Editorial

Calculating the Burden of Disease of Suicide, Attempted Suicide, and Suicide Ideation by Estimating Disability Weights

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A new application of a comprehensive method for assessing the burden of disease for suicidal behavior has been applied to epidemiological data in The Netherlands. Calculating the burden of disease of suicide in DALYs (disability adjusted life years) puts suicide at 21st in the list of most important diseases in The Netherlands with 43,500 DALYs. However, nonfatal suicide attempts also cause suffering, both physical and mental. If this suffering is taken into account, suicide and nonfatal attempted suicide climb to position 11 in this ranking of diseases with 90,700 DALYs. This places suicidal behaviors between dementia (rank 10) and breast cancer (rank 12). If the mental suffering from suicidal thoughts is taken into account as well, the number of DALYs increases to a total of 257,000, so that the full range of suicidal behaviors including suicidal thoughts rank among the most important diseases in The Netherlands. These figures are useful for setting priorities in health care and research funding. They result from a study by the National Institute for Public Health and the Environment (RIVM), the Netherlands Institute of Mental Health and Addiction (Trimbos Institute), and the Vrije Universiteit (Hoeymans & Schoemaker, 2010; Van Spijker, Van Straten, Kerkhof, Hoeymans, & Smit, 2011). Below I summarize the most important aspects of this study.

Epidemiological Data

Each year in The Netherlands injuries caused by fatal suicide attempts lead to 1,500 deaths, nonfatal attempts lead to 15,000 treatments at emergency departments and 9,000 hospital admissions. According to self-report surveys, each year around 100,000 people in The Netherlands make a nonfatal suicide attempt, and around 3% of the adult population has serious suicidal thoughts each year (Ten Have, de Graaf, van Dorsselaer, van 't Land, & Vollebergh, 2006, 2011). The total population of The Netherlands is about 16,500,000.

Disability Adjusted Life Years

More than mortality and prevalence alone, the burden of disease has become an important indicator of a population's health. Burden of disease can be described as the impact of a health problem on the population as measured by mortality and morbidity. It is most frequently quantified by disability adjusted life years (DALYs), which express both the loss of healthy life years due to premature death (years of life lost, or YLLs), and the loss of healthy life years due to disability (years lived with disability, or YLDs). One DALY therefore represents the loss of an equivalent of 1 year in full health. The YLDs for a particular health state are estimated by multiplying the incidence of a health state by the average duration of the disease and the disability weight (DW). DW is an index between 0 (best imaginable health state) and 1 (worst imaginable health state) which expresses the severity of the disability associated with a certain health state (Van Spijker et al., 2011, p. 342). The DALY is described in detail in Murray and Lopez (1996). DWs for physical injuries have been adopted from the Integrated Burden of Injury Study and the Multi-Attribute Instrument Study (Hoeymans & Schoemaker, 2010). For the mental suffering associated with nonfatal attempted suicide and suicidal ideation DW have yet to be developed.

Crisis 2012; Vol. 33(2):63–65
DOI: 10.1027/0227-5910/a000161

Development of DWs for Nonfatal Attempted Suicide and Suicidal Ideation

In epidemiological studies, where DALYs are used to compare population health, expert panels are accustomed to estimating DWs. DWs have been estimated for many health states, including nonfatal self-inflicted injuries (DW = 0.447, Mathers, Vos, & Stevenson, 1999). In 2004, nonfatal self-inflicted injuries represented 1.3% of the global burden of disease, which places them among the leading causes of disease burden worldwide (World Health Organization, 2008). Suicidal thoughts were not included in the studies on nonfatal self-inflicted injuries – which was the reason to develop DWs in this study for both the mental distress involved in nonfatal suicide attempts and for suicidal thoughts.

Valuation Procedure

The valuation procedure was carried out by mail with the help of an expert panel consisting of 18 experienced medical practitioners with research experience who had to be knowledgeable about suicidality. The majority (88%) had a research background at PhD level: 63% were psychiatrists, 37% general practitioners, and their mean age was 55 years. Each panelist received descriptions of 12 health states they were to interpolate on a visual analog scale (VAS), ranging from 0 (*worst imaginable health state*) to 100 (*best imaginable health state*). For the interpolation they were instructed to consider the consequences of living with the respective health state for 1 year. The VAS scores for 16 other health states have been formally calibrated in a Dutch DW study (Stouthard, Essink-Bot, & Bonsel, 2000). Panelists received the calibrated VAS and corresponding descriptions of the 16 reference points. Ten other health states for which DWs had been previously established were also selected in order to compare this panel to previously used panels. The selected health states with their corresponding DWs were meningitis with permanent locomotor impairment (DW = .17), meningitis with permanent locomotor and cognitive impairment (DW = .76), constitutional eczema (DW = .07), moderate rheumatoid arthritis (DW = .37), moderate heart failure (DW = .35), severe heart failure (DW = .65), severe depression with psychotic features (DW = .84), moderate to severe depression (DW = .51), cataract (DW = .11), and macular degeneration (DW = .25).

Each of the 12 health states consisted of a descriptive text based on the ICD-10 and DSM-IV-TR criteria, where the condition was rated on six dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression, and cognition) on a five-level scale (*no problems* to *severe problems*). For suicidal thoughts and nonfatal suicide attempts, the authors composed these textual descriptions according to the definition of nonfatal suicidal behavior, with or without injuries by De Leo, Burgis, Bertolote, Kerkhof, and Bille Brahe (2006, p. 14): *A nonhabitual act with nonfatal outcome that the individual, expecting to, or taking the risk to die or to inflict bodily harm, initiated and carried out with the purpose of bringing about wanted changes.* This definition emphasizes the possible ambivalent lethal intent in suicidal intentions: simultaneously wanting to die and to survive or to seek help (see Box 1 and Box 2).

