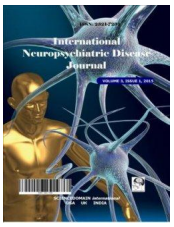

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# Exploring the High Burden of Depression Relative to Other Mental, Neurological and Substance Use Disorders

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***Authors' contributions***

*This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

The Global Burden of Disease (GBD) has been widely investigated in recent years becoming central evidence of both Global Mental Health (GMH) and the argument to 'scale up' Mental Health (MH) resources worldwide. This burden of disease is defined as the difference between present health status and an ideal condition in which every person lives into old age without any illness and disability. Depression has remained high in studies looking at GBD above other forms of mental, neurological and substance abuse disorders (MNS). There are many explanations for this pattern of results. This article reviews some of the statistics on the GBD, and critically discusses other factors associated with the high burden of depression. The global burden of depression is appraised concerning its high comorbidity with physical health conditions, the methodology used in epidemiological studies, the standard metric used to compare disease-burden worldwide and the depression epidemic as a socio-cultural construct.

*Keywords: Burden of disease; depression; mental disorders; neurological disorders; substance use disorders.*

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## 1. INTRODUCTION

Population health data on incidence, prevalence and years lived with a disability is crucial for informing global, regional and national health policies; determine public health priorities as well as resource allocation and disease surveillance [1,2]. In light of its importance, many different summary measures of population health have been proposed and used to try to quantify the disease-burden on populations [3]. In 1990, the Global Burden of Disease (GBD) study introduced a new metric called the Disability-Adjusted Life Years (DALYs) which allows for the comparison of overall health and life expectancy across nations and is currently the standard approach to epidemiological assessment [4]. The DALY did not only account for premature mortality statistics but also quantified the years lost due to disability caused by disease or injury. Before the DALY, health policy decisions were mainly informed by mortality statistics [5]. The quantification of both dimensions of disease, mortality and disability, changed the protagonists on the disease-burden charts. With the exception of sub-Saharan Africa, the global burden of disease has shifted from communicable to non-communicable diseases and from premature death to years lived with disability [6]. Although global health indicators have improved since 1990, population growth and ageing are fueling the amount of YLD, resulting in a faster decline in mortality rates compared to the YLD and making the non-fatal dimensions of disease the primary challenge for health systems worldwide [1]. This 'epidemiological transition' is contributing to the rise in the burden of mental, neurological and substance use disorders (MNS) that already accounted for 10.4% of the global DALYs in 2010 [5].

Disaggregated, mental disorders account for the most significant proportion of DALYs (56.7%) compared to neurological disorders (28.6%) and substance use disorders (14.7%) [5]. Driving the DALY percentages for MNS disorders are the YLD, as these diseases are the leading cause of YLD worldwide (28.5% of all YLDs) and appear to contribute very little to the YLL (2.8%) [5].

Depression is associated with high disability rates, the burden associated with depression is very high in comparison to other MNS and predicted to be the second leading cause of illness by 2030. This has kindled discussions of depression being described as an epidemic [7,8] identifying it as a priority condition to be prevented and treated on the Global Mental Health agenda [9,10]. This article will critically discuss and review literature surrounding the more enormous burden of disease attributed to depression relative to other mental, neurological and substance use disorders.

Depression is a mental disorder that can present itself at different levels of severity: mild, moderate or severe. It is 'characterized by sadness, loss of interest or pleasure, feelings of guilt or Low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration' [10]. An estimated 350 million people of all ages suffer from depression worldwide [11]. This high prevalence rate accompanied by the recurrent and generally chronic nature of the disorder, its high co-morbidity with other mental and physical illnesses [12,13], its negative impact on every-day life activities [14], and its significant economic burden on society [15], all account for a highly burdensome mental ill health condition. However, apart from the extreme prevalence rate, most of these facts are also true for other MNS disorders. So what is unique about depression?

