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The role of common mental and physical disorders in days out of role in the Iraqi general population: Results from the WHO World Mental Health Surveys

Ali Obaid Al-Hamzawi, DM, FICMS¹, Anthony J. Rosellini, PhD², Marrena Lindberg, ScM², Maria Petukhova, PhD², Ronald C Kessler, PhD², and Ronny Bruffaerts, PhD³

¹ Department of Psychiatry, College of Medicine, Qadisia University, Diwania, Iraq

² Department of Health Care Policy, Harvard Medical School, Boston, MA USA

³ Universitair Psychiatrisch Centrum – KU Leuven (UPC-KUL), Campus Gasthuisberg, Herestraat 49, B-3000 Leuven, Belgium

Abstract

In an effort to support mental health policy planning efforts in conjunction with the reconstruction of Iraq, a nationally representative face-to-face household survey was carried out that assessed the prevalence and correlates of common mental disorders in the Iraqi population. A total of 4,332 adult (ages 18+) respondents were interviewed (95.2% response rate). The current report presents data on the role impairments (number of days out-of-role in the past 30 days) associated with the nine mental disorders assessed in the survey in comparison to the impairments associated with ten chronic physical disorders also assessed in the survey. These disorders were all assessed with the WHO Composite International Diagnostic Interview. Days out-of-role was assessed with the WHO Disability Assessment Schedule. Both individual-level and societal-level effects of the

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Address correspondence to Ronald C. Kessler, Ph.D., Department of Health Care Policy, Harvard Medical School, 180 Longwood Ave., Boston, MA. Tel. (617) 432-3587, Fax (617) 432-3588, Kessler@hcp.med.harvard.edu..

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Conflict of interest: Dr. Kessler has been a consultant for AstraZeneca, Analysis Group, Bristol-Myers Squibb, Cerner-Galt Associates, Eli Lilly & Company, GlaxoSmithKline Inc., HealthCore Inc., Health Dialog, Hoffman-LaRoche, Inc., Integrated Benefits Institute, John Snow Inc., Kaiser Permanente, Matria Inc., Mensante, Merck & Co, Inc., Ortho-McNeil Janssen Scientific Affairs, Pfizer Inc., Primary Care Network, Research Triangle Institute, Sanofi-Aventis Groupe, Shire US Inc., SRA International, Inc., Takeda Global Research & Development, Transcept Pharmaceuticals Inc., and Wyeth-Ayerst. Dr. Kessler has served on advisory boards for Appliance Computing II, Eli Lilly & Company, Mindsite, Ortho-McNeil Janssen Scientific Affairs, Johnson & Johnson, Plus One Health Management and Wyeth-Ayerst. Dr. Kessler has had research support for his epidemiological studies from Analysis Group Inc., Bristol-Myers Squibb, Eli Lilly & Company, EPI-Q, GlaxoSmithKline, Johnson & Johnson Pharmaceuticals, Ortho-McNeil Janssen Scientific Affairs., Pfizer Inc., Sanofi-Aventis Groupe, Shire US, Inc., and Walgreens Co. Dr. Kessler owns 25% share in DataStat, Inc. The remaining authors report nothing to disclose.

disorders were estimated. Strongest individual-level predictors were bipolar and drug abuse disorders (176-95 days per year), with mental disorders making up five of the seven strongest predictors. The strongest population-level predictors were headache/migraine and arthritis (22-12% population proportions). Overall population proportions were 57% of days out-of-role due to the chronic physical disorders considered here and 18% for the mental disorders. Despite commonly-occurring mental disorders accounting for more individual-level days out-of-role than the physical disorders, mental disorders are much less likely to receive treatment in Iraq (e.g., due to stigma). These results highlight the need for culturally tailored mental health prevention and treatment programs in Iraq.

