



Counting Suicides and Making Suicide Count as a Public Health Problem

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Relatively few countries credibly count their dead (Mathers, Fat, Inoue, Rao, & Lopez, 2005). Thus, differential sophistication as well as sociopolitical and economic support of healthcare and systems to investigate deaths inevitably leave a large gulf between richer and poorer countries in accurately registering manner and cause of death. And when suicide is in question, the variable stigma of self-harm combined with limited resources for conducting forensic death investigations likely produce large registration gaps among richer nations as well. In higher-income democratic countries, and probably in most other countries too, logic strongly suggests that suicide misclassification is overwhelmingly one-way (O'Carroll, 1989). False negativity (= undercounting) appears far more problematic for suicide etiology and prevention than false positivity (= overcounting). Drawing from the argot of computer analysts, suicide is not a default category for medicolegal authorities (Timmermans, 2005).

Suicide has been subject to serious scientific documentation and analysis at least since the insightful and enduring contributions of Enrico Morselli and Emile Durkheim in the 19th century (Morselli, 1882; Durkheim, 1897/1951). Of these two intellectual giants, Morselli was apparently more cognizant of threats to data validity; nevertheless, he still minimized them in his own research. Serious questioning of suicide data quality largely had to wait until the 1960s. Those tumultuous times stimulated the provocative statement that "Facts strongly suggest that the relationship between statistical organizations and the suicide rates they produce is subject to the following principle: other things being equal, suicide rates vary directly with the degree of professional medical training of the categorizers, the average rate of man-hours devoted to cause of death categorization, and the independence of the categorizers from interested parties" (Douglas, 1967, p. 379). Similar logic motivated a complementary assertion that "Proper diagnosis of suicidal death rests upon adequate personnel, appropriate legislation, and financial and community support" (Da-

vis & Spelman, 1968, p. 453). Demonstrating sensitivity to cultural contexts, such insights or claims helped reveal a grave need for empirical assessments of official suicide statistics.

A comprehensive evaluation of suicide data quality was performed by two British researchers, Sainsbury and Jenkins (1982). Their international data primarily derived from more developed countries. While acknowledging that undercounting of suicide was problematic, they concluded that official cross-national statistics could in fact reliably sustain analysis of suicide determinants. Since their seminal study empirical critiques of these statistics were conducted in many diverse settings. However, publication of the results is rare in the highest-impact journals, an indicator of relative underrating of suicide data validity as a scientific concern.

The process of case ascertainment in the United States may help illustrate why the research and prevention communities have typically downplayed or ignored serious deficits in suicide data. A report from the prestigious Institute of Medicine concluded that "official suicide statistics are fraught with inaccuracies. Undetermined cases and open verdicts and underreporting limit their strength" (Goldsmith, Pellmar, Kleinman, & Bunney, 2002, p. 55). While the report deserves praise for elevating the profile of suicide as a public health problem for the United States, this frank condemnation reflects passivity in the face of these data deficits. Certainly an extremely high bar for suicide diagnoses or rulings is explicit in the imperative for medicolegal authorities to establish deliberate intent to die. Variable standards for determining homicide contrast with this stringent requirement for validating suicide. Unlike the situation with second- and third-degree homicide, only a ruling of first-degree homicide in the United States requires unequivocal evidence of deliberate intent to kill. While suicide is officially almost twice as common as homicide, comparisons of their relative magnitude are inherently unequal. Exacerbating this inequality, suicide and possible

suicide investigations are underresourced compared with homicide counterparts (US Public Health Service, 2001). Police are key partners with medical examiners and coroners in ascertainment of homicide cases, whereas the ascertainment of suicide generally lies outside their scope of work – and no other agency is currently credentialed to fill that complementary void. A marker for differential fastidiousness in suicide and homicide data collection, a federal government report stated that 93% of homicides were autopsied compared with just 55% of suicides (Hoyert, Kung, & Xu, 2007). In some European countries, for instance, police are clearly better trained to assist in or manage suicide investigations (Värnik et al., 2010). Nevertheless, it seems unlikely that the large procedural discrepancies in ascertaining and reporting suicide and homicide are unique to the United States.

The 21st century revealed a major new threat to suicide data reliability and validity. Prescription and nonprescription drug overdose death rates have reached epidemic heights in the United States (Bohnert, Fudalej, & Ilgen, 2010), and are also rising rapidly in many other countries (e.g., Vicente, Giraudon, Matias, Hedrich, & Wiessing, 2009). Drug-related and other poisoning suicides are notoriously difficult to detect without compelling corroborative evidence (Lindqvist & Gustafsson, 2002; Scott, Swartz, & Warburton, 2006). In Asia, death by pesticide poisoning greatly augments the mix (Gunnell, Eddleston, Phillips, & Konradsen, 2007), and a poisoning pandemic could be masking suicide on a massive scale. Soaring caseloads and other pressures on medicolegal authorities may not only dilute, but even derail evaluations of manner of death, especially those involving possible suicides. In one egregious instance, the New York City Medical Examiner's Office succumbed to stresses from policy changes, budgetary constraints, and media criticism in willfully misclassifying suicides under "accidents" (Whitt, 2006).

