerable emotional outbursts gave way to parasuicidal acts. Some wives became jealous of their husbands' other sexual partners and dreaded contracting sexually transmitted diseases and severe social hardships brought by separation or divorce. Living in poverty and congestion as squatters enhanced risks to emotional crisis especially among the 73 attempters, who had taken alcohol prior to the acts. Alcohol has the effects of altering moods of the consumer, increasing paranoid ideation, panic, suicidal thoughts and impulses to self-mutilation [29, 30]. Fourteen pregnant girls attempted suicide after their boyfriends refused to marry them. A study from Singapore (1982) found the main reason for attempted suicide to be relationship problems involving threats of separation from boyfriends [15]. Unwanted pregnancies lead to acute stress reactions with loss of self-esteem, anxiety, feelings of guilt, hostility and hopelessness which sometimes culminate in self-mutilation.

Eight percent of suicide attempters in severe financial deprivations claimed that life was not worth living. Seventeen subjects lived in hardcore poverty and were unwell, while eight had unexpectedly taken dramatic losses in petty business. Poor people and those in debt report more psychiatric symptoms, harbor feelings of hopelessness, are less in control of events around them and receive more psychiatric diagnoses. They tend to have greater suicidal intent [31]. Bereavement following loss of parents in two instances and loss of a sibling in three others provoked the feelings towards self-mutilation. Loss traumas, especially in African cultures, tend to increase the risk of suicide, particularly in females. This risk is particularly high in individuals with a history of psychiatric disorder and/or suicidal behavior before bereavement and lacking family support following the loss [32, 33].

### *Clinical factors*

The incidence of parasuicides and suicides has been found to be highest among individuals suffering from mental and physical illnesses. Psychiatric illness is one of the most powerful indicators of suicide and probably the most relevant one in the clinical context [34, 35]. At least a third of all parasuicides suffered from significant neuropsychiatric disorders. Of these patients 35.6% had psychotic disorders of which 16 cases had chronic recurrent schizophrenia. These patients suffered from poor therapeutic compliance and could not afford to buy the needed medicaments. The lack of enduring social support made them feel lonely, and they were tired of taking drugs with unpleasant side effects. Six patients had florid psychotic symptoms. They claimed to have obeyed voices instructing them to take their lives. A third of the psychotic patients had taken alcohol several hours before the attempts. About 10% of patients with schizophrenia commit suicide, and that stigmatization, in addition to relapses and remissions, and consumption of alcohol, especially among young schizophrenics, heightens the risk of suicidal behavior [36, 37]. Twenty-seven depressed patients suffered from severe distress and decided to end their suffering. Depression has previously been found to be a good correlate of suicidal behavior, with a prevalence among self-harm patients ranging from 30% to 66% [18, 19]. Moreover, suicide risk among affective disorders has been estimated to be 30 times higher than that of the general population, and this risk is highest relatively early in the course of the disorder [38–40].

Twelve-and-a-half percent of the psychiatric patients had acute organic brain syndromes whose main etiology comprised infections, substance abuse and metabolic disorders. Of the 12 who abused drugs, eight drank over two liters of beer with considerable amounts of illicit brew (*gongo*) per day. Three parasuicides abused heroin and one abused cannabis. These patients accumulated financial debts from their abuse and had provoked severe interpersonal conflicts which heightened their emotional outbursts, leading to autoaggression. The risk of suicide among male heroin addicts has been estimated to be approximately 20 times that of the general population [41]. Slightly over 7% of the attempters suffered from neurotic disorders. They exhibited lower emotional tolerance and had frequent, acute, emotionally charged conflicts within their families. Patients suffering from depressive neurosis or panic have been reported to have increased risk of suicidal behavior [42]. Chronic seizures of about six years featured in five parasuicides. These patients who exhibited inter-ictal personality changes expressed hopelessness and disappointment of regularly taking anticonvulsant medication without sustained relief. Risk of suicide in epilepsy has been estimated to be fivefold, and

this risk may be very much higher in people with temporal lobe epilepsy [43]. Twelve patients suffered from clinically and serologically proven acquired immunodeficiency syndrome and one suffered from tuberculosis. They claimed worsening, unendurable suffering with inadequate socio-economic support. Previous studies have shown the risk of patients with HIV infections to be 35–40 times higher than that of HIV-negative persons. The risk in this group is particularly high if the stage of HIV infection is advanced and accompanied by disabling intercurrent illnesses in poor socio-economic conditions [44, 45].

