

Global Mental Health 4



Mental health systems in countries: where are we now?

K S Jacob, P Sharan, I Mirza, M Garrido-Cumbrera, S Seedat, J J Mari, V Sreenivas, Shekhar Saxena

More than 85% of the world's population lives in 153 low-income and middle-income countries (LAMICs). Although country-level information on mental health systems has recently become available, it still has substantial gaps and inconsistencies. Most of these countries allocate very scarce financial resources and have grossly inadequate manpower and infrastructure for mental health. Many LAMICs also lack mental health policy and legislation to direct their mental health programmes and services, which is of particular concern in Africa and South East Asia. Different components of mental health systems seem to vary greatly, even in the same-income categories, with some countries having developed their mental health system despite their low-income levels. These examples need careful scrutiny to derive useful lessons. Furthermore, mental health resources in countries seem to be related as much to measures of general health as to economic and developmental indicators, arguing for improved prioritisation for mental health even in low-resource settings. Increased emphasis on mental health, improved resources, and enhanced monitoring of the situation in countries is called for to advance global mental health.

The previous articles in this Series on global mental health have described the evidence base emphasising the public-health importance of mental disorders, complex links with physical diseases,¹ scarcity of mental health resources, inequity in resource distribution, inefficiency of use,² and evidence related to the effectiveness of interventions for the treatment and prevention of mental disorders in low-income and middle-income countries (LAMICs).³ More than 85% of the world's population lives in the 153 countries classified as LAMICs, according to World Bank criteria. Nine of 11 countries with a population of at least 100 million belong to the LAMIC categories.

Health systems are core to the delivery of evidence-based mental health care.⁴ WHO outlined the need and rationale for building community-based mental health systems and services.⁵ It identified the following key components for improving mental health services: provide treatment for mental disorders in primary care; ensure increased accessibility to essential psychotropic medication, and provide care in the community; educate the public; involve communities, families, and consumers; establish national

policies, programmes, and legislation on mental health; develop human resources; link with other sectors; monitor community mental health; and support relevant

Key messages

- Country-level information on mental health systems has recently become available, although it still has substantial gaps and inconsistencies. Efforts are needed to obtain systematic, reliable, and comparable country-level data
- Mental health resources in countries seem to be as related to measures of general health as are economic or developmental indicators, arguing for improved prioritisation for mental health even in low-resource settings. Although retaining integration in the development and health framework, the delineation of a ring-fenced budget for mental health could help this process
- Availability of estimates of neuropsychiatric burden has not had much effect on mental health resource development. Objective goals are needed in health priority settings at the country level
- Many LAMICs do not have stewardship instruments (ie, policy, legislation) to direct their mental health programmes and services. They should be supported in developing policy documents and in their implementation
- Most LAMICs allocate very little financial resources and have substantially inadequate manpower and infrastructure for mental health. LAMICs should increase their budget for health as well as mental health
- Countries have high degree of variability on various components of mental health systems, even in the same income categories. Some countries seem to have progressed well in developing their mental health systems despite having low income, and need careful scrutiny to derive useful lessons
- Global progress on mental health is only an aggregate of country-level progress. Monitoring of the situation in countries is necessary to advance global mental health

Search strategy and selection criteria

The UN and WHO databases and reports published on the web and in print were searched for country-specific data relevant to mental health systems. Development data were sourced from the UN (eg, population, adult literacy) and the World Bank (eg, income categories). Indicators of health expenditure and resources were obtained from WHO databases. Data for neuropsychiatric burden and suicide were extracted from the Global Burden of Disease project of WHO. Indicators of mental health (eg, presence of mental health policy and legislation, proportion of mental health budget of total health budget, density of mental health professionals, and density of hospital beds for mental health) were extracted from the WHO Mental Health Atlas database.

Lancet 2007; 370: 1061–77

Published Online
September 4, 2007
DOI:10.1016/S0140-6736(07)61241-0

This is the fourth in a **Series** of six articles about global mental health

See Online for webtables 1 and 2

Department of Psychiatry, Christian Medical College, Vellore, India (Prof K S Jacob MD); Department of Psychiatry (Prof P Sharan MD) and Department of Biostatistics (V Sreenivas PhD), All India Institute of Medical Sciences, New Delhi, India; Institute of Psychiatry, Rawalpindi Medical College, University of Health Sciences, Lahore, Pakistan (Prof I Mirza MRCPsych); Department of Mental Health and Substance Abuse, WHO, Geneva, Switzerland (M Garrido-Cumbrera PhD, S Saxena MD); MRC Unit on Anxiety Disorders, Department of Psychiatry, University of Stellenbosch, Cape Town, South Africa (Prof S Seedat PhD); and Department of Psychiatry, Universidade Federal de São Paulo, São Paulo, Brazil (Prof J J Mari MD)

Correspondence to: Prof K S Jacob, Department of Psychiatry, Christian Medical College, Vellore 632002, India

research. A mental health system should, thus, include all organisations and resources focused on improving mental health and cover the following domains: policy and legislative framework, community mental health services, mental health in primary health care, human resources, public education, links with other sectors, and monitoring and research.⁶ Many effects inside and outside the health sector including geography, demography, language, and culture; history, transition, and development; politics and civil movement; stigma and public awareness; conflict; burden of disorders; financing of mental health services; and the brain drain, among others, have been thought to impinge on the development of mental health services in LAMICs. A good understanding of the current level of mental health system in a country is essential for planning and strengthening of the system.

In this Series article, we attempt to answer the question: where are the countries, at present, in terms of their mental health systems? We present country-specific data on the mental health systems and highlight recent trends. Selected mental health resource indicators are examined with a few resource indicators on development, economics, and health resources. We aim to provide decisionmakers and programme planners with a baseline, and a realistic view of the challenges and opportunities in the development of mental health systems, and in identifying country-specific, regional, and global targets.

Methods

The statistical test ANOVA was used to compare WHO regions and World Bank income categories with respect to selected mental health resource indicators. We also examined, in an ecological correlational analysis of LAMICs, the relation between population data (log population), economic indices (gross domestic product [GDP] per head), health-resource indicators (health budget as % of GDP, health providers per 100 000 people, doctors per 1000 people, nurses per 1000 people), health condition indicators (neuropsychiatric burden per 100 000 people, suicides per 100 000 people) and the availability of mental health resources (mental health beds per 10 000 people, psychiatrists per 100 000 people, psychiatric nurses per 100 000 people, and mental health budget as percent of health budget).

As a secondary data source, published mental health profiles of individual countries were also reviewed for relevant information on mental health systems in countries. The PubMed database was searched for country profiles. Three journals known to have published such profiles were searched by hand, which revealed 46 country profiles from *International Psychiatry*, 13 from *International Review of Psychiatry*, and 11 from the *British Journal of Psychiatry*. We extracted data for the 52 countries profiled (14 low-income, 14 lower-middle-income, nine upper-middle-income, and 15 high-income countries).

To illustrate issues we identified, case studies from Brazil, India, and South Africa are presented as examples. These cases focus on the following: the historical development of mental health policy and programmes, the current state of indicators of mental health care, and recent changes and factors that served as catalysts.

Indicators related to mental health systems and their correlations

Table 1 shows country-specific data for measures of human development, health expenditure and resources, the burden due to neuropsychiatric conditions, frequency of suicide, and indicators related to mental health systems.⁷⁻¹² Tables 2 and 3 summarise the data across WHO regions and the World Bank income categories.

The median estimated neuropsychiatric burden for all countries was 2964 disability-adjusted life years (DALY) per 100 000 people. Upper middle-income countries (classified by the World Bank) had significantly greater neuropsychiatric burden than upper middle-income and lower middle-income countries, which in turn had a greater burden than low-income countries. American countries and European countries had a significantly greater neuropsychiatric burden than countries in other WHO regions.

The median suicide rate in countries was 6.55 per 100 000 people. Suicide among men was reported to be higher than 35 per 100 000 people in Belarus, Kazakhstan, Lithuania, Russia, and Ukraine. European and South East Asian regions had a higher rate of suicide than other regions.

Mental health stewardship

Nearly 80% of the 191 countries had a mental health policy or programme (or both) and about 70% have mental health legislation. There was a significant difference between WHO regions in terms of number of countries with mental health legislation (data not shown). More countries in the European region (92%) and fewer countries in the eastern Mediterranean region (55%) had enacted laws on mental health. 11 countries (Andorra, Cambodia, Djibouti, Gabon, Guinea-Bissau, Guyana, Maldives, Somalia, the former Yugoslav Republic of Macedonia, Timor-Leste, and Vanuatu) had neither a mental health policy or programme nor legislation, and almost all are LAMICs.

Expenditure on health and mental health

World Bank income categories and WHO regions had significantly different total expenditure on health as a proportion of GDP. African, Eastern Mediterranean, and South East Asian countries spent significantly less of their GDP on health than American, European, and the Western Pacific countries; and low-income countries spend significantly less of their GDP on health than middle-income countries, which in turn spent significantly less of their GDP on health than high-income countries.

WHO region	Population (x10 ³)	World Bank income categories	Adult literacy rate (%)	Unemployment (%)	Total expenditure on health (% of GDP)	Health providers per 100 000 people	Rate of DALYs by neuropsychiatric conditions per 100 000 people	Suicide per 100 000 people*	Presence of mental health policy or programme	Presence of mental health legislation	Proportion of mental health budget (% of total health budget)	Total number of mental health beds (per 10 000 population)	Mental health beds outside mental hospitals (% of total mental health beds)	Psychiatrists per 100 000 people	Psychiatric nurses per 100 000 people
Afghanistan	29 863	L	..	..	6.5%	40	3712.12	6.49	Y	Y	..	0.055	43.64%	0.036	0.07
Albania	3 130	LM	98.7%	15%	6.5%	552	3158.96	2.62	Y	Y	6%	2.5	20%	2.2	4.2
Algeria	32 854	LM	69.8%	18%	4.1%	336	2357.55	2.87	Y	Y	..	1.4	38.57%	1.1	1.1
Andorra	67	H	..	..	7.1%	695	3553.34	7.22	N	N	3.9%	1.6	100%	10	9
Angola	15 941	L	66.8%	..	2.8%	127	2675.76	8.08	Y	..	..	0.13	46.15%	0	0
Antigua and Barbuda	81	UM	..	..	4.6%	345	4038.52	0.48	Y	Y	3%	17.9	5.03%	2	4.5
Argentina	38 747	UM	97.2%	16%	8.9%	381	4558.89	10.21	Y	Y	..	6	10%	13.25	..
Armenia	3 016	LM	99.4%	8%	6%	841	2959.37	3.35	Y	Y	4.5%	4.8	0.42%	4	0
Australia	20 155	H	..	5%	9.5%	1218	3064.02	11.31	Y	Y	9.6%	3.9	69.23%	14	53
Austria	8 189	H	..	5%	7.5%	1297	3386.25	18.19	Y	Y	..	6.5	30.77%	11.8	37.8
Azerbaijan	8 411	LM	98.8%	1%	3.6%	1183	3125.41	4.42	N	Y	1.6%	7.1	2.82%	5	3.9
Bahamas	323	H	..	11%	6.4%	552	3945.41	3.05	N	..	11%	11.96	2.26%	4.7	21.6
Bahrain	727	H	87.7%	..	4.1%	589	2570.26	4.37	Y	Y	..	3.3	0%	5	23
Bangladesh	141 822	L	41.1%	4%	3.4%	57	3108.76	12.20	Y	Y	0.5%	0.065	53.85%	0.05	0.06
Barbados	270	UM	99.7%	10%	6.9%	491	3953	4.18	Y	Y	12%	26	15.38%	3	97
Belarus	9 755	LM	99.6%	2%	5.5%	1671	3240.34	38.19	N	Y	..	8	6.25%	10.1	25.6
Belgium	10 419	H	..	9%	9.4%	1097	3501.83	20.86	Y	Y	6%	22.1	41.63%	18	..
Belize	270	UM	76.9%	10%	4.5%	231	3887.43	2.32	N	Y	1%	2.3	8.7%	1.3	0.5
Benin	8 439	L	33.6%	..	4.4%	88	2503.76	4.29	Y	Y	..	0.08	..	1.2	0
Bhutan	2163	L	..	..	3.1%	27	3047.02	13.54	Y	N	0.17%	0	..	0.3	0.16
Bolivia	9 182	LM	86.5%	5%	6.7%	442	4088.36	1.99	Y	Y	0.2%	0.791	35.52%	0.9	..
Bosnia and Herzegovina	3 907	LM	94.6%	..	9.5%	576	3095.18	13.87	Y	Y	..	3.6	33.33%	1.8	10
Botswana	1 765	UM	78.9%	20%	5.6%	305	2681.23	4.98	Y	Y	1%	1.1	36.36%	0.4	9
Brazil	186 405	LM	88.4%	9%	7.6%	499	4568.94	5.01	Y	Y	2.5%	2.56	4.69%	4.8	..
Brunei	374	H	92.7%	..	3.5%	489	2857.85	1.65	N	Y	..	1.2	100%	1.9	0.3
Bulgaria	7 726	LM	98.2%	12%	7.5%	775	3412.03	16.92	Y	Y	2.5%	8.3	50.6%	9	15
Burkina Faso	13 228	L	12.8%	..	5.6%	60	2465.34	5.23	Y	Y	..	0.18	66.67%	0.05	0.4
Burma	50 519	L	89.7%	..	2.8%	134	2759.69	10.60	Y	Y	1.3%	0.55	40%	0.2	0.6