Keywords

burden of disease; days out of role; human capital loss; mental disorders; prevalence

1. INTRODUCTION

Iraq has been greatly affected by violence and economic strain over the past 30 years (e.g., Iran-Iraq war in the 1980s; first Gulf War and economic sanctions in the 1990s). More recently, it is estimated that armed violence resulted in nearly 350,000 deaths and injuries between 2003 and 2010 (Hicks et al., 2011) and that the unemployment rate was as high as 28% in 2004 (Trading Economics, 2013). Given the widely recognized associations between violence exposure, unemployment, and adverse mental and physical health outcomes (Boynton-Jarrett et al., 2008; McKee-Ryan et al., 2005; Linn et al., 1985; Murthy, 2007; Murthy and Lakshminarayana, 2006; Shaw and Krause, 2002), researchers have recently started examining the prevalence and correlates of mental and physical disorders in Iraq. In the Iraqi Mental Health Survey, for example, Alhasnawi et al. (2009) found that anxiety disorders were the most common class of disorder and major depression was the most common individual disorder. Younger age was associated with greater risk of having a disorder, and only 2.2% of the sample reported receiving mental health treatment over the prior year. Similar studies of physical disorders have found hypertension and musculoskeletal disorders (e.g., pain) to be particularly common among Iraqis. However, this research has been limited by relying on refugee samples living in neighboring countries rather than nationally representative samples living in Iraq (Doocy et al., 2012; Mateen et al., 2012).

Nonetheless, the extant literature provides important descriptive information that can be used to inform health care decisions in Iraq, an area of reform that has been prioritized during the reconstruction. The general consensus is that Iraq has a need for public health preventative interventions and primary care-based screening and treatment (Al Hilfi et al., 2013; Ministry of Health, Government of Iraq, 2008), particularly in the area of mental health (Fleck, 2004; Humphreys and Sadik, 2006). Given the limited resources available, it is important to make decisions about developing and implementing such programs based on information about comparative disease burden and comparative treatment effectiveness (Davis et al., 2005; Loeppeke et al., 2009; Special Committee on Health and Productivity Management and National Health Care Financing, 2009; Suhrcke et al., 2012). In addition to

defining burden in terms of condition-specific rates or morbidity and mortality (Special Committee on Health and Productivity Management and National Health Care Financing, 2009), recent research has also considered information on the impairments associated with different health problems, such as the effects of these problems on days out of role (Davis et al., 2005; Suhrcke et al., 2012) and role performance (Andlin-Sobocki et al., 2005; Loeppke et al., 2009; Merikangas et al., 2007; Stang et al., 2006; Von Korff, 2009). It is useful to evaluate relative impairments of specific conditions using epidemiological data rather than data collected in treatment samples in order to deal with the fact that severity of disorder is associated with seeking treatment (Ormel et al., 2008) and the possibility that barriers to seeking treatment can vary across conditions.

Although nationally representative samples have been used to estimate disorder impairments in several countries (Alonso et al., 2013; Merikangas et al., 2007; Stang et al., 2006), no study to our knowledge has examined the burden associated with different mental and physical disorders in post-autocratic Iraq. One advantage of the direct assessment of both prevalence and impairment in the same epidemiological survey is that it allows an important problem with the use of health valuations by expert raters to be addressed: that the latter ratings do not take into consideration the fact that health problems are often highly comorbid and the possibility that the burdens of individual conditions vary as a function of comorbidity (Stang et al., 2006; Von Korff, 2009). Accordingly, the purpose of the current report is to inform health care reform in Iraq by estimating the individual- and societal-level burden (i.e., days out of role) of commonly occurring mental disorders and chronic physical conditions.