### *Genetic and repeated parasuicide factors*

Members of a family tend to suffer from similar illnesses because of common genetic predisposition. Although the causal mechanisms are complex, they significantly involve socio-environmental factors. Polygenic inheritance of suicidal behavior in depressed patients with a history of attempted suicide has previously been reported [46]. In this study, parental history of major mental illnesses was found in 3% of cases, while in siblings the history was positive in 4.3% subjects and 11% in second-degree relatives. This finding is lower than that found in Budapest (1988) in which a positive family history of mental disorders was found in 27% of male and 29% in female suicide attempters [47]. This difference is likely to be due to underreporting because of fears of stigmatization of psychiatric disorders among African cultures. Deliberate self-harm is thought to be learned socially, and that those who repeat the act have significantly more prior contacts. Several studies have also shown that 10–60% of suicide attempters had previously undertaken deliberate self-injuries [48–52]. Five percent of cases had a history of one previous attempt, 3.7% had attempted once, 1% had repeated twice and one case had three attempts. Parents of four parasuicides had a positive history of attempted suicides, while second-degree relatives of these parasuicides had attempted suicide. In two cases, parents had completed suicide, while in three cases, siblings had committed suicide. These findings should be taken cautiously, as parasuicide and suicides are culturally seen as taboos in Tanzania. People do not volunteer information readily on intimate family matters because they fear social sanctions and marginalization.

### *Means employed*

Over two-thirds of parasuicides in this study employed overdoses of easily obtainable medicinal drugs of which 65% used chloroquine tablets (average dose 1.5 gm). The number of females who employed chloroquine, antibiotics, aspirin, psychotropics, de-worming medicaments and other unknown drugs was at least three times that of men. Panadol was however, about equally used in

both sexes. In San Diego (1993) women were found to be more than four times as likely as men to employ drugs, particularly Panadol, in suicide [53]. The motivation to take an overdose of medicament is often complex, frequently with a simultaneous interplay of different psychological motives in an individual [54]. A study from South Africa found that the majority of parasuicides who employed self-poisoning were single and had experienced early parental loss [18]. In continental Europe, benzodiazepines remain the drug of choice for suicide attempters [55], although overdoses of paracetamol are also rampant there, as in Nigeria [56, 57]. More females than males also ingested various types of poisons. Poisoning was found in a third of all admissions into the intensive care unit at Kenyatta National Hospital in Nairobi [58]. Eight parasuicides were males who employed more aggressive means, such as hanging, jumping from heights, banging heads against walls and shooting. It has been reported that when males attempt suicide, they often use more lethal and violent methods than females [59].

The evaluation of the in depth interviews of the extent of death wish in the parasuicides was not clear cut in all cases. However, 31.3% of the attempters were serious ideators who indicated a premeditated death wish and intention to take their lives. Two-fifths of attempters, the majority of which were women, had carried out the acts of deliberate self-injury demonstratively to solicit public sympathy and help in their miseries. Ten percent expressed equivocal deliberations, and 18.3% did not volunteer any intentions. Some of the latter requested exemption from explaining their motives, while the remaining remained silent. Many parasuicides developed guilt feelings associated with their suicidal behavior as they learned that they had trespassed against the law. It is, therefore, not surprising that only about a third of the study cohort volunteered their intent in the affirmative.

#### CONCLUSION

Although suicidal behavior is difficult to predict even in high risk groups of suicide attempts, parasuicide was found to be at least twice as common in young women as in young men. The attempts were found to be embedded within socio-economic deprivations and recent acute interpersonal conflicts often aggravated by ill health and the mood-altering effect of alcohol. Previous history of mental illness in the family, and a positive history of parasuicide in the patient and relatives including suicides in the family were other risk factors. The majority of deliberate self-injuries by women employed overdoses of readily available medicinal drugs, particularly chloroquine. A third of the subjects expressed a genuine death wish, while two-fifths attempted suicide as an act of *cry for help* and the rest

remained silent or were equivocal about their suicidal intention. Closer surveillance of suicidal mental patients at home would facilitate timely referral to hospital. Furthermore, availability of medicinal drugs calls for greater control to limit misuse. Further studies on parasuicide and suicide rates are needed to determine the seriousness of this psychological suffering so that appropriate interventions can be sought.