Continued from previous page

Burundi	AFR	7548	L	58.9%	14%	3.1%	22	2687.08	6.90	Y	N	..	0.1	0%	0.02	0
Cambodia	WPR	14071	L	73.6%	2%	10.9%	100	2968.36	4.23	N	N	..	0	..	0.16	0.22
Cameroon	AFR	16322	L	67.9%	8%	4.2%	179	2455.42	4.75	Y	..	0.1%	0.08	12.5%	0.03	0.2
Canada	AMR	32.268	H	..	7%	9.9%	1209	3827.05	11.75	Y	Y	..	19.34	52.95%	12	44
Cape Verde	AFR	507	LM	75.7%	..	4.6%	136	2577.04	3.27	Y	Y	..	0.78	100%	0.9	..
Central African Republic	AFR	4038	L	48.6%	..	4%	52	2568.67	9.40	N	..	..	0.07	100%	0.03	0.03
Chad	AFR	9749	L	25.5%	..	6.5%	32	2406.55	4.77	Y	N	..	0.02	50%	0.01	0.01
Chile	AMR	16.295	UM	95.7%	7%	6.1%	172	4268.58	11.17	Y	Y	2.33%	1.27	18.11%	4	1.1
China	WPR	1323345	LM	90.9%	4%	5.6%	214	2683.88	20.94	Y	N	2.35%	1.06	17.92%	1.29	1.99
Colombia	AMR	45.600	LM	94.2%	12%	7.6%	190	4193.38	6.11	Y	Y	0.08%	..	..	2	..
Comoros	AFR	798	L	56.2%	..	2.7%	89	2410.14	2.91	N	Y	..	0	..	0	0
Cook Islands	WPR	18	..	..	..	3.8%	367	2692.02	3.43	N	Y	..	0	..	0	5.3
Costa Rica	AMR	4327	UM	95.8%	7%	7.3%	225	3794.09	7.75	Y	Y	8%	2.6	3.85%	2	2
Cote d'Ivoire	AFR	18154	L	48.1%	..	3.6%	73	2806.41	19.95	Y	..	0.1%	0.15	13.33%	0.2	0.2
Croatia	EUR	4551	UM	98.1%	14%	7.8%	783	3659.88	15.18	N	Y	..	10.06	20.28%	8.7	..
Cuba	AMR	11.269	LM	99.8%	..	7.3%	1335	3531.61	0.67	Y	Y	5%	7.36	22.28%	10	2.7
Cyprus	EUR	835	H	96.8%	5%	6.4%	610	2397.52	16.25	Y	Y	7%	5.2	13.46%	5	45
Czech Republic	EUR	10.220	UM	..	8%	7.5%	1369	3254.77	10.86	Y	N	3%	11.4	14.04%	12.1	33
Democratic Republic of the Congo	AFR	57.549	L	65.3%	..	4%	64	2715.99	4.79	Y	Y	..	0.17	11.76%	0.04	0.03
Denmark	EUR	5431	H	..	5%	9%	1351	3504.28	13.36	Y	Y	..	7.1	..	16	59
Djibouti	EMR	793	LM	..	..	5.7%	60	2590.49	4.90	N	N	..	0.7	100%	0	0.16
Dominica	AMR	79	UM	..	11%	6.3%	467	4320.47	0.00	N	Y	2.9%	..	..	..	..
Dominican Republic	AMR	8895	LM	87.7%	18%	7%	371	3744.05	2.90	Y	..	0.5%	0.37	18.92%	2	0.4
Ecuador	AMR	13.228	LM	91%	9%	5.1%	313	4146	5.94	Y	N	..	1.69	9.47%	2.1	0.5
Egypt	EMR	74.033	LM	55.6%	11%	5.8%	253	2890.13	1.51	Y	Y	9%	1.3	15.38%	0.9	2
El Salvador	AMR	6881	LM	79.7%	7%	8.1%	203	4062.1	8.71	Y	N	..	0.65	0%	0.5	0
Equatorial Guinea	AFR	504	L	84.2%	..	1.5%	84	2442.39	5.22	Y	N	..	0	..	0	0
Eritrea	AFR	4401	L	..	..	4.4%	63	2553.4	5.86	Y	N	..	0.64	0%	0.03	0.18
Estonia	EUR	1330	UM	99.8%	10%	5.3%	1332	3244.14	28.71	Y	Y	..	10.2	21.57%	13	0
Ethiopia	AFR	77.431	L	41.5%	23%	5.9%	25	2506.02	3.49	N	..	..	0.07	14.29%	0.02	0.3
Fiji	WPR	848	LM	92.9%	5%	3.7%	229	2778.69	2.88	Y	Y	1.7%	2.34	0%	0.25	0
Finland	EUR	5249	H	..	9%	7.4%	1825	3670.26	23.38	Y	Y	..	10	100%	22	180
France	EUR	60.496	H	..	10%	10.1%	1087	3680.4	15.92	Y	Y	8%	12	41.67%	22	98

Continued from previous page

Gabon	AFR	1384	UM	..	..	4.4%	545	2523.11	4.48	N	N	0.3%	0.7	14.29%	0.3	1
Gambia	AFR	1517	L	..	..	8.1%	143	2344.75	4.51	Y	Y	..	0.78	0%	0.08	0
Georgia	EUR	4474	LM	..	13%	4%	785	3320.16	3.28	Y	Y	..	2.1	4.76%	6	24
Germany	EUR	82 689	H	..	11%	11.1%	1319	3297.04	13.88	Y	Y	..	7.5	40%	11.8	52
Ghana	AFR	22 113	L	54.1%	..	4.5%	107	2845.24	3.95	Y	Y	0.5%	1.03	2.91%	0.08	2
Greece	EUR	11 120	H	91%	9%	9.9%	842	2778.11	3.52	Y	Y	..	8.7	50.57%	15	3
Grenada	AMR	103	UM	..	..	6.7%	420	3995.86	3.37	Y	Y	10%	10.8	20.37%	1	5.4
Guatemala	AMR	12 599	LM	69.1%	3%	5.4%	494	3784.02	2.33	Y	N	0.9%	0.35	8.57%	0.54	0.04
Guinea	AFR	9402	L	..	..	5.4%	67	2431.75	5.14	Y	Y	..	0.05	0%	0.04	0
Guinea-Bissau	AFR	1586	L	..	..	5.6%	82	2408.47	4.70	N	N	2.3%	0	..	0	0
Guyana	AMR	751	LM	..	26%	4.8%	277	4593.06	20.43	N	N	..	3	13.33%	0.2	0.6
Haiti	AMR	8528	L	51.9%	..	7.5%	36	3874.36	0.73	N	..	..	..	..	..	..
Honduras	AMR	7205	LM	80%	4%	7.1%	189	3732.24	8.12	Y	N	2.3%	0.6	11.67%	0.76	0
Hungary	EUR	10 098	UM	99.3%	7%	8.4%	1238	3458.58	28.17	Y	Y	8%	9.6	76.04%	9	19
Iceland	EUR	295	H	..	3%	10.5%	1794	3061.21	11.82	Y	Y	..	5	100%	25	33
India	SEAR	1 103 371	L	61%	4%	4.8%	187	3112.41	17.38	Y	Y	2.05%	0.25	20%	0.2	0.05
Indonesia	SEAR	222 781	LM	87.9%	9%	3.1%	95	2683.85	11.31	Y	Y	1%	0.4	5%	0.21	0.9
Iran	EMR	69 515	LM	77%	..	6.5%	183	3484.17	8.22	Y	N	3%	1.6	12.5%	1.9	0.5
Iraq	EMR	28 807	LM	..	27%	2.7%	197	2873.04	6.88	Y	Y	..	0.63	12.7%	0.7	0.1
Ireland	EUR	4148	H	..	4%	7.3%	2225	3585.51	11.72	Y	Y	6.8%	9.43	21%	6.82	136
Israel	EUR	6725	H	96.9%	9%	8.9%	1027	3253.5	4.78	Y	Y	6.2%	8.1	6.17%	13.7	10.7
Italy	EUR	58 093	H	..	9%	8.4%	993	2978.27	6.78	Y	Y	..	4.63	100%	9.8	32.9
Jamaica	AMR	2651	LM	87.6%	11%	5.3%	250	3884.76	0.07	Y	Y	5%	5	20%	1.6	8
Japan	WPR	128 085	H	..	5%	7.9%	996	2342.47	24.62	Y	Y	5%	28.4	27.46%	9.4	59
Jordan	EMR	5703	LM	89.9%	..	9.4%	527	2730.12	17.17	Y	Y	..	1.57	10.83%	1	2
Kazakhstan	EUR	14 825	LM	99.5%	8%	3.5%	1007	3535.96	37.14	Y	Y	7%	6.5	9.23%	6	..
Kenya	AFR	34 256	L	73.6%	..	4.3%	128	2705.34	5.94	Y	Y	0.01%	0.4	25%	0.2	2
Kiribati	WPR	99	LM	..	..	13.1%	265	2563.96	0.00	Y	N	1.6%	7.3	0%	1	0
Kuwait	EMR	2687	H	82.9%	1%	3.5%	543	2467.48	1.78	Y	N	..	3.4	0%	3.1	22.5
Kyrgyzstan	EUR	5264	L	98.7%	13%	5.3%	917	3233.03	14.80	Y	Y	7.9%	6.25	10.08%	4.5	13.7
Laos	WPR	5924	L	68.7%	..	3.2%	161	3183.44	21.23	N	..	..	0.07	100%	0.03	0
Latvia	EUR	2307	UM	99.7%	9%	6.4%	848	3578.23	30.45	Y	Y	6.3%	13.8	2.17%	10	40
Lebanon	EMR	3577	UM	..	..	10.2%	443	2743.66	6.05	Y	N	..	7.5	1.33%	2	5.3
Lesotho	AFR	1795	L	81.4%	39%	5.2%	67	2660.14	6.64	Y	Y	7%	0.8	62.5%	0.05	0.2