2. METHODS

2.1. Sample

The Iraqi Mental Health Survey is a nationally representative epidemiological survey of 4,332 adults (18 years +) that was carried out in Iraq in 2006-2007 under the direction of the Iraq Ministry of Health, the Iraq Central Organization for Statistics, and Information Technology (COSIT), the Ministry of Health of the Kurdistan region (MoHK), and the Kurdistan Regional Statistics Office (KRSO) in conjunction with the WHO World Mental Health Surveys (www.hcp.med.harvard.edu/wmh). A stratified multistage clustered area probability sample of household residents was selected in the central and southern governorates during August and September, 2006, in Anbar during October and November, 2006, and in the Kurdistan region during February and March, 2007. All interviews were administered face-to-face by trained lay interviewers using training and field quality control procedures described elsewhere (Harkness et al., 2008; Kessler and Üstün, 2008; Pennell et al., 2008). Informed consent was obtained before beginning interviews. Procedures for obtaining informed consent and protecting individuals were approved and monitored for compliance by the Institutional Review Boards of the organizations coordinating the survey. The survey response rate was 95.2%. More details about sampling are provided elsewhere (Alhasnawi et al., 2009).

2.2. Measurements

2.2.1. Mental disorders—Mental disorders were assessed with Version 3.0 of the WHO Composite International Diagnostic Interview (CIDI), a fully structured lay-administered interview designed to generate research diagnoses of commonly occurring mental disorders according to the definitions and criteria of both the DSM-IV and ICD-10 diagnostic systems (Kessler and Üstun, 2004b). The nine mental disorders considered here include mood disorders (major depressive disorder, bipolar I-II disorder), anxiety disorders (panic disorder and/or agoraphobia, specific phobia, social phobia, generalized anxiety disorder, post-traumatic stress disorder) and substance disorders (alcohol abuse with and without dependence, drug abuse with and without dependence). Only disorders present in the 12 months before interview were considered. DSM-IV criteria were used to define prevalence. A clinical reappraisal study with blinded clinical follow-up interviews using the Structured Clinical Interview for DSM-IV (SCID) has found generally good concordance between diagnoses based on the CIDI and those based on the SCID (First et al., 2002; Haro et al., 2006).

2.2.2. Chronic physical disorders—Physical disorders were assessed with a standard chronic disorders checklist adapted from the U.S. Health Interview Survey (World Health Organization, 2013). Checklists of this sort yield more complete and accurate reports about chronic conditions than do open-ended questions (Center for Disease Control and Prevention, 2004; Schoenborn et al., 2003). Methodological studies have documented moderate to good concordance between checklist reports and medical records (Baker et al., 2001; Knight et al., 2001). The ten disorders considered here are: cardiovascular disease (hypertension, and other heart diseases), cancer, arthritis, chronic pain, diabetes, frequent or severe headache or migraine, insomnia, neurological disorders (multiple sclerosis, Parkinson's, and epilepsy or seizures), digestive conditions (stomach or intestine ulcer or irritable bowel condition), and respiratory diseases (asthma, or other respiratory diseases). For the symptom-based conditions like arthritis, chronic pain and headache, heart attack or stroke, respondents were asked to report whether they had experienced these conditions. For the remaining conditions the question was prefaced by the phrase “have you ever been told by a doctor or health professional that you had any of these conditions?” and, if so, whether they had experienced them in the past 12 months before interview.

2.2.3. Days out of role—A modified version of the WHO Disability Assessment Schedule (WHO-DAS) was used to evaluate impairments in role functioning (Vazquez-Barquero et al., 2000; Von Korff et al., 2008; World Health Organization, 2013). A key component of the WHO-DAS is a question about number of days in the 30 before interview respondents were “totally unable to work or carry out your normal activities” because of their physical or mental health, or use of alcohol or drugs. Good concordance of these reports have been documented both with payroll records of employed people (Kessler et al., 2003; Revicki et al., 1994) and prospective daily diary reports (Kessler et al., 2004a).

2.3. Statistical analysis

Multiple regression analysis was used to examine multivariate associations of the disorders assessed in the survey with reported days out of role in the past 30 days controlling for age,

gender, marital status, employment status, and education. As substantial comorbidity is known to exist among these disorders (Gureje, 2009), we included terms to capture the effects of comorbidity in the regression models. Given that the number of possible combinations of comorbid disorders in the data ($2^{19} - 20 = 524,268$) far exceeds the number of respondents, it was necessary to impose some structure on the terms used to capture the effects of comorbidity. This was done using a number of different model specifications that are described elsewhere (Alonso et al., 2011). The best-fitting model was one that included a separate dummy predictor variable for each of the 19 individual disorders in addition to a count variable for the total number of disorders experienced.

