

- 15 Dunne MP, Zolotor AJ, Runyan DK, Andrevia-Miller I, Choo WY, Dunne SK, et al. IPSCAN Child Abuse Screen Tools Retrospective version (ICAST-R): Delphi study and field testing in seven countries. *Child Abuse Negl* 2009; **33**: 815–25.
- 16 Kessler RC, Üstün TB. *The WHO World Mental Health Surveys: Global Perspectives on the Epidemiology of Mental Disorders*. Cambridge University Press, 2008.
- 17 The World Bank. *Data and Statistics*. The World Bank, 2008 (<http://go.worldbank.org/D7SN0B8YU0>).
- 18 Heeringa SG, Wells JE, Hubbard F, Mneimneh Z, Chiu WT, Sampson NA. Sample designs and sampling procedures. In *The WHO World Mental Health Surveys: Global Perspectives on the Epidemiology of Mental Disorders* (eds RC Kessler, TB Üstün): 14. Cambridge University Press, 2008.
- 19 Kessler RC, Üstün TB. The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *Int J Methods Psychiatr Res* 2004; **13**: 93–121.
- 20 American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (4th edn) (DSM-IV)*. APA, 1994.
- 21 First MB, Spitzer RL, Gibbon M, Williams JBW. *Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP)*. Biometrics Research, New York State Psychiatric Institute, 2002.
- 22 Haro JM, Arbabzadeh-Bouchez S, Brugha TS, de Girolamo G, Guyer ME, Jin R, et al. Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health surveys. *Int J Methods Psychiatr Res* 2006; **15**: 167–80.
- 23 Knauper B, Cannell CF, Schwarz N, Bruce ML, Kessler RC. Improving the accuracy of major depression age of onset reports in the US National Comorbidity Survey. *Int J Methods Psychiatr Res* 1999; **8**: 39–48.
- 24 Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: results from the National Comorbidity Survey. *Am J Public Health* 2001; **91**: 753–60.
- 25 Endicott J, Andreasen N, Spitzer RL. *Family History Research Diagnostic Criteria*. Biometrics Research, New York State Psychiatric Institute, 1978.
- 26 Kendler KS, Silberg JL, Neale MC, Kessler RC, Heath AC, Eaves LJ. The family history method: whose psychiatric history is measured? *Am J Psychiatry* 1991; **148**: 1501–4.
- 27 Straus MA. Measuring intrafamily conflict and violence: the Conflict Tactics (CT) Scales. *J Marriage Fam* 1979; **41**: 75–88.
- 28 Courtney ME, Piliavin I, Grogan-Kaylor A, Nesmith A. *Foster Youth Transitions to Adulthood: A Longitudinal View of Youth Leaving Care*. Institute for Research on Poverty, 1998.
- 29 Merikangas KR, Ames M, Cui L, Stang PE, Üstün TB, Von Korff M, et al. The impact of comorbidity of mental and physical conditions on role disability in the US adult household population. *Arch Gen Psychiatry* 2007; **64**: 1180–8.
- 30 Klebanoff MA, Cole SR. Use of multiple imputation in the epidemiologic literature. *Am J Epidemiol* 2008; **168**: 355–7.
- 31 Singer JD, Willett JB. It's about time: using discrete-time survival analysis to study duration and the timing of events. *J Educ Stat* 1993; **18**: 155–95.
- 32 Burnham KP, Anderson DR. *Model Selection and Multimodel Inferences: A Practical-theoretic Approach (2nd edn)*. Springer-Verlag, 2002.
- 33 Northridge ME. Public health methods – attributable risk as a link between causality and public health action. *Am J Public Health* 1995; **85**: 1202–3.
- 34 Wolter KM. *Introduction to Variance Estimation*. Springer-Verlag, 1985.
- 35 Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Üstün TB. Age of onset of mental disorders: a review of recent literature. *Curr Opin Psychiatry* 2007; **20**: 359–64.
- 36 Kessler RC, Angermeyer M, Anthony JC, de Graaf R, Demyttenaere K, Gasquet I, et al. Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry* 2007; **6**: 168–76.
- 37 Bebbington P. Childhood sexual abuse and psychosis: aetiology and mechanism. *Epidemiol Psychiatr Soc* 2009; **18**: 284–93.
- 38 Read J, Bentall RP, Fosse R. Time to abandon the bio-bio-bio model of psychosis: exploring the epigenetic and psychological mechanisms by which adverse life events lead to psychotic symptoms. *Epidemiol Psychiatr Soc* 2009; **18**: 299–310.
- 39 Read J, Fink P, Rudegear T, Felitti V, Whitfield CL. Child maltreatment and psychosis: a return to a genuinely integrated bio-psycho-social model. *Clin Schizophr Relat Psychoses* 2008; **2**: 235–54.
- 40 Hardt J, Rutter M. Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. *J Child Psychol Psychiatry* 2004; **45**: 260–73.
- 41 Moffitt TE, Caspi A, Taylor A, Kokaua J, Milne BJ, Polanczyk G, et al. How common are common mental disorders? Evidence that lifetime prevalence rates are doubled by prospective versus retrospective ascertainment. *Psychol Med* 2010; **40**: 1–11.
- 42 Fergusson DM, Horwood LJ. The Christchurch Health and Development Study: review of findings on child and adolescent mental health. *Aust N Z J Psychiatry* 2001; **35**: 287–96.
- 43 Jones GT, Power C, Macfarlane GJ. Adverse events in childhood and chronic widespread pain in adult life: results from the 1958 British Birth Cohort Study. *Pain* 2009; **143**: 92–6.
- 44 Melchior M, Moffitt TE, Milne BJ, Poulton R, Caspi A. Why do children from socioeconomically disadvantaged families suffer from poor health when they reach adulthood? A life-course study. *Am J Epidemiol* 2007; **166**: 966–74.
- 45 Clark C, Caldwell T, Power C, Stansfeld SA. Does the influence of childhood adversity on psychopathology persist across the lifecourse? A 45-year prospective epidemiologic study. *Ann Epidemiol* 2010; **20**: 385–94.
- 46 Burgermeister D. Childhood adversity: a review of measurement instruments. *J Nurs Meas* 2007; **15**: 163–76.
- 47 Snyder T, Shafer L. *Youth Indicators, NCES 96-027*. US Department of Education, National Center for Education Statistics, 1996.
- 48 Finkelhor D. The international epidemiology of child sexual abuse. *Child Abuse Negl* 1994; **18**: 409–17.
- 49 Garcia-Moreno C, Heise L, Jansen HA, Ellsberg M, Watts C. Public health. Violence against women. *Science* 2005; **310**: 1282–3.
- 50 Bifulco A, Brown GW, Adler Z. Early sexual abuse and clinical depression in adult life. *Br J Psychiatry* 1991; **159**: 115–22.
- 51 Tennant C, Bebbington P, Hurry J. Parental death in childhood and risk of adult depressive disorders: a review. *Psychol Med* 1980; **10**: 289–99.
- 52 McMahon SD, Grant KE, Compas BE, Thurm AE, Ey S. Stress and psychopathology in children and adolescents: is there evidence of specificity? *J Child Psychol Psychiatry* 2003; **44**: 107–33.
- 53 Shanahan L, Copeland W, Costello EJ, Angold A. Specificity of putative psychosocial risk factors for psychiatric disorders in children and adolescents. *J Child Psychol Psychiatry* 2008; **49**: 34–42.
- 54 Spinhoven P, Elzinga BM, Hovens JG, Roelofs K, Zitman FG, van Oppen P, et al. The specificity of childhood adversities and negative life events across the life span to anxiety and depressive disorders. *J Affect Disord* 2010; March 19 (Epub ahead of print).
- 55 Read J, Hammersley P, Rudegear T. Why, when and how to ask about child abuse. *Adv Psychiatr Treat* 2007; **13**: 101–10.
- 56 Edwards VJ, Holden GW, Felitti VJ, Anda RF. Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: results from the adverse childhood experiences study. *Am J Psychiatry* 2003; **160**: 1453–60.
- 57 Horwitz AV, Widom CS, McLaughlin J, White HR. The impact of childhood abuse and neglect on adult mental health: a prospective study. *J Health Soc Behav* 2001; **42**: 184–201.
- 58 Edwards VJ, Dube SR, Felitti VJ, Anda RF. It's ok to ask about past abuse. *Am Psychol* 2007; **62**: 327–8; discussion 30–2.
- 59 Hazel NA, Hammen C, Brennan PA, Najman J. Early childhood adversity and adolescent depression: the mediating role of continued stress. *Psychol Med* 2008; **38**: 581–9.
- 60 Turner H, Butler M. Direct and indirect effects of childhood adversity on depressive symptoms in young adults. *J Youth Adolesc* 2003; **32**: 89–103.
- 61 Hankin BL. Childhood maltreatment and psychopathology: prospective tests of attachment, cognitive vulnerability, and stress as mediating processes. *Cogn Ther Res* 2005; **29**: 645–71.



BJPpsych

The British Journal of Psychiatry

Associations of serious mental illness with earnings: results from the WHO World Mental Health surveys

Daphna Levinson, Matthew D. Lakoma, Maria Petukhova, Michael Schoenbaum, Alan M. Zaslavsky, Matthias Angermeyer, Guilherme Borges, Ronny Bruffaerts, Giovanni de Girolamo, Ron de Graaf, Oye Gureje, Josep Maria Haro, Chiyi Hu, Aimee N. Karam, Norito Kawakami, Sing Lee, Jean-Pierre Lepine, Mark Oakley Browne, Michail Okoliyski, José Posada-Villa, Rajesh Sagar, Maria Carmen Viana, David R. Williams and Ronald C. Kessler

The British Journal of Psychiatry 2010 197: 114-121
Access the most recent version at doi:10.1192/bjp.bp.109.073635

Supplementary data	<i>"Data supplement"</i> http://bjp.rcpsych.org/cgi/content/full/197/2/114/DC1
Reprints/permissions	To obtain reprints or permission to reproduce material from this paper, please write to permissions@rcpsych.ac.uk
You can respond to this article at	http://bjp.rcpsych.org/cgi/eletter-submit/197/2/114
Email alerting service	Receive free email alerts when new articles cite this article - sign up in the box at the top right corner of the article or click here
Downloaded from	bjp.rcpsych.org on December 27, 2010 Published by The Royal College of Psychiatrists

To subscribe to *The British Journal of Psychiatry* go to:
<http://bjp.rcpsych.org/subscriptions/>

Associations of serious mental illness with earnings: results from the WHO World Mental Health surveys

Daphna Levinson, Matthew D. Lakoma, Maria Petukhova, Michael Schoenbaum, Alan M. Zaslavsky, Matthias Angermeyer, Guilherme Borges, Ronny Bruffaerts, Giovanni de Girolamo, Ron de Graaf, Oye Gureje, Josep Maria Haro, Chiyi Hu, Aimee N. Karam, Norito Kawakami, Sing Lee, Jean-Pierre Lepine, Mark Oakley Browne, Michail Okoliyski, José Posada-Villa, Rajesh Sagar, Maria Carmen Viana, David R. Williams and Ronald C. Kessler

Background

Burden-of-illness data, which are often used in setting healthcare policy-spending priorities, are unavailable for mental disorders in most countries.

Aims

To examine one central aspect of illness burden, the association of serious mental illness with earnings, in the World Health Organization (WHO) World Mental Health (WMH) Surveys.

Method

The WMH Surveys were carried out in 10 high-income and 9 low- and middle-income countries. The associations of personal earnings with serious mental illness were estimated.

Results

Respondents with serious mental illness earned on average a third less than median earnings, with no significant between-country differences ($\chi^2(9) = 5.5-8.1$, $P = 0.52-0.79$). These

losses are equivalent to 0.3–0.8% of total national earnings. Reduced earnings among those with earnings and the increased probability of not earning are both important components of these associations.

Conclusions

These results add to a growing body of evidence that mental disorders have high societal costs. Decisions about healthcare resource allocation should take these costs into consideration.

Declaration of interest

R.C.K. has been a consultant for GlaxoSmithKline, Kaiser Permanente, Pfizer, Sanofi-Aventis, Shire Pharmaceuticals and Wyeth-Ayerst; has served on advisory boards for Eli Lilly & Company and Wyeth-Ayerst; and has had research support for his epidemiological studies from Bristol-Myers Squibb, Eli Lilly & Company, GlaxoSmithKline, Johnson & Johnson Pharmaceuticals, Ortho-McNeil Pharmaceuticals, Pfizer and Sanofi-Aventis.