Box 1. We now ask you to evaluate people who attempted suicide

> These people attempted suicide one or more times within a year, without a fatal outcome. The majority made a concrete plan prior to the attempt. Almost half do not have the intention to die; for them the attempt was a cry for help. After the attempt they are possibly treated at a hospital or by a GP. The majority has a psychiatric condition, and a minority receives treatment. In a year their condition is characterized by the following: no problems in walking about or with self-care; some or moderate problems in performing daily activities, pain or discomfort, anxiety or depression, and cognitive impairments. (Van Spijker et al., 2011)

Box 2. We now ask you to evaluate people with suicidal thoughts

> These people experience one or more periods of suicidal thoughts within a year. During this period they think about death and ask themselves if they would be better off dead. They possibly make a concrete plan, but they do not attempt suicide. The majority has a psychiatric condition, and a minority receive treatment. After a year their condition is characterized by the following: no problems in walking about or with self-care; few problems with cognitive impairments; some or moderate problems performing daily activities, pain or discomfort, and anxiety or depression. (Van Spijker et al., 2011)

Results

Reliability analysis demonstrated excellent agreement among the panelists. Their evaluations of the other 10 health states agreed with those of previous panels. The DW for suicidal thoughts was estimated to be .36, for mental distress involved in nonfatal suicide attempts .46.

Discussion

When comparing the resulting DWs for suicidal thoughts (.36) with the DWs for related psychiatric disorders, suicidal thoughts are considered as disabling as alcohol dependence (.32) and cocaine dependence (.33). The DW for mental distress involved in nonfatal suicide attempts (.46) is comparable with heroine dependence (.43) and with various manifestations of depressive disorder (.46), and it is less severe than those for borderline personality disorder

(.54) and schizophrenia with several psychotic episodes and some permanent impairments (.71).

When comparing the suicidality DWs with somatic disorders, it becomes apparent that suicidal thoughts are as disabling as severe asthma (.36), and moderate heart failure (.35). Nonfatal suicide attempts match the DWs for initial stage Parkinson's disease (.48).

These comparisons demonstrate the severity of suicidal thoughts and nonfatal suicide attempts. The evaluation procedure is a widely used method to make health states comparable. This is the first time, however, that suicidal thoughts and nonfatal suicide attempts have been compared to other somatic and psychiatric health states – and the end result is quite alarming. The importance of this study lies in creating awareness of the burden of suicidal behavior to the community and to health-care systems. Clinicians, of course, have always known about the burden of suicidality to individuals, their families, and the community. But now there is an empirical procedure to inform policymakers and research-funding bodies about the overall magnitude and burden of the full-range of the problem of suicide, including nonfatal attempts and suicidal thoughts.

Colleagues are invited to replicate the study (Van Spijker et al., 2011) in other countries using varied panels (expert panels, patient panels), bigger panels, and other health states as points of reference. The procedure used here may complement earlier work by the WHO into assessing the global burden of the full range of suicidal behavior.

References

De Leo, D., Burgis, S., Bertolote, J., Kerkhof, A. J. F. M., & Bille Brahe, U. (2006). Definitions of suicidal behavior: Lessons learned from the WHO/EURO Multicentre Study. *Crisis, 27*, 1, 4–15.

Ten Have, M., de Graaf, R., van Dorsselaer, S., van 't Land, H., & Vollebergh, W. (2006, 2011). *Suicidality in the population: Results of the Nemesis study.* Utrecht, Netherlands: Trimbos Instituut. (in Dutch)

Hoeymans, N., & Schoemaker, C. G. (Eds.) 2010. *The burden of disease of suicide and attempted suicide* (Report 270342001/ 2010, in Dutch). Bilthoven, The Netherlands: RIVM.

Mathers, C., Vos, T., & Stevenson, C. (1999). *The burden of disease and injury in Australia* (AIHW Cat. No. PHE 17). Canberra, Australia: AIHW.

Murray, C. J. L., & Lopez, A. D. (Eds.). (1996). *The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020.* Cambridge, MA: Harvard University Press.

Stouthard, M. E. A., Essink-Bot, M., & Bonsel, G. J. (2000). Disability weights for diseases. A modified protocol and results for a Western European region. *European Journal of Public Health, 10*, 24–30.

Van Spijker, B. A. J., Van Straten, A., Kerkhof, A. J. F. M., Hoeymans, N., & Smit, F. (2011). Disability weights for suicidal thoughts and nonfatal suicide attempts. *Journal of Affective Disorders, 134*, 341–347.

World Health Organization. (2008). *The global burden of disease, 2004 updated*. Geneva: Author.

About the author

Ad Kerkhof is Associate Editor of *Crisis* and one of the authors of the new Dutch practice guidelines for the assessment and treatment of suicidal patients, which were recently endorsed by all the professional organizations involved in health care. These new guidelines are now implemented in 40 mental health care departments and have been evaluated in an RCT trial, measuring the effectiveness of the training program in improving skills and knowledge as well as in decreasing suicidal ideation and behaviors in patients (the Pitstop Suicide Study). Ad Kerkhof has also been closely involved in the development of a web-based self-help course for suicidal ideation.

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