Continued from previous page

Liberia	AFR	3283	L	55.9%	..	4.7%	33	2513.76	6.69	N	Y	..	0.08	0%	0.03	0.03
Libya	EMR	5853	UM	81.7%	..	4.1%	489	2776.43	3.87	Y	..	..	1	0%	0.18	0.5
Lithuania	EUR	3431	UM	99.6%	13%	6.6%	1192	3141.23	45.51	Y	Y	7%	10	14%	15	36
Luxembourg	EUR	465	H	..	5%	6.8%	1208	3570.52	16.17	Y	Y	13.4%	10.5	28.57%	12	35
Madagascar	AFR	18606	L	70.6%	5%	2.7%	61	2430.1	4.28	Y	Y	0.82%	0.17	52.94%	0.08	0.3
Malawi	AFR	12884	L	64.1%	..	9.3%	61	2497.43	7.03	Y	Y	2%	0.37	..	0	2.5
Malaysia	WPR	25347	UM	88.7%	4%	3.8%	239	2874.14	6.60	Y	Y	1.5%	2.7	11.11%	0.6	0.5
Maldives	SEAR	329	LM	96.3%	..	6.2%	362	2910.39	4.94	N	N	..	..	..	0.36	0
Mali	AFR	13518	L	19%	..	4.8%	61	2570.72	5.14	Y	Y	0.02%	0.2	100%	0.06	0.15
Malta	EUR	402	H	87.9%	7%	9.3%	933	2670.87	6.27	Y	Y	10%	18.9	0.21%	4	102
Marshall Islands	WPR	62	LM	..	31%	13.1%	345	2740.12	5.40	Y	Y	0.4%	0	..	0	0
Mauritania	AFR	3069	L	51.2%	..	4.2%	74	2458.15	5.50	Y	N	1%	0.2	0%	0.08	0
Mauritius	AFR	1245	UM	84.3%	9%	3.7%	479	2846.12	11.89	Y	Y	0.3%	9.5	15.79%	1	5
Mexico	AMR	107029	UM	90.3%	3%	6.2%	288	3699.85	3.88	Y	Y	1%	0.667	23.54%	2.7	0.1
Micronesia	WPR	110	LM	..	..	6.4%	450	2654.79	3.02	Y	..	7.3%	0.7	100%	0	0
Moldova	EUR	4206	L	96.2%	8%	7.2%	893	4056.37	18.31	Y	Y	6.5%	6.7	11.94%	9	30.5
Monaco	EUR	35	H	..	..	9.7%	2031	3246.32	13.90	Y	Y	..	17.27	100%	28.5	..
Mongolia	WPR	2646	L	97.8%	4%	6.7%	600	2953.21	12.26	Y	Y	5%	2.4	29.17%	3.3	4.4
Morocco	EMR	31478	LM	50.7%	12%	5.1%	130	2763.59	2.32	Y	Y	..	0.783	33.59%	0.4	2.2
Mozambique	AFR	19792	L	46.5%	..	4.7%	35	2738.64	3.59	Y	..	..	0.23	13.04%	0.04	0.01
Namibia	AFR	2031	LM	85%	34%	6.4%	335	2641.73	6.69	N	Y	..	1.5	0%	0.2	0
Nauru	WPR	14	..	..	..	12.3%	691	2696.79	2.14	N	Y	..	0	..	0	0
Nepal	SEAR	27133	L	48.6%	..	5.3%	67	3135.5	10.32	Y	Y	0.08%	0.08	75%	0.12	0.08
Netherlands	EUR	16299	H	..	4%	9.8%	1700	3030.87	8.89	Y	Y	7%	18.7	17.65%	9	99
New Zealand	WPR	4028	H	..	4%	8.1%	1108	2970.45	12.20	Y	Y	11%	3.8	73.68%	6.6	74
Nicaragua	AMR	5487	L	76.7%	12%	7.7%	145	3715.52	11.87	Y	..	1%	0.34	5.88%	0.64	0.045
Niger	AFR	13957	L	14.4%	..	4.7%	25	2563.84	5.67	Y	Y	..	0.2	100%	0.04	0.04
Nigeria	AFR	131530	L	66.8%	..	5%	198	2858.23	4.93	Y	Y	..	0.4	25%	0.09	4
Niue	WPR	1	..	..	..	9.7%	800	2631.42	3.24	N	Y	..	0	..	0	0
North Korea	SEAR	22488	L	..	..	5.8%	741	2745.67	5.02	Y	Y	..	..	..	..	..
Norway	EUR	4620	H	..	5%	10.3%	1847	3229.49	11.34	Y	Y	0.1%	12	..	20	42
Oman	EMR	2567	UM	74.4%	..	3.2%	482	2535.65	4.04	Y	N	..	0.49	42.86%	1.4	5
Pakistan	EMR	157935	L	48.7%	8%	2.4%	120	3021.98	10.47	Y	Y	0.4%	0.24	75%	0.2	0.08
Palau	WPR	20	UM	..	..	9.7%	261	2539.28	3.99	Y	Y	2%	4.7	100%	5	10

Continued from previous page

Panama	AMR	3232	UM	91.9%	12%	7.6%	304	3772-87	503	Y	..	..	2.55	38.82%	3.7	5
Papua New Guinea	WPR	5887	L	57.3%	3%	3.4%	58	2537-53	10.02	Y	Y	0.7%	0.24	29.17%	0.09	1.2
Paraguay	AMR	6158	LM	91.6%	8%	7.3%	289	4021-27	3.83	Y	Y	0.05%	0.731	16.01%	1.8	0.08
Peru	AMR	27968	LM	87.7%	11%	4.4%	184	4025-57	1.76	Y	N	2%	0.47	..	2.06	6
Philippines	WPR	83054	LM	92.6%	11%	3.2%	272	3065-21	1.68	Y	N	0.02%	0.9	37.78%	0.4	0.4
Poland	EUR	38530	UM	..	19%	6.5%	793	3350-94	17.33	Y	Y	..	7.8	33.33%	6	18.4
Portugal	EUR	10495	H	..	6%	9.6%	786	3208-07	6.73	Y	Y	2.3%	7.5	80%	4.7	10.1
Qatar	EMR	813	H	89.2%	4%	2.7%	715	2348-71	4.47	Y	N	1%	0.97	0%	3.4	10
Republic of the Congo	AFR	3999	L	82.8%	..	2%	116	2621-32	6.31	Y	N	..	0.06	100%	0.03	0.1
Romania	EUR	21711	LM	97.3%	8%	6.1%	604	3294-03	12.49	Y	Y	3%	7.6	27.63%	4.1	8.9
Russia	EUR	143202	LM	99.4%	8%	5.6%	1278	3747-65	40.96	Y	Y	..	11.5	12.17%	13.3	50
Rwanda	AFR	9038	L	64%	1%	3.7%	48	2492-31	6.95	Y	..	1%	0.2	0%	0.03	0.8
St Kitts and Nevis	AMR	43	UM	..	..	5.3%	621	4813-06	0.00	..	..	..	..	..	..	..
St Lucia	AMR	161	UM	90.1%	16%	5%	745	4079-69	5.38	N	Y	4%	10.7	0%	1.9	2.6
St Vincent and the Grenadines	AMR	119	UM	..	..	6.1%	325	4125-3	6.87	Y	Y	4.6%	10.6	8.49%	0.9	14.2
Samoa	WPR	185	LM	98.7%	..	5.4%	274	2600-13	3.30	N	Y	..	0.2	100%	0	0.5
San Marino	EUR	28	H	..	3%	7.5%	14283	2761-12	9.66	N	Y	..	3.8	100%	15	0
Sao Tome and Principe	AFR	157	L	..	..	8.6%	236	2503-81	6.48	Y	Y	..	2.2	100%	0	0.3
Saudi Arabia	EMR	24573	UM	79.4%	5%	4%	435	2549-3	5.81	Y	N	..	1.18	32.2%	1.1	6.4
Senegal	AFR	11658	L	39.3%	..	5.1%	38	2370-93	4.37	Y	Y	9%	0.3	50%	0.16	0.06
Serbia and Montenegro	EUR	10503	UM	96.4%	15%	9.6%	697	3458-07	14.78	N	Y	..	9.6	53.12%	12.8	19
Seychelles	AFR	81	UM	91.9%	..	5.9%	944	2519-14	10.63	Y	Y	2.8%	7.7	22.08%	2	8
Sierra Leone	AFR	5525	L	29.6%	..	3.5%	39	2471-14	10.06	N	Y	..	0.47	31.91%	0.02	0.04
Singapore	WPR	4326	H	92.5%	5%	4.5%	564	2455-8	10.28	Y	Y	6.1%	6.1	3.28%	2.3	10.4
Slovakia	EUR	5401	UM	99.6%	18%	5.9%	1022	3642-15	13.88	N	..	5%	9	33.33%	10	32
Slovenia	EUR	1967	H	99.7%	6%	8.8%	980	3594-48	29.49	N	Y	..	8.46	14.89%	5.35	5.8
Solomon Islands	WPR	478	L	..	..	4.8%	98	2643-74	2.30	Y	Y	1.4%	0.26	0%	0	0.9
Somalia	EMR	8228	L	..	..	n/a	23	2635-87	7.57	N	N	..	0.398	..	0.06	0.03
South Africa	AFR	47432	LM	82.4%	27%	8.4%	485	3116-32	10.55	Y	Y	..	4.5	11.11%	1.2	7.5
South Korea	WPR	47817	H	..	4%	5.6%	351	3369-19	18.17	Y	Y	3%	13.8	54.35%	3.5	10.1
Spain	EUR	43064	H	97.1%	11%	7.7%	1113	3271-46	8.32	Y	Y	..	4.4	15.91%	3.6	4.2
Sri Lanka	SEAR	20743	LM	90.4%	9%	3.5%	228	2689-89	31.91	Y	Y	1.6%	1.8	22.22%	0.2	1.8
Sudan	EMR	36233	L	59%	..	4.3%	114	2472-43	7.12	Y	Y	..	0.2	10%	0.09	0.2

