International disparity of mental disorders burden: New trends of global mental health disparity

Huijie ZHU  
Nanjing Agricultural University

Haojun JIANG  
Nanjing Agricultural University

Zhiping ZHU  
Nanjing Agricultural University

Zhaoyu YAO (✉ yaozhaoyu@njau.edu.cn)  
Nanjing Agricultural University

Research Article

Keywords: Global burden of disease, mental disorders, global mental health, health disparity

Posted Date: January 31st, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1294201/v1

License: ©  This work is licensed under a Creative Commons Attribution 4.0 International License.  Read Full License
Abstract

**Background**: Mental illness had been a worldwide concern. Global Mental Health (GMH) had become a movement to fight for Global health inequality. In low-income country, adequate and quality mental health infrastructure, mental health services are not provided equitably to people with mental disorders.

**Methods**: We used the data of global burden of 204 countries from 1990 to 2019 in Global Burden of Disease database. The Years Lived with Disability (YLDs) due to mental disorders was treated as an indicator of national mental health. In the GBD Results Tool toolkit provided by the Institute of Health Measurement and Evaluation, retrieved and visualized the data in global burden of disease data. In addition, we used correlation analysis to analyze the correlation between the burden of mental illness and the level of national development.

**Results**: It is found that, mental health had been a global issue which showing a gradual upward trend. There is a significant positive and moderate correlation between national development and the burden of mental disorder. The better the national development, the higher the YLDs Rate caused by mental disorders. The burden of mental illness in low-income countries is not high, but the rate of increase is relatively fast, while the burden of mental illness in low- and middle-income countries is relatively high, but the rate of decrease is apparent.

**Conclusion**: The burden of mental disorders in developed countries is relatively high, but it has shown a downward trend. However, although the burden of mental disorders in developing countries is not large, the growth rate is relatively fast. This may be related to mental health policy. It is high time to notice that mental health had been a global issue. Global mental health movement should be done to narrow the gap between different countries, especially in developing countries.

Background

**Health disparity in mental health**

*The Black Report*, which was the first academic work on health inequality, pointed out that there are significant differences in the mortality and morbidity rates of residents of different occupational classes and incomes. The report believes that there is widespread health inequality in the UK, as well as France, the United States and other countries. After *The Black Report* released, researches on health inequality gradually turned to focus on micro and macro socioeconomic factors. The micro factors of health inequality mainly include income [1], healthcare utilization [2], and socio-economic status [3]. The macro factors [4] mainly include social class [5], medical system [6], national wealth [7] and income inequality [8]. These studies pay more attention to factors related to physical health, such as mortality and the prevalence of physiological diseases.

With the increasing of global health governance, residents of low-income countries and their physical health of people have improved, but mental health problems have become increasingly prominent and have received widespread attention [9-10]. The 2001 World Health Organization report *Mental Health: New Understanding, New Hope* pointed out that, more than 25% of people are suffered from mental disorders [11]. Depression is the third leading contributor to the global disease burden [12]. With the high incidence of mental illnesses on a global scale, the differences in the wealth of mental illnesses between regions and countries are becoming more apparent [13]. Cross-national epidemiological studies have emphasized that mental disorders are prevalent
across the globe, but are underdiagnosed and undertreated [14]. Mental health disparity is becoming a new manifestation of health inequality on a global perspective, and is constantly evolving into a new trend that has a negative impact on health equity.

Global mental health and mental health across countries

Following the enlightenment of physical health inequality in the *Black report*, the impact of economic and wealth on personal mental health is the first to be concerned. Survey data show that the lower the socioeconomic status, the higher the prevalence and risk of mental illness [15], and the higher the probability of being admitted to a mental hospital [16]. More macro-level data show macro factors, such as regional development levels [17], income inequality [18], etc., are closely related to the prevalence of mental illness. These studies regard the economic factors as an important factor affecting individual’s mental health or one seeking mental health services.

With the progress of globalization, the trend of mental health differences on a global scale has become a new research direction. Mental health disorders are viewed as a global concern requiring globally led approaches to address them [19]. Global Mental Health (GMH) had become a movement with proponents, adherents, opponents, and an ideology and core activities [9]. Mental health between low-income, middle-income and high-income countries [20-21] had been found, but low-income countries got more attention [22]. In low-income country, adequate and quality mental health infrastructure [23], mental health services are not provided equitably to people with mental disorders [24-25], persons with serious mental illness in less-developed countries do not receive treatment [26]. A research pointed out that, 32% of 191 countries did not have a specified budget for mental health. Many countries from Africa (79%) and the South East Asia (63%) spent less than 1% of their total health budget on mental health [27]. The stated aims of the Movement for GMH are ‘to improve services for people living with mental health problems and psychosocial disabilities worldwide, especially in low- and middle-income countries where effective services are often scarce’ [28].