The fact that mental disorders are associated with high societal burden is now well established both in terms of disability-adjusted life-years¹ and as a fraction of national budgets.² A large part of this burden consists of indirect costs such as those associated with reduced rates of labour force participation,³ unemployment among those in the labour force⁴ and underemployment among those who are employed.⁵ Mental disorders also have costs for employers, including high rates of sporadic absenteeism⁶ and disability-related work leave⁷ as well as low levels of on-the-job work performance.⁸ The most commonly used approach to study these labour market costs is the human capital approach.⁹ This approach is based on the observation that wages and salaries are paid in direct return for productive services, making earnings a good indicator of the human capital accumulated by the individual and making earnings-equivalent time forgone because of an illness a good representation of the indirect costs of that illness to the employer. Although a considerable body of empirical research has used the human capital approach to document adverse societal effects of mental disorders, this research has been carried out largely in a small number of high-income countries.^{4,7} Yet epidemiological data show that mental disorders are common throughout the world.¹⁰ The purpose of the current paper is to use the survey data in the World Health Organization (WHO) World Mental Health (WMH) Surveys to make estimates of the human capital costs of mental disorders in a wider range of countries (population samples from 10 high-income and 9 low- and middle-income countries with a total of more than 100 000 respondents). We focus on serious mental illness because previous

research has shown that earnings and long-term work incapacity are both much more strongly related to serious mental illness than to less serious forms of mental illness.^{5,11}

Method

Sample

Twenty surveys were carried out in 19 countries in the Americas (Brazil, Colombia, Mexico, USA), Europe (Belgium, Bulgaria, France, Germany, Italy, The Netherlands, Spain), the Middle East (Israel, Lebanon), Africa (Nigeria, South Africa), Asia (Japan, People's Republic of China: Beijing, Shanghai, Shenzhen, India: Pondicherry), and New Zealand (online Table DS1). The World Bank¹² classifies Brazil, Bulgaria, Colombia, India, Lebanon, Mexico, Nigeria, the People's Republic of China, and South Africa as low- and middle-income countries, and all the other surveyed countries as high-income countries. All surveys were based on either multistage clustered area probability samples of households, with one or two random respondents selected in each sample household, or multistage clustered area probability samples of individuals listed in a national population register. All interviews were carried out face to face by trained lay interviewers.

Recruitment began with a letter sent to the households of potential respondents describing the purpose of the study and answering commonly asked questions about how their household was selected, the voluntary nature of participation and the confidentiality of responses. Interviewers reviewed these issues with the potential respondents when they visited the households

and obtained informed consent before beginning the interviews. Standard procedures for recording and storing the survey data in de-identified files were used to protect the confidentiality of respondents. A respondent safety plan was developed separately in each country consistent with local norms to address concerns about evidence of respondent danger to self or others. These recruitment, consent and respondent protection procedures were approved by the Human Subjects Committee of the lead organisation that carried out the survey in each country.

The total sample size was 101 825, with individual country sample sizes ranging from a low of 2372 in The Netherlands to a high of 12 992 in New Zealand. The weighted average response rate across countries was 72.2%. Internal subsampling was used to reduce respondent burden by dividing the interview into two parts. Part I included the core diagnostic assessment of mental disorders. Part II included a detailed risk-factor questionnaire, a series of diagnoses of secondary interest, and a series of questions about the correlates of mental illness. Earnings were assessed in Part II. All respondents completed Part I ($n=101\,825$), and all respondents who met criteria for any Part I mental disorder plus a probability sample of other Part I respondents were administered Part II ($n=51\,007$). (All respondents were administered Part II in Israel and South Africa.) The Part I data were weighted to adjust for differential probabilities of selection and for the undersampling of hard-to-reach respondents (a probability subsample of whom received special intensive recruitment efforts). The Part II data were additionally weighted to adjust for the undersampling of Part I respondents without a core disorder (i.e. weighting by the inverse of probability of selection into Part II) to remove any bias in Part II relative to Part I. A final Part II was weight adjusted for discrepancies between the sample distributions and the population census on a wide range of sociodemographic and geographic variables. The analyses reported here were based on the respondents in the weighted Part II sample who were of working age, which we defined for purposes of this analysis as 18–64 years of age ($n=44\,561$). A more detailed description of WMH sampling that includes an analysis of the effects of weights and weight trimming is presented elsewhere.¹³

Interviewer training and fieldwork quality control

Each WMH interviewer was required to complete a 7-day training course and to pass an examination that included administering a series of practice interviews with scripted responses before beginning production work. During production, supervisors reviewed all interviews for completeness and made follow-up contacts with a random 5–10% of respondents to confirm household addresses, household enumeration, random selection procedures and the length of the interview. Supervisors repeated a random sample of questions during these interview audits in order to make sure interviewers administered the complete interview and that responses were recorded accurately. In addition, aggregate interviewer-level data were monitored on an ongoing basis to look for distinctive interviewer-specific data patterns that might indicate fabrication of data. A more detailed discussion of interviewer training and field quality-control procedures is presented elsewhere.¹⁴

Measures

Mental illness

All surveys assessed mental illness with the WHO Composite International Diagnostic Interview (CIDI),¹⁵ a fully-structured diagnostic interview that assesses the prevalence of mental

disorders according to the definitions and criteria of both the DSM-IV¹⁶ and ICD-10¹⁷ diagnostic systems. The DSM-IV criteria were used in the current report. We focused on prevalence at any time within the 12 months before the interview. The disorders considered include anxiety disorders (generalised anxiety disorder, panic disorder, phobias, post-traumatic stress disorder) and mood disorders (major depressive disorder, dysthymic disorder, bipolar disorder). In making diagnosis, CIDI organic exclusion rules were imposed. Clinical reappraisal studies carried out in conjunction with a number of WMH surveys using the Structured Clinical Interview for DSM-IV¹⁸ as the gold standard documented generally good concordance of masked clinical diagnoses with diagnoses based on the CIDI. Serious mental illness was defined following previous WMH analyses¹⁹ as either meeting criteria for bipolar I disorder or having any other 12-month diagnosis with evidence of serious role impairment. Serious role impairment was defined as either having a score in the severe range on one or more of the Sheehan Disability Scales,²⁰ which assess disability in work-role performance, household maintenance, social life or intimate relationships or attempting suicide. The CIDI also assessed DSM-IV alcohol and illicit drug use with or without dependence. Both lifetime prevalence of these conditions and prevalence in the 12 months before the interview were used as controls to adjust for comorbidity between mental and substance disorders. Other 12-month disorders that did not meet criteria for serious mental illness were not considered because preliminary analysis found that they are not significantly related to earnings. (Detailed results are available from the authors on request.)

Earnings

All Part II respondents were asked to report their personal earnings in the past 12 months before taxes. Respondents were instructed to count only wages and other stipends from employment, not pensions, investments or other financial assistance or income. As in most community surveys, the item-level non-response rate for this question was non-trivial (with a range of 0.8–18.3% and an interquartile range of 2.2–7.0% across surveys). Mean imputation was used to impute missing values. It is noteworthy that serious mental illness was not significantly related to having a missing value on the earnings variable either in high- or low- and middle-income countries ($\chi^2(1)=0.1-3.1$, $P=0.08-0.71$). This means that the decision about how to deal with these missing values (i.e. either by case deletion, imputation or introducing a control variable for having a missing value on this variable into the regression equations) would not meaningfully influence the magnitude of the serious mental illness coefficients in the regression analyses reported below.

Analysis methods

In order to facilitate pooling of results across countries, earnings reports were divided by the median earnings in the country. These transformed scores were then used as outcomes in pooled regression analyses estimated simultaneously across all countries. Prior to carrying out this analysis, earnings distributions were compared for respondents with and without serious mental illness. The earnings distributions among respondents with any earnings were divided for this purpose into four categories by defining low earnings as less than half the within-country median, low-average earnings as up to the median, high-average earnings as up to twice the median, and high earnings as greater than two times the median.

The regression analyses were then carried out using a dummy variable for serious mental illness as the predictor of primary interest. The outcome was the transformed continuous earnings score. Control variables were included for sociodemographics (age, gender), country (19 dummy variables to distinguish respondents across the 20 surveys), substance disorders and interactions between gender and all other predictors. The gender interactions were included because previous research has shown that the predictors of earnings are different for males than females.^{5,21}

A major statistical problem in estimating regression equations of this sort is that the earnings distribution is highly skewed, with a meaningful minority of the sample in each country reporting no earnings and a much higher proportion of other respondents having high earnings than would be found in a normal distribution. This makes ordinary least squares regression analysis both biased and inefficient. Economists have developed special statistical procedures to address this problem that involve using either two-part models (i.e. a first logistic regression model to predict having any earnings and a second linear regression model to predict amount of earnings among those with any earnings)^{22,23} or special one-part non-linear models.^{24,25} We used both approaches in addition to conventional ordinary least squares regression analysis (with linear, square root and logarithmic link functions) and selected the best approach based on standard empirical model comparison procedures.²⁶ The details of the modelling approaches are discussed elsewhere,⁵ but the final best-fitting model was a one-part generalised linear model that assumed a logarithmic link function between predictors and the outcome with prediction error variance proportional to the predicted values.

As the best-fitting model used a non-linear transformation of the outcome in conjunction with an interaction between serious mental illness and gender, model-based simulation was needed to interpret the coefficients. This was done by predicting earnings twice for each respondent from the model coefficients, once using the actual characteristics of the respondent and a second time recoding all respondents with serious mental illness to assume that they did not have serious mental illness. Individual-level differences between these estimates were averaged across all respondents with serious mental illness to estimate the mean individual-level decrease in earnings associated with serious mental illness. Societal-level estimates were then obtained by multiplying this individual-level estimate by the prevalence of serious mental illness. Demographic rate standardisation²⁷ was

then used to decompose the societal-level estimates into components due to the associations of serious mental illness with probability of having any earnings and with the amount earned by those with any earnings. Because the WMH sample design featured weighting and clustering, the standard errors of the model coefficients and the simulated estimates were obtained using the design-based jackknife repeated replications method.²⁸ In this method, each model and each simulation is replicated many times in pseudo-samples to generate a distribution of each coefficient that is then used to calculate an empirical estimate of the standard error of the coefficient. Multivariate significance was estimated using design-adjusted Wald χ^2 -tests.²⁹ Statistical significance was consistently evaluated using two-sided tests at the 0.05 level of significance.

Results

Sample distributions

Consistent with their population distributions, the age distribution of the sample is different in high-income countries from that in low- and middle-income countries ($\chi^2(3) = 553.1, P < 0.001$) (Table 1). Larger proportions of respondents are in the age ranges 18–24 (24.5% v. 15.6%) and 25–39 (40.8% v. 35.0%) in low- and middle-income than high-income countries, whereas larger proportions are in the age ranges 40–54 (34.0% v. 24.8%) and 55–64 (15.4% v. 10.0%) in high-income than low- and middle-income countries. Females have a somewhat older age distribution than males in low- and middle-income countries ($\chi^2(3) = 9.2, P = 0.026$), but there is no gender difference in the age distribution in high-income countries ($\chi^2(3) = 1.3, P = 0.74$). Serious mental illness is estimated to be significantly more prevalent in high-income than low- and middle-income countries both in the total sample (4.3% v. 3.0%, $t = 6.4, P < 0.001$) and separately among males (3.5% v. 2.2%, $t = 5.1, P < 0.001$) and females (5.0% v. 3.9%, $t = 4.3, P < 0.001$) (Table 1). Serious mental illness is estimated to be significantly more common among females than males in both high-income and low- and middle-income countries ($t = 6.1–6.6, P < 0.001$).