A straightforward possibility for why the burden of depression is so high compared to other MNS disorders is that more people are suffering from depression for more extended periods of time than From any other MNS disorder. And indeed, the prevalence of low is higher than most other MNS disorder. Further, women suffer more from depression than men (2:1 female to male ratio) and also have a longer life expectancy than men [10]. Therefore, it could be argued that the socio-demographic evolution characterised by population growth and ageing is what makes the burden of depression is so high relative to other disorders [16]. However, there is possibly a more complex picture surrounding the prevalence rates associated with depression, and it is essential this is critically explored to fully understand the current statistics of the global burden of disease associated with depression.

### 1.1 Comorbidity Associated with Depression

One possible explanation for the higher levels of GBD associated with depression in comparison to other MNS is its high comorbidity with a range of physical health conditions. Although there is a lack of evidence of causation, this comorbidity is widely reported. Additionally, depression is

comorbid with many chronic diseases [13]. Considering the three top projected leading causes of GBD reported by Mathers & Loncar [7]; HIV/AIDS, depression and ischemic heart disease, it has been found that there are associations with depression and HIV/AIDS. Leserman and colleagues [17] found that depressive symptoms were associated with the more rapid development of AIDS in HIV infected gay men. Similarly, research looking at HIV infected men and women found that depression was comorbid with the disease and accounted for significant changes in CD4 cell counts even with the use of Highly Active Antiretroviral Treatment (HAART) [18]. Although there is controversy as to the causal relationship between these factors, the comorbidity is uncontested.

There is also the consideration that there are other reported factors associated with depression, such as conflicts and disasters [19, 20,21]. With the majority of these occurring in Low and Middle-Income Countries which account for 80% of the world's population [16] this could point to the higher rates of depression in the GBD studies than other mental, neurological and substance use disorders.

## 1.2 Methodological Issues with Epidemiological Data

It is highlighted that there is a lack of coverage, or sufficient coverage, in studies investigating the GBD of countries across the globe. In a systematic review of epidemiological data on the global burden of mental disorders, Baxter and colleagues [16] reported that there were highly variable levels of coverage. While North America and Australasia had reasonably substantial prevalence data, it was relatively weak elsewhere. In more detail, they reported that four of the 21 GBD world regions: Central Asia, Central Sub-Saharan Africa, Latin America and Oceana had no data of mental disorders and therefore the majority of missing coverage was in LMICs. Reviewing specifically the epidemiological data on GBD of depression [22], it was found that no WHO region had achieved full coverage and Europe had the highest coverage with data on 15 out of 52 countries. Africa had the lowest coverage with data on only three out of 46 countries. With only limited coverage of data, there is uncertainty around the accuracy of the global estimates of the burden of disease.

Even those countries which have data have identified methodological flaws concerning the methods of collection and analysis. The sampling methods used to generate the respondents for the data has been criticised [15]. The majority of the data for GBD studies is collected through questionnaires and household surveys [16]. This means that non-household populations and marginal groups are immediately excluded from data, and it has been suggested that people who have mental health or substance abuse problems are less likely to be available or willing for interviews and surveys [16]. Indeed, there is evidence that marginalised groups have poorer health and mental health than non-marginalised groups [23]. In a review by Brhilikova and colleagues [22], they found that 45% of studies did not meet the conventional sample size or the sample was unknown. Furthermore, eight of the studies they reviewed did not specify an age group used and 16 studies had an unclear sampling frame. Additionally, clinical data is argued to be an unreliable gauge, as the number of people in treatment does not indicate the number of people in a population who have a mental illness [24]. Indeed, without robust methods and clearly stated experimental design the exclusivity of the data is questionable.