#### REFERENCES

1. Kerkhof A. J. F. M., Schmidtke A., Bille-Brahe U., De Leo D. and Lonnqvist. *Attempted Suicide in Europe*. DSWO University Press, Leiden/Copenhagen, 1994.
2. Hollan D. Indignant suicide in the Pacific: an example from the Trojan Highlands of Indonesia. *Cult. Med. Psychiatr.* 3, 363, 1990.
3. Bhugra D. Suicide trends in the South-East Thames Region. *Psychiatr. Bull.* 13, 366, 1989.
4. Wasserman D. and Spellerberg S. Attempted suicide in Stockholm county, Sweden 1975-1985. *Acta Psychiatr. Scand.* 81, 190, 1989.
5. Diekstra R. F. The epidemiology of suicide and parasuicide. *Acta Psychiatr. Scand.* 9, 371, 1993.
6. Mengech H. K. and Dhadphale M. Attempted suicide (parasuicide) in Nairobi, Kenya. *Acta Psychiatr. Scand.* 69, 416, 1984.
7. Platt S. Parasuicide in Europe: the WHO/EURO multicenter study on parasuicide. I. Introduction and preliminary analysis for 1989. *Acta Psychiatr. Scand.* 85, 97, 1992.
8. Weissman M. M. The epidemiology of suicide attempts 1960-1971. *Arch. Gen. Psychiatr.* 30, 737, 1976.
9. Fyer M. R., Frances A. J., Sullivan T., Hurt T. and Clarkin J. Suicide attempts in patients with borderline personality disorder. *Am. J. Psychiatr.* 145, 737, 1988.
10. Stanley M. and Mann J. J. Increased serotonin-2 binding sites in frontal cortex of suicide victims. *Lancet* 2, 214-216, 1983.
11. Kebede D. and Ketsela T. Suicide attempts in Ethiopian adolescents in Addis Abeba high schools. *Eth. Med. J.* 319, 83, 1993.
12. Swift C. R. *Mental Health Rural Health Series*. African Medical Research Foundation, Nairobi, 1977.
13. Pearce C. M. and Martin G. Predicting suicide attempts among adolescents. *Acta Psychiatr. Scand.* 90, 324, 1994.
14. World Health Organization. *The ICD 10 Classification of Mental and Behavioral Disorders. Clinical Descriptions and Diagnostic Guidelines*. World Health Organization, Geneva, 1992.
15. Tsoi W. F. and Kok L. P. Suicide behavior in Singapore for the year 1980. *Sing. Med. J.* 23, 299, 1982.
16. World Health Organization. *Suicide and Attempted Suicide: Public Health Papers*. WHO, Geneva, 1974.
17. Odejide A. O., Williams A. O., Ohaeri J. U. and Ikuesan B. A. The epidemiology of deliberate self-harm: the Ibadan experience. *Br. J. Psychiatr.* 149, 734, 1986.
18. Naidoo P. and Pillary B. J. Parasuicide in a general hospital in South Africa. *Psychol. Rep.* 72, 979, 1993.
19. Retterstol N., Gjertsen F., Ekland H. and Olving J. H. Suicide among young people aged 15-29 in Oslo. The development in the Nordic countries and regional