Earnings distributions among respondents with and without serious mental illness

The proportion of respondents with non-zero earnings is significantly lower among those with than those without serious mental illness in both high-income (61.9% v. 75.6%, $t = 8.6$,

Table 1 Distributions of age, gender and mental illness in high-income and low- and middle-income countries^a

	% (s.e.)					
	High-income countries			Low- and middle-income countries		
	Total (n = 23 457)	Male (n = 10 114)	Female (n = 13 343)	Total (n = 21 104)	Male (n = 9040)	Female (n = 12 064)
Age, years ^b						
18–24	15.6 (0.4)	16.0 (0.5)	15.3 (0.5)	24.5 (0.4)	24.6 (0.7)	24.5 (0.6)
25–39	35.0 (0.5)	34.7 (0.6)	35.2 (0.6)	40.8 (0.5)	41.3 (0.7)	40.2 (0.6)
40–54	34.0 (0.4)	34.0 (0.6)	34.0 (0.6)	24.8 (0.4)	25.1 (0.6)	24.4 (0.5)
55–64	15.4 (0.3)	15.3 (0.5)	15.5 (0.4)	10.0 (0.3)	9.1 (0.4)	10.8 (0.4)
12-month serious mental illness ^c	4.3 (0.1)	3.5 (0.2)	5.0 (0.2)	3.0 (0.1)	2.2 (0.2)	3.9 (0.2)

a. High-income countries: Belgium, France, Germany, Israel, Italy, Japan, The Netherlands, Spain, USA, New Zealand; low- and middle-income countries: South Africa, Brazil, Bulgaria, China, Colombia, Lebanon, Mexico, Nigeria, Pondicherry, Shenzhen.

b. Significance of age differences was evaluated with Wald design-based χ^2 -tests. The age distribution is significantly different between high-income and low- and middle-income countries in the total sample ($\chi^2(3) = 553.1, P < 0.001$) and separately among males ($\chi^2(3) = 272.5, P < 0.001$) and females ($\chi^2(3) = 298.4, P < 0.001$). Males and females also have significantly different age distributions in low- and middle-income ($\chi^2(3) = 9.2, P = 0.026$) but not high-income ($\chi^2(3) = 1.3, P = 0.74$) countries.

c. The estimated prevalence of serious mental illness differs significantly between high-income and low- and middle-income countries in the total sample ($\chi^2(1) = 40.4, P < 0.001$) and separately among males ($\chi^2(1) = 25.0, P < 0.001$) and females ($\chi^2(1) = 17.6, P < 0.001$). Males and females also differ in prevalence of serious mental illness in both high-income ($\chi^2(1) = 34.7, P < 0.001$) and low- and middle-income ($\chi^2(1) = 39.8, P < 0.001$) countries.

Table 2 Earnings distributions^a for respondents with and without serious mental illness in high-income and low- and middle-income countries^b

	High-income countries			Low- and middle-income countries		
	Total (<i>n</i> = 23 457)	Male (<i>n</i> = 10 114)	Female (<i>n</i> = 13 343)	Total (<i>n</i> = 21 104)	Male (<i>n</i> = 9040)	Female (<i>n</i> = 12 064)
Any earnings, % (s.e.)						
Total sample	75.0 (0.4)	82.6 (0.6)	67.7 (0.6)	62.8 (0.5)	72.9 (0.7)	53.3 (0.6)
Serious mental illness	61.9* (1.6)	70.6* (2.6)	56.2* (2.0)	51.6 (1.9)	62.9*† (3.6)	45.6*† (2.4)
Others	75.6* (0.4)	83.1* (2.6)	68.3* (0.6)	63.1 (0.5)	73.1*† (0.7)	53.6*† (0.6)
Low earnings among the employed, % (s.e.)						
Total sample	24.3 (0.5)	16.8 (0.6)	33.2 (0.8)	25.7 (0.6)	23.0 (0.8)	29.0 (0.9)
Serious mental illness	40.4* (1.8)	34.6* (3.0)	45.2* (2.2)	23.9 (2.5)	22.2 (3.9)	25.1 (3.0)
Others	23.8* (0.5)	16.3* (0.6)	32.7* (0.8)	25.7 (0.6)	23.0 (0.8)	29.2 (0.9)
Low-average earnings among the employed, % (s.e.)						
Total sample	20.6 (0.5)	16.0 (0.6)	26.0 (0.7)	33.0 (0.7)	30.1 (0.8)	36.8 (1.0)
Serious mental illness	25.1* (1.6)	21.0* (2.5)	28.4 (2.1)	45.6* (3.0)	39.1*† (4.1)	50.4*† (3.9)
Others	20.5* (0.5)	15.9* (0.6)	25.9 (0.7)	32.7* (0.7)	29.9*† (0.8)	36.3*† (1.0)
High-average earnings among the employed, % (s.e.)						
Total sample	28.2 (0.5)	29.2 (0.7)	27.1 (0.7)	15.7 (0.5)	16.2 (0.6)	15.0 (0.7)
Serious mental illness	21.9* (1.7)	25.7 (2.8)	18.8* (1.8)	11.6* (1.6)	13.8 (3.1)	10.0*† (2.2)
Others	28.5* (0.5)	29.3 (0.7)	27.4* (0.7)	15.8* (0.5)	16.3 (0.7)	15.2*† (0.7)
High earnings among the employed, % (s.e.)						
Total sample	26.8 (0.5)	37.9 (0.8)	13.8 (0.5)	25.6 (0.6)	30.7 (0.8)	19.1 (0.7)
Serious mental illness	12.7* (1.2)	18.8* (2.2)	7.6* (1.2)	18.9* (1.7)	24.9*† (2.7)	14.5* (2.2)
Others	27.3* (0.5)	38.5* (0.8)	14.1* (0.5)	25.8* (0.6)	30.8*† (0.8)	19.3* (0.8)
$\chi^2(3)$	141.2†	76.0†	47.9†	28.8†	6.2	16.9†

a. Low earnings were defined as less than half the within-country median among those with any earnings, low-average earnings as up to the median, high-average earnings as up to twice the median, and high earnings as greater than twice the median.
b. High-income countries: Belgium, France, Germany, Israel, Italy, Japan, The Netherlands, New Zealand, Spain, USA; low- and middle-income countries: Brazil, Bulgaria, Colombia, India, Lebanon, Mexico, Nigeria, People's Republic of China, South Africa.
*Significant difference between respondents with serious mental illness and other respondents at the 0.05 level, two-sided test.
†Significant difference at the 0.05 level between the earnings distributions of respondents with and without serious mental illness among those with non-zero earnings.

$P < 0.001$) and low- and middle-income (51.6% v. 63.1%, $t = 5.9$, $P < 0.001$) countries (Table 2). Similar differences are found when we look separately at males ($t = 4.8$ – 2.8 , $P \leq 0.001$ – 0.005) and females ($t = 5.9$ – 3.2 , $P \leq 0.001$). These overall differences are because of the proportions of respondents with low and low-average earnings being significantly higher among those with than those without serious mental illness in both high-income (40.4% v. 23.8%, $t = 9.0$, $P < 0.001$ low earnings; 25.1% v. 20.5%, $t = 2.8$, $P = 0.005$ low-average earnings) and low- and middle-income (low-average only; 45.6% v. 32.7%, $t = 4.4$, $P < 0.001$) countries and the proportions of respondents with high-average and high incomes being significantly higher among those without than those with serious mental illness in both high-income (28.5% v. 21.9%, $t = 3.7$, $P < 0.001$ high-average earnings; 27.3% v. 12.7%, $t = 11.2$, $P < 0.001$ high earnings) and low- and middle-income (15.8% v. 11.6%, $t = 2.5$, $P = 0.013$ high-average earnings; 25.8% v. 18.9%, $t = 3.8$, $P < 0.001$ high earnings) countries. Similar patterns are found when we look separately at men and women.

Individual-level regression models of the association between serious mental illness and earnings

The model-based simulations estimate that serious mental illness is associated with a reduction in earnings equal to 32% of the median within-country earnings in high-income countries and 33% of median within-country earnings in low- and middle-income countries (Table 3). The association is considerably larger among men than women in high-income countries (53% v. 19%, $t = 4.8$, $P < 0.001$) but more comparable for men and women in low- and middle-income countries (29% v. 35%, $t = 0.2$, $P = 0.85$). Decomposition shows that 39% of the total association between serious mental illness and earnings in high-income countries and 27% in low- and middle-income countries is as a

result of the reduced probability of having any earnings among people with serious mental illness. This component is smaller for men than women in high-income countries (31% v. 55%, $t = 2.4$, $P = 0.020$) but larger for men than women in low- and middle-income countries (50% v. 18%, $t = 0.5$, $P = 0.60$). A larger component of the total association, 49% of the total in high-income countries and 66% in low- and middle-income countries, is as a result of the lower mean level of earnings among people with than without serious mental illness who have any earnings. This component is larger for men than women in high-income countries (56% v. 36%, $t = 2.1$, $P = 0.030$) but larger for women than men in low- and middle-income countries (75% v. 45%, $t = 0.5$, $P = 0.61$).

Country-specific, individual-level and societal-level projections

It is instructive to compare results across countries and to put the individual-level estimates into perspective by considering them in their natural metrics projected to the societal level. This was done by estimating the coefficients in the best-fitting model separately in each of the 20 surveys, expressing the estimates in terms of mean rather than median earnings, multiplying these estimates by the prevalence of serious mental illness, and then multiplying this product by the population size of the country in the age range of the sample to obtain societal-level estimates (Table 4). Serious mental illness is associated with a reduction in earnings in all 19 countries, with a statistically significant weighted average value of 19.4% of mean earnings in high-income countries and 10.9% of mean earnings in low- and middle-income countries. Between-country differences in these individual-level estimates are not significant either in high-income ($\chi^2(9) = 8.1$, $P = 0.52$) or low- and middle-income ($\chi^2(9) = 5.5$, $P = 0.79$) countries. At

Table 3 The simulated associations of serious mental illness with reduced earnings at the individual level among men and women separately in high-income and low- and middle-income countries^a

	Estimate (s.e.)					
	High-income countries			Low- and middle-income countries		
	Total	Male	Female	Total	Male	Female
Overall association						
Association between serious mental illness and earnings in the total sample ^b	0.32* (0.03)	0.53* (0.07)	0.19* (0.02)	0.33* (0.14)	0.29 (0.23)	0.35 (0.18)
Component effects						
Effect of serious mental illness on probability of non-zero earnings ^c	0.14* (0.02)	0.16* (0.02)	0.14* (0.02)	0.05 (0.03)	0.07 (0.05)	0.05 (0.04)
Estimated effect of serious mental illness on earnings given non-zero earnings ^b	0.26* (0.04)	0.42* (0.08)	0.12* (0.03)	0.42 (0.28)	0.21 (0.30)	0.57 (0.44)
Decomposition of overall effect ^d						
Due to difference in probability of non-zero earnings	0.39* (0.05)	0.31* (0.06)	0.55* (0.08)	0.27 (0.19)	0.50 (0.58)	0.18 (0.18)
Due to difference in earnings given non-zero earnings	0.49* (0.05)	0.56* (0.07)	0.36* (0.07)	0.66* (0.20)	0.45 (0.53)	0.75* (0.23)
Due to the interaction between the two components	0.12* (0.01)	0.13* (0.02)	0.09* (0.02)	0.07* (0.03)	0.05 (0.06)	0.08 (0.06)

a. High-income countries: Belgium, Germany, Israel, Italy, Japan, The Netherlands, Spain, USA, New Zealand; low- and middle-income countries: Brazil, Bulgaria, Colombia, India, Lebanon, Mexico, Nigeria, People's Republic of China, South Africa.

b. The estimates reported in these rows summarise the results of individual-level simulations based on the coefficients in the best-fitting multiple regression model. (The coefficients from these models are not reported here, but are available from the authors.) That model was a generalised linear model that assumed a logarithmic link function between predictors and the outcome with prediction error variance proportional to the predicted values. A discussion of generalised linear model estimation is presented elsewhere.⁵ The simulation used the model coefficients to predict individual-level earnings twice for each respondent, once using the actual characteristics of the respondent and a second time based on the counterfactual assumption that none of the respondents had serious mental illness. Individual-level differences between these earnings estimates were averaged across all respondents with serious mental illness to estimate the expected mean individual-level decrease in earnings associated with serious mental illness in Part i of the current table. Standard errors were obtained by replicating the entire analysis in pseudo-samples using the method of jackknife repeated replication and using the distribution of estimates to generate an empirical estimate of the standard error.²⁸

c. The estimates reported in this row summarise the results of logistic regression analysis to predict any earnings v. no earnings.

d. Demographic rate standardisation²⁷ was then used to decompose the societal-level estimates into components due to the associations of serious mental illness with probability of having any earnings and with the amount earned by those with any earnings. A description of this method is presented elsewhere.⁵

* Significant at the 0.05 level, two-sided test.

the societal level, the estimate averages 0.8% of all national earnings in high-income countries and 0.3% of all national earnings in low- and middle-income countries. Between-country differences are statistically significant in high-income countries ($\chi^2(9) = 30.4, P < 0.001$), with much lower estimates in Italy, Japan and Spain (0.0–0.3%) than the other countries (0.7–1.7%). Between-country differences in the societal-level estimates are not statistically significant, in comparison, in low- and middle-income countries ($\chi^2(9) = 4.7, P = 0.86$).

