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The WHO World Mental Health (WMH) Surveys

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Abstract

The paper presents an overview of the WHO World Mental Health (WMH) Survey Initiative and summarizes recent WMH results regarding the prevalence and societal costs of mental disorders. The WMH surveys are representative community surveys that were carried out in 28 countries throughout the world aimed at providing information to mental health policy makers about the prevalence, burden, and unmet need for treatment of common mental disorders. Results show that mental disorders are commonly occurring in all participating countries. The inter-quartile range (IQR: 25th–75th percentiles) of lifetime DSM-IV disorder prevalence estimates (combining anxiety, mood, disruptive behavior, and substance disorders) is 18.1–36.1%. The IQR of 12-month prevalence estimates is 9.8–19.1%. Analysis of age-of-onset reports shows that many mental disorders begin in childhood-adolescence and have significant adverse effects on subsequent role transitions. Adult mental disorders are found in the WMH data to be associated with high levels of role impairment. Despite this burden, the majority of mental disorders go untreated. Although these results suggest that expansion of treatment could be cost-effective from both the employer perspective and the societal perspective, treatment effectiveness trials are needed to confirm this suspicion. The WMH results regarding impairments are being used to target several such interventions.

The World Mental Health (WMH) Survey Initiative is a WHO initiative designed to help countries carry out and analyze epidemiological surveys of the prevalence and correlates of mental disorders. (www.hcp.med.harvard.edu/wmh) Twenty-eight developed and developing countries have so far completed WMH surveys and others are in progress. The vast majority of these surveys are nationally representative, although a few are representative of only a single region (e.g., the San Paolo Metropolitan Area in Brazil) or regions (e.g., six Metropolitan Areas in Japan).

All WMH surveys use the same diagnostic interview, the WHO Composite International Diagnostic Interview (CIDI) (14), a fully-structured research diagnostic interview designed for use by trained lay interviewers who do not have clinical experience. The CIDI generates diagnoses of mental disorders according to the definitions and criteria of both the ICD and DSM systems. Consistent training materials, training programs, and quality control monitoring procedures are used in all WMH surveys to guarantee cross-survey comparability (22). Consistent WHO translation, back-translation, and harmonization procedures for the interview and training materials are also used across countries (6).

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The use of a fully-structured interview is central to WMH success, as many participating countries do not have the trained mental health professions needed to implement a large-scale clinical survey. However, the WMH collaborators are also encouraged to carry out blinded clinician re-interviews with a probability sub-sample of WMH respondents to confirm that CIDI diagnoses are consistent with clinical diagnoses. Methodological studies have documented good concordance of this sort (7).

DISORDER PREVALENCE ESTIMATES IN THE WMH SURVEYS

The core disorders assessed in the WMH surveys are anxiety disorders (panic disorder, phobias, generalized anxiety disorder, PTSD), mood disorders (major depressive disorder, dysthymic disorder, bipolar disorder), disruptive behavior disorders (ADHD, conduct disorder, oppositional-defiant disorder, intermittent explosive disorder), and substance disorders (alcohol and drug abuse-dependence). The first set of WMH surveys, which have been the focus of our analysis up to now (15), show that these disorders are quite common overall in the countries studied. The inter-quartile range (IQR; 25th–75th percentiles across countries) of the lifetime prevalence estimate of having any DSM-V/CIDI disorder is 18.1–36.1%. A lifetime DSM-IV/CIDI diagnosis was found among more than one-third of respondents in five countries (Colombia, France, New Zealand, Ukraine, United States), more than one-fourth in six others (Belgium, Germany, Lebanon, Mexico, Netherlands, South Africa), and in more than one-sixth in an additional four (Israel, Italy, Japan, Spain). The remaining two countries studied so far, China (13.2%) and Nigeria (12.0%), had considerably lower prevalence estimates that are likely to be downwardly biased (5,24). Prevalence estimates for other developing countries were all above the lower bound of the IQR. Twelve-month prevalence estimates are generally 40–60% as high as lifetime prevalence estimates. When coupled with the fact that our clinical reappraisal studies showed lifetime prevalence estimates in developed countries to be accurate and with the possibility that prevalence estimates in less developed countries are under-estimated, these results argue persuasively that mental disorders have great public health importance throughout the world.