A large number of studies on international differences in mental health follow the research logic of health inequality, evaluating mental health disparity from the perspective of mental health services and resources. However, few studies have specifically focused on mental health between different countries, especially the differences in mental health between low- and high-income countries. Are there differences in the burden of mental illness between different countries and regions? How is mental health related to the country’s economic and social development? What are the trends in the mental health disparity of countries with different levels of economic development in different periods? Based on the data of the Global Burden of Disease database, this article discussed the current situation and trend of the burden of mental health in global context.

Methods

Data

The data we used is the Global Burden of Disease database, which is an open database on the website of The Institute for Health Metrics and Evaluation (IHME). The construction of the global burden of disease database has a long history. The World Bank commissioned the Harvard School of Public Health and the World Health
Organization for its 1993 World Development Report to jointly complete the first global burden of disease. Since 1990, the data has recorded more than 350 diseases and injuries, and collected the latest estimates of deaths and disability deaths by different causes, ages and genders in most countries and regions around the world [29]. In the GBD Results Tool toolkit provided by the Institute of Health Measurement and Evaluation, the data in the global burden of disease database can be retrieved and visualized, and research data can be exported.

**Variables**

**Mental Health**

Health is not only disease-free and being strong, but also a state of fulfillment in three aspects: physical, mental, and social (Well-being). The World Health Organization's definition of mental health: Mental health is regarded as a state of health. In this state, individuals are aware of their own potential, can cope with the pressure of daily life, are creative, and can do something to the group they belong to make their own contributions [30]. Since mental health is a multi-dimensional concept, and mental illnesses are juxtaposed with substance use disorders in the Global Burden of Disease database (Mental and substance use disorders), the study selected several typical mental illnesses as the observed diseases. The main mental illnesses used in the study include five main types of mental illness: Depressive disorders, Bipolar disorder, Schizophrenia, Anxiety disorders, Autism and Asperger's syndrome.

**Disabled and lost healthy life years (DALYs and YLDs)**

Murray proposed DALYs (Disability Adjusted Life Years) in 1996, which refers to the years of healthy life lost due to premature death and disability due to a certain cause [31]. It consists of two parts. Years of life lost (YLLs, Years of life lost) and years of life lost (YLDs, Years Lived with Disability). It is difficult to identify deaths due to mental illness. The data on health life years lost due to death in disability-adjusted life years may not be accurately estimated, and the difference between the two values of DALYs and YLDs in actual data is very small, so when assessing the burden of mental illness The burden of mental health disease is measured by years of disability and loss of healthy lives.

**National development level**

Comprehensive and multiple indicators are often used to measure the level of development of a country or region. The human development index and the socio-demographic index are two more commonly used indicators in the health field. The Human Development Index (HDI, Human Development Index) was proposed by the United Nations Development Program (UNDP) in the "Human Development Report 1990" to measure the level of economic and social development of UN member states. The Human Development Index is composed of three indicators: average life expectancy, literacy rate, and real GDP per capita. In 2015, the global burden of disease project team introduced the social demography index (SDI, social demography index), which is a brief indicator used to determine the level of development of a country or other region. SDI is the comprehensive
average of the per capita income, average education level and fertility rate of all regions in the global burden of
disease project group, which is between 0 and 1.

Analysis method

The mental illness burden data and socio-demographic index indicators in the study come from the GBD Results
Tool toolkit, while the human development data comes from the World Bank database. The analysis database is
obtained by matching the names of countries or regions. In the analysis of the study, the mental health disease
burden data was derived from the GBD Results Tool toolkit, and the data was analyzed in STATA 16.0. Part of
the visualized image comes from the GBD Compare Viz Hub visualization function provided on the website of
the Institute of Health Measurement and Evaluation.