Discussion

Main findings

We found that serious mental illness is associated with a reduction in population-level earnings equivalent to 0.8% of all earnings in high-income countries and 0.3% of all earnings in low- and middle-income countries. We are aware of no other comparable studies of the societal costs of mental disorders with which these estimates can be compared with other than US studies that are broadly consistent with the results reported here for the US WMH sample.^{30,31} An excellent benchmark for putting these values into perspective is the recent US government stimulus package in the American Recovery and Reinvestment Act (ARRA; www.recovery.gov), an unprecedented series of US government investments in education, energy, healthcare and national infrastructure implemented in an effort to stimulate the flagging US economy. The 0.8% decrement in societal-level earnings associated with serious mental illness in high-income countries is roughly equivalent to the total planned ARRA investment in national infrastructure, whereas the 0.3% decrement in societal-level earnings associated with serious mental illness in low- and middle-income countries is roughly equivalent to the total planned ARRA investment in all of healthcare. These comparisons make it clear that mental disorders are associated with massive losses of productive human capital not only at the individual level

(32–33% of median national earnings, 11–19% of mean national earnings) but also at the societal level in the WMH countries.

Implications

This finding of a strong association between mental disorders and low earnings adds to a growing body of evidence that the impaired functioning associated with mental disorders carries an enormous societal burden.^{12,14} Comparative cost-of-illness studies suggest that the magnitude of this burden at the individual level is higher than that of many other classes of illness. For example, another recent WMH report showed that mental disorders are associated with higher levels of individual-level disability than any of the wide variety of commonly occurring physical disorders examined in the WMH surveys, including arthritis, asthma, cancer, diabetes and heart disease.³² This pattern held in both high-income and low- and middle-income countries. Health policy makers need to be made aware of these comparative illness burden data along with information about comparative treatment effectiveness to help guide decisions about resource allocation in disorder-specific screening and treatment programmes.

Controlled intervention trials have shown that employment rates and earnings among the employed can both be increased among people with severe-persistent mental illness, the vast majority of whom have a history of psychosis, using such methods as prevocational training and supported employment.^{33,34} It is important to note, though, that only a minority of people with serious mental illness have severe-persistent mental illness.³⁵ Little is known about the effects of treatment on occupational outcomes among the much larger proportion of people with serious mental illness who do not have severe-persistent mental illness, the majority of whom suffer from chronic anxiety or behaviour disorders or recurrent depression. The fact that low earnings among people who have earnings accounts for a larger component of the total effect of serious mental illness on earning than having no earnings raises the question whether out-patient interventions

Table 4 The simulated association of serious mental illness with reduced earnings at the individual level and societal level in each World Mental Health country

	Serious mental illness		The associations expressed as a proportion of mean national earnings ^a				The associations expressed in local currency ^b			
	Prevalence		Individual-level ^c		Societal-level ^d		Individual-level		Societal-level (in Billions)	
	%	(s.e.)	Estimate	(s.e.)	Estimate	(s.e.)	Estimate	(s.e.)	Estimate	(s.e.)
High-income										
Belgium	4.9	(1.0)	27.3	(17.3)	1.3	(0.8)	211 807	(135 679)	65.8	(42.2)
France	3.8	(0.5)	38.9*	(18.7)	1.5*	(0.7)	42 660*	(20 473)	56.7*	(27.0)
Germany	2.7	(0.5)	36.8	(36.8)	1.0	(1.0)	11 908	(11 886)	16.8	(16.7)
Israel	3.7	(0.3)	23.8*	(10.0)	0.9*	(0.4)	1516*	(622)	0.2*	(0.0)
Italy	1.3	(0.2)	1.5	(7.9)	0.0	(0.1)	409 686	(2 107 357)	194.1	(998.7)
Japan	1.2	(0.4)	19.1	(30.0)	0.2	(0.4)	611 752	(959 881)	5.4	(8.7)
The Netherlands	4.4	(0.7)	16.2*	(6.2)	0.7*	(0.3)	7404*	(2901)	3.5*	(1.4)
New Zealand	4.9	(0.3)	25.3	(15.5)	1.3	(0.8)	10 031	(6275)	1.2	(1.3)
Spain	1.9	(0.3)	18.0	(15.2)	0.3	(0.3)	353 356	(294 691)	177.2	(147.6)
United States	6.5	(0.4)	25.5*	(6.5)	1.7*	(0.4)	8519*	(2100)	99.5*	(24.6)
Low- and middle-income										
Brazil	9.3	(0.7)	1.5	(2.5)	0.1	(0.2)	17	(30)	0.0	(0.0)
Bulgaria	1.5	(0.3)	26.6	(18.7)	0.4	(0.3)	638	(441)	0.0	(0.0)
Colombia	4.1	(0.4)	20.1	(13.0)	0.8	(0.5)	1 051 625	(675 762)	1042.9	(670.3)
India (Pondicherry)	1.0	(0.2)	39.4	(125.9)	0.4	(1.3)	17 478	(55 715)	0.1*	(0.0)
Lebanon	4.1	(0.7)	2.1	(1.1)	0.1*	(0.0)	141*	(70)	0.0	(0.0)
Mexico	2.3	(0.2)	5.9	(4.6)	0.1	(0.1)	2022	(1622)	2.4	(1.5)
Nigeria	0.5	(0.2)	34.5	(56.5)	0.2	(0.3)	23 599	(38 745)	7.5	(12.4)
People's Republic of China (Beijing, Shanghai)	0.6	(0.2)	28.9	(57.4)	0.2	(0.3)	413	(826)	0.0	(0.0)
Shenzhen	0.9	(0.3)	3.6	(10.9)	0.0	(0.1)	1141	(3413)	0.0	(0.0)
South Africa	3.3	(0.3)	18.8	(22.3)	0.6	(0.7)	4798	(5585)	3.9	(4.8)
Pooled										
High-income	4.3	(0.1)	19.4*	(1.8)	0.8*	(0.1)				
Low- and middle-income	3.1	(0.1)	10.9*	(4.6)	0.3*	(0.1)				

a. Results are expressed here in terms of mean earnings, whereas they were expressed in terms of median earnings in Table 3. The median was used in estimating the models in Table 3 because this transformation was considered the one that makes most sense as the basis for constraining model coefficients to be constant across countries. The mean is used here, in comparison, because it is the natural metric for interpreting the substantive meaning of results. To clarify the interpretation: if 4.3% of respondents in high-income countries have serious mental illness and serious mental illness is associated with a 19.4% reduction in earnings, then this level of loss in this segment of the population represents $0.194 \times 0.043 = 0.8\%$ of all national earnings.

b. The local currencies are francs in Belgium, francs in France, marks in Germany, shekels in Israel, lira in Italy, yen in Japan, guilders in The Netherlands, dollars in New Zealand, pesetas in Spain, dollars in the USA, reais in Brazil, lev in Bulgaria, pesos in Colombia, rupees in India, pounds in Lebanon, pesos in Mexico, naira in Nigeria, yuan in People's Republic of China, and rand in South Africa.

c. Estimates do not differ significantly across either high-income countries ($\chi^2(9) = 8.1, P = 0.52$) or low- and middle-income countries ($\chi^2(9) = 5.5, P = 0.79$) based on design-based Wald χ^2 -tests.

d. Estimates differ significantly across high-income countries ($\chi^2(9) = 30.4, P < 0.001$) but not low- and middle-income countries ($\chi^2(9) = 4.7, P = 0.86$) based on design-based Wald χ^2 -tests.

*Significant at the 0.05 level, two-sided test.

for employed people with a serious mental illness, but one that is a non-severe-persistent mental illness, might be a useful remedy. A handful of controlled studies have documented that such interventions can reduce job loss and sickness absence,^{36,37} but we are aware of no controlled intervention studies that have documented an effect on earnings among the employed. Long-term follow-up would likely be required to document such an effect. A useful preliminary step might be to examine naturalistic longitudinal data to increase our understanding of the occupational career dynamics associated with serious mental illness that is non-severe-persistent mental illness in nature and the extent to which the high unemployment rate of people with serious mental illness is as a result of a high long-term unemployment rate versus a high short-term circulating unemployment rate. Intervention implications differ depending on the mix of these two kinds of unemployment, which cannot be distinguished with the data examined here.

Limitations

This study has a number of limitations in measurement, including that mental disorders were assessed with fully structured lay interviews rather than clinical interviews, that earnings were

assessed with self-report rather than administrative records, that missing income reports were based on mean imputations, and that results were pooled across samples that varied in inclusion criteria and response rates. Bias could be introduced by any of these measurement characteristics. A limitation of a more conceptual sort is that the productive labour of women in domestic activities was not assigned a monetary value even though it clearly has value. In a related way, the productive labour of individuals who receive compensation for their labour in the form of goods or services (e.g. food and housing) rather than money, such as subsistence farmers, is underestimated in our analysis because we did not measure labour directly but rather inferred the existence of labour from earning. This limitation could be of special importance in low- and middle-income countries, as a larger proportion of workers are in the informal sector than in high-income countries.³⁸ This limitation might explain the fact that estimates of gender differences are less pronounced in low- and middle-income than high-income countries.

Limitations also existed in the analysis approach, most notably that a dynamic association was estimated with cross-sectional data. The most significant implication of this fact was that we were unable to adjust for the effect of low earnings on risk of mental disorder. There is good reason to believe that such a reciprocal

effect exists.³⁹ Because of this limitation, although we can state that serious mental illness is associated with low earnings we cannot say that this association is the result of serious mental illness causing low earnings. Virtually all cost-of-illness studies⁹ have this same limitation. There is no definitive way to correct estimates for this limitation with non-experimental data. Controlling for mediating variables, such as education and marital status, which might themselves be reciprocally related to mental disorders, is not a corrective, as this can lead to overcorrection. Longitudinal analysis can sometimes help. For example, a 5-year longitudinal follow-up of 5000 initially employed respondents aged 18–30 in the Cardia study in four US cities found that high baseline depression symptom scores significantly predicted subsequent unemployment and decreases in income even after controlling for baseline education, marital status and history of prior unemployment.⁴⁰ Even here, though, high baseline depression symptom scores could have been influenced by knowledge of job insecurity that turned out to predict subsequent job loss.

Sophisticated statistical models can sometimes be used to reduce the range of uncertainty about reciprocal influences if information is available on third variables that influence one but not the other variable in a reciprocal pair⁴¹ or if other assumptions can reasonably be made to justify the assumption of implicit conditional randomisation,⁴² but such models are highly sensitive to misspecification. As a result, experimental interventions are ultimately the only reliable way to resolve the uncertainty about the causal effects of mental disorders on earnings. Controlled studies of these sorts, when combined with information about the prevalence and course of illness from epidemiological studies, provide the greatest hope of obtaining more definitive data about the effects of serious mental illness on earnings and other aspects of productive role functioning.