As the outcome variable (a 0-30 measure of number of days out of role) is highly skewed, we investigated a number of different link functions and prediction error structures to describe the associations of the predictors with the outcome that included an ordinary least squares regression model and six generalized linear models (GLM) that considered the conjunction of two link functions (logarithmic or square root) and three error structures (constant, error variance proportional to the mean and error variance proportional to the mean squared). Standard diagnostic procedures to compare model fit (Buntin and Zaslavsky, 2004) showed that GLM with a square root link function and constant variance was the best-fitting model. Based on this result, the final model was based on this specification.

Simulation using the coefficients of the best-fitting model was used to estimate the individual-level and societal-level effect of each disorder. Individual-level effects were estimated by using the coefficients in the best-fitting model to estimate the expected number of days each respondent would be out of role based on the individual's scores on each of the predictor variables. That vector of predicted values was then saved and a second individual-level estimate was generated from the coefficients in the best-fitting model based on the assumption that one and only one focal disorder was no longer present for any of the individuals in the sample. In other words, we modified the dataset to assume that no respondent had one particular focal disorder. Importantly, the interaction terms were also modified based on this assumption. We then generated predicted values of the outcome for each respondent using the coefficients in the best-fitting model (i.e., we did not re-estimate the model, but used the coefficients in the model to multiply out a predicted value for each respondent). That vector of predicted values was then saved. Individual-level differences in the two predicted values of the outcome were then calculated, summed across all respondents with the focal disorder, and then averaged across all respondents with the focal disorder to obtain an estimate of the individual-level effect of the focal disorder on days out of role. This set of procedures was then repeated for each of the other 18 disorders. It is important to reiterate that this procedure takes comorbidity into consideration because all predictors that include information about comorbidity were modified in the simulations to assume that interactions involving the focal disorder no longer exist in the version of the specification that assumes the focal disorder is no longer present. Societal-level effects were then estimated by combining information on the individual-level effects with information of the observed prevalence of the disorder to calculate the number of days out of role associated with each disorder at the population level.

Standard errors of prevalence estimates were obtained using the Taylor series linearization method (Wolter, 1985) implemented in the SUDAAN software package (Software for Survey Data Analysis, version 8.1 on UNIX-Solaris/SUN OS) to account for the complex sample design of the survey. Standard errors of individual and societal-level effects were estimated using SAS macros for the Jackknife Repeated Replications method (JRR) for complex sample data. Significance tests were consistently evaluated using .05-level, two-sided design-based tests.

3. RESULTS

3.1. Socio- demographic characteristics

The sample consisted of 4,332 respondents with an average age of 36.9 (range of 18 to 96), with roughly equal numbers of men and women and 65.6% married. Roughly three-quarters (78.2%) of respondents had at least 12 years of education. Whereas 68.2% of men were employed, most women were not (86.9%). The survey did not assess religion given the sensitive nature of the topic at the time of data collection. Although sex-varying employment rates are consistent cultural norms, it is also important to reiterate that our assessment of days out of role considered both being unable to work and being unable to carry out one's normal activities (e.g., activities associated with being a homemaker). More details on sample characteristics can be found in Table 1.

3.2. The distribution of days out of role

The mean number of days out of role in the 30 days before interview was 2.4. (Table 2) This is equivalent to approximately 29 days per year. 22.6% of respondents reported at least one day out of role in the previous 30 days, with a mean of 10.8 and median of 4.8 (equivalent to an annualized total-sample mean of 28.3 days).