Focusing on individual disorders, the WMH data find that specific phobia is the most prevalent of the disorders we studied, with lifetime prevalence in the 6–12% range and 12-month prevalence in the 4–8% range. Major depressive disorder (MDD) is generally the next most prevalent disorder, with lifetime prevalence in the 4–10% range and 12-month prevalence in the 3–6% range. Social phobia is generally the next most prevalent disorder, with prevalence sometimes approaching that of MDD. These prevalence estimates are, if anything, conservative, though, as controversy exists regarding the possibility that the current diagnostic criteria for some disorders in the DSM and ICD systems are overly conservative (19,23). A related issue is that clinically significant sub-threshold manifestations of some disorders are more prevalent than the disorders themselves (1,17). However, we do not currently have good estimates of the proportion of the population meeting criteria for one or more sub-threshold disorders because community epidemiological surveys have for the most part not explored sub-threshold manifestations systematically.

SHORT-TERM ADVERSE EFFECTS OF MENTAL DISORDERS

A considerable amount of research has been done on the short-term societal costs of mental disorders in terms of healthcare expenditures, impaired functioning, and reduced longevity, but most of this work was done in the US (3,4). The magnitudes of the cost estimates in these studies are staggering. For example, Greenberg et al. (4) estimated that the annual societal costs of anxiety disorders in the US in the 1990s exceeded \$42 billion. This estimate

excludes the indirect costs of early-onset anxiety disorders through adverse life course outcomes (e.g., the effects of child-adolescent anxiety predicting low educational attainment and consequent long-term effects on low income) and through increased risk of other disorders (e.g., anxiety disorders predicting the subsequent onset of cardiovascular disorder).

Although comparable studies of the societal costs of mental disorders have been carried out in only a few countries other than the US, a recent WMH analysis of the comparative impairments caused by mental disorders and commonly occurring chronic physical disorders documented that mental disorders have substantial adverse effects on functioning in many countries around the world (20). That report made use of the fact that physical disorders were assessed in the WMH surveys with a standard chronic disorders checklist. Respondents with the ten most common such disorders were asked to report the extent to which each disorder interfered with their ability to carry out their daily activities in both productive roles (i.e., job, school, housework) and social roles (i.e., social and personal life). The same questions about disorder-specific role impairments were also asked of respondents with each of the mental disorders assessed in the surveys, the ten most commonly occurring of which were compared to the ten physical disorders.

Of the 100 logically possible pair-wise disorder-specific mental-physical comparisons, the proportion of impairment ratings in the severe range was higher for the mental than physical disorder in 76 comparisons in developed and 84 comparisons in developing countries. Nearly all of these higher mental-than-physical impairment ratings were statistically significant at the .05 level and held in within-person comparisons (i.e., comparing the reported impairments associated with a particular mental-physical disorder pair in the subsample of respondents who had both disorders). A similar pattern held when treated physical disorders were compared with mental disorders to address the concern that the more superficial assessment of physical than mental disorders might have led to the inclusion of sub-threshold cases of physical disorders with low disability.

It is also instructive to examine societal-level effects; that is, effects that take into consideration not only how seriously impairing the disorders are but also how prevalent they are. We are only beginning this line of analysis in the cross-national WMH data, but analyses of the US WMH survey have been completed (18). The results show that one-third of all days out of role associated with chronic-recurrent health problems in the US are due to mental disorders. This amounts to literally billions of days of lost functioning per year in the US population. We do not yet know if comparable results will hold in parallel analyses of WMH surveys in other countries, but preliminary results suggest that this will.