Daphna Levinson, PhD, Ministry of Health, Mental Health Services, Jerusalem, Israel; **Matthew D. Lakoma**, MPH, **Maria Petukhova**, PhD, Harvard Medical School, Department of Health Care Policy, Boston, USA; **Michael Schoenbaum**, PhD, National Institute of Mental Health, Bethesda, USA; **Alan M. Zaslavsky**, PhD, Harvard Medical School, Department of Health Care Policy, Boston, USA; **Matthias Angermeyer**, MD, PhD, Center for Public Mental Health, Goettingen am Wagram, Austria; **Guilherme Borges**, ScD, Instituto Nacional de Psiquiatria Ramon de la Fuente, Tlalpan, Mexico; **Ronny Bruhaerts**, PhD, Katholieke Universiteit Leuven, Leuven, Belgium; **Giovanni de Girolamo**, MD, IRCCS Fatebenefratelli, Brescia, Lombardy, Italy; **Ron de Graaf**, PhD, MSc, Netherlands Institute of Mental Health and Addiction, Utrecht, The Netherlands; **Oye Gureje**, MD, PhD, FRCPsych, University of Ibadan, Department of Psychiatry, Ibadan Oyo, Nigeria; **Josep Maria Haro**, MD, MPH, PhD, Parc Sanitari Sant Joan de Déu, CIBERSAM, Barcelona, Spain; **Chiyi Hu**, MD, PhD, Shenzhen Institute of Mental Health, Guangdong; China; **Aimee N. Karam**, PhD, Department of Psychiatry and Clinical Psychology, Saint George Hospital University Medical Center, Department of Psychiatry and Clinical Psychology, Balamand University Medical School and the Institute for Development, Research, Advocacy and Applied Care (IDRAAC), Beirut, Lebanon; **Norito Kawakami**, MD, Graduate School of Medicine, University of Tokyo, Japan; **Sing Lee**, FRCPsych, The Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong, China; **Jean-Pierre Lepine**, MD, HDR, INSERM U 705, University Paris Diderot, Hôpital Lariboisière Fernand Widal, Paris France; **Mark Oakley Browne**, PhD, FRANZCP, Discipline of Psychiatry, School of Medicine, University of Tasmania, Tasmania, Australia; **Michail Okoliyski**, PhD, Department Global Mental Health, National Centre of Public Health Protection, Sofia, Bulgaria; **José Posada-Villa**, MD, Asesor Atención Psicosocial y Salud Mental, OIM-COLOMBIA, Bogota, Colombia; **Rajesh Sagar**, MD, All India Institute of Medical Sciences (AIIMS), New Delhi, India; **Maria Carmen Viana**, MD, PhD, Section of Psychiatric Epidemiology, Institute of Psychiatry, School of Medicine, University of São Paulo, São Paulo, Brazil; **David R. Williams**, MPH, PhD, Harvard School of Public Health, Department of Society, Human Development and Health, Boston, USA; **Ronald C. Kessler**, PhD, Harvard Medical School, Department of Health Care Policy, Boston, USA

Correspondence: Ronald C. Kessler, PhD, Department of Health Care Policy, Harvard Medical School, 180 Longwood Avenue, Boston, MA 02115, USA. Email: kessler@hcp.med.harvard.edu

First received 1 Oct 2009, final revision 18 Mar 2010, accepted 27 Apr 2010

Funding

This paper was prepared under the auspices of the World Health Organization World Mental Health (WMH) Survey Initiative. These activities were supported by the United States

National Institute of Mental Health (NIMH; R01MH070884), the Mental Health Burden Study: Contract number HHSN271200700030C, the John D. and Catherine T. MacArthur Foundation, the Pfizer Foundation, the US Public Health Service (R13-MH066849, R01-MH069864, and R01 DA016558), the Fogarty International Center (FIRCA R03-TW006481), the Pan American Health Organization (PAHO), the Eli Lilly & Company Foundation, Ortho-McNeil Pharmaceutical Inc, GlaxoSmithKline, Bristol-Myers Squibb, and Shire. The São Paulo Megacity Mental Health Survey is supported by the State of São Paulo Research Foundation (FAPESP) Thematic Project Grant 03/00204-3. The Epidemiological survey in Bulgaria (EPIBUL) as part of the WMH is supported by the Ministry of Health of Bulgaria in the frame of the National Program for Mental Health 2001–2006. The Chinese WMH Survey Initiative is supported by the Pfizer Foundation. The Shenzhen Mental Health Survey is supported by the Shenzhen Bureau of Health and the Shenzhen Bureau of Science, Technology, and Information. The Colombian National Study of Mental Health (NSMH) is supported by the Ministry of Social Protection. The ESEMeD project is funded by the European Commission (Contracts QLG5-1999-01042; SANCO 2004123), the Piedmont Region (Italy), Fondo de Investigación Sanitaria, Instituto de Salud Carlos III, Spain (FIS 00/0028), Ministerio de Ciencia y Tecnología, Spain (SAF 2000-158-CE), Departament de Salut, Generalitat de Catalunya, Spain, Instituto de Salud Carlos III (CIBER CB06/02/0046, RETICS RD06/0011 REM-TAP), and other local agencies and by an unrestricted educational grant from GlaxoSmithKline. The WMH was funded by WHO (India) and helped by Dr R Chandrasekaran, JIPMER. The Israel National Health Survey is funded by the Ministry of Health with support from the Israel National Institute for Health Policy and Health Services Research and the National Insurance Institute of Israel. The World Mental Health Japan (WMHJ) Survey is supported by the grant for Research on Psychiatric and Neurological Diseases and Mental Health (H13-SHOGAI-023, H14-TOKUBETSU-026, H16-KOKORO-013) from the Japan Ministry of Health, Labour and Welfare. The Lebanese National Mental Health Survey (LEBANON) is supported by the Lebanese Ministry of Public Health, the WHO (Lebanon), Fogarty International, anonymous private donations to IDRAAC, Lebanon, and unrestricted grants from Janssen Cilag, Eli Lilly, GlaxoSmithKline, Roche, and Novartis. The Mexican National Comorbidity Survey (MNCS) is supported by The National Institute of Psychiatry Ramon de la Fuente (INPRFMDIES 4280) and by the National Council on Science and Technology (CONACyT-G30544-H), with supplemental support from PAHO. Te Rau Hinengaro: The New Zealand Mental Health Survey (NZMHS) is supported by the New Zealand Ministry of Health, Alcohol Advisory Council, and the Health Research Council. The Nigerian Survey of Mental Health and Wellbeing (NSMHW) is supported by the WHO (Geneva), the WHO (Nigeria), and the Federal Ministry of Health, Abuja, Nigeria. The South Africa Stress and Health Study (SASH) is supported by the US NIMH (R01-MH059575) and National Institute of Drug Abuse (NIDA) with supplemental funding from the South African Department of Health and the University of Michigan. The US National Comorbidity Survey Replication (NCS-R) is supported by the NIMH (U01-MH60220) with supplemental support from the NIDA, the Substance Abuse and Mental Health Services Administration (SAMHSA), the Robert Wood Johnson Foundation (Grant 044708) and the John W. Alden Trust.

Acknowledgements

We thank the World Mental Health (WMH) Survey Initiative staff for assistance with instrumentation, fieldwork, and data analysis. A complete list of WMH publications can be found at <http://www.hcp.med.harvard.edu/wmh/>.

References

- Murray CJL, Lopez AD. *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries and Risk Factors in 1990 and Projected to 2020*. Harvard University Press, 1996.
- Gabriel P, Liimatainen MR. *Mental Health in the Workplace*. International Labour Office, 2000.
- Zhang X, Zhao X, Harris A. Chronic diseases and labour force participation in Australia. *J Health Econ* 2009; **28**: 91–108.
- Chatterji P, Alegria M, Lu M, Takeuchi D. Psychiatric disorders and labor market outcomes: evidence from the National Latino and Asian American Study. *Health Econ* 2007; **16**: 1069–90.
- Kessler RC, Heeringa S, Lakoma MD, Petukhova M, Rupp AE, Schoenbaum M, et al. Individual and societal effects of mental disorders on earnings in the United States: results from the national comorbidity survey replication. *Am J Psychiatry* 2008; **165**: 703–11.
- Kessler RC, Frank RG. The impact of psychiatric disorders on work loss days. *Psychol Med* 1997; **27**: 861–73.
- Kessler RC, Barber C, Birnbaum HG, Frank RG, Greenberg PE, Rose RM, et al. Depression in the workplace: effects on short-term disability. *Health Aff (Millwood)* 1999; **18**: 163–71.
- Berndt ER, Finkelstein SN, Greenberg PE, Howland RH, Keith A, Rush AJ, et al. Workplace performance effects from chronic depression and its treatment. *J Health Econ* 1998; **17**: 511–35.
- Tarricone R. Cost-of-illness analysis. What room in health economics? *Health Policy* 2006; **77**: 51–63.
- Kessler RC, Aguilar-Gaxiola S, Alonso J, Angermeyer MC, Anthony JC, Brugha TS, et al. Prevalence and severity of mental disorders in the world mental health survey initiative. In *The WHO World Mental Health Surveys: Global Perspectives on the Epidemiology of Mental Disorders* (eds RC Kessler, TB Üstün): 534–40. Cambridge University Press, 2008.
- Shiels C, Gabbay MB, Ford FM. Patient factors associated with duration of certified sickness absence and transition to long-term incapacity. *Br J Gen Pract* 2004; **54**: 86–91.

- 12 World Bank. *Data & Statistics, Country Groups by Income*. World Bank, 2009 (<http://data.worldbank.org/about/country-classifications/country-and-lending-groups>).
- 13 Heeringa SG, Wells EJ, Hubbard F, Mneimneh ZN, Chiu WT, Sampson NA, et al. Sample designs and sampling procedures. In *The WHO World Mental Health Surveys: Global Perspectives on the Epidemiology of Mental Disorders* (eds RC Kessler, TB Üstün): 14–32. Cambridge University Press, 2008.
- 14 Pennell B-E, Mneimneh Z, Bowers A, Chardoul S, Wells JE, Viana MC, et al. Implementation of the World Mental Health Surveys. In *The WHO World Mental Health Surveys: Global Perspectives on the Epidemiology of Mental Disorders* (eds RC Kessler, TB Üstün): 33–57. Cambridge University Press, 2008.
- 15 Kessler RC, Üstün TB. The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *Int J Methods Psychiatr Res* 2004; **13**: 93–121.
- 16 American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (4th edn) (DSM-IV)*. APA, 1994.
- 17 World Health Organization. *The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines*. WHO, 1992.
- 18 First MB, Spitzer RL, Gibbon M, Williams JBW. *Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP)*. Biometrics Research, New York State Psychiatric Institute, 2002.
- 19 Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, Kovess V, Lepine JP, et al. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA* 2004; **291**: 2581–90.
- 20 Leon AC, Olfson M, Portera L, Farber L, Sheehan DV. Assessing psychiatric impairment in primary care with the Sheehan Disability Scale. *Int J Psychiatry Med* 1997; **27**: 93–105.
- 21 Rice DP, Miller LS. Health economics and cost implications of anxiety and other mental disorders in the United States. *Br J Psychiatry* 1998; **173** (suppl 34): 4–9.
- 22 Duan N, Manning W, Morris C, Newhouse J. Choosing between the sample-selection model and the multi-part model. *J Bus Econ Stat* 1984; **2**: 283–9.
- 23 Manning WG. The logged dependent variable, heteroscedasticity, and the retransformation problem. *J Health Econ* 1998; **17**: 283–95.
- 24 Manning WG, Mullahy J. Estimating log models: to transform or not to transform? *J Health Econ* 2001; **20**: 461–94.
- 25 McCullagh P, Nelder J. *Generalized Linear Models*. Chapman and Hall, 1989.
- 26 Buntin MB, Zaslavsky AM. Too much ado about two-part models and transformation? Comparing methods of modeling Medicare expenditures. *J Health Econ* 2004; **23**: 525–42.
- 27 Schempf A, Becker S. On the application of decomposition methods. *Am J Public Health* 2006; **96**: 1899.
- 28 Wolter KM. *Introduction to Variance Estimation*. Springer-Verlag, 1985.
- 29 Engle RF. Wald, likelihood ratio, and Lagrange multiplier tests in econometrics. In *Handbook of Econometrics, Volume I* (eds Z Griliches, MD Intriligator): 796–801. Elsevier, 1983.
- 30 Harwood H, Ameen A, Denmead G, Englert E, Fountain D, Livermore G. *The Economic Cost of Mental Illness, 1992*. National Institute of Mental Health, 2000.
- 31 Rice DP, Kelman S, Miller LS, Dunmeyer S. *The Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985*. US Department of Health and Human Services, 1990.
- 32 Ormel J, Petukhova M, Chatterji S, Aguilar-Gaxiola S, Alonso J, Angermeyer MC, et al. Disability and treatment of specific mental and physical disorders across the world. *Br J Psychiatry* 2008; **192**: 368–75.
- 33 Crowther RE, Marshall M, Bond GR, Huxley P. Helping people with severe mental illness to obtain work: systematic review. *BMJ* 2001; **322**: 204–8.
- 34 Latimer E. Economic considerations associated with assertive community treatment and supported employment for people with severe mental illness. *J Psychiatry Neurosci* 2005; **30**: 355–9.
- 35 Kessler RC, Berglund PA, Zhao S, Leaf PJ, Kouzis AC, Bruce ML, et al. The 12-month prevalence and correlates of Serious Mental Illness (SMI). In *Mental Health, United States, 1996* (eds RW Manderscheid, MA Sonnenschein): 59–70. US Government Printing Office, 1996.
- 36 Rost K, Smith JL, Dickinson M. The effect of improving primary care depression management on employee absenteeism and productivity. A randomized trial. *Med Care* 2004; **42**: 1202–10.
- 37 Wang PS, Simon GE, Avorn J, Azocar F, Ludman EJ, McCulloch J, et al. Telephone screening, outreach, and care management for depressed workers and impact on clinical and work productivity outcomes: a randomized controlled trial. *JAMA* 2007; **298**: 1401–11.
- 38 Standing G. Economic insecurity and global casualisation: threat or promise? *Soc Indic Res* 2008; **88**: 15–30.
- 39 Charles KK, Decicca P. Local labor market fluctuations and health: is there a connection and for whom? *J Health Econ* 2008; **27**: 1532–50.
- 40 Whooley MA, Kiefe CI, Chesney MA, Markovitz JH, Matthews K, Hulley SB. Depressive symptoms, unemployment, and loss of income. The CARDIA Study. *Arch Intern Med* 2002; **162**: 2614–20.
- 41 Angrist JD, Imbens GW, Rubin DB. Identification of causal effects using instrumental variables. *J Am Stat Assoc* 1996; **91**: 444–55.
- 42 Rosenbaum PR. *Observational Studies*. Springer, 2002.