- variations in Norway *Tidsskr. Nor. Laegeforen* **113**, 1969, 1993.
20. Klerman G. *Suicide and Depression among Adolescents and Young Adults*. American Psychiatric Press, Washington, 1986.
  21. Miles C. P. Conditions predisposing to suicide: a review. *J. Nerv. Ment. Dis.* **164**, 231, 1977.
  22. Morano C. D., Cisler R. A. and Lemerond J. Risk factors for adolescent suicidal behavior: loss, insufficient familial support and hopelessness. *Adolescence* **28**, 851, 1993.
  23. World Bank. *World Bank Report 1993b: Tanzania, A Poverty Profile*. World Bank, Dar es Salaam, Tanzania, 1993.
  24. Pritchard C. Is there a link between suicide in young men and unemployment? A comparison of the U.K. with other European Community countries. *Br. J. Psychiatry*. **160**, 750, 1992.
  25. Jones S. C., Forster D. P. and Hassanyh F. The role of unemployment in parasuicide. *Psychol. Med.* **21**, 169, 1991.
  26. Smith R. Occupationless health: "I couldn't stand it any more." Suicide and unemployment. *Br. Med. J.* **291**, 1563, 1985.
  27. Stack S. and Lester D. The effect of religion on suicide ideation. *Soc. Psychiatr. Psychiatr. Epidemiol.* **26**, 168, 1991.
  28. Horwitz A. V. and White H. R. Becoming married, depression, and alcohol problems among adults. *J. Hlth Soc. Behav.* **132**, 221, 1991.
  29. Lewinsohn P. M., Rohde P. and Seeley J. R. Psychosocial risk factors for future adolescent suicide attempts. *J. Consult. Clin. Psychol.* **62**, 197, 1994.
  30. Murphy G. E., Wetzel R. D., Robin E. and McEnvoy L. Multiple risk factors predict suicide in alcoholism. *Arch. Gen. Psychiatr.* **49**, 459, 1992.
  31. Hatcher S. Debt and deliberate self-poisoning. *Br. J. Psychiatry*. **164**, 111, 1994.
  32. Mehlum L. Prodromal signs and precipitating factors in attempted suicide. *Military Med.* **157**, 574, 1992.
  33. Buch J. Recent bereavement in relation to suicide. *J. Psychosom. Res.* **16**, 361, 1972.
  34. Buck C. Determinants of health: people, situations, and social systems. In *Psychosocial Factors Affecting Health* (Edited by Lipkin M. Jr and Kupka K.). Praeger, New York, 1982.
  35. Alleck P. and Allgulander C. Psychiatric diagnoses as predictors of suicide: a comparison of diagnoses at conscription and in psychiatric care in cohort of 50,465 young men. *Br. J. Psychiatry*. **157**, 339, 1990.
  36. Landmark J., Cernovsky Z. Z. and Merkey H. Correlates of suicide attempts and ideation in schizophrenia. *Br. J. Psychiatry*. **151**, 18, 1987.
  37. Wilkinson D. G. The suicide rate in schizophrenia. *Br. J. Psychiatry*. **140**, 138, 1982.
  38. Bartels S. J., Drake R. E. and McHugo G. J. Alcohol abuse, depression and suicidal behavior in schizophrenia. *Am. J. Psychiatry*. **149**, 394, 1992.
  39. Guze S. B. and Robins E. Suicide among primary affective disorders. *Br. J. Psychiatry*. **117**, 437, 1970.
  40. Hawton K. Assessment of suicide among primary affective disorders. *Br. J. Psychiatry*. **150**, 145, 1987.
  41. James I. P. Suicide and mortality among heroin addicts in Britain. *Br. J. Add.* **62**, 391, 1967.
  42. Sims A. and Prior P. The pattern of mortality in severe neuroses. *Br. J. Psychiatry*. **133**, 299, 1978.
  43. Barraclough B. Suicide and epilepsy. In *Epilepsy and Psychiatry* (Edited by Reybolds E. H. and Trimble M. R.), pp. 4-5. Churchill Livingstone, Edinburgh, 1981.
  44. McKegney F. P. and O'Dowd M. A. Suicidality and HIV status. *Am. J. Psychiatr.* **149**, 396, 1992.
  45. Rajs J. and Fugelstad A. Suicide related to human immunodeficiency virus infection in Stockholm. *Acta Psychiatr. Scand.* **85**, 234, 1992.
  46. Papadimitriou G. N., Linkowski P., Delarbre C. and Mendlewicz J. Suicide on paternal sides of depressed patients with a lifetime history of attempted suicide. *Acta Psychiatr. Scand.* **83**, 417, 1991.
  47. Arato M., Deter E., Rihmer Z. and Somogyi E. Retrospective psychiatric assessment of 200 suicides in Budapest. *Acta Psychiatr. Scand.* **77**, 454, 1988.
  48. Wang A. G. and Brille-Brahe U. Attempted suicide in Denmark IV: a five year follow-up. *Life Threat. Behav.* **2**, 67, 1972.
  49. Kienhorst C. W. M., de Wilde E. J., van Den Bout J., Diekstra R. F. W. and Wolters W. H. G. Characteristics of suicide attempters in a population-based sample of Dutch adolescents. *Br. J. Psychiatry*. **156**, 143, 1990.
  50. Mishara B. L., Baker A. H. and Mishara T. T. The frequency of suicide attempts: a retrospective approach applied to college students. *Am. J. Psychiatry*. **133**, 841, 1976.
  51. Myers E. D. Predicting repetition of deliberate self-harm: a review of the literature in the light of current study. *Acta Psychiatr. Scand.* **77**, 314, 1988.
  52. Platt S. The social transmission of parasuicide: is there a modeling effect? *Crisis* **14**, 23, 1993.
  53. Mendelson W. B. and Rich C. L. Sedatives and suicide: the San Diego study. *Acta Psychiatr. Scand.* **88**, 337, 1993.
  54. Farmer R. Hostility and deliberate self-poisoning: the role of depression. *Br. J. Psychiatry*. **150**, 609, 1987.
  55. Neeleman J. Attempted suicide in Europe. *Psychiatr. Bull.* **18**, 297, 1994.
  56. Eferakeya A. E. Drugs and suicide attempts in Benin-city. *Br. J. Psychiatry*. **127**, 764, 1970.
  57. Asuni T. Attempted suicide in Western Nigeria. *West Afr. Med. J.* **13**, 51, 1967.
  58. Kahuho S. K. Occasional report: drug poisoning in the intensive care unit of Kenyatta National Hospital. *East Afr. Med. J.* **57**, 490, 1980.
  59. Spirito A., Bond A., Kurkjian J., Devost L., Bosworth T. and Brown L. K. Gender differences among adolescent suicide attempters. *Crisis* **14**, 178, 1993.