Continued from previous page

Suriname	AMR	449	LM	88%	14%	7.9%	207	3961.55	18.09	Y	Y	4.2%	5.2	0%	1.25	15
Swaziland	AFR	1032	LM	79.2%	..	5.8%	646	2753.49	4.51	Y	Y	0.3%	2	0%	0.1	10
Sweden	EUR	9041	H	..	6%	9.4%	1422	3173.59	12.80	N	Y	11%	6	..	20	32
Switzerland	EUR	7252	H	..	4%	11.5%	1465	3470.23	17.90	N	Y	..	13.2	0%	23	46
Syria	EMR	19043	LM	82.9%	12%	5.1%	334	2719.7	0.56	Y	Y	..	0.8	2.5%	0.5	0.5
Tajikistan	EUR	6507	L	99.5%	3%	4.4%	722	3290.63	5.10	N	..	..	2.47	0%	1.8	3.6
Tanzania	AFR	38329	L	69.4%	5%	4.3%	39	2455.82	2.34	Y	Y	7%	0.7	48.57%	0.04	2
Thailand	SEAR	64233	LM	92.6%	2%	3.3%	320	3222.38	11.08	Y	N	2.5%	1.4	0%	0.6	2.7
The former Yugoslav Republic of Macedonia	EUR	2034	LM	96.1%	37%	7.1%	809	3094.18	7.39	N	N	..	8.2	24.39%	7.5	24
Timor-Leste	SEAR	947	L	..	..	9.6%	229	202.72	10.69	N	N	..	..	..	..	..
Togo	AFR	6145	L	53%	..	5.6%	47	2436.57	4.52	Y	Y	0.2%	0.4	25%	0.04	0
Tonga	WPR	102	LM	98.9%	..	6.5%	369	2569.28	3.24	N	Y	0.5%	2.6	100%	1	1
Trinidad and Tobago	AMR	1305	UM	98.5%	10%	3.9%	366	3610.65	14.81	Y	Y	..	10.29	23.03%	1	11.5
Tunisia	EMR	10102	LM	74.3%	14%	5.4%	421	2758.26	4.42	Y	Y	..	1.13	24.78%	1.6	0.2
Turkey	EUR	73193	LM	88.3%	10%	7.6%	304	2904.49	6.67	Y	N	..	13	38.46%	1	3
Turkmenistan	EUR	4833	LM	98.8%	..	3.9%	1322	3105.81	12.50	Y	Y	..	3.5	8.57%	3	..
Tuvalu	WPR	10	..	..	..	6.1%	409	2816.18	5.63	Y	Y	..	1.8	100%	0	0
Uganda	AFR	28816	L	68.9%	3%	7.3%	81	2574.86	2.01	Y	Y	0.7%	0.44	50%	1.6	2
Ukraine	EUR	46481	LM	99.4%	9%	5.7%	1108	3152.61	35.83	Y	Y	..	9.6	3.12%	8.9	34
United Arab Emirates	EMR	4496	H	77.3%	2%	3.3%	621	2371.5	3.81	Y	Y	..	1.4	..	2	11
UK	EUR	59668	H	..	5%	8%	1505	3336.1	8.45	Y	Y	10	5.8	..	11	104
USA	AMR	298213	H	..	5%	15.2%	1193	4222.12	10.34	Y	Y	6%	7.7	59.74%	13.7	6.5
Uruguay	AMR	3463	UM	97.7%	17%	9.8%	450	4060.59	17.04	Y	..	8%	5.4	11.48%	22.9	0.85
Uzbekistan	EUR	26593	L	99.3%	0%	5.5%	1338	3187.33	9.01	Y	Y	4.6%	3.1	3.23%	3.3	7.2
Vanuatu	WPR	211	LM	74%	..	3.9%	246	2576.22	2.95	N	N	..	0.1	100%	0	0
Venezuela	AMR	26749	UM	93%	16%	4.5%	194	3874.28	6.19	Y	N	..	2.5	88.4%	24	..
Vietnam	WPR	84238	L	90.3%	2%	5.4%	128	2734.34	11.03	Y	N	..	0.63	6.35%	0.32	0.3
Yemen	EMR	20975	L	49%	12%	5.5%	99	2870.3	4.90	Y	N	..	1.85	40.54%	0.5	0.09
Zambia	AFR	11668	L	67.9%	12%	5.4%	213	2673.9	3.36	Y	Y	..	0.5	66%	0.02	5
Zimbabwe	AFR	13010	L	90%	6%	7.9%	88	2713.33	4.90	Y	Y	..	1.2	25%	0.1	4.6

AFR=African region. AMR=Region of the Americas. EMR=Eastern Mediterranean region. EUR=European region. SEAR=South East Asian region. WPR=Western Pacific region. L=low income. LM=lower-middle income. UM=upper-middle income. H=high income. Y=yes. N=no. N/A=not available. *Suicide indicator corresponds to the category "self-inflicted injuries" of the Global Burden of Diseases Project and to the category "suicide and self-inflicted injuries" of International Classification of Disease (ICD)-9 (E950-959) and ICD-10 (X60-X84, Y870). Information mainly obtained through vital registration data and other mortality data from WHO Member States. Information from sample registration systems, population laboratories, and epidemiological analyses of specific conditions also used to improve estimates of cause-of-death-patterns. Table compiled from references 7-12.

Table 1. Country-specific data for development, health resources, neuropsychiatric burden, and mental health system indicators

	African region (I)	Region of the Americas (II)	Eastern Mediterranean region (III)	European region (IV)	South East Asian region (V)	Western Pacific region (VI)	ANOVA (F, p, df)	Post-hoc test (2x2, LSD, p<0.05)
Population	9 220 000 (n=46)	6 158 000 (n=35)	10 102 000 (n=21)	6 616 000 (n=52)	27 133 000 (n=11)	848 000 (n=27)	..	..
Adult literacy (%)	66.05% (n=40)	90.2% (n=26)	77.15% (n=16)	98.75% (n=30)	88.8% (n=8)	91.7% (n=14)	24.181* (5, 128, 133)	I<III<II,VI<IV; I<V<IV
Unemployment (%)	12% (n=15)	10.4% (n=29)	11% (n=11)	8.1% (n=48)	4.31% (n=5)	3.95% (n=14)	3.017† (5, 116, 121)	I>IV,V,VI
Total expenditure on health (% GDP)	4.7% (n=46)	6.7% (n=35)	4.7% (n=20)	7.5% (n=52)	3.5% (n=11)	5.6% (n=27)	10.156* (5, 184, 189)	I,III,V<II,IV,VI
Mental health budget (% health budget)	0.76% (n=20)	2.9% (n=25)	2% (n=4)	6.3% (n=27)	1.15% (n=8)	2% (n=17)	5.937* (5, 95, 100)	I,V<II<IV; VI<IV
Number of mental health beds per 10 000 people	0.34 (n=46)	2.6 (n=31)	1 (n=21)	7.9 (n=52)	0.33 (n=8)	1.06 (n=27)	18.140* (5, 178, 183)	I,V<II<IV; III,VI<II,IV; I<VI
Proportion of beds in mental hospitals (% of total number of mental health beds)	75% (n=41)	87.5% (n=30)	87.3% (n=19)	79.36% (n=48)	77.78% (n=7)	53.94% (n=22)	3.363‡ (5, 160, 165)	VI<I,II,III,IV; I<II
Health providers per 100 000 people	81.5 (n=46)	325 (n=35)	334 (n=21)	1092.00 (n=52)	187 (n=11)	345 (n=27)	8.946* (5, 185, 190)	I,II,III,V,VI<IV
Psychiatrists per 100 000 people	0.05 (n=46)	2 (n=32)	0.9 (n=21)	9.4 (n=52)	0.2 (n=9)	0.32 (n=27)	30.890* (5, 180, 185)	I,III,V,VI<II<IV
Psychiatric nurses per 100 000 people	0.2 (n=45)	2.6 (n=27)	0.5 (n=21)	25.6 (n=47)	0.16 (n=9)	0.5 (n=27)	12.189* (5, 169, 174)	I,II,III,V,VI<IV
Rate of DALYs by neuropsychiatric conditions per 100 000 people	2538.26 (n=46)	3995.86 (n=35)	2730.12 (n=21)	3266.12 (n=52)	2910.39 (n=11)	2696.79 (n=27)	104.738* (5, 185, 190)	I<VI<IV<II; III,V<IV<II
Suicide per 100 000 people	5.06 (n=46)	5.03 (n=35)	4.90 (n=21)	13.62 (n=52)	11.08 (n=11)	4.23 (n=27)	13.783* (5, 186, 191)	IV,V<I,II,III,VI

Data are median values unless stated otherwise. ANOVA=analysis of variance (F, F value; p, probability; df, degrees of freedom). LSD=least square difference. *p<0.001. †p<0.05. ‡p<0.01.

Table 2: Summary of human development indices, expenditure on health and mental health, mental health resources, and burden due to mental disorders, by WHO region

A major aspect of mental health financing, especially in countries that do not have a well-articulated mental health system, is to ensure that mental health financing is an integral component of general health financing and that specific allocations are made for mental health initiatives. A specified budget for mental health denotes the regular source of money, available in a country's budget, allocated to achieve mental health objectives, such as implementation of mental health policies or programmes, or the establishment of care facilities for mental health. 31% of countries reported not having a specified budget for mental health care, despite its importance. Many countries reported that although they do not have a national budget specifically for mental health care, they do allocate budgets to every province or state under their mental health programmes. In many countries, mental health is a part of the primary health-care system, which makes the budget for mental health care difficult to ascertain.

Of the countries that reported these data, nearly 70% of countries in Africa and 50% in southeast Asia spend less than 1% of their health budget on mental health care. By contrast, more than 60% of European countries spend more than 5% of their health budget on mental health care. Three African countries (10%) reported that they spend more than 5% of their health budgets on mental health, whereas one European country reported that it spent less than 1% of its health budget on mental health.

The expenditure on mental health as a percentage of health budget was significantly different between World Bank income categories and WHO regions. High-income countries spent more of their health budget on mental health than upper middle-income countries (median 3%), which in turn spent more of their health budget on mental health than low-income countries (1%) and lower middle-income countries (2.1%). European countries (6.3%) spent more of their health budget on mental health than countries in other WHO regions (0.76% to 2.9%).

Mental health beds

Mental health beds are beds maintained for continuous use by patients with mental disorders, which include those in mental hospitals, general hospitals, and other settings—eg, residential homes in the community. Community care has a better effect than institutional treatment on the outcome and quality of life of individuals with chronic mental disorders. Shifting patients from mental hospitals to care in the community is also cost-effective and respects human rights. Mental health services should therefore be provided in the community, with the use of all available resources, which can lead to early intervention and remove the stigma of patients receiving treatment. Large custodial mental hospitals need to be replaced by community-care facilities, backed by general hospital psychiatric beds and home care

	Low income (I)	Lower-middle income (II)	Upper-middle income (III)	High income (IV)	World	ANOVA (F, df, p)	Post-hoc test (2x2, LSD, p<0.05)
Population	11 658 000 (n=61)	8 653 000 (n=54)	3 232 000 (n=35)	5 340 000 (n=38)	6 803 000 (n=192)	..	..
Adult literacy (%)	62.5% (n=50)	90.4% (n=47)	95.7% (n=25)	91.75% (n=12)	87.7% (n=134)	33.94 (3, 130, 133)*	I<II,III,IV
Unemployment (%)	5.1% (n=23)	10.4% (n=40)	10.4% (n=25)	5.1% (n=34)	8.35% (n=122)	6.38 (3, 118, 121)*	I,IV<II; IV<III
Total expenditure on health (% GDP)	4.8% (n=60)	5.75% (n=54)	6.1% (n=35)	8.25% (n=38)	5.8% (n=191)	15.10 (3, 183, 186)*	I<II,III<IV
Mental health budget (% health budget)	1% (n=28)	2.15% (n=30)	3% (n=22)	6.8% (n=21)	2.5% (n=101)	11.68 (3, 97, 100)*	I,II<III<IV
Number of mental health beds per 10 000 people	0.24 (n=58)	1.59 (n=52)	7.7 (n=33)	7.5 (n=38)	1.69 (n=185)	38.07 (3, 177, 180)*	I<II<III,IV
Proportion of beds in mental hospitals (% of total number of mental health beds)	75% (n=50)	86.99% (n=50)	81.89% (n=33)	60% (n=33)	79.72% (n=167)	3.08 (3, 162, 165)†	II, III>IV
Health providers per 100 000 people	82 (n=61)	335.5 (n=54)	467 (n=35)	1102.50 (n=38)	356.5 (n=192)	13.03 (3, 184, 187)*	I,II,III<IV
Psychiatrists per 100 000 people	0.06 (n=58)	1.05 (n=54)	2.7 (n=33)	10.5 (n=38)	1.2 (n=187)	44.78 (3, 179, 182)*	I<II<III<IV
Psychiatric nurses per 100 000 people	0.16 (n=58)	1.05 (n=48)	5.35 (n=30)	32.95 (n=36)	2 (n=176)	29.32 (3, 168, 171)*	I<III<IV; II,III<IV
Rate of DALYs by neuropsychiatric conditions per 100 000 people	2643.74 (n=61)	3100.50 (n=54)	3610.65 (n=35)	3237.91 (n=38)	2963.87 (n=192)	16.84 (3, 184, 187)*	I<II,IV<III
Suicide per 100 000 people	5.86 (n=61)	4.98 (n=54)	6.60 (n=35)	11.33 (n=38)	6.55 (n=192)	NS	..