3.3. Prevalence of physical and mental disorders

Slightly fewer than half (47.8%) of respondents had one or more of the disorders considered here, with 44.5% having at least one chronic physical disorder and 10.9% at least one mental disorder. (Table 3) Chronic pain, headache/migraine, and respiratory disorder were among the most common physical disorders (all in the 14-18% range), while major depressive disorder, specific phobia, and generalized anxiety disorder were the most common mental disorders (all in the 2-4% range).

3.4. Days out of role among respondents with chronic physical and mental disorders

Simple uncontrolled inspection of mean days out of role among respondents with each disorder showed the average to vary considerably by type of disorder, with a mean annualized number of days out of role (i.e., the mean in the past 30 days multiplied by 12) of 66.6 days for mental disorders and 50.8 for physical disorders. (Table 3) Bipolar disorder was the mental disorder associated with the highest mean (225.8) and other mental disorders with comparatively high means were major depressive disorder (95.3) and drug abuse (93.8). Among the chronic physical disorders, neurological disorders and cancer had the higher means (117.4 and 107.1, respectively).

3.5. Individual-level effects of chronic physical and mental disorders on days out of role

The results just reviewed do not provide definitive information on the *unique* effects of individual disorders because socio-demographic differences and comorbidity were not taken into consideration. These unique effects were estimated based on the nonlinear regression-based simulations described above. (Table 4) The presence of any disorder was associated with an annualized 32.5 days out of role (about 2.7 days per month). Bipolar disorder was the individual disorder associated with by far the highest mean number of days out of role (176.2). The next high impact disorder was drug abuse (95.3), followed by neurological disorder (84.1) and cancer (80.3). The next three disorders with highest individual-level effects were all mental disorders: major depressive disorder (52.2), panic disorder (51.7), and generalized anxiety disorder (37.5). The only physical disorder other than neurological disorder and cancer having an individual-level effect approaching these was insomnia (30.3), which is typically considered both a physical and a psychiatric disorder. The individual-level effect of all chronic physical disorders combined (i.e., assuming that all such disorders could be cured) was 30.2 days compared to 40.6 days associated with all mental disorders.

3.6. Society-level effects of chronic physical and mental disorders on days out of role

Roughly two-thirds (65.9%) of all days out of role in the Iraqi population were estimated to be due to one or more of the disorders considered here, with the other 34.1% presumably due to acute conditions (e.g., cold, flu, strains and sprains, etc.) and unmeasured chronic conditions. (Table 4) Chronic physical disorders accounted for a higher part of this proportion (56.9%) than mental disorders (18.1%) because of the higher prevalence of chronic physical than mental disorders, despite the higher individual-level effects of mental than chronic physical disorders. The individual disorders with the highest proportions were headaches (21.5%) and arthritis (12.4%), with major depressive disorder next most important (9.7%) followed by three other physical disorders: respiratory disorders (9.5%), cardiovascular disorders (8.3%), and chronic pain conditions (7.9%). A comparison of individual-level and societal-level effects shows that the high societal-level impacts of the physical disorders were due to a combination of high prevalence and moderate individual-level effects, while the high societal-level impact of major depression is due to a combination of intermediate prevalence and a high individual-level effect. The physical disorders with highest individual-level effects (neurological and cancer) have low societal-level effects (1.6-0.7%) due to low prevalence.

4. DISCUSSION

This paper reports from the first large-scale general-population survey in Iraq of the associations of chronic physical and mental disorders with days out of role. As over half of the sample was not employed (e.g., 52.2% females identified themselves as homemakers), the burden estimates provided here reflect days out of role from both paid work duties as well as unpaid activities (e.g., household responsibilities). Both physical and mental disorders were found to be associated with considerable numbers of days out of role. Six disorders were found to be associated with individual-level increases of more than 90 days out of role per year. Four of these six are mental disorders (bipolar disorder, major

depressive disorder, panic disorder, and drug abuse) and the other two physical (neurological disorders and cancer). Chronic physical disorders are more important, though, at a societal level due to their higher prevalence than mental disorders, with major depression the only mental disorder having one of the highest societal-level effects.