リストカッターの自殺

松本 俊彦*

抄録：2000年にカリスマ的リストカッターである「南条あや」の遺稿集『卒業式まで死にません』が刊行されて以降、精神科臨床の現場でリストカットを繰り返す自傷患者と遭遇することが急激に増えた。このような自傷患者のなかには、処方薬の過量服薬を繰り返す者も少なくなく、救急医療の現場では過量服薬患者が問題となっている。リストカットなどの自傷行為は、その行為だけを見れば自殺企図と峻別されるが、長期的には重要な自殺のリスク要因であり、援助の対象とすべき問題である。しかし、わが国の精神科医療者のなかでは、リストカットや過量服薬を繰り返す患者に対する否定的な感情を持ち、近年の自殺対策のなかでかかりつけ医から精神科医への紹介促進の動きとは裏腹に、いままって援助に忌避的な者も少なくない。本稿では、リストカッターにおける自殺のリスク要因について論じるとともに、彼らをめぐる今日の精神科医療の問題点を指摘した。

精神科治療学 25(2) : 237-245, 2010

Key words : *self-injury, wrist-cutting, suicide, risk factor*

I. リストカッター「南条あや」の死

2000年頃から、精神科外来ではリストカットを繰り返す女性患者が急激に増加した。筆者は、そうした患者たちから何度となく、「先生は、南条あやの『卒業式まで死にません』¹⁵⁾を読みましたか？」と質問されたものである。当時、自傷患者のあいだで南条あやはカリスマ的存在となっていて、数多くの追従者・模倣者を生み出していた。

南条あや（本名：鈴木純）は、両親の離婚や学校での苛酷ないじめといった状況のなかで、中学1年頃よりリストカットを繰り返すようになった。もっとも、彼女の問題はリストカットだけではなかったように思われる。遺稿集¹⁵⁾を読むと、彼女は時々、ヨーグルトやゼリーしか口にしないという極端なダイエットも繰り返しており、摂食障害への罹患も疑われる。

ともあれ、数年間に及ぶ自傷行為の果てに、彼女は高校3年時には精神科での入院治療も受けた。そのようななかで自らの精神科医療利用体験を綴った日記がネット上に公開されると、彼女はたちまち「メンヘル系ライター」として注目を集めるようになった。『卒業式まで死にません』は、それらの日記をまとめた遺稿集にあたる。

彼女は、1999年3月30日—高校の卒業式の20日後—に死亡した。その日の午後、彼女は一人でカラオケボックスに入店し、大量の向精神薬を服用

Suicide of self-injurers.

*国立精神・神経センター精神保健研究所自殺予防総合対策センター

〒187-8553 東京都小平市小川東町4-1-1)

Toshihiko Matsumoto, M.D., Ph.D.: Center for Suicide Prevention, National Institute of Mental Health, National Center of Neurology and Psychiatry, 4-1-1, Ogawahigashi-cho, Kodaira-shi, Tokyo, 187-8553 Japan.

して昏睡状態に陥り、そのまま帰らぬ人となったという。享年18歳であった。ただし、彼女が服用した向精神薬の量は致死量に満たず、かねてより頻回のリストカットや献血（これも「瀉血」という一種の自傷か）による慢性貧血の状態にあり、また、死後の解剖において心臓弁膜に異常が見出されたことから、死因は「推定自殺」と曖昧に濁されている。

南条あやという存在は、彼女の信奉者だけでなく、精神科医療関係者にも無視できない影響を与えたように思う。彼女の日記には、処方薬の飲み心地をソムリエのように批評したり、気軽に過量服薬したりするありさまが描かれているが、初めてそれを読んだとき、筆者は、現代精神科医療の暗部を拡大鏡で見せつけられた気がして慄然としたのを覚えている。当時すでにわが国では、精神科クリニックの急増に伴って過量服薬によって救急搬送される患者の増加が問題となり始めていた。「うつ病はこころの風邪、早めに精神科へ」などといった口当たりのよい啓発の副作用かもしれない。その結果、彼女の死と前後して、巷には「リストカット患者はお断り」という理由から患者を断る精神科クリニックが増え始めた。無理もない話である。処方薬を乱用し、インターネット上でリストカットした血まみれの腕の写真や主治医の発言を公開する患者など、確かに煩わしいことこの上ない。それでいて、まともに治療をしようと思えば長い診察時間が必要となり、現行の診療報酬制度下ではあまりにも効率が悪すぎる。

とはいえ、現実に南条あやが死亡している以上、リストカッターたちが死なないという保証などどこにもない。いいかえれば、「リストカットじゃ死なない」といえたとしても、「リストカットする奴は死なない」とはいえない。その意味では、自殺予防の観点では、「リストカッターお断り」として援助の埒外に弾き出して済まされる問題ではないのである。

本稿では、こうした「リストカッター」たちの自殺について考えてみたい。

II. なぜ彼らはリストカットを繰り返すのか？

1. 自傷と自殺の違い

まずはここから始めよう。自殺とは、致死的な目的から、致死性の予測をもって、現実に致死性の高い損傷を自らの身体に加えることを指すが、一方、自傷とは、自殺以外の目的から、非致死性の予測をもって、故意に非致死的な損傷を自らの身体に加える行為とされている²¹⁾。ここでいう「自殺以外の目的」とは、たとえば、周囲に対する何らかの意思伝達の意図であったり、解離症状を軽減するためであったりするが、なかでも最も多い自傷の理由が、怒りや緊張などの不快感情への対処である²²⁾。つまり、自傷とは、誰の助けも借りずに苦痛を緩和する孤独な対処方法であり、意図の点で自殺とは峻別されるべき行動である。

WalshとRosen²³⁾は、Shneidman²⁴⁾の自殺に関するメタ心理学的知見を踏まえて、自殺と自傷の差異を明らかにしている(表1)。Shneidmanによれば、自殺とは、耐えがたく、逃れられない、果てしなく続く精神的苦痛のなかで、唯一自分に残された「脱出口」であるという。すなわち、自殺を考える者は、もはや自力ではどうにも状況を変えることができないという絶望感と無力感のなかで、「楽になるには、一切の意識活動を終焉させるしかない」と確信する心理的視野狭窄の状態に陥り、自らを傷つけるわけである。

一方、自傷とは、苦痛を一時的に緩和する試みである。すなわち、自傷者の苦痛は間歇的・断続的な性質のものであり、そのような不快な意識状態を短期間だけ変化させ、混乱した意識状態を再統合するために自らを傷つける。もちろん、本来であれば、間歇的な苦痛の原因(たとえば、虐待やいじめ)を取り除くことこそが根本的かつ建設的な解決策であるのはいうまでもないが、虐待やいじめの加害者が到底かなわないほど強大な相手であったり、加害者に制止を要請してかえって深刻な事態に陥った経験を持つ者もいよう。そのような場合、次善の策としてとられるのが、苦痛を体験する自らの意識状態を変容させることで困難な状況に適応する、という方法である。

表1 メタ心理学的視点に基づく自傷と自殺の違い
(文献21より引用)

特徴	自殺	自傷
苦痛	耐えられない、逃れられない、果てしなく続く痛み	間歇的・断続的な苦痛
目的	唯一の最終的な解決策	一時的な解決策
目標	意識の終焉	意識の変化
感情	絶望感 無力感	疎外感

その生理学的メカニズムには不明な点が多いが、自傷者の場合、自傷がもたらす「身体の痛み」には「心の痛み」を一時的に抑えるという不思議な鎮痛効果があることが知られている¹⁸⁾。事実、習慣性自傷者では、自傷直後には脳内モルヒネ様物質エンケファリンの血中濃度が上昇しているという報告¹⁹⁾があり、このことが、自傷の「心の痛み」に対する鎮痛効果と関係している可能性がある。したがって、自傷とは、「心の痛み」を一時的に鎮めるために、自傷という方法で自らに「身体の痛み」を与える方法なのである。あるいは、こういいかえてもよい。自傷とは、「死にたいくらいつらい状況」を「生き延びるために」行われる行動なのである、と。

自傷者の多くは、こうした、自傷がもたらす鎮痛効果を偶然に、あるいは、自殺企図の失敗や他の自傷者の模倣を通じて発見し、以後その行動をまるでお守りのように携えて生きることとなる。ある17歳の女性患者は、かつて筆者に次のように語った。

「父はいわゆる仕事人間でほとんど家におらず、母は新興宗教に熱中していた。だから、学校でのいじめのことも話せなかった。それで、小学校5年のときに『もう死のう』と思って初めてリストカットをした。もちろん、死にはしなかったけど、気持ちがすごく楽になった。誰も私を助けてくれないけど、『これ』さえあれば生きていけると思った」

2. 自傷アディクションという死への迂回路化

自傷がもたらす「心の痛み」に対する鎮痛効果は、きわめて速やかに発現する。苛酷な状況を根

本的・建設的な方法で変化させるよりも、圧倒的に簡単に迅速な困難の解決をはかることができるので、またたく間に手放せない行動となってしまう。

しかしその一方で、自傷には反復される過程で耐性を生じやすいという欠点もある。繰り返すほどに主観的な疼痛閾値は上昇し、当初と同じ切り方では「心の痛み」を鎮めるのに不足するようになり、また、鎮痛効果の持続時間が短くなってしまふのである。そのため、何回も自分を傷ついたり、より深く切ったりしなければ、かつてと同じ効果が得られなくなってしまうのである。ときには、手首や腕だけで足りなくなり、他の身体部位を切ったり、あるいは、切るだけではなく、頭を壁に打ちついたり、火のついたタバコを皮膚に押しつけたりする者もいる。

さらに困ったことに、自傷を繰り返すうちに以前よりもストレスに対して脆弱になってしまうという変化も見られる。以前だったら気にもとめなかったささいな出来事にも「身体の痛み」が必要となるわけである。このため、最終的には、いくら切っても「心の痛み」を埋め合わせるのに追いつかない状態—「切ってもつらいが、切らなきゃなおつらい」という状態—に陥ってしまうのである。これは自傷のアディクション化である。

Favazza²⁰⁾は、この自傷のアディクション状態のことを「反復性自傷症候群 Repetitive Self-mutilation syndrome」と呼んでいる。自傷によって自分をコントロールしているつもりが、いつしか自分が自傷にコントロールされてしまう事態である。Favazzaによれば、この段階に到達した自傷者は、もはや禁止や叱責によってはその行動をコントロールできない状態にあり、その行動自体を治療の対象とする必要があるという。反復性自傷に至った者の生き方は、次第に自暴自棄的ともいえる独特なすさみ方を呈する。たとえば、自虐的に自らを「リストカッター」などと呼ぶなど、否定的自己同一性を確立する。あるいは、自傷した際に出た血液で絵を描いたり、自傷創の写真や動画をインターネット上に掲載したりするなど、一見グロテスクとも思える行動をとることも少なくない。こうした行動は、援助者側の陰性感情を刺

激し、彼らの苦痛を過小視させてしまう。

一般に反復性自傷者は、「生き延びるために」自傷を繰り返しながら日々をすごすうちに、皮肉にも以前よりも自殺念慮を強めている傾向がある。実際、彼らはしばしば、「消えてしまいたい」「いなくなりたい」といった消極的な自殺念慮ととれる言葉を口にする。もっと直截に「死にたい」という言葉を漏らすことも稀ではない。そしてあるとき、ふだん自傷に用いているのとは別の方法で自殺企図に及ぶことがある。