Compounding the problem of data validity is the probability that suicide underenumeration itself is nonrandom (Platt, Backett, & Kreitman, 1988). For example, while teenage suicide clusters attract media attention, evidence suggests that medicolegal officials exercise extra caution in diagnosing or ruling suicide in the younger population (Rockett et al., 2010). Any sociodemographic heterogeneity in the quality of suicide recordkeeping could seriously undermine the effectiveness of prevention programs beyond the damage already exacted by undercounting. Moreover, nonrandom misclassification of suicide would potentially confound the relative importance of documented protective and risk factors for suicide. A racial paradox illustrates this issue (Rockett, Samora, & Coben, 2006). African Americans have been portrayed at low risk for suicide relative to Whites, based on persisting low official rates of suicide and putative protective effects of religiosity and social cohesion (Utsey, Hook, & Stanard, 2007). This interpretation contradicts expectations informed by the long history of profound oppression, discrimination, segregation, and socioeconomic inequality experienced by African

Americans. A potential alternative explanation is that the racial-ethnic gap in suicide rates is a product of disparities in health data (Rockett et al., 2010). Both of these competing perspectives or hypotheses need in-depth and systematic evaluation. Data disparities might also explain an anomalous finding from an analysis of the 1993 US National Mortality Followback Survey (Castle, Duberstein, Meldrum, Conner, & Conwell, 2004). Manifest as a risk factor for suicide among Whites, problem drinking of alcohol implausibly appeared to be protective among Blacks.

The specter of burgeoning worldwide misclassification reinforces arguments for redefining suicide and subsuming suicide deaths under a broader rubric (Breiding & Wiersma, 2009). For example, overdoses among the drug-dependent effectively qualify as deliberate self-injury even when classified as "accidents." Although this is an empirical question, most individuals who are dependent on controlled substances probably know on some level that they are engaging in a chemical analog of Russian roulette. A broader category of self-injury comprising suicides and fatal drug overdose cases, both unintentional and of undetermined intent, could be a foundation for rationalizing, unifying, reinvigorating, and refocusing prevention.

When the Centers for Disease Control and Prevention (CDC) began to address injury as a public health problem in the United States, during the 1980s, they initially focused only on the prevention of "accidental" injuries. Connoting fatalism or an act of God, "accident" mischaracterizes an injury incident or death as a random and hence unavoidable event. In presenting injury as a public health problem, and thus one amenable to scientific study and prevention, the CDC campaigned for researchers and practitioners to eschew "accidental injury" in favor of "unintentional injury." Now it is virtually axiomatic in scientific injury circles in the United States that attainment of prevention goals is obstructed by the survival of the superstition-laden term "accident" (Gielen, Sleet, & DiClemente, 2006). Fueled by stigmatizing religious proscriptions, cultural taboos, and legal prohibitions, the "suicide" label, too, embodies formidable superstitious properties that artifactually depress counts, impede prevention, and so provide another compelling reason for redefinition or recasting.

Suicide is essentially operationalized as an acute event, with injury being the actual cause of death. In contrast to communicable disease, in particular, the representation of injury as a public health problem is relatively new. From a public health perspective, suicides and all deaths by injury are predictable and preventable in populations, if not for individuals (Rockett, 1998). However, capacity for prediction relies mostly on documentation of past mortality patterns and trends. Thus, gross undercounting of suicide would artifactually diminish its ranking as a public health problem and priority for prevention.

The public health approach, as applied to injury prevention, pursues a disciplined path of delineating risk groups, identifying risk factors, evaluating countermeasures, and implementing field successes in the wider population

(Rockett, 1998). Its poster story is impressive secular reductions in motor-vehicle traffic mortality, which have occurred in most industrialized countries (Barss, Smith, Baker, & Mohan, 1998; Hemenway, 2009). Success has emanated from an integrated array of protective measures: construction and regulation of safer roads and vehicles, provision of alternative modes of public and private mass transit, and enactment and enforcement of laws concerning speeding, use of seatbelts, as well as DWI (driving while intoxicated) and DUI (driving under the influence). Germane to preventing suicide and other mortality from deliberate self-injury, these evidence-based regulatory, legislative, environmental, and behavioral modifications did not transpire with unwavering societal buy-in (Eberstadt, 1997). They emerged from a haltering interplay between science and government intervention on the one hand and defense of individual liberties and private sector obstructionism on the other. Unsurprisingly, this stop-and-go scenario is being replicated in the less-developed world (e.g., Routley et al., 2009). Again pertinent to preventing suicide and other self-injury, creating and maintaining safe or safer driving conditions require accurate data as well as persistent diligence and vigilance by diverse coalitions, which extend horizontally, diagonally, and vertically from grass-roots constituencies to the highest echelons of government.