Results

Mental disorders burden and increasing trend worldwide

It can be seen from the global burden of disease database that in 2019, the number of life-years lost due to all
causes reached 860973.780 thousand per year. According to the global population of that year, the average
person lost 0.11 years of life due to various diseases. The number of life-years lost due to mental disorders is
125293.960 thousand per year; the average life-year lost due to various diseases is 1619.32 person-years per
100,000 people.

| Table 1 |
|---|
| **global YLDs caused by major mental disorders in 2019** |
| | Number | Percent | Rate |
| | thousand per year | % | per 100 thousand |
| Total all cause | 860973.780 | 100.00 | 11127.34 |
| Mental disorders | 125293.960 | 14.59 | 1619.32 |
| schizophrenia | 15107.248 | 1.78 | 195.25 |
| Depressive disorders | 46863.642 | 5.45 | 605.67 |
| Major Depressive disorder | 37202.741 | 4.33 | 480.81 |
| Dysthymia | 9660.900 | 1.12 | 124.86 |
| Bipolar disorder | 8502.426 | 0.99 | 109.89 |
| Anxiety disorders | 28676.050 | 3.34 | 370.61 |
| Autism spectrum disorders | 4306.615 | 0.50 | 55.66 |

Global YLDs caused by mental disorders accounts for 14.95% of total .Depression and anxiety are the two types
of mental disorders that cause disability and loss of life years, regardless of the total number, proportion or
average amount of life lost due to major mental disorders. It can be seen from this that depression and anxiety are both important mental disorders that affect mental health and cause the loss of healthy life years, and require attention. In addition, mental disorders such as schizophrenia and bipolar disorder are also factors that cause the loss of healthy life years.

A statistical analysis of the years of life lost due to disability from major mental disorders worldwide from 1990 to 2019. Judging from the total number of life-years lost due to mental disorders over the years, it was only 82.17 million person-years in 1990, and it increased to 125.31 million person-years in 2019. The burden of mental disorders has increased by nearly half in 30 years. The average annual increase in life lost due to mental disorders is 1.534 million per year, with an average annual increase of 1.5%. Among them, the annual average annual increase in life lost due to Depressive disorders is 206,000 years, with an average annual increase of 1.75%; the average annual increase in life loss due to anxiety disorders is 345345 years, with an average annual increase of 1.49%; The annual average annual increase in life lost due to schizophrenia is 206065, an average annual increase of 1.75%; the average annual increase in life lost due to Autism spectrum disorders is 41403, an average annual increase of 1.13%; bipolar disorder causes The average annual increase of disabled lives lost was 108770 person-years, with an average annual increase of 1.61%.

### Table 2

|                          | Mental disorders | schizophrenia | Depressive disorders | Bipolar disorder | Anxiety disorders | Autism spectrum disorders |
|--------------------------|------------------|---------------|---------------------|------------------|-------------------|---------------------------|
|                          | DALYS            | YLDS          | YLDS                | YLDS             | YLDS              | YLDS                      |
| 1990                     | 821.7            | 821.6         | 77.9                | 282.5            | 60.2              | 181.7                      |
| 2000                     | 975.2            | 975.0         | 95.1                | 337.4            | 71.6              | 217.8                      |
| 2010                     | 1120.9           | 1120.7        | 114.0               | 388.0            | 84.5              | 250.0                      |
| 2015                     | 1197.2           | 1197.0        | 123.3               | 418.5            | 90.5              | 265.3                      |
| 2019                     | 1253.1           | 1252.9        | 151.0               | 468.6            | 85.0              | 286.7                      |
| **annual average number**| **15.34**        | **15.34**     | **2.06**            | **6.13**         | **1.88**         | **3.45**                   |
| **average growth rate (%)** | **1.53**         | **1.53**      | **1.75**            | **1.66**         | **1.61**         | **1.49**                   |

It can be seen that the overall burden of various mental disorders has shown an increasing trend. From 1990 to 2019, the average annual growth rate has reached 1.5%. At the same time, it can be seen that depression and anxiety are not only the major factors in the loss of life years due to mental disorders, but the growth rate of the two types of mental disorders is also relatively high. Depression is the only mental disorders among the top five diseases that have lost life years [32].
Correlation between national development level and burden of mental disorders

The burden of mental disorders can be compared internationally through the years of life lost due to mental disorders in different countries or regions. From the perspective of the total number of life years lost due to mental disorders, the average number of life years lost due to mental disorders in each country or region is 614,186.09 person*years. Among them, India has the highest number of life-years lost due to mental disorders, at 21,893,508.43 person*years; followed by China, with 20,291,585.67 person*years; and the United States, with 73,126,178.13 person*years. It can be seen that the burden of mental disorders of the top three most populous countries are quite high.