Data are median values unless stated otherwise. ANOVA=analysis of variance (F, F value; p, probability; df, degrees of freedom). LSD=least square difference. *p<0.001. †p<0.05.

Table 3: Human development indices, expenditure on health and mental health, mental health resources and burden due to mental disorders, by World Bank income categories

support.⁵ However, not all patients can be given community care, and inpatient facilities in hospitals are essential to manage acute mental disorders. The availability and distribution of mental health beds between various settings greatly depends on resources allocated for mental health and on policies (eg, deinstitutionalisation) and is governed in most countries by legislation.

The median number of mental health beds per 10 000 population in all countries is 1.69. Two-fifths of countries have fewer than one mental health bed per 10 000 people. Almost 95% of the southeast Asian population and 83% of the African population has access to less than one bed per 10 000 people. However, 84% of the population in the European region has access to five or more mental health beds per 10 000 people. Barbados, Belgium, and Japan have access to more than 20 mental health beds per 10 000 people.

The number of mental health beds differed significantly between World Bank income categories and WHO regions. In terms of density of mental health beds, countries with low income (median 0.24 beds per 10 000 people), with lower middle-income (1.59), and in the African (0.34) and southeast Asian (0.33) regions had a lower density than upper middle-income (7.7), high-income (7.5), American (2.6), and European (7.9) countries.

About 1.84 million mental health beds are available worldwide, with nearly 70% in mental hospitals; 20% in general hospitals; and about 10% in other locations such

as military hospitals, hospitals for special populations, and long-term rehabilitation centres. 21 countries reported that they had no beds in mental hospitals. However, 25 countries reported that 95% of their beds were in the mental hospital setting. A significant difference between World Bank income categories and WHO regions was seen regarding the percentage of mental health beds in stand-alone mental hospitals. High-income countries (median 60%) had a smaller proportion of stand-alone mental hospital beds than middle-income countries (82% vs 87). Western Pacific (54%) countries had proportionately fewer beds in stand-alone mental hospitals than other countries, mainly because of the low density of mental health beds in stand-alone institutions in Australia, New Zealand, and the Republic of Korea, and the absence of such institutions in many small Pacific Island countries.

Human resources

The median number of health and mental health professionals (per 100 000 people) in all countries is as follows: health providers, 356.5; psychiatrists, 1.2; and psychiatric nurses, 2.0. Nearly half of all countries reported that they had less than one psychiatrist per 100 000 people, which included all southeast Asian and nearly 90% of African countries. The median density of professionals for low-income countries was 0.06 per 100 000 population and 10.5 for high income-countries.

Nearly five-sixths of low-income countries, four-fifths of the southeast Asian and half of the eastern Mediterranean countries had fewer than one psychiatric nurse per 100 000 people. However, almost three-quarters of high-income countries had ten or more psychiatric nurses per 100 000 people.

Countries grouped according to World Bank income categories differed greatly in terms of human resources: health providers (who could also provide mental health services in primary care), psychiatrists, and psychiatric nurses. The high-income countries had more health providers (median 1102.5 per 100 000 people), psychiatrists (10.5), and psychiatric nurses (33.0) than LAMICs. The upper middle-income countries also had more mental health professionals (psychiatrists, median 2.7 per 100 000 people; psychiatric nurses, 5.4) than low-income countries (0.06 and 0.16, respectively).

Association between population, economic and health indicators, and mental health resource indicators in LAMICs

The ecological correlation analyses were based on the following assumptions: compared with countries with high resources, those with low economic resources (GDP per head and health budgets as a percentage of GDP) would have fewer mental health resources, countries with low health-related human resources (health providers per 100 000 people, physicians per 1000 people, nurses per 1000 people) would have fewer mental health-related human resources (unless specifically targeted), and those with a high mental health burden (neuropsychiatric DALY per 100 000 people, suicides per 100 000 people) should have deployed more mental health resources.

An examination of the predictive ability of population, economic, health-related resource indicators, and neuropsychiatric burden with regard to mental health resource indicators in LAMICs showed that these indicators explained 62%, 58%, 39%, and 14% of the variance, respectively, in availability of mental health beds, psychiatrists, psychiatric nurses, and mental health budget as a percentage of health budget (table 4). GDP per head (40%) and availability of health providers (14%) were the strongest predictors of mental health beds in LAMICs. The strongest predictors for the availability of psychiatrists and psychiatric nurses were the availability of doctors (53%) and nurses (29%) in the country, respectively. Availability of health providers was the only predictor of mental health budget. The ecological correlation analysis for mental health budgets should be deemed tentative because data were available for only 80 LAMICs.

Countries with high economic resources or with a high burden of mental disorders and suicide could provide more resources for mental health, irrespective of their health-related human resources. To control for the density of health professionals, the effects of economic indicators (GDP per head, health budget as a percentage

	Standardised coefficients (β)	F, df, p	Adjusted R ² (%)	Variance explained (%)
Mental health beds per 10 000 people				
Constant	..	46.526*	0.618	..
GDP per head (US\$, 2004)	0.339	(5, 136, 141)	..	40.0
Health providers per 100 000 people	0.307	..	..	14.1
Rate of DALYs by neuropsychiatric conditions per 100 000 people	0.217	..	..	3.4
Log population	-0.217	..	..	3.0
Suicide per 100 000 people	0.15	..	..	1.3
Psychiatrists per 100 000 people				
Constant	..	50.782*	0.582	..
Physicians per 1000 people	0.549	(4, 139, 143)	..	53.0
Suicide per 100 000 people	0.207	..	..	2.6
Rate of DALYs by neuropsychiatric conditions per 100 000 people	0.131	..	..	1.6
Total expenditure on health (% GDP)	0.117	..	..	1.0
Psychiatric nurses per 100 000 people				
Constant	..	29.179*	0.387	..
Nurses per 1000 people	0.29	(3, 131, 134)	..	29.1
GDP per head (US\$, 2004)	0.28	..	..	5.1
Suicide per 100 000 people	0.252	..	..	4.5
Proportion of mental health budget (% of total health budget)				
Constant	..	14.171*	0.143	..
Health providers per 100 000 people	0.392	(1, 78, 79)	..	14.3

F=F value. df=degrees of freedom. p=probability. *p<0.001.

Table 4: Prediction of mental health resource indicators by selected population, development, and health indicators in LAMICs

of GDP) and disease burden (neuropsychiatric DALY per 100 000 people, suicides per 100 000 people) on mental health resources were estimated separately in subgroups of countries formed on the basis of health provider tertiles (eg, top third of LAMICs with regard to physicians or middle third LAMICs with regard to nurses). GDP per head explained an appreciable amount of variance (20–40%) in the density of psychiatrists in countries with less (lower two tertiles) health-related human resources and some variance (10–20%) in the density of psychiatric nurses in countries with more (upper two tertiles) health-related human resources. Health budget as a proportion of GDP did not explain much variance in mental health resources. These findings are understandable in view of the fact that health-related human resources correlate only moderately with GDP per head ($r=0.4-0.5$) and have a very low correlation with health budget as a percentage of GDP ($r=0.06-0.12$). Neuropsychiatric burden explained only a small amount of variance (10–20%) in mental health beds and human resources, mostly in countries with higher density (upper two tertiles) of health providers, whereas the incidence of suicides explained similar amounts of variance only in the countries with the highest density of health-related manpower (data not shown in tables).

Panel 1: Brazil—from mental hospitals to community care

Until the 1980s, mental hospitals and asylums formed the core of care for people with severe mental disorders in Brazil, which included large state-owned hospitals and private institutions, financed and regulated by the government.⁷⁴ The quality and environment of these settings was poor and most patients were given substandard treatment and care.

In 1990, under the auspices of the Pan American Health Organization, Brazil adopted the Caracas Declaration that promoted psychiatric reform and incorporation of mental health programmes in primary care.⁷⁵ The Declaration was crystallised into operational edicts from the Ministry of Health, with the objective of advancing alternative community-based programmes.⁷⁶ Mental health professionals who had earlier fought against the military dictatorship pushed for psychiatric reform.⁷⁷

The two main features of the reform programme were the Community Mental Health Services, which were set up to care for people with severe psychiatric disorders, and the Return Home Programme, which provided financial support for families who welcomed relatives who had spent a long time in the mental hospitals and asylums back to their homes or to community therapeutic units.

5259 psychiatrists (about 3.0 per 100 000 people), 12 377 psychologists (about ten), 1985 social workers (about one), 3119 psychiatric nurses (1.7) and 2661 occupational therapists (about two) are working for the Unified Health System (SUS).⁷⁸

Total number of beds in psychiatric hospitals in Brazil is 50 045 (0.27 beds per 1000 inhabitants), with 1086 outpatient mental health facilities (66 for children and adolescents and 109 for alcohol and drugs). The new Psychosocial Community Centres (CAPS) are specialised mental health services to provide outpatient care or partial hospital care as day or night treatment.⁷⁹

In 1995–2005, the number of psychiatric beds in mental hospitals fell by 41% (5.4–3.2 per 10 000 inhabitants), whereas community services increased nine-fold (0.004–0.037).⁷⁹ In the same period, alternative beds, mainly those located in general hospitals, increased from 1% to 6% of the total number of psychiatric beds.⁸⁰

Although the proportion of mental health expenditure in relation to the total health expenses fell from 5.8% in 1995 to 2.3% in 2005, a substantial reduction was seen in the allocation to mental hospitals (95.5% to 49.3% of the mental health budget) as well as a concomitant increase in the budget for community services (from 0.8% to 15%).⁷⁹

Nine postgraduate programmes are dedicated to psychiatry, neuropsychiatry, psychobiology, and mental health with support from the Ministry of Education,⁸¹ resulting in a steady increase in international publications and journals with high impact factors.^{82–84} The official journal of the Brazilian Psychiatric Association has also recently been indexed in the Thomson International Scientific Indicators database.⁸⁵

The change in policy and the strengthening of manpower has resulted in a major reform of the mental health system, changes in the delivery of care, widened accessibility to essential psychotropic medication, provision for care in the community, and provision of universal coverage and free access to a network of services. Political reforms in the country and commitment of the health professionals to provide care in the primary health-care system were the main facilitators for its success.

Nevertheless, many hurdles need to be overcome. Unequal distribution and coverage of community services across regions and the government's failure to increase resources for mental health care remain major challenges. The effect of changes in policy on mental health-care delivery across Brazil need to be regularly assessed to improve and fine-tune the system.

Data for mental health systems extracted from published country profiles

Extracted data (webtables 1 and 2)^{13–73} were classified under the following themes: mental health in primary care; community mental health services, public education and links with other sectors; and monitoring and research.