The ratio of deaths from undetermined injury intent to suicides is a crude but useful guide for assessing suicide underenumeration. Researchers have inferred from this indicator that only a few countries, most notably Austria, Hungary, and the Netherlands, excel in counting suicides (Rockett & Smith, 1995; Rockett & Thomas, 1999; Värnik et al., 2010). Suicides are hidden in other cause-of-death categories besides undetermined intent, categories that may be of much greater absolute importance in misclassification. For example, researchers in Australia documented serious misclassification of suicides within the group “accidents” and ill-defined and other unspecified causes of mortality (De Leo, 2010). Their excellent studies and persuasive findings (De Leo, 2007; De Leo et al., 2010; Williams, Doessel, Svetcic, & De Leo, 2010) justified a full-scale investigation of suicide and suicide data quality by officials of the federal Senate, which should eventually transform suicide registration in Australia – and hopefully internationally as well. Described in an ensuing report, *The Hidden Toll: Suicide in Australia*, this investigation could be a prototype for similar investigations around the globe (Senate Community Affairs Committee Secretariat, 2010).

World Suicide Prevention Day symbolizes and enhances awareness of suicide as a public health problem. However, suicide remains far removed from achieving the universal recognition it warrants as a major and preventable one. Globally, the true annual suicide toll could be easily double or triple the conservatively estimated one million deaths (WHO, 2010). The need for effective prevention requires multifaceted and integrated responses, including production of data commensurate to the task. Of course, high-quality data must incorporate detailed and appropriate con-

tent in addition to accurate suicide counts. As our capacity for measuring, characterizing, and disseminating the true dimensions of this universal and relentless human tragedy improves, so will the prospects for securing more adequate funding for research and prevention.

References

- Barss, P., Smith, G., Baker, S., & Mohan, D. (1998). *Injury prevention: An international perspective. Epidemiology, surveillance, and policy*. New York: Oxford University Press.
- Bohnert, A. S. B., Fudalej, S., & Ilgen, M. A. (2010). Increasing poisoning mortality rates in the United States, 1999–2006. *Public Health Reports, 125*, 542–547.
- Breiding, M. J., & Wiersma, B. (2006). Variability of undetermined manner of death classification in the US. *Injury Prevention, 12* (Suppl. II): ii49–ii54.
- Castle, K., Duberstein, P. R., Meldrum, S., Conner, K. R., & Conwell, Y. (2004). Risk factors for suicide in blacks and whites: an analysis of data from the 1993 National Mortality Follow-back Survey. *American Journal of Psychiatry, 161*, 452–458.
- Davis, J. H., & Spelman, J. W. (1968). The role of the medical examiner or coroner. In H. L. P. Resnik (Ed.), *Suicidal behaviors* (pp. 453–514). Boston, MA: Little Brown.
- De Leo, D. (2007). Suicide mortality data need revision. *Medical Journal of Australia, 186*, 157–158.
- De Leo, D. (2010). Australia revises its mortality data on suicide (Editorial). *Crisis, 31*, 169–173.
- De Leo, D., Dudley, M. J., Aebersold, C. J., Mendoza, J. A., Barnes, M. A., Harrison, J. E., & Ranson, D. L. (2010). Achieving standardized reporting of suicide in Australia: Rationale and program for change. *Medical Journal of Australia, 192*, 452–456.
- Douglas, J. D. (1967). *Social meanings of suicide*. Princeton, NJ: Princeton University Press.
- Durkheim, E. (1897/1951). *Suicide: A study in sociology* (J. A. Spaulding & G. Simpson, transl.). New York: The Free Press.
- Eberstadt, N. (1997). Daniel Patrick Moynihan, epidemiologist: A review essay on Moynihan's miles to go. A personal history of social policy. *Population and Development Review, 23*, 405–424.
- Gielen, A. C., Sleet, D. A., & DiClemente, R. J. (Eds.). (2006). *Injury and violence prevention: Behavioral science theories, methods, and applications*. San Francisco, CA: Jossey-Bass.
- Goldsmith, S. K., Pellmar, T. C., Kleinman, A. M., & Bunney, W. E. E. (2002). *Reducing suicide: A national imperative*. Washington, DC: National Academies Press.
- Gunnell, D., Eddleston, M., Phillips, M. R., & Konradsen, F. (2007). The global distribution of fatal pesticide self-poisoning: systematic review. *BMC Public Health, 7*, 357.
- Hemenway, D. (2009). *While we were sleeping. Success stories in injury and violence prevention*. Berkeley, CA: University of California Press.
- Hoyert, D. L., Kung, H. C., & Xu, J. (2007). Autopsy patterns in 2003. National Center for Health Statistics. *Vital and Health Statistics, 20*. Available at http://www.cdc.gov/nchs/data/series/sr_20/sr20_032.pdf
- Lindqvist, P., & Gustafsson, L. (2002). Suicide classification – Clues and their use. A study of 122 cases of suicide and unde-