要するに、苛酷な現在を生き延びるためのこのアディクション行動は、死への迂回路でもあるのである。現在の死を回避するのに役立つかもしれないが、未解決の問題はそのまま残り、緩徐に未来の死をたぐり寄せている可能性がある。

Ⅲ、自殺リスクの高いリストカッターの特徴

1. 自傷患者の3年間の追跡調査から

すでに述べたように、自傷と自殺とは峻別されるべきであるが、Owensら¹⁰⁾のメタ分析は、十代における1回以上の自傷経験は10年後における自殺既遂による死亡のリスクを数百倍に高めることを明らかにしている。このことは、自傷が自殺のリスク要因であることを意味している。もちろん、現実にはすべてのリストカッターが自殺企図に及んだり、自殺既遂に至ったりするわけではない。

筆者ら¹⁰⁾は、自傷患者の自殺リスクを明らかにするために、精神科通院中の女性自傷患者81名を3年間追跡したことがある。その結果、3年間追跡し得た67名のうち、50名(74.6%)が何らかの自己破壊的行動を行っており、15名(22.4%)が致死性の高い自己破壊的行動(医療機関で治療が行われなければ明らかに死亡していたと考えられる身体損傷を伴うもの)に及んでいたことが明らかにされた(表2)。

続いて、3年間以内に致死性の高い自己破壊的行動が見られた群と見られなかった群とのあいだで、追跡調査開始時点に収集した情報に関して比較を行った(表3)。情報として採用した変数は、年齢や生活状況、外傷体験、自傷行為の様態

(開始年齢や継続年数、頻度や嗜癖性の自覚など)、随伴する精神医学的問題(過量服薬の既往、生活機能、衝動性、摂食障害傾向、衝動性、アルコール乱用)といったものである。その結果、致死性の高い自己破壊的行動が見られた群では、強姦被害の体験、ならびに市販薬の過量服薬体験が有意に高率であり、また、アルコール依存のスクリーニング尺度である日本語版AUDIT(Alcohol Use Disorder Identification Test)¹¹⁾得点、および、神経性大食症のスクリーニング尺度である日本語版BITE(Bulimic Investigatory Test of Edinburgh)¹²⁾得点も有意に高かった。要するに、リストカッターの自殺リスクは、①強姦被害の経験、②市販薬を過量服薬した経験、③アルコール問題、④摂食障害的傾向という4つの要因に関連し、意外なことに、自傷頻度や身体損傷の程度といった自傷自体の重症度とは関連していなかったのである。

さらに筆者らは、交絡因子の影響を除去して、致死性の高い自己破壊的行動と特に密接に関連する要因を明らかにするために、上述した単変量比較で有意差の見られた項目を独立変数として多変量比較を行った。すると、致死性の高い自己破壊的行動と有意に関係する変数として、BITE得点(オッズ比、1.066; 95%信頼区間、1.002-1.141)だけが抽出された。これは、BITE得点が1点上昇するに伴って、致死的な自己破壊的行動をするリスクが1.066倍高まることを意味している。

2. 自己破壊的行動スペクトラム

自身が行った調査の結果、さらには内外の先行研究で明らかにされた知見をもとに、最近、筆者は図1のような自己破壊的行動スペクトラム¹³⁾を考えるようになった。縦軸に行為にあたっての致死的な意図の強さをとり、横軸に客観的な行為がもたらす身体損傷の致死性をとる。すると、一方の極に、明確な致死的な意図から、縊首や飛び降り、飛び込みなどといった致死性の高い方法による「自殺企図」を想定すると、もう一方の反対の極には、摂食障害やアルコール・薬物乱用が布置されることとなる。

摂食障害やアルコール・薬物乱用は、「死にた

表2 自己破壊的行動の手段・方法（文献10より引用）

自己破壊的行動の内容（重複回答あり）	3年間の経過が判明した対象者 N=67 何らかの自己破壊的行動あり 74.6%（50名）	
	致死性の高い行動	致死性の低い行動
		22.4%
自己切傷・刺傷・熱傷	7.5%	58.2%
過量服薬	19.4%	35.8%
服毒	0.0%	4.5%
縊首	1.5%	6.0%
高所からの飛び降り	7.5%	0.0%
車・電車などへの飛び込み	0.0%	0.0%
溺水	1.5%	0.0%
その他	0.0%	0.0%

い」あるいは「自分を傷つけたい」という意図からではなく、「痩せたい」「ハイになりたい」という意図から行われる。また、1回の拒食や過食・嘔吐、あるいは精神作用物質の摂取で健康が損なわれるわけではないが、かつてMenninger¹³⁾によって「慢性自殺」と名づけられたように、長期間繰り返されることで健康被害が顕在化する。さらに、すでに述べたように、自傷患者に摂食障害やアルコール・薬物乱用が併存すれば、致死性の高い自己破壊的行動のリスクが高まる。なお、HarrisとBarraclough⁶⁾のメタ分析によれば、患者の自殺死亡率が最も高い精神障害の診断は摂食障害である。また、海外にはアルコール・薬物乱用が自殺のリスク要因であることを示す研究が多数存在する¹⁴⁾。以上を踏まえれば、摂食障害やアルコール・薬物乱用は「無意識的な自傷」と名づけることには異論はあるまい。

「無意識的な自傷」の1つ上の段階には、「意識的な自傷」がある。これにはリストカットが含まれる。これはMenningerのいう「局所性自殺」である。つまり、「死にたいくらいつらい状況を生き延びるために」身体の一部を犠牲にする行為であり、致命的な意図はない。しかし、「自分を傷つけている」という意図は意識されている。なお、自傷者のなかにはアルコール・薬物乱用や摂食障害傾向を呈する者が少なくないことから、「意識的な自傷」と「無意識的な自傷」は近縁的

な関係があるといえる。

「意識的自傷」の1つ上の段階には、過量服薬などの「自殺の意図が曖昧な過量服薬」がある。PattisonとKahan¹⁷⁾は、非致死性の予測がつきにくく、身体損傷の状況を視覚的に確認できないという理由から、過量服薬を自傷概念から除外している。たしかに過量服薬した患者は、意識回復後に「とにかく眠りたかった」「嫌なことを忘れたかった」などと、一見、自殺とは異なる意図を述べる一方で、「ずっと目が覚めなければよかった」などと、死を願うかのような言葉をもらすことも珍しくない。その意味では、過量服薬は自傷と自殺の中間、あるいは双方にまたがる地点に位置づけられるべきである。

筆者らの調査⁹⁾では、過量服薬はリストカット歴の長い自傷者に多いということが明らかにされている。最初の過量服薬は、通常、反復性自傷の段階に到達して「鎮痛効果」が得られなくなった自傷者が、自殺行動として行うことが多いが、そこで自殺既遂に至らなかったものの、過量服薬を持つ、あたかもパソコンを強制終了させる瞬間のような「不快気分に対する強力なリセット効果」を発見し、苛酷な状況を「生き延びるために」これを繰り返すようになる場合がある。しかし筆者の臨床経験では、最終的に致命的な行動によって既遂に至った者のなかには、自殺既遂に至る前に何回も過量服薬を繰り返した果てに縊首や飛び降

表3 3年間の経過が判明群・非判明群との調査登録時変数の比較（文献10より引用）

		致死性の高い自己破壊的行動 (N=67)		p value	
		あり N=15	なし N=52		
調査登録時年齢(歳(SD))		27.4 (7.6)	25.8 (7.1)	0.476	
追跡調査開始時点の 情報	生活歴に関する変数	17歳以下の親からの身体的暴力	20.0%	32.7%	0.344
		17歳以下の肉親からの性的暴力	20.0%	19.2%	0.947
		17歳以下の他人からの性的暴力	33.3%	21.2%	0.330
		親のネグレクト	20.0%	15.4%	0.671
		親の言語的虐待	40.0%	42.3%	0.873
		親の配偶者虐待場面の目撃	3.0%	19.2%	0.600
		親の性交場面を目撃	33.3%	17.3%	0.179
		親の精神疾患の存在	6.7%	23.1%	0.157
		学校時代のいじめ被害	66.7%	67.3%	0.963
		その他のいじめ	40.0%	34.6%	0.702
		強姦の被害(18歳以降)	46.7%	15.4%	0.010*
		その他の性的被害(セクハラなど)	40.0%	38.5%	0.914
		配偶者からの身体的虐待	13.3%	17.3%	0.714
		配偶者からの性的暴力	0.0%	7.7%	0.268
		配偶者以外の家族成員からの暴力	6.7%	19.2%	0.247
		強盗や恐喝の被害	6.7%	9.6%	0.725
		近親者の自殺	33.3%	17.3%	0.179
		近親者の事故死・突然死	33.3%	32.7%	0.963
		交通事故の被害	53.3%	32.7%	0.145
		家庭の経済的破綻	13.3%	21.2%	0.500
自然災害などへの罹災	6.7%	3.8%	0.642		
戦争・地域紛争への罹災	0.0%	0.0%	—		
その他の心的外傷体験	33.3%	46.2%	0.377		
登録時の生活状況	単身生活	6.7%	8.7%	0.804	
リストカットの様態 に関する変数	最初にリストカットした年齢(歳(SD))	20.3 (8.7)	20.2 (7.2)	0.971	
	リストカット期間(年(SD))	7.2 (8.6)	5.5 (4.9)	0.363	
	登録時1ヵ月以内の自己切傷	53.3%	63.5%	0.478	
	10回以上の自己切傷経験	80.0%	73.1%	0.587	
	自己切傷創の縫合処置経験	40.0%	26.9%	0.330	
	心理的抵抗	73.3%	78.8%	0.652	
	抑制喪失	73.3%	84.6%	0.315	
	嗜癖性の自覚	86.7%	82.4%	0.694	
随伴する精神医学的 問題および生活機能 に関する変数	過去における処方された向精神薬の過量服薬	93.3%	75.0%	0.124	
	過去における市販薬の過量服薬	73.3%	38.5%	0.017*	
	GAF(点(SD))	41.5 (16.6)	47.5 (11.3)	0.110	
	AUDIT(点(SD))	8.6 (9.9)	3.9 (5.7)	0.023*	
	BITE(点(SD))	30.9 (10.2)	19.5 (11.2)	0.001*	
	BIS-11(点(SD))	76.7 (14.1)	71.7 (11.0)	0.154	
ADES(点(SD))	5.1 (2.0)	4.9 (2.4)	0.889		

*p<0.05

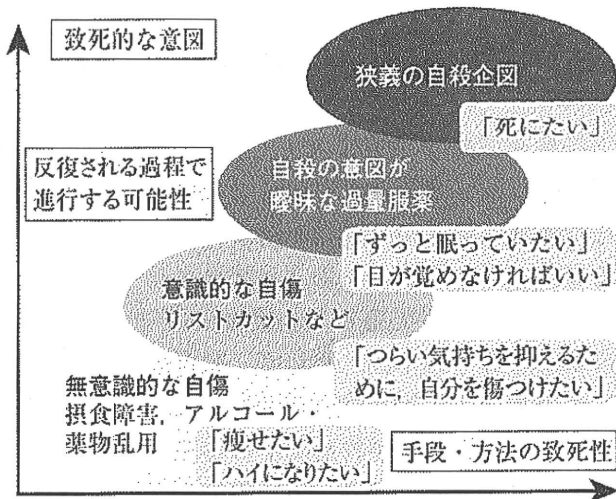


図1 自己破壊的行動スペクトラム (文献11より引用)

りといった致死的な行動をとった者もいる。そう考えれば、「自殺の意図が曖昧な過量服薬」を「自殺企図」に最も近接する場所に位置づけるのはきわめて妥当なことであるように思われる。

以上からわかるように、これらの自己破壊的行動の各段階は、反復によって進行しうる連続的な関係のなかで捉えることができる。もちろん、エスカレート速度には個人差があり、患者によっては各段階を直線的に進行するのではなく、停滞や逆行、あるいは複数の段階が混在している場合もありうる。さらに、自傷患者の追跡調査でも触れたように、強姦被害などの外傷体験はこのプロセスの促進要因となる可能性もあろう。

いずれにしても、自殺予防のためにはこの全段階の自己破壊的行動に対する介入が必要である。その意味では、2008年の自殺総合対策大綱の一部改正（「自殺対策加速化プラン」）¹³⁾は、自殺ハイリスク者対策として「思春期・青年期の自傷行為」や「アルコール・薬物依存」を追加した点で、高く評価されるべきものである。