From the perspective of the average annual loss of life due to mental disorders, the average life-year lost due to mental disorders in each country or region is 1,619.32 person*years/100,000 people. Among them, the per capita loss of life-years caused by mental disorders in Portugal, was the highest, with 2,603.9 person*years/100,000; followed by Greece, with 2,509.77 person*years/10,000; and third was Greenland, with 2,485.91 person*years/10,000. Taking into account the differences in the population of different countries and regions, after weighting by the population, the YLD rate of the country with the highest population is no longer high. In terms of the proportion of years of life lost due to mental disorders, the international average is 14.59%. Among them, Palestine has the highest proportion, accounting for 23.76%; followed by Qatar, accounting for 22.43%; and third is Iran, accounting for 21.63%.

Judging from the YLDs due to mental disorders of 204 countries and regions, agglomeration has appeared in some regions, and the level of national development in this agglomeration region is also very similar. On this basis, the correlation between the level of development and the country's mental health can be tested.

The correlation between the development level and the national mental health is analyzed, and HDI and SDI are used as proxy variables for the national development level (Table 2). The results show that the Pearson correlation coefficient values of the two variables HDI and SDI in the four years of 1990, 2000, 2010 and 2019 are between 0.5 and 0.7, and the national development level and the national mental disorders burden show a significant intermediate level correlation.

We use scatter plots to fit the YLDS in the GBD database in 1990, 2000, 2010, and 2019, and the HDI and SDI of each country (Figure 3). It turns out that whether HDI or SDI is used as a measure of a country's development level, the fitted straight lines for all four years are inclined to the upper right corner. In other words, the higher the development level, the greater the national burden of mental disorders. This shows that in the past three decades, the significant correlation between the national development level and the burden of mental disorders has stabilized, and we can use the national development level to predict the national burden of mental disorders. The result seems to be contrary to the claims of the GMH movement, but the data shows that, on average, countries with higher levels of economic development are experiencing a higher level of mental disorders burden than low- and middle-income countries. This does not mean that there is no need to worry about the burden of mental disorders in low- and middle-income countries.

Trend of mental disorders burden across different countries
Are there any differences in mental disorders burden of countries with different levels of development? In order to further analyze the burden of mental disorders and its changing trends in countries with different development levels, the study compared the trends of the burden of mental disorders in low-income countries, low-middle-income countries, middle-income countries, middle-high-income countries, and high-income countries from 1990 to 2019 (Figure 4). The GBD Results Tool is used to compare and analyze the burden of mental disorders in countries with different income levels.

From the YLDs of countries with different levels of development, it can be seen that, firstly, the YLDs Number of countries of all development levels is always on a rising trend, which shows that the burden of mental disorders in all countries is always rising, and it needs to be alert. Second, the YLDs of high-level SDI countries are only higher than those of low-SDI countries, and are always lower than YLDs of medium-SDI countries. Medium-SDI countries have the highest burden of mental disorders. Finally, the growth trend of YLDs in low-SDI and low-medium SDI countries is always faster than that in high-medium SDI countries and high-SDI countries, and the burden of mental disorders in low-SDI countries may become more serious.

From the YLDs percent due to mental disorders in countries with different levels of development, only the YLDs percent of low-SDI countries has been rising. Although YLDs percent of other countries have once risen, they have shown a downward trend in recent years. Judging from the downward trend of YLDs percent, the burden of disease caused by mental disorders in high-SDI countries has fallen the most. The decline in high-middle SDI and middle- SDI countries has been significant, but the decline in low-middle SDI countries has not been significant in recent years. It can be seen that the burden of disease caused by mental disorders in low-SDI countries is rising, while the percentage of the burden of mental disorders in high-SDI countries has a clear advantage.

The YLDs rate of countries with different levels of developments shows that, the average burden of mental disorders in high-SDI countries is relatively high and stable, low-SDI countries are relatively low and stable, and the rate of mental disorders burden in medium-SDI countries is at an intermediate level but the rate of increase obvious. However, in recent years, the rate of mental disorders burden in low and middle SDI countries seems to be on the rise.

From the comparison of the burden of mental disorders in countries with different SDI levels, it can be seen that the number and percent of the mental disorders burden in high-SDI countries is at a medium level, but the average burden of mental disorders is at a relatively high level; The total amount, proportion and average amount are all at a medium-to-high level; the burden of mental disorders in low-SDI countries is relatively low. Judging from the changing trend over the years, the proportion of the burden of mental disorders in high-SDI countries has gradually decreased, while the proportion of the burden of mental disorders in low- and medium-SDI countries has continued to increase. It can be seen that the burden of mental disorders in high-SDI countries has shown a downward trend, while the burden of mental disorders in low- and middle-SDI countries is gradually increasing.