These results must be interpreted within the context of several important study limitations. First, certain mental disorders may have been influenced (i.e., underreported) by the negative stigma associated with mental illness among Iraqis (Sadik et al., 2010). Estimates reported here are likely conservative. In particular, the low 30-day prevalence of alcohol and drug abuse disorders (0.1%) may have been influenced by the fact that (i) substance use is generally forbidden in the Qur'an, and/or (ii) prior to 2003, substance-related criminal charges resulted in harsh punishments (Aqrabi and Humphreys, 2009). Second, physical disorders were assessed with a simple self-report chronic disorders checklist rather than medical examination or abstracting medical records. Although previous research has documented good correspondence between self-reports of these chronic conditions and general practitioner records (Kriegsman et al., 1996), there is also evidence that suggests that self-reports are more amenable to under-reporting than physical examinations and medical chart reviews (Harrison, 1991; Solomon, 2001) and biased by socio-demographic (e.g. lower education or poor health literacy) and cognitive factors (Harrison, 1991; Jamison et al., 2006). These findings suggest that we might have under-estimated the importance of silent chronic physical disorders, although we would expect better performance of the assessments of symptom-based conditions such as headaches and arthritis. Third, our findings are limited to those mental and physical disorders included in the survey. Indeed, some particularly disabling brain conditions such as non-affective psychosis and dementia were not assessed. Despite this, though, we saw that the disorders assessed here are associated with roughly two-thirds of all days out of role, which means that our assessment is capturing the bulk of the disabling disorders in the Iraqi population. Fourth, reports about days out of role might be biased (Biering-Sorensen and Hilden, 1984), although the fact that we focused on a short (30-day) recall period and projection to the past year rather than a request for respondents to report over the entire past year would be expected to reduce recall bias substantially.

Within the context of these limitations, our findings can be used to inform health care policy decisions in Iraq. Our 30-day prevalence estimates are consistent with the existing Iraqi literature (Alhasnawi et al., 2009; Doocy et al., 2012; Mateen et al., 2012). In addition, we found that respondents generally attributed more individual-level disability to mental rather than chronic physical disorder but that physical disorders accounted for a much higher societal-level proportion of all days out of role due to their higher prevalence. Our findings suggest the need for prioritization of programs designed to prevent and treat conditions associated with the greatest degree of burden in Iraq, including chronic headaches, arthritis, and major depressive disorder.

Importantly, treatment rates of chronic physical disorders are known to be higher than those of mental disorders worldwide (Ormel et al., 2008), and Iraqis have particularly low rates of treatment for the mental disorders considered here (Alhasnawi et al., 2009). These factors could at least partly account for the higher individual-level effects of mental than physical

disorders. Another implication of this finding, though, is that equity in health care treatment requires more aggressive outreach to detect and treat mental disorders. Such efforts must carefully consider cultural factors associated with mental illness in Iraq. For example, although 75% of Iraqis report that they would not want others to know if they had a mental disorder, 70% would feel comfortable talking to someone at a primary care clinic about mental health problems (Sadik et al., 2010). Thus, in order to maximize outreach, the integrating of mental health into primary care should continue to be a priority in Iraq (Hamid et al., 2008). In particular, our findings suggest a potential benefit of primary care based education, screening, and treatment for mood and anxiety disorders.

The development and implementation of mental health programs in Iraq must also recognize the scarcity of mental health treatment providers. Available estimates suggest that there are only .7 psychiatrists, .1 psychiatric nurses, and .05 psychologists for every 100,000 Iraqi citizens, and that the majority of these providers are localized to Iraq's largest cities (Okasha et al., 2012). As mental and physical disorders are often comorbid, it is thus necessary to train non-mental health staff in the 2,000 primary care clinics dispersed across Iraq to screen for the presence of comorbid mental disorders. Consistent with this suggestion, Iraq recently developed a national primary care based mental health training initiative that has demonstrated promising preliminary findings (Sadik et al., 2011).