Primary-care data suggested that 61% of countries had reported that they had incorporated teaching of psychiatry and behavioural sciences in their undergraduate curriculum. A fifth of countries reported the integration of assessment and treatment protocols for mental disorders in primary health care, and 17% described interactions between primary health care and mental health services. 27% of countries reported refresher mental health training for primary health-care physicians, whereas 13% had refresher programmes for primary health-care nurses. Information about mental health refresher training of non-physicians as well as a system of interaction between physicians, non-physician primary health-care staff, and traditional healers was available in fewer than 10% of the profiles studied.

With respect to community mental health services, public education, and links with other sectors, 22 (59%) of 37 LAMICs profiled reported public education efforts. 46% of the countries reported the presence of user, consumer, and family associations. However, whether these organisations were firmly rooted or whether the coverage was country-wide is unclear. Public education and awareness campaigns on mental health were reported by a third of countries. A quarter of countries reported refresher training of mental health staff on child and adolescent mental health. A smaller proportion of countries reported having school health programmes (15%), provision of social welfare benefits for people with mental disorders (12%) and mental health care of prisoners (17%). Only two countries reported educational activities with police officers, judges, and lawyers and a similar number also mentioned provision of employment for people with severe mental disorders.

27 (73%) of 37 countries profiled mentioned the conduct of health services research and the monitoring of mental health service data. However, details of the magnitude and type of research and the number of mental health research professionals participating were scarce. Additionally, many countries without mental health research might not have published mental health country profiles.

Case studies from Brazil, India, and South Africa

Panels 1–3 highlight the many diverse aspects needed for the delivery of mental health services. They focus on the historical development of mental health policy and programmes, the current state of indicators of mental health care, recent changes, and factors that have been catalysts in these different contexts. The Brazilian case study discusses the decentralisation of mental health

services, the closure of mental hospitals, the reduction in mental hospital beds and budgets, and the increase and integration of mental health services into primary care and the community. The case study from India highlights the role played by judicial activism in increasing the emphasis on mental health and kickstarting the reform of mental health service delivery. The report from South Africa draws attention to the problems in the delivery of mental health care and argues for the need for a comprehensive mental health policy in addition to progressive mental health legislation for the delivery of mental health care in the community. The case study also highlights the need for community mental health services to be in place before closure or downsizing of mental hospitals. These narratives emphasise the complexity of providing mental health services in LAMICs.

Discussion

We have reviewed the current status of mental health systems in countries, by use of data compiled by international organisations and from published country profiles. Although the data might not be fully accurate, they are the best estimates available. The limitations of UN and WHO databases include incomplete data on various indicators, differences in interpreting definitions provided in the glossary, lack of aggregated data (eg, national vs regional mental health budget) or disaggregated data (eg, contribution of mental health budget to total health budget) in some countries, inadequate portrayal of the differences in coverage and quality of services by averaged indicators, and incomplete coverage of the non-governmental sector. Similarly, comparison of DALYs and suicide across nations is also challenging, and a large proportion of the country profiles did not mention many aspects of their mental health systems and care. Nevertheless, this Series article attempts to examine the different issues related to mental health systems. Although our conclusions are tentative, they still provide direction for further analysis. The data also provide a baseline to set targets and goals to assess progress in mental health-care delivery.

The present state of development of mental health infrastructure in LAMICs can be shown in relatively low scores on many indicators of human development (eg, adult literacy and unemployment) and health systems. However, the fact that mental health receives a very small proportion of the total health budget in many LAMICs suggests that it should be given a higher priority within health resources. This supposition is supported by multivariate analysis, which demonstrates that although mental health resources need to be viewed in the wider context of the economies of countries, they are related to a great extent to the general health-care resources of countries. Much can therefore be achieved even in LAMICs that direct their resources to the solution of

Panel 2: India—mental health care and judicial intervention

India accepted the need for community care for people with mental disorders,⁸⁶ set up and assessed model programmes,^{87–90} and proposed an ambitious National Mental Health Program in the 1980s.⁹¹ India also passed new mental health legislation.^{92,93}

Despite these plans, the situation on the ground did not change over the next two decades and the programme failed to deliver.^{92,94,95} Many states of the country also did not implement the legislation even a decade later. The many reasons^{95–97} suggested for the lack of success include the complete lack of estimates of cost and the absence of provision of budgetary support. Unrealistic minimum standards for mental hospitals; restrictive licensing requirements; complete exclusion of government institutions and the traditional health sector from its ambit; and divergent perspectives among psychiatrists, government, and the legal point of view were reasons for the failure to implement the new legislation.

Over the past decade, the Supreme Court of India intervened with two landmark judgments. The first intervention was when the Court ordered a detailed enquiry^{98,99} into the conditions of specific government mental hospitals. The shocking conditions, lack of basic facilities, archaic structures and practices, poor staffing and treatment facilities, inadequate budgetary support, and poor human rights record that were prevalent were exposed. The second judicial intervention was after an accidental fire in August, 2001, which killed 25 people with mental disorders in a religious institution.¹⁰⁰ The Court recommended the framing of policy and the initiation of steps to establish mental hospitals¹⁰¹ and entrusted the National Human Rights Commission with monitoring quality in mental hospitals.¹⁰²

The interventions also started processes to ensure the implementation of the Mental Health Act, its regulations, admission, and discharge procedures for psychiatric institutions. The national programme was also restructured in 2003 and the previous approach was replaced by a more comprehensive strategy involving a redesigned district programme, strengthening psychiatric education in medical schools, streamlining of mental hospitals, and empowering mental health authorities and research efforts to increase the evidence base with clearly specified budgetary allocations.¹⁰³

Funding increased from 280 million rupees (US\$6.2 million) during the Ninth Five Year Plan (1997–2002) to 1900 million rupees (\$42.2 million) for the Tenth Plan (2003–07), and a further prioritisation of mental health in funding is proposed with 9460 million rupees (\$210.2 million) allocated in the Eleventh 5-year plan (2008–12).^{104,105}

Mental health is now mentioned in the approach paper of the 11th Planning Commission's discussion on India's development.¹⁰⁶ The government recently reviewed the evidence base related to mental disorders, the implementation of current mental health programmes, and has identified barriers to provision of care.¹⁰⁵

All the districts in the country are to be covered. Specific allocation in funding is planned for supporting the following: research, education, training of psychiatrists and medical officers in mental health, implementation of the Mental Health Act, school mental health programmes, and non-governmental organisations. A new position of programme officer (psychiatrist or medical officers with 6 months of specific training), psychologists, social workers, nurses, and support staff are to be employed at the district level. Funding is also increased for psychotropic medication and facilities for mental health in district general hospitals.^{104,105}

The new plans and programme include a revitalised national programme; rejuvenated district mental health programme; increased accessibility to essential psychotropic medication; and provision for public education, relevant research and for increasing mental health resources. The plans have resulted in increased budgetary allocation of resources and improved monitoring of psychiatric institutions. Judicial interventions focused governmental efforts to increase the priority and funding for mental health.

Nevertheless, the implementation of proposed plans will need to be assessed to see whether the new programmes are satisfactorily put into practice across the country.

Panel 3: South Africa—progressive legislation without an effective national programme

Neuropsychiatric disorders account for a large proportion of years of life lost to disability (YLDs) for South Africans, second only in contribution to YLDs after HIV/AIDS.^{107,108}

South Africa accepted the need for more progressive legislation after a resolution adopted by WHO at an African Region meeting in 1999 to prioritise mental health and review existing legislation.

The new Mental Health Care Act 17 of 2002 was agreed on by Parliament in October, 2002, and promulgated on Dec 15, 2004.¹⁰⁹ The legislation has provided the impetus to develop community and home-based care that focus on rehabilitation,¹¹⁰ which is backed by comprehensive protocols at all levels of care (eg, early detection, social mapping of available supports).

Many projects (alcohol and drug abuse prevention, violence against women and children, victim empowerment, trauma management, training of police officers in the use of the Act, partnerships between non-profit organisations with Mental Health Review Boards) were initiated in specific regions.

Nevertheless, no special programmes have as yet been initiated at national level to assist in putting the Act into operation and making necessary fiscal, staffing, and structural changes to mental health services, as set out in the legislation. Deficiencies in implementation include: the slow creation of Mental Health Review Boards, with some provinces lacking resources to support and sustain such structures; many district and regional hospitals lacking the necessary infrastructure, staffing, and beds to operate acute assessment units and not having trained health manpower; existing models of mental health service planning, use, and resource distribution continue to be geographically inequitable, with resources in relatively rural and less economically developed provinces largely inadequate;¹¹¹ only a quarter of psychiatric public-sector staff employed in community mental health settings,¹¹² with the remainder located at hospitals in predominantly urban areas; many, if not all, of the nine provinces lacking capacity in the face of increasing patient numbers, bed shortages (especially paediatric and geriatric beds), severe budgetary constraints and low staff morale to provide comprehensive mental health services at the primary level; budgets for psychiatric hospitals and primary-care services being managed separately, which complicates the channelling of monies saved through dehospitalisation into primary care; the limited availability of psychotropic medication in primary care impedes continuity of care between hospital and community;¹¹³ and the lack of programmes aimed at changing public attitudes and stigma related to mental disorders.

The lack of a national mental health programme, of resources at the provincial level, and of sensitisation of national and provincial decisionmakers about mental health burden have resulted in suboptimum implementation of the legislation. The post of National Director for Mental Health and Substance Abuse in the country had also been vacant for 3 years, although recently filled, resulting in a lack of direction and leadership at national level.

The achievements of the legislative reform include a comprehensive and humanistic new law. The new democracy that replaced the apartheid regime facilitated this major change. However, narrowing the divide between legislation and practice will need increased investment in terms of mental health policy, planning, finance, restructuring, and training on the ground.

general health and mental health problems. Many factors combined to produce the achievements of programmes in countries such as Brazil. The Brazilian case study clearly suggests that mental health reform is possible with substantial commitment from mental health professionals, even with scarce initial financial commitment from governments.

Although the neuropsychiatric burden of LAMICs was lower than that of high-income countries, many LAMICs have substantial burdens due to mental disorders, as assessed with DALYs. The effect and burden of mental disorders (eg, depression, anxiety, alcohol and substance use, dementia) in LAMICs has also been highlighted.¹¹² Investigations into suicide have also reported marked increases in suicide rates over specific periods in many LAMICs, including China, Mexico, and Brazil.⁵ Studies from India using verbal autopsies have reported much higher suicide rates^{114–117} than national statistics using information from police records. The fact that neuropsychiatric burden was a weak predictor of mental health resources in LAMICs in multivariate analysis is a cause of genuine concern. Prioritisation of resource allocation is a complex issue and factors such as the low human development indices and the high burden of infectious diseases could constrain resource allocation to mental health. Since neuropsychiatric burden is an objective indicator, policymakers, programme planners, and other stakeholders need to be convinced of its use in priority settings, which would call for better communication with all stakeholders and for advocacy.

A large proportion (20–30%) of LAMICs do not have mental health policies, programmes, and legislation, despite the fact that these declarations of intent are not very resource-intensive. Moreover, the scale, comprehensiveness, coverage, and reach of such policy directions are restricted in many nations. The Indian case study records how the national programme was implemented only in small pockets, for nearly two decades after its acceptance, because it had no budgetary allocation for its use on a national scale. The South African case suggests that mental health policy and legislation does not automatically translate into adequate delivery of mental health services if not spelt out clearly by a comprehensive national programme. These findings indicate the need for inculcation of a systems perspective for service development, since piecemeal efforts are probably neither effective nor efficient.