IV. 自殺既遂となったリストカッター

前に紹介した筆者らの追跡調査は、所詮は重篤な自殺未遂を指標とした研究であるので、厳密には、得られたリスク要因を自殺既遂のものと同義には捉えられない。

実は、その調査では、追跡期間中に自殺既遂に至った対象者が1名だけ存在した。ここでは、その自殺既遂事例を紹介しておきたい。なお、症例提示にあたっては、個人が特定されないように、症例の本質を歪めない範囲で大幅な修正を行っている。

〔症例〕 調査登録時20歳女性、死亡時22歳（追跡開始1年10ヵ月時点）

DSM-IV-TR 診断：特定不能の解離性障害、神経性大食症・排出型、境界性パーソナリティ障害

生活歴：教育に厳格な両親によって養育され、幼少時から繰り返し体罰を受けていた。中学時代までは真面目な生徒であったが、高校進学後、両親に対する反発から夜遊びをするようになった。そのなかで、遊び仲間の男性数人からの強姦被害に遭遇し、しかも相手がわからないまま妊娠した。しかし、家族からは「ふしだらな女」と非難され、警察に被害届を出せないまま、中絶手術を受けた。手術後、高校を中退した。

調査登録までの病歴：中絶手術後（17歳時）より拒食、過食・嘔吐が始まった。また、18歳頃よりリストカットや過量服薬を頻回に繰り返すようになり、家族に対する暴力も問題化した。さらに、歓楽街で見知らぬ男性と性交渉を持ち、しかも、後でそうした性的逸脱行動を覚えていないという解離性健忘も見られるようになった。この頃、家族に精神科に連れて行かれ、強引に閉鎖病棟入院させられた。家族との関係が悪循環的に自己破壊的行動をエスカレートさせている印象があり、主治医の提案により、退院後、症例は生活保護を受給しながらアパート単身生活を開始した。これ以後、症例の自己破壊的行動は著しく減少し、まもなくボランティアで介護の仕事もするようになった。

調査登録時点の状況：症例のリストカット開始年齢は18歳であり、約2年間の数十回に及ぶリストカット歴があったが、調査登録時には3ヵ月近く止まっていた。過量服薬も多数回の経験があったが、登録時は半年ほどしていなかった。また、自記式評価尺度上、著明な神経性大食症傾向と解離傾向が認められた。

その後の経過：症例は、介護のボランティアを通じて恋人ができ、まもなく半同棲状態となった。やがて症例は就労を焦り、コンビニエンスストアでのアルバイトを始めたが、仕事の負担は大きく、解離性健忘が頻発するようになった。そんな矢先、バイト先の飲み会で泥酔した症例は、同僚男性と不本意な性交渉を持った。翌日より症例はそのことを深刻に自責する一方で、本来の恋人との性交渉が苦痛となった。にもかかわらず、恋人が半ば強引に交渉を求めると、症例は解離状態に陥ることが増えた。まもなくリストカットと過食・嘔吐が再発し、処方薬の過量摂取が繰り返された。

自殺既遂の状況：症例は、恋人との半同棲は苦痛であったが、といて両親との同居にも抵抗感を覚えた。そこで、主治医は自殺防止の観点から精神科病院への入院に踏み切った。しかし、症例は同じ病棟のある男性患者を不可解な理由で非常に恐れ、職員の間を突いて離院してしまい、そのまま退院となった。離院した病院への再入院は叶わず、仕方なく主治医は複数の精神科病院に入院の依頼をしたが、いずれの病院からも断られた。離院から1週間後のある早朝、症例は縊首によって死亡した。

本症例は幼少時から様々な外傷体験が蓄積するなかで、最終的に深刻な性被害体験を契機に、多方向性の自己破壊的行動が顕在化し、最終的に自殺既遂に至った。世帯分離による単身生活は、短期的には家族内の悪循環を解決するのに成功したが、長期的には危機的状況を回避するための選択肢を狭めた可能性は否めない。

ここに登場する主治医とは筆者自身である。いまでも耳の奥にこびりついて忘れられないのは、入院を断られる際に何度も聞かされた、「当院ではパーソナリティ障害の患者は受けない」という冷淡な声である。精神科医から冷遇されるリストカット者たちはつくづく不幸な患者だと思うが、彼らに熱心に関わる精神科医もまた同業者の冷淡な対応に曝されることがある。

V. リストカッターの自殺予防のために

これまで自殺対策においては、「自殺既遂者の90%以上が自殺直前には何らかの精神障害に罹患した状態にあるが、実際に精神科治療を受けている者はごくわずかである²⁾と認識されていた。しかし、筆者らが実施した心理学的剖検調査⁷⁾では自殺既遂者の46%が、そして、東京都が実施した自死遺族からの聞き取り調査³⁰⁾では自殺既遂者の52%がそれぞれ精神科治療中の自殺であった。さらに筆者らの調査では、精神科治療中の自殺既遂者は、縊首や飛び降りなどの致死的行動に及ぶ際、処方薬を過量に摂取し、おそらくは酩酊状態にあったと推測されることが明らかにされている⁷⁾。これでは、精神科薬物療法とは治療の名のもとに行われる自殺補助となってしまふ。

もちろん、反論は数多くあろうし、その大半は正当な主張であろう。ただ、それでも、「DSMによってうつ病概念が拡大し、『ニセモノのうつ病』の人にまで医療が提供されている」という意見にだけは与するつもりはない。こうした主張には、必ずリストカット者たちを「医療を混乱させるニセモノの病人」に貶める意図が隠されているものである。

現在、わが国で展開されている様々な自殺対策のなかで、いまだに手つかずの領域が1つだけ残されている。それは、精神科医療の質の向上、とりわけリストカットや過量服薬を繰り返す患者への対応能力の向上である。何も、「精神療法の技能向上に努めよ」という意味ではない。そうした患者を援助する際に見られがちな否定的態度をほんの少しでも変えること。それだけでも多少とも救える患者が増えるはずである。

文 献

- 1) Barraclough, B., Bunch, J., Nelson, B. et al.: A hundred cases of suicide: Clinical aspects. *Br. J. Psychiatry*, 125: 355-373, 1974.
- 2) Bertolote, J.M., Fleishmann, A., De Leo, D. et al.: Psychiatric diagnoses and suicide: Revising the evidence. *Crisis*, 25: 147-155, 2004.
- 3) Chynoweth, R., Tonge, J.I. and Armstrong,

- J.: Suicide in Brisbane: A retrospective psychosocial study. *Aust. N.Z. J. Psychiatry*, 14: 37-45, 1980.
- 4) Coid, J., Alolio, B. and Rees, L.H.: Raised plasma met-enkephalin in patients who habitually mutilate themselves. *Lancet*, 2: 545-546, 1983.
 - 5) Favazza, A.R.: *Bodies under Siege: Self-mutilation and Body Modification in Culture and Psychiatry*, 2nd ed. The Johns Hopkins University Press, Baltimore, 1996.
 - 6) Harris, E.C. and Barraclough, B.: Suicide as an outcome for mental disorders. A meta-analysis. *Br. J. Psychiatry*, 170: 205-228, 1997.
 - 7) 廣川聖子, 松本俊彦, 勝又陽太郎ほか: 死亡前に精神科治療を受けていた自殺既遂者の心理社会的特徴: 心理学的剖検による調査. *日本社会精神医学会雑誌*, 2010 (印刷中).
 - 8) 廣尚典: CAGE, AUDITによる問題飲酒の早期発見. *日本臨床*, 172: 589-593, 1997.
 - 9) 松本俊彦, 山口亜希子, 阿瀬川孝治ほか: 過量服薬を行う女性自傷患者の臨床的特徴: リスク予測に向けての自記式質問票による予備的調査. *精神医学*, 47: 735-743, 2005.
 - 10) 松本俊彦, 阿瀬川孝治, 伊丹昭ほか: 自己切傷患者における致命的な「故意に自分を傷つける行為」のリスク要因: 3年間の追跡調査. *精神経誌*, 110: 475-487, 2008.
 - 11) 松本俊彦: 自傷行為の理解と援助—「故意に自分の健康を害する」若者たち—. *日本評論社*, 東京, 2009.
 - 12) Menninger, K.A.: *Man against himself*. Harcourt Brace Jovanovich, New York, 1938.
 - 13) 内閣府: 自殺対策加速化プラン(<http://www8.cao.go.jp/jisatsutaisaku/taikou/pdf/plan.pdf>)
 - 14) 中井義勝, 濱垣誠司, 高木隆郎: 大食症質問表Bulimic Investigatory Test, Edinburgh (BITE)の有用性と神経性大食症の実態調査. *精神医学*, 40: 711-716, 1998.
 - 15) 南条あや: 卒業式まで死にません. *新潮社*, 東京, 2000.
 - 16) Owens, D., Horrocks, J. and House, A.: Fatal and non-fatal repetition of self-harm. Systematic review. *Br. J. Psychiatry*, 181: 193-199, 2002.
 - 17) Pattison, E.M. and Kahan, J.: The Deliberate Self-Harm Syndrome. *Am. J. Psychiatry*, 140: 867-872, 1983.
 - 18) Russ, M.J., Roth, S.D., Lerman, A. et al.: Pain perception in self-injurious patients with borderline personality disorder. *Biol. Psychiatry*, 32: 501-511, 1992.
 - 19) Shneidman, E.S.: *Suicide as Psychache: A clinical approach to self-destructive behavior*. Jason Aronson Inc., Lanham, 1993.
 - 20) 東京都福祉保健局編: 自殺実態調査報告書—自死遺族からの聞き取り調査—. *東京都福祉保健局*, p.41-44, 2009.
 - 21) Walsh, B.W. and Rosen, P.M.: *Self-mutilation—theory, research, & treatment—*. Guilford Press, New York, 1988.

〔第25回日本ストレス学会学術総会：教育講演〕

青年期の自殺とその予防—自傷行為に注目して—

松本俊彦¹⁾

抄録：近年，若者を中心にリストカットなどの自傷行為が問題化している。自傷行為とは，自殺以外の目的から，非致死的手段と非致死性の予測をもって，故意に自らの身体に損傷を加える行為と定義され，しばしば不快感情への対処として繰り返される。このような自傷行為は自殺とは峻別される行動であり，精神保健の専門家にとっては陰性感情を刺激される現象でもある。しかしその一方で，自傷行為を繰り返す者の自殺リスクは高く，長い時間をかけてさまざまな自己破壊的行動を発展させながら最終的に自殺既遂へと至る事例もある。

本稿では，自傷行為をいかに理解し，対応していくべきかについて概説するとともに，精神保健の専門家が若者の自傷行為と向き合うことが，青年期の自殺予防において重要な意義があることを指摘した。

Key words : 自傷行為，青年期，自殺予防

I. はじめに

リストカットを始めとする自傷行為は，今や学校保健における主要な課題である。筆者らの調査によれば，約3,000人の中高生のうち，男子の7.5%，女子の12.1%に，刃物で故意に自らの身体を切った経験が認められ¹⁾，中学・高校の養護教諭の98～99%が自傷をする生徒に対応した経験があることが明らかにされている²⁾。

筆者は，自殺予防という観点から考えるとき，十代の青年たちに広くみられる自傷行為に注目することは重要であると考えている。もちろん，自傷行為は自殺企図とは異なる行動である。しかし先行研究³⁾は，そのような行動を繰り返す個人の自殺リスクが極めて高いことを示している。言い換えれば，「リストカットなんかじゃ死なない」からといっ

て，「リストカットする奴は死なない」とは言えないのである。

本稿では，自傷行為をどのように理解し，具体的にどのように対応すべきなののかについて，筆者なりの考えを整理しておきたい。

II. 自傷行為に対応する前に理解すべきこと

1 自傷行為は自殺企図ではない

自傷行為は，多くの場合，怒り，恥辱感，孤立感，不安・緊張などの不快感情に対処するための方法である⁴⁾。すなわち，自傷者の多くは，その行為に際して自殺を意図していない。彼らは，自傷する理由としてしばしば，「心の痛みを身体の痛み置き換えて耐えている」「自傷は私の安定剤」と語る。なかには，「死ぬためではなく，生きるために必要」と主張する人もいる。これらは，自傷行為が失敗した自殺企図ではないことを意味している。

2 自傷行為は自殺関連行動である

しかしその一方で，自傷行為は自殺と密接

1) 独立行政法人国立精神・神経医療研究センター
精神保健研究所自殺予防総合対策センター