The limited availability of trained mental health care providers also underscores the potential utility of telemedicine in Iraq. Internet use is becoming increasingly popular in Iraq (Miniwatts Marketing Group, 2012), and internet-based prevention and intervention may be particularly useful given the possibility that some Iraqis may be less likely to leave their homes because of prior and/or ongoing violence (Lane, 2013). One recent pilot study found promising outcomes for an internet-based cognitive behavioral treatment for Iraqis with posttraumatic stress disorder (Wagner et al., 2012). Although similar programs still need to be developed and tailored for Iraqis experiencing major depressive disorder, panic disorder, and generalized anxiety disorder (i.e., mental disorders associated with greater burden in the present study), studies conducted in other countries suggest that internet-based prevention and treatment efforts for these disorders are effective (Carlbring et al., 2011; Farrer et al., 2011; Kiropoulos et al., 2008; Klein et al., 2006; Titov et al., 2011). Relatedly, although there is a larger workforce of physical health care providers in Iraq, internet-based interventions have also been effectively used to treat/manage several of the chronic physical disorders associated with a greater degree of burden in the present study, including headaches, diabetes, and insomnia (Cuijpers et al., 2008).

In summary, the present study is the first to report individual- and societal-level burdens associated with physical conditions and mental disorders in post-autocratic Iraq. Our findings highlight the importance of Iraqi health programs designed to prevent and treat conditions such as chronic headaches, arthritis, and major depression. Given the unique circumstances associated with mental health care in Iraq (e.g., stigma, lack of treatment providers), our findings also support continued mental health outreach through primary care clinics as well as alternative means such as telemedicine.

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Table 1

Distribution of respondents by age, marital status, education, employment, and income

	Male		Female		Total	
	%	(se)	%	(se)	(se)	
Age						
18-34	55.7	1.8	53.1	1.5	54.4	1.3
35-49	22.5	1.1	24.4	1.4	23.5	0.9
50-64	15.3	1.5	15.7	1.5	15.5	1.1
65+	6.6	0.7	6.8	0.8	6.7	0.4
Marital status						
Married	67.6	1.3	63.5	1.8	65.6	1.2
Separated/Widowed/Divorced	2.2	0.6	12.8	1.1	7.4	0.6
Never married	30.2	1.3	23.7	1.5	27.0	1.0
Years of Education						
0-11	12.2	1.1	31.4	1.2	21.8	0.9
12	31.0	1.4	35.4	1.6	33.2	0.9
13-15	34.4	1.6	21.4	1.6	27.9	1.0
16+	22.4	1.1	11.8	1.6	17.1	0.9
Employment Status						
Employed	68.2	1.8	13.1	1.2	40.8	1.2
Student	7.7	1.1	4.6	0.8	6.1	0.7
Homemaker	0.6	0.2	52.2	1.7	26.2	1.0
Retired	6.7	1.1	0.4	0.2	3.6	0.6
Other	16.9	1.3	29.8	1.7	23.3	1.1
Family Income¹						
Low	20.9	1.3	26.7	1.3	23.8	0.9
Low-average	27.1	1.6	26.0	1.3	26.5	1.0
High-average	30.9	1.6	29.4	1.4	30.2	0.8
High	21.1	1.7	17.9	1.3	19.5	1.1
(n)	(2,091)		(2,241)		(4,332)	

¹ Family income was defined using standard international welfare economics methods. Household income was divided by number of family members to create a measure of income-per-family-member (IPFM). IPFM was then defined low if less than half the international median, low-average if up to the median, high-average if up to two times the median, and high if greater than twice the median.