Furthermore, there have been reports of missing data in reviews of epidemiological studies of GBD. It has been reported that there is an absence of incidence data for most studies with prevalence data being converted to incidence data in some cases to estimate disease duration [22]. Similarly, there have been reports that countries without data (predominantly LMICs) were given estimates based on other countries or regional data [5,24]. In many regions such as the Eastern Mediterranean region, Sub-Saharan Africa, and parts of Asia and the Pacific there is a lack of death registration data. This means the estimates of death by cause should be treated with caution [7]. Ingleby highlights that data from Nigeria was excluded from WHO data due to its extremely low prevalence of depression and other disorders [24]. Although this could reflect the limited willingness of participants in surveys, it could also be truly reflective of the burden. Therefore, it is questioned why there was not a similar reaction to the high scores in New Zealand and the USA which could also be argued to reflect a survey bias. These questions begin to delve into a more in-depth debate about the possible motives behind the data that is presented which will be addressed below.

Furthermore, other methodological issues raised included the finding that studies which use prospective estimates of the lifetime prevalence of mental disorders produce higher rates than studies which use retrospective estimates [25]. Additionally, it has been reported that incidence studies of depression are affected by the time interval of follow up investigations [26-29]. 'Short-interval' studies were found to produce higher rates of incidence than 'long-interval' studies. Therefore, it is not only important that these be considered when analysing GBD data, but also that such methods are reported clearly in studies producing the data. Indeed, many of the reviews present their data in ways that are difficult to replicate and thus difficult to understand and critique. This is a real concern considering that the high rates of depression may be due to the methodology used, and without explicit representation of the data, it could result in the unquestioned acceptance of findings.

### 1.3 The Depression Epidemic – A Measurement and Socio-Cultural Construction

In comparison to MNS, the symptoms associated with 'depression' are closer to normal responses to difficult situations. This makes for an easier identification and perhaps over-identification of 'depression'. In the West, this danger of over-diagnosing depression has been documented [8,16,30]. There is a possibility this might also be occurring on a global scale, inflating the prevalence estimates of depression worldwide and spreading depression a disease model [8]. Although the prevalence rates of depression are likely to be increasing due to the simultaneous increase in population sizes, the epidemic-like status that depression has acquired compared to other MNS disorders can also be explained by the uncritical utilization of Western-based instruments to diagnose 'depression' worldwide and the exportation of the Western ethno-psychology that places 'health', 'burden' and 'disability' within the individual. Voigt and King opined that currently the GBD studies capture a 'narrow construct of health within a rather narrow slide of humanity' (2014, p.226). Therefore, the burden associated with depression might indeed be high relative to other MNS disorders within this narrow construct of health within the narrow slide of humanity. Population health data on incidence, prevalence and years lived with disability is unequivocally essential for determining public health priorities. However, there remains a lot of effort to be done in terms of global mental health epidemiology before the epidemic-like status of depression is accepted uncritically.

## 2. CONCLUSION

The estimates of the GBD have consistently reported depression as higher in comparison to other MNS. At first glance they appear to be likely results considering the high comorbidity of depression with highly prevalent physical illnesses, and its association with distressing events everyday in LMICs which make up the majority of the world's population. Critical analysis of the epidemiological data demonstrates that estimating the GBD is not a simple task but is plagued with multiple challenges of method and design. Despite this, the statistics are confidently quoted and frequently cited and they may be encouraging the improper implementation of initiatives with limited evidence-base. This is a complex argument for those firmly in favour of the movement to 'scale up' resources [30] and those on the opposite end of the spectrum who believe that the only thing LMICs have to learn from the West is how not to approach current 'issues' in mental health conditions [24]. This argument highlights the uncertainty that exists and the necessity for cautious data interpretation, transparent reporting of methods and results, and the empowerment of nations rather than the imposition of Western ways.

Currently, depression features as the second most burdensome disorder in the world after HIV/AIDS. While there is little doubt that low causes a lot of harm and disability to the individual concerned regarding activity limitation and participation restriction, it has been argued that certain socio-cultural factors and methodological constraints can have a substantial impact on what diseases or disorders appear on the top of the disease-burden charts. In sum, this article has provided potential reasons behind the present epidemic-like status that depression has taken compared to other MNS disorders. The intention is not to under-value the burden associated with depression or any other MNS disorders but to alert to the fact that the data over which the burden is currently being calculated is scaring, disparate and in many countries irrelevant.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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