LONG-TERM ADVERSE EFFECTS OF MENTAL DISORDERS

WMH respondents with a lifetime history of each disorder were asked to report retrospectively how old they were when the disorder first began. AOO distributions were generated from these reports. Distributions were very consistent across countries (9). Some anxiety disorders, most notably the phobias and separation anxiety disorder (SAD), had very early AOO distributions, with median AOO in the range 7–14 and the vast majority of lifetime cases occurring within 5–10 years of these medians. Similarly early onsets were reported for the disruptive behavior disorders considered in the WMH surveys. The other common anxiety disorders (panic disorder, generalized anxiety disorder, PTSD) and mood disorders, in comparison, had later AOO distributions, with median AOO in the age range 25–50 and a wide IQR (15–75). Substance use disorders, finally, were found to have intermediate median AOO (20–35), with the vast majority of cases having onsets within ten years of these medians. All of these AOO distributions are much earlier than those associated with most chronic physical disorders (11).

WMH analyses show that early-onset mental disorders are significant predictors of the subsequent onset and persistence of numerous physical disorders (8,21). This is part of a larger pattern of associations between early-onset mental disorders and a wider array of adverse life course outcomes that might be conceptualized as societal costs of these disorders, including reduced educational attainment, early marriage, marital instability, and low occupational and financial status (12,13,16). It is unclear if these associations are causal. As a result, it is not possible to state unequivocally that these outcomes are consequences of mental disorders. It would be very valuable from a public health perspective to have long-term evidence to evaluate this issue from experimental treatment effectiveness studies. Even in the absence of this evidence, though, the WMH data show clearly that mental disorders, and especially early-onset mental disorders, are associated with substantially reduce life changes in terms of physical health and achievements in a variety of role domains.

THE COST-EFFECTIVENESS OF TREATMENT INTERVENTIONS

WMH analyses have been carried out to estimate the effects of specific disorders on role functioning in workplace settings (2,10). The results are striking. In the US, for example, 6.4% of workers were found to have an episode of MDD in the year of the survey, resulting in an average of over five weeks of lost work productivity (10). Given the salaries of these workers, the annualized human capital loss to US employers associated with MDD was estimated to be in excess of \$36 Billion. A similar result was found in a WMH analysis that estimated the workplace costs of adult ADHD in ten WMH surveys (2). ADHD was associated with an average of 22 excess days of lost productivity per worker with this disorder.

Workplace costs as large as these raise the question whether expansion of detection, treatment, and treatment quality improvement initiatives might be able to reduce the adverse workplace effects of mental disorders to an extent that makes treatment cost-effective from an employer perspective. An experimental effectiveness trial carried out in conjunction with the US WMH survey evaluated this question (26). A large sample of workers was screened for MDD and randomized either to a model outreach and best-practices treatment intervention or to usual care. The intervention group was found at six and twelve months to have significantly higher job retention and hours worked than controls (equivalent to an annualized two weeks more work). The financial benefits of these intervention effects (in terms of hiring and training costs, disability payment, and salaries paid for sickness absence days) were substantially higher than the costs of treatment, documenting that the intervention was a human capital investment for employers. Replications of this intervention experiment are currently underway in other WMH countries, including Australia and Japan. Extensions of the intervention to consider treatment of bipolar depression and adult ADHD are also underway. Ongoing analyses of the WMH data are also being used to search for other intervention targets that can be used to evaluate the effects of treatment in reducing the burdens associated with mental disorders.

CONCLUSIONS

The WMH results reviewed here document that mental disorders are commonly occurring, often have an early age-of-onset, and often are associated with significant adverse societal costs. We also presented evidence to show that some societal costs can be reversed with best-practices treatment. The latter finding argues much more persuasively than the naturalistic survey findings that mental disorders are actual *causes* rather than merely *correlates* of impaired role functioning. Based on these results, we can safely conclude that mental disorders are common and consequential from a societal perspective throughout the world. Yet, as reported elsewhere (25), the WMH data show that only a small minority of

people with mental disorders receive treatment in most countries and that even fewer receive high-quality treatment. This situation has to change. A good argument could be made based on the results about treatment effectiveness that an expansion of treatment would be a human capital investment opportunity from the employer perspective. The same argument could be made about human capital consequences of expanded treatment from a societal perspective. Ongoing WMH analyses will continue to refine naturalistic analyses of the adverse effects of mental disorders in an effort to target experimental interventions that can demonstrate the value of expanded treatment to address the enormous global burden of mental disorders.

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