We also highlight the scarcity of psychiatrists and psychiatric nurses, which compounds the problems of mental health-care delivery in most LAMICs. Capacity development in LAMICs is urgently needed since these professionals have many roles and also become advocates for mental health. With the absence of aggregated data, definitive conclusions are difficult to make on the extent to which internal migration (eg, from rural to urban areas, or from the public to the for-profit private sector) and external migration (transnational) complicates the capacity problem in LAMICs, but the working experience in LAMICs as well as high-income countries suggests that depletion of human resources through migration needs to be addressed urgently.^{118,119}

In view of the major resource limitations of most LAMICs, the treatment gap between individuals who

need mental health care and those who actually receive it is larger than high-income countries.^{2,120,121} Furthermore, the proportion of people in these countries who receive evidence-based and humane treatment is even smaller.^{2,3}

Comprehensive community mental health services, mental health services in primary care, public education programmes, and links with other sectors are scarce in most LAMICs. Substantial professional commitment to provide basic mental health care for the population is needed to reallocate resources in the mental health system with an increased emphasis on community and primary health care over stand-alone mental hospitals. The rudimentary level of mental health-service research programmes in many nations also contributes to poor delivery of mental health care.¹²²

Conclusion

The limited resources available for mental health in LAMICs has led to poor delivery of services, and to suffering and disability in people with mental disorders. The different goals (eg, improvement of mental health, enhanced responsiveness of the health system, fair governmental and private contribution for services)⁴ need to be addressed in a systematic manner. Although many countries have signed up to many of these goals through their national policies and plans, their implementation on the ground leaves much to be desired. Political, administrative, and financial commitment is needed from the many stakeholders if these aspirations are to be put into practice.

This Series article describes the current status of mental health systems in different countries, to serve as a baseline for planning. Although similarities and differences will be seen in contexts, available resources, needs, and priorities in the diverse mental health systems of the developing world, every factor needs detailed analysis and specific solutions, while increasing the emphasis and priority for mental health in general. Governments, mental health professionals, and other stakeholders in mental health need to work cohesively to propagate mental health reform in their countries. Many recent reports⁵ and resolutions^{123,124} on mental health have emphasised the importance and effect of mental disorder. However, the pace of reform has not been galvanised in most LAMICs. Innovative approaches are needed to promote the reality of mental disorders and efficiently use available resources to ensure that basic mental health care reaches all individuals.

Conflict of interest statement

We declare that we have no conflict of interest.

Acknowledgments

The *Lancet* Global Mental Health Series is supported by the John and Catherine MacArthur Foundation. We thank the *Lancet* Global Mental Health group for suggestions. SS and MG-C are employees of WHO; the views expressed in this article do not necessarily represent the decisions, policy, or views of WHO.

References

- 1 Prince M, Patel V, Saxena S, et al. No health without mental health. *Lancet* 2007; published online Sept 4. DOI:10.1016/S0140-6736(07)61238-0.
- 2 Saxena S, Thornicroft G, Knapp M, Whiteford H. Resources for mental health: scarcity, inequity, and inefficiency. *Lancet* 2007; published online Sept 4. DOI:10.1016/S0140-6736(07)61239-2.
- 3 Patel V, Araya R, Chatterjee S, et al. Treatment and prevention of mental disorders in low-income and middle-income countries. *Lancet* 2007; published online Sept 4. DOI:10.1016/S0140-6736(07)61240-9.
- 4 World Health Organization. The world health report 2000. Health systems: improving performance. Geneva: WHO, 2000.
- 5 World Health Organization. World health report 2001—mental health: new understanding, new hope. Geneva: WHO, 2001. <http://www.who.int/whr/2001/en/> (accessed Aug 13, 2007).
- 6 World Health Organization. World Health Organization assessment instrument for mental health systems (WHO-AIMS). Geneva: WHO, 2005. http://www.who.int/mental_health/evidence/AIMS_WHO_2_2.pdf (accessed Aug 13, 2007).
- 7 United Nations Educational, Scientific and Cultural Organization. Adult literacy rate (2000–2004). http://www.who.int/whosis/whostat2006_demographics.xls (accessed July 27, 2007).
- 8 International Labour Organization. Yearly statistics—total and economically active population, employment, unemployment, hours of work, wages, labour cost, consumer price indices, occupational injuries, strikes and lockouts: 1969–2005. Table 3A: unemployment, general level. <http://laborsta.ilo.org> (accessed Aug 1, 2006).
- 9 World Bank analytical classifications. Country classification, 2004. <http://siteresources.worldbank.org/DATASTATISTICS/Resources/OGHIST.xls> (accessed July 4, 2007).
- 10 World Health Organization. Atlas, mental health resources in the world 2005. Geneva: WHO, 2005.
- 11 WHOSIS (WHO Statistical Information System). World Health Statistics 2007. Geneva: WHO, 2007. <http://www.who.int/whosis/whostat2007/en/index.html> (accessed July 27, 2007).
- 12 World Health Organization. Global burden of disease project. Department of Measurement and Health Information. December, 2004. <http://www.who.int/healthinfo/bod/en/index.html> (accessed June 4, 2007).
- 13 Ventevogel P, Nassery R, Azimi S, Faiz H. Psychiatry in Afghanistan. *Int Psych* 2006; 3: 36–38.
- 14 Suli A, Lazëri L, Nano L. Mental health services in Albania. *Int Psych* 2004; 4: 14–16.
- 15 Rosen A. Australian psychiatry: coming of age? *Int Psych* 2005; 10: 15–17.
- 16 Ismayilov F. Mental health services in Azerbaijan. *Int Psych* 2004; 3: 6–17.
- 17 Karim MR, Shaheed F, Paul S. Psychiatry in Bangladesh. *Int Psych* 2006; 3: 16–18.
- 18 Golubeva N, Naudts K, Gibbs A, Evesgneev R, Holubeu S. Psychiatry in the Republic of Belarus. *Int Psych* 2006; 3: 11–13.
- 19 Price D. Mental health services in Bermuda. *Int Psych* 2004; 6: 11–12.
- 20 Pacheco de M, Ferraz T, Carlini AE. Brazilian public mental health policy: education and research. *Int Psych* 2003; 1: 15–16.
- 21 Tomovi T, Mladenova M, Lazarova I, Sotirov V. Bulgaria mental health country profile. *Int Rev Psych* 2004; 16: 93–106.
- 22 Guebaly N. Canadian psychiatry: a status report. *Int Psych* 2004; 6: 12–15.
- 23 Pemjean A. Psychiatric country profile: Chile. *Int Psych* 2003; 1: 13–15.
- 24 Stewart CL. Chile mental health country profile. *Int Rev Psych* 2004; 16: 73–82.
- 25 Raboch J. Psychiatry in the Czech Republic. *Int Psych* 2006; 3: 41–43.
- 26 Daoud R, Atallah S, Loza N. Psychiatric services in Egypt—an update. *Int Psych* 2003; 2: 12–14.
- 27 Alem A. Ethiopia Psychiatry in Ethiopia. *Int Psych* 2004; 4: 8–10.
- 28 Lahtinen E. Mental health in Finland. *Int Psych* 2006; 3 (1): 12–14.
- 29 Botbol M. French psychiatry. *Int Psych* 2006; 3: 14–16.