- terminated manner of death. *Forensic Science International*, 128, 136–40.
- Mathers, C. D., Fat, D. M., Inoue, M., Rao, C., Lopez, A. D. (2005). Counting the dead and what they died from: an assessment of the global status of cause of death data. *Bulletin of the World Health Organization*, 83, 171–177.
- Morselli, E. (1882). *Suicide: An essay on comparative moral statistics*. New York: Appleton.
- O'Carroll, P. W. (1989). A consideration of the validity and reliability of suicide mortality data. *Suicide and Life-Threatening Behavior*, 19, 1–16.
- Platt, S., Backett, S., & Kreitman, N. (1988). Social construction or causal ascription: Distinguishing suicide from undetermined deaths. *Social Psychiatry and Psychiatric Epidemiology*, 23, 217–221.
- Rockett, I. R. H. (1998). Injury and violence: A public health perspective. *Population Bulletin*, 53, 1–40. Available at <http://www.prb.org/Source/53.4InjuryViolence.pdf>
- Rockett, I. R. H., Samora, J. B., & Coben, J. H. (2006). The black-white suicide paradox: Possible effects of misclassification. *Social Science and Medicine*, 63, 2165–2175.
- Rockett, I. R. H., & Smith, G. S. (1995). Suicide misclassification in an international context. *Proceedings of the International Collaborative Effort on Injury Statistics*. Available at <http://www.cdc.gov/nchs/data/ice/ice95v1/c26.pdf>
- Rockett, I. R., & Thomas, B. M. (1999). Reliability and sensitivity of suicide certification in higher-income countries. *Suicide and Life-Threatening Behavior*, 29, 141–149.
- Rockett, I. R. H., Wang, S., Stack, S., De Leo, D., Frost, J. L., Ducatman, A. M., . . . Kapusta, N. D. (2010). Race/ethnicity and potential suicide misclassification: Window on a minority suicide paradox? *BMC Psychiatry*, 10, 35. Available at <http://www.biomedcentral.com/content/pdf/1471-244X-10-35.pdf>
- Routley, V., Ozanne-Smith, J., Li, D., Yu, M., Wang, J., Zhang, J., & Qin, Y. (2009). Attitudes to seat belt wearing and related safety features in two cities in China. *International Journal of Injury Control and Safety Promotion*, 16, 15–26.
- Sainsbury, P., & Jenkins, J. S. (1982). The accuracy of officially reported suicide statistics for purposes of epidemiologic research. *Journal of Epidemiology and Community Health*, 36, 43–48.
- Scott, C. L., Swartz, E., & Warburton, K. (2006). The psychological autopsy: solving the mysteries of death. *Psychiatric Clinics of North America*, 29, 805–22.
- Senate Community Affairs References Committee. (2010). *The hidden toll: suicide in Australia*. Canberra: Senate Printing Unit, Parliament House.
- Timmermans, S. (2005). Suicide determination and the professional authority of medical examiners. *American Sociological Review*, 70, 311–333.
- US Public Health Service (2001). *National strategy for suicide prevention: Goals and objectives for action*. Washington, DC: Department of Health and Human Services.
- Utsey, S. O., Hook, J. N., & Stanard, P. (2007). A re-examination of cultural factors that mitigate risk and promote resilience in relation to African American suicide: A review of the literature and recommendations for future research. *Death Studies*, 31, 399–416.
- Värnik, P., Sisask, M., Värnik, A., Laido, Z., Meise, U., Ibelshäuser, A., . . . Hegerl, U. (2010). Suicide registration in eight European countries: A qualitative analysis of procedures and practices. *Forensic Science International*, 201, 86–92.
- Vicente, J., Giraudon, I., Matias, J., Hedrich, D., & Wiessing, L. (2009). Rebound of overdose mortality in the European Union 2003–2005: Findings from the 2008 EMCDDA annual report. *Eurosurveillance*, 14, 1–2.
- Whitt, H. P. (2006). Where did the bodies go? The social construction of suicide data, New York City, 1976–1992. *Sociological Inquiry*, 76, 166–187.
- Williams, R. F., Doessel, D. P., Svetlicic, J., & De Leo, D. (2010). Accuracy of official suicide mortality data in Queensland. *Australian and New Zealand Journal of Psychiatry*, 44, 815–822.
- World Health Organization. (2010). *Suicide prevention (SUPRE)*. Available at http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/

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