**Discussion**
The analysis of the correlation between the level of development and the burden of mental disorders found that there is a clear correlation between the high level of development and the high burden of mental disorders, but developed countries have a greater advantage in reducing the growth rate of the burden of mental disorders. In countries with low and medium levels of development, although the total burden of mental disorders is not large, it has shown strong signs of increase in the proportion of mental disorders burden and rate.

The core factors that form the relationship between the level of development and the burden of mental disorders may reflect the health costs and service advantages of development. The health cost refers to the loss of mental health that may be brought about by rapid development, and the service advantage refers to the mental health services and system construction that a strong economy can provide. Therefore, we see that developed countries have a leading position in the number of mental disorders burdens, but at the same time, we see a slowdown or even a downward trend in the percentage and rate of mental disorders burdens. However, under the current circumstances, the development trend of the burden of mental disorders is unfavorable for developing countries with poorer development levels, no matter in terms of total amount or average amount. It is high time to notice that mental health had been a global issue. Global mental health movement should be done to narrow the gap between different countries, especially in the low development countries.

**Limitation**

The study used GBD disease burden data and correlated it with national HDI and SDI data for correlation analysis, revealing the correlation between the level of development and the burden of mental disorders. The use of second-hand data may force research to rely on data with uncertain data quality. Moreover, limited to the operationalization of variables of second-hand data, the logical relationship between the research variables can be completely clarified. If we can further correlate more cultural, social and other factors of the country, we can better present the logical picture behind the global mental health differences.

**Conclusion**

Based on the historical data of the Global Burden of Disease database, the study compares and analyzes the global burden of mental disorders, differences between different development countries and changing trends of the burden of mental health in a global context. Firstly, mental health had been a global issue. Mental disorders are a worldwide health problem. Depression and anxiety are both major mental disorders that cause the loss of healthy life years. The global burden of mental disorders is showing a gradual upward trend from 1990 to 2019. Secondly, there is a significant positive and moderate correlation between the level of national development and the burden of mental disorders. The better the national development, the higher the YLDs Rate caused by mental disorders. Thirdly, countries or regions with medium and high SDI levels have a relatively high burden of mental disorders, but there is a downward trend in the proportion of the burden of mental disorders and the growth rate of the number. The burden of mental disorders in low-income countries is not high, but the growth rate is obvious.

The burden of mental illness is equally severe in low-income and upper-middle-income countries. The burden of mental illness in low-income countries is not high, but the rate of increase is relatively fast, while the burden of mental illness in low- and middle-income countries is relatively high, but the rate of decrease is apparent.
Declarations

Ethical Approval and Consent to participate

This study does not involve human participants or animals. The authors declare that this study was approved by the institutional review board of science and technology ethics committee.

Consent for publication

Not applicable.

Availability of data and materials

All data relevant to the study are included in the article or uploaded as online supplemental information.

Competing interests

The authors declare that they have no competing interests.

Funding

Not applicable, Authors affirm not having entered into an agreement with the funder that may have limited their ability to complete the research as planned, and indicate that they have had full control of all primary data.

Authors’ contributions

HJ ZHU wrote the main manuscript. HJ JIANG, ZP ZHU and ZY YAO critically revised the manuscript. All authors reviewed the manuscript.

Acknowledgments

We thank Institute for Health Metrics and Evaluation (IHME) for sharing the Global Burden of Disease dataset.

Authors' information

1 college of humanities and social development, Nanjing Agricultural University Nanjing China, 2 college of public administration, Nanjing Agricultural University Nanjing China.

References
1. Doorslaer E, Humphries K H. Income-Related Health Inequality in Canada. Social Science & Medicine, 2000, 50(5):663-671.

2. Chioun Lee, Stephanie L Ayers & Jennie Jacobs Kronenfeld. The association between perceived provider discrimination, healthcare utilization and health status in racial and ethnic minorities. Ethnicity & Disease, 2009, 19(3):330-337.

3. Liu Hexuan & Guo Guang. Lifetime Socioeconomic Status, Historical Context, and Genetic Inheritance in Shaping Body Mass in Middle and Late Adulthood. American Sociological Review, 2015, 80(4): 705-737.

4. Scholten S, Velten J, Neher T, et al. Wealth, justice and freedom: objective and subjective measures predicting poor mental health in a study across eight countries. SSM - Population Health, 2017, 3: 639-648.

5. Williams D R. Race, Socioeconomic Status, and Health The Added Effects of Racism and Discrimination. Annals of the New York Academy of Sciences, 2010, 896:173-188.