Table 2

Distribution of days out of role due to health problems in the 30 days before interview in the Iraqi general population

	<u>%</u>	<u>(se)</u>
Any days out of role	22.6	(0.8)
1 day	7.4	(1.2)
2 days	18.4	(1.4)
3-5 days	25.6	(1.8)
6-10 days	18.0	(2.0)
11-20 days	11.3	(1.6)
21-30 days	19.3	(2.0)

Table 3

Prevalence of mental and physical disorders in the Iraqi general population and associated annualized days out of role

	<u>Prevalence</u>		<u>Annualized days out of role</u> ^I	
	<u>%</u>	<u>(se)</u>	<u>Mean</u>	<u>(se)</u>
I. Mental disorders				
Depression	4.4	(0.5)	95.3	(21.1)
Bipolar	0.2	(0.1)	225.8	(99.4)
Panic disorder	1.5	(0.3)	91.5	(30.0)
Specific phobia	3.8	(0.4)	36.4	(9.7)
Social phobia	0.7	(0.2)	83.3	(40.7)
Generalized anxiety disorder	2.3	(0.3)	88.5	(17.0)
Alcohol abuse	0.1	(0.1)	0.0	(0.0)
Drug abuse	0.1	(0.1)	93.8	(66.0)
Post-traumatic stress disorder	1.1	(0.2)	71.4	(17.9)
II. Chronic physical disorders				
Insomnia	5.0	(0.4)	79.8	(17.2)
Headache or migraine	18.2	(0.9)	64.9	(5.2)
Arthritis	13.5	(0.9)	68.7	(6.1)
Chronic pain	18.4	(1.0)	59.8	(6.3)
Cardiovascular	9.3	(0.7)	73.6	(9.7)
Respiratory	13.7	(0.7)	47.5	(6.7)
Diabetes	3.5	(0.4)	76.5	(13.9)
Digestive	2.1	(0.3)	42.1	(10.7)
Neurological	0.5	(0.2)	117.4	(56.2)
Cancer	0.3	(0.1)	107.1	(67.2)
III. Total disorders				
Any mental	10.9	(0.7)	66.6	(10.7)
Any physical	44.5	(1.1)	50.8	(3.4)
Any disorder	47.8	(1.0)	49.6	(3.3)
IV. All respondents	--	--	28.7	(1.9)

^I Mean number of days out of role in the past 30 days multiplied by 12

Table 4

Individual-level and societal-level effects of chronic physical and mental disorders on annualized days out of role in the Iraqi general population

	<u>Individual-level effects (days out of role per year)</u>		<u>Societal-level effects (percent of all days out of role)</u>	
	Est	(se)	%	(se)
I. Mental disorders				
Major depressive disorder	52.2	(22.6)	9.7	(4.0)
Bipolar disorder	176.2	(51.3)	0.8	(0.3)
Panic disorder	51.7	(27.0)	2.9	(1.5)
Specific phobia	9.9	(11.3)	1.5	(1.7)
Social phobia	21.4	(36.3)	0.6	(1.0)
Generalized anxiety disorder	37.5	(21.0)	3.7	(2.1)
Alcohol abuse	-4.7	(14.3)	0.0	(0.1)
Drug abuse	95.3	(92.2)	0.3	(0.3)
Post-traumatic stress disorder	17.3	(22.6)	1.0	(1.3)
II. Chronic physical disorders				
Insomnia	30.3	(21.1)	6.0	(4.2)
Chronic headache or migraine	26.9	(9.1)	21.5	(7.3)
Arthritis	23.0	(15.0)	12.4	(8.4)
Chronic pain	9.8	(10.1)	7.9	(7.9)
Cardiovascular disorder	21.8	(14.1)	8.3	(5.2)
Respiratory disorder	16.7	(11.2)	9.5	(6.9)
Diabetes	26.5	(17.3)	4.0	(2.6)
Digestive disorder	-3.3	(24.6)	-0.3	(2.6)
Neurological disorder	84.1	(32.1)	1.6	(0.7)
Cancer	80.3	(59.2)	0.7	(0.5)
III. Total disorders				
All disorders	32.5	(5.3)	65.9	(9.4)
All mental	40.6	(10.5)	18.1	(4.4)
All physical	30.2	(7.5)	56.9	(13.9)