- 30 Sharashidze M, Naneishvili G, Silagadze T, Begiashvili A, Sulaberidze B, Beria B. Georgia mental health country profile. *Int Rev Psych* 2004; **16**: 107–16.
- 31 Patel V, Saxena S. Psychiatry in India. *Int Psych* 2003; **1**: 16–18.
- 32 Khandelwal SK, Jhingan HP, Ramesh S, Gupta RK, Srivastava VK. India mental health country profile. *Int Rev Psych* 2004; **16**: 126–41.
- 33 Thara R, Padmavati R, Srinivasan TN. Focus on psychiatry in India. *Br J Psychiatry* 2004; **184**: 366–73.
- 34 Fioritti A, Bassi M, Girolamo G. Italian psychiatry—25 years of change. *Int Psych* 2003; **2**: 14–17.
- 35 Sadeghi M, Mirsepassi G. Psychiatry in Iran. *Int Psych* 2005; **10**: 10–12.
- 36 Sadik S, Al-Jadiry AM. Mental health services in Iraq: past, present and future. *Int Psych* 2006; **3**: 11–13.
- 37 Levav I, Grinshpoon A. Mental health services in Israel. *Int Psych* 2004; **4**: 10–14.
- 38 Tsuchiya KJ, Takei N. Focus of psychiatry in Japan. *Br J Psychiatry* 2004; **184**: 88–92.
- 39 Takriti A. Psychiatry in Jordan. *Int Psych* 2004; **5**: 9–11.
- 40 Kiima DM, Njenga FG, Okonji MO, Kigamwa PA. Kenya mental health country profile. *Int Rev Psych* 2004; **16**: 48–53.
- 41 Njenga FG, Kigamwa PA. Mental health policy and programmes in Kenya. *Int Psych* 2005; **8**: 12–14.
- 42 Antun F, Baddoura C, Khani M. Lebanon. *Int Psych* 2007; **4**: 14–16.
- 43 Puras D. Mental health in Lithuania. *Int Psych* 2005; **10**: 12–14.
- 44 Puras D, Vicius AG, Povilaitis R, Veniute M, Jasilionis D. Lithuania mental health country profile. *Int Rev Psych* 2004; **16**: 117–25.
- 45 Kauye F, Mafuta C. Malawi. *Int Psych* 2007; **4**: 9–11.
- 46 Galea S, Mifsud J. The mental health care system in Malta. *Int Psych* 2004; **5**: 11–13.
- 47 Deva MP. Psychiatry and mental health in Malaysia. *Int Psych* 2005; **8**: 14–16.
- 48 Byambasuren S, Tsetsegdary G. Mental health in Mongolia. *Int Psych* 2005; **8**: 9–11.
- 49 Regimi SK, Poharel A, Ojha SP, Pradhan SN, Chapagain G. Nepal mental health country profile. *Int Rev Psych* 2004; **16**: 142–49.
- 50 Gureje O. Psychiatry in Nigeria. *Int Psych* 2003; **2**: 10–12.
- 51 Johannessen JO, Stubhaug B, Skandsen J. Mental health services in Norway. *Int Psych* 2005; **9**: 13–15.
- 52 Al-Sinawi H, Al-Adawi S. Psychiatry in the Sultanate of Oman. *Int Psych* 2006; **3**: 14–16.
- 53 Karim S, Saeed K, Rana MW, Mubbashar MH, Jenkins R. Pakistan mental health country profile. *Int Rev Psych* 2004; **16**: 83–92.
- 54 Mubbashar MH. Development of mental health services in Pakistan. *Int Psych* 2003; **1**: 11–13.
- 55 Muga F. Psychiatry in Papua New Guinea. *Int Psych* 2006; **3**: 14–16.
- 56 Tolentino Jr UJL. The state of mental health in the Philippines. *Int Psych* 2004; **6**: 8–11.
- 57 Conde BP. Philippines mental health country profile. *Int Rev Psych* 2004; **16**: 159–66.
- 58 Ghuloum S, Ibrahim MA. Psychiatry in Qatar. *Int Psych* 2006; **3**: 16–18.
- 59 Tataru N. Psychiatry and geriatric psychiatry in Romania. *Int Psych* 2005; **7**: 12–15.
- 60 Kua EH. Focus on psychiatry in Singapore. *Br J Psychiatry* 2004; **185**: 79–82.
- 61 López-Ibor JJ, Reneses B. Psychiatry in Spain. *Int Psych* 2005; **9**: 8–11.
- 62 Suh GH. Mental healthcare in South Korea. *Int Psych* 2005; **7**: 10–12.
- 63 Mendis N. Mental health services in Sri Lanka. *Int Psych* 2004; **3**: 10–13.
- 64 Silfverhielm H, Stefansson C. Psychiatry in Sweden. *Int Psych* 2006; **3**: 9–11.
- 65 Udomratn P. Mental health and psychiatry in Thailand. *Int Psych* 2007; **4**: 11–13.
- 66 Siriwanarangsana P, Liknapichitkul D, Khandelwal S. Thailand mental health country profile. *Int Rev Psych* 2004; **16**: 150–58.
- 67 Maharajh HD, Ali A. The mental health policies of Trinidad and Tobago. *Int Psych* 2004; **5**: 13–16.
- 68 Coskun B. Psychiatry in Turkey. *Int Psych* 2004; **3**: 13–15.
- 69 Kigozi F. Mental health services in Uganda. *Int Psych* 2005; **7**: 15–18.
- 70 Ndyabangi S, Basangwa D, Lutokome J, Mubiru C. Uganda mental health country profile. *Int Rev Psych* 2004; **16**: 54–62.
- 71 Gluzman S, Kostyuchenko S. Psychiatry in Ukraine. *Int Psych* 2006; **3**: 31–41.
- 72 Belfort E, González J. Psychiatry in Venezuela. *Int Psych* 2005; **9**: 11–13.
- 73 Mayeya J, Chazulwa R, Mayeya PN, et al. Zambia mental health country profile. *Int Rev Psych* 2004; **16**: 63–72.
- 74 Mari JJ. Psychiatric care in Brazil. In: Brown E, ed. *Psychiatry in developing countries*. London: Gaskell Books, 1983.
- 75 Levav I, Restrepo H, Guerra de Macedo C. The restructuring of psychiatric care in Latin America: a new policy for mental health services. *J Public Health Policy* 1994; **15**: 71–85.
- 76 Brazil. Law 10.216, from the 6th of April, 2001. Official Journal of the Brazilian Republic Federation, April 9, 2001: 3 (section 1).
- 77 Tenorio, F. Psychiatry reform in Brazil from the 1980s to present days: its history and concepts. *Hist cienc saude-Manguinhos* 2002; **9**: 25–59.
- 78 WHO-AIMS report on mental health system in Brazil. Geneva: WHO, 2007.
- 79 Andreoli SB, Almeida-Filho N, Martin D, Mateus MDL, Mari JJ. Is psychiatric reform a move for reducing the mental health budget? The case of Brazil. *Rev Bras Psiquiatr* 2007; **1**: 43–46.
- 80 Botega NJ. Psychiatric units in Brazilian general hospitals: a growing philanthropic field. *Int J Soc Psychiatry* 2002; **48**: 97–102.
- 81 Mari JJ, Bressan RA, Almeida-Filho N, Gerolin J, Sharan P, Saxena S. Mental health research in Brazil: policies, infrastructure, financing and human resources. *Rev Saude Publica* 2006; **40**: 161–69.
- 82 Zorzetto R, Razzouk D, Dubugras MT, et al. The scientific production in health and biological sciences of the top 20 Brazilian universities. *Braz J Med Biol Res* 2006; **39**: 1513–20.
- 83 Bressan RA, Gerolin J, Mari JJ. The modest but growing Brazilian presence in psychiatric, psychobiological and mental health research: assessment of the 1998–2002 period. *Braz J Med Biol Res* 2005; **38**: 649–59.
- 84 Razzouk D, Zorzetto R, Dubugras MT, Gerolin J, Mari JJ. Mental health and psychiatry research in Brazil: scientific production from 1999 to 2003. *Rev Saude Publica* 2006; **40**: 93–100.
- 85 Bressan RA, Miguel EC, Mari JJ, Rohde LA, Mercadante MT. We have reached the ISI! *Rev Bras Psiquiatr* 2005; **27**: 170–71.
- 86 World Health Organization. The introduction of a mental health component into primary health care. Geneva: WHO, 1990.
- 87 Harding TW, d'Arrigo Busnello E, Climent CE, et al. The WHO collaborative study on strategies for extending mental health care, III: Evaluative design and illustrative results. *Am J Psychiatry* 1983; **140**: 1481–85.
- 88 World Health Organization. Mental health care in developing countries: a critical appraisal of research findings. WHO Technical Report Series no 698. Geneva: WHO, 1984.
- 89 Chisholm D, Sekar K, Kumar KK, et al. Integration of mental health care into primary care: Demonstration cost-outcome study in India and Pakistan. *Br J Psychiatry* 2000; **176**: 581–88.
- 90 James S, Chisholm D, Murthy RS, et al. Demand for, access to and use of community mental health care: lessons from a demonstration project in India and Pakistan. *Int J Soc Psychiatry* 2002; **48**: 163–76.
- 91 Director General of Health Services. National mental health program for India. New Delhi: Director General of Health Services, 1982.
- 92 Agarwal AK. Mental Health Program: need for redemption. *Ind J Psychiatry* 1991; **33**: 85–86.
- 93 Government of India. The Mental Health Act 1987. New Delhi: Gazette of India. <http://mohfw.nic.in/Mental%20Health.pdf> (accessed Aug 13, 2007).
- 94 Jacob KS. Community care for people with mental illness in developing countries: problems and possible solutions. *Br J Psychiatry* 2001; **178**: 296–98.
- 95 National Institute for Health and Family Welfare. Mental Health Act 1987. <http://www.nihfw.org/ndc-nihfw/html/Legislations/MentalHealthAct.htm> (accessed Aug 17, 2007).

- 96 Antony JT. A decade with the Mental Health Act 1987. *Ind J Psychiatry* 2000; **42**: 345–55.
- 97 Danda A, Goel DS, Chadda RK. Law and mental health: common concerns and varied perspectives. In: Agarwal SP, Goel DS, Ichhpujani RL, Salhan RN, Shrivastava S, eds. *Mental health: an Indian perspective, 1946–2003*. New Delhi: Directorate General of Health Services, Ministry of Health and Family Welfare, 2004: 170–88.
- 98 Dhanda A. Laws relating to the custody, care and treatment of persons with mental disorder. In: Dhanda A, ed. *Legal order and mental disorder*. New Delhi: Sage, 2000: 34–74.
- 99 Sharma D. Mental health patients face primitive conditions. *Lancet* 1999; **354**: 495.
- 100 Kumar PSS. 25 die in T N asylum fire. *The Hindu*. Aug 7, 2001: <http://www.hinduonnet.com/thehindu/2001/08/07/stories/01070002.htm> (accessed Aug 13, 2007).
- 101 Supreme Court of India. Orders of the Supreme Court in Civil Writ Petition NO. 334/2001 & 562/2001—Erwady-Saarthak public interest litigation. 2001: <http://mohfw.nic.in/Mental%20Health.pdf> (accessed Aug 14, 2007).
- 102 National Human Rights Commission. *Quality assurance in mental health*. New Delhi: National Human Rights Commission, 1999.
- 103 Agarwal SP, Ichhpujani RL, Shrivastava S, Goel DS. Restructuring the National Mental Health Program. In: Agarwal SP, Goel DS, Ichhpujani RL, Salhan RN, Shrivastava S, eds. *Mental health: an Indian perspective, 1946–2003*. New Delhi: Directorate General of Health Services, Ministry of Health and Family Welfare, 2004: 119–22.
- 104 Goel DS, Agarwal SP, Ichhpujani RL, Shrivastava S. Mental Health 2003: the Indian scene. In: Agarwal SP, Goel DS, Ichhpujani RL, Salhan RN, Shrivastava S, eds. *Mental health: an Indian perspective, 1946–2003*. New Delhi: Directorate General of Health Services, Ministry of Health and Family Welfare, 2004: 3–24.
- 105 Planning Commission, Government of India. *Towards faster and more inclusive growth: an approach to the 11th five year plan*. New Delhi: Planning Commission, Government of India, 2006.
- 106 Ministry of Health, Government of India. *National Mental Health Programme: Proposal and budget for the 11th five year plan*. Bangalore: National Institute of Mental Health and Neurosciences, 2006.
- 107 Bradshaw D, Groenewald P, Laubscher R, et al. Initial burden of disease estimates for South Africa, 2000. *S Afr Med J* 2003; **93**: 682–88.
- 108 Norman R, Bradshaw D, Schneider M, Pieterse D, Groenewald P. *Revised DALY estimates for the comparative risk factor assessment, South Africa, 2000*. Cape Town: Medical Research Council, 2006.
- 109 Republic of South Africa. *Mental Health care Act (Act 17 of 2002)*. <http://www.info.gov.za/gazette/acts/2002/a17-02.pdf> (accessed Aug 14, 2007).
- 110 Department of Health. *Strategic priorities for the national health system 2004–2009*. Pretoria: Department of Health, 2004. <http://www.doh.gov.za/docs/policy/stratpriorities.pdf> (accessed Aug 14, 2007).
- 111 Lund C, Flisher AJ. Norms for mental health services in South Africa. *Soc Psychiatry Psychiatr Epidemiol* 2006; **4**: 587–94.
- 112 Lund C, Flisher AJ. Community/hospital indicators in South African public sector mental health services. *J Ment Health Policy Econ* 2003; **6**: 181–87.
- 113 Szabo CP. The Mental Health Care Act: challenges and opportunities. *S Afr Psychiatry Rev* 2006; **9**: 1–5.
- 114 Joseph A, Abraham S, Muliylil JP, et al. Evaluation of suicide rates in rural India using verbal autopsies, 1994–9. *BMJ* 2003; **326**: 1121–22.
- 115 Aaron R, Joseph A, Abraham S, et al. Suicides in young people in rural southern India. *Lancet* 2004; **363**: 1117–18.
- 116 Abraham VJ, Abraham S, Jacob KS. Suicide in the elderly in Kaniyambadi block, Tamil Nadu, South India. *Int J Geriatr Psychiatr* 2005; **20**: 953–55.
- 117 Prasad J, Abraham VJ, Minz S, et al. Rates and factors associated with suicide in Kaniyambadi Block, Tamil Nadu, South India, 2000–02. *Int J Soc Psychiatr* 2006; **52**: 65–71.
- 118 Kohn R, Saxena D, Levav I, Saraceno B. The treatment gap in mental health care. *Bull World Health Organ* 2000; **82**: 858–64.
- 119 WHO World Mental Health Consortium. Prevalence, severity and unmet need for treatment of mental disorders in the World Mental Health Organization World Mental Health Surveys. *JAMA* 2004; **291**: 2581–90.
- 120 Patel V. Recruiting doctors from poor countries: the great brain robbery? *BMJ* 2003; **327**: 926–28.
- 121 Muula AS, Panulo B Jr, Maseko FC. The financial losses from the migration of nurses from Malawi. *BMC Nurs* 2006; **5**: 9.
- 122 *Lancet* Global Mental Health Group. Scale up services for mental disorders: a call for action. *Lancet* 2007; published online Sept 4. DOI:10.1016/S0140-6736(07)61242-2.
- 123 World Health Organization. *WHO mental health: a call for action by World Health Ministers*. Ministerial round tables. 54th World Health Assembly. Geneva: WHO, 2001.
- 124 World Health Organization. *WHO mental health: responding to the call for action*. Resolution of the World Health Assembly: WHA55.10. Geneva: WHO, 2002.