6. Maskileyson, Dina. Healthcare system and the wealth–health gradient: A comparative study of older populations in six countries. Social Science & Medicine, 2014, 119(C):18-26.

7. Cole W M. Wealth and health revisited: Economic growth and wellbeing in developing countries, 1970 to 2015. Social Science Research, 2019, 77:45-67.

8. Kawachi I, Kennedy B P. Income inequality and health: pathways and mechanisms. Health Services Research, 1999, 34(1 Pt 2):215-227.

9. Whitley. Global Mental Health: concepts, conflicts and controversies. Epidemiology & Psychiatric Sciences, 2015, 24(4):285-291.

10. Florence B, Mustafa al'Absi, Anne E. Becker & Beverly P. Global research challenges and opportunities for mental health and substance-use disorders. Nature, 2015, 7578(527): 172-177.

11. World Health Organization, The World health report 2001: Mental health: new understanding, new hope. France, 2001.

12. Pamela Y. Collins et al., Grand challenges in global mental health. Nature, 2011,475(7354):27-30.

13. McCullough J M, Leider J P. Associations Between County Wealth, Health and Social Services Spending, and Health Outcomes. American Journal of Preventive Medicine, 2017, 53(5): 592-598.

14. Stein D J, Giordano J. Global mental health and neuroethics. BMC Medicine, 2015, 13(1):1-6.

15. Ckea B, Ghcmm C, Galea D S. Is wealth associated with depressive symptoms in the United States? Annals of Epidemiology, 2020, 43:25-31.

16. Rushing, W. A, Two patterns in the relationship between social class and mental hospitalization. American Sociological Review, 1969,34(4): 533-541.

17. GBD 2013 DALYs and HALE Collaborators. Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition. Lancet, 2015, 386: 2145-2191.

18. Kahn, R. S., Wise, P. H., Kennedy, B. P., & Kawachi, I. State income inequality, household income, and maternal mental and physical health: cross sectional national survey. British Medical Journal, 2000,321(7272): 1311-1315.

19. Rajabzadeh V, Burn E, Sajun SZ, et al. Understanding global mental health: a conceptual review. BMJ Global Health, 2021;6:e004631. doi:10.1136/ bmjgh-2020-004631.
20. Natalia Diaz-Granados et al., Monitoring Gender Equity in Mental Health in a Low-, Middle-, and High-Income Country in the Americas. Psychiatric Services, 2011, 62(5):516-522.

21. Lund C, MD Silva, Plagerson S, et al. Poverty and mental disorders: breaking the cycle in low-income and middle-income countries. Lancet, 2011, 378(9801):1502-1514.

22. Vikram P. Mental health in low- and middle-income countries. British Medical Bulletin, 2007(1):81-96.

23. Ngui E M, Khasakhala L, DavidNdetei, et al. Mental disorders, health inequalities and ethics: A global perspective. International Review of Psychiatry, 2010, 22(3):235-244.

24. Patel V, Saxena S, Maj M, et al. Global mental health 1 - No health without mental health. Lancet, 2007, 370(9590):859-877.

25. Tesfamicael G, Thomas B. Nurses and mental health services in developing countries. Lancet, 2007, 370(9592):1016-1017.

26. Anne E. Becker and Arthur Kleinman. Mental Health and the Global Agenda. New England Journal Medicine, 2013, 369:66-72.

27. Saxena S, Sharan P, Saraceno B. Budget and Financing of Mental Health Services: Baseline Information on 89 Countries from WHO's Project Atlas. The Journal of Mental Health Policy and Economics, 2003, 6(3):135-143.

28. David O & Sumeet J. Making space for embedded knowledge in Global Mental Health: a role for social work? European Journal of Social Work, 2015, 18(4): 569-582

29. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. Available from http://ghdx.healthdata.org/gbd-results-tool.

30. World Health Organization, World health statistics 2015, 2015.

31. Murray CJL. Rethinking DALYs. In: Murray CJL, Lopez AD. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020. Cambridge: Harvard University Press, 1996.

32. GBD 2016 Disease and Injury Incidence and Prevalence Collaborators, Global, regional and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet, 2017, 390:1211-1259.

Figures
Figure 1
rate of YLDs caused by mental disorders in 2019
Figure 2
percent of YLDs caused by mental disorders in 2019

Figure 3
scatter plot of YLDs With HDI and SDI, 1990-2019
Figure 4

YLDs of mental disease burden of different countries (1990-2019)