Examining the Associations of Mental Health Policies, Resources, and Services with the Burden of Mental Disorders through a Global Lens

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Abstract

Aims: Mental disorders represent a major public health challenge worldwide. While research has identified diverse individual-level, interpersonal-level, and community-level determinants of mental disorders, there remains a significant gap in understanding how country-level determinants, such as mental health policies, resources, and services, impact the global burden of mental disorders. This study examines global and regional mental health policies, resources, services, and their associations with Disability-Adjusted Life Years, Years Lived with Disability, and Years of Life Lost due to mental disorders.

Methods: Data from 165 countries were analyzed using the World Health Organization Mental Health Atlas 2020 and the 2019 Global Burden of Disease datasets, following a six-stage, evidence-based approach informed by global health literature.

Results: The Eastern Mediterranean region had the highest mean values of Disability-Adjusted Life Years (1911.442 per 100,000 population) and Years Lived with Disability (1911.375 per 100,000 population). The European region had the highest median value of Years of Life Lost (0.263 per 100,000 population). The African region reported the fewest mental health services, the Western Pacific region had the most mental health inpatient facilities, and the Americas region led in mental health outpatient facilities. Significant associations were found between World Health Organization-reported mental health policies and Years Lived with Disability (b = 117.808, p = 0.046), the number of mental health

professionals per 100,000 population and Years Lived with Disability (b = 0.872, p = 0.008), and the total number of inpatient mental health facilities and Years of Life Lost (b = 0.001, p = 0.001).

Conclusions: The results highlighted the chronic, non-fatal nature of mental disorders and regional disparities in mental health services. The associations identified may inform improvements in global mental health management. Governments can refer to the findings to identify regions with mental health service gaps and allocate resources accordingly, develop evidence-based interventions that consider multiple factors, and integrate mental health into broader policies. Efforts can be made toward continuous evaluation of country-based investment and policy implementation to ensure long-term impact.

Introduction

Mental disorders pose increasingly significant challenges to global public health. By 2019, approximately one in every eight people globally, totaling about 970 million, suffered from a mental disorder (World Health Organization, 2022). The prevalence of these disorders further escalated in 2020 due to the COVID-19 pandemic. To quantify the burden of mental disorders, three key metrics are frequently employed: Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability (Deng et al., 2023; Effatpanah et al., 2024). The Years of Life Lost measure years lost due to premature death by comparing age at death to a standard life expectancy and are significantly influenced by deaths from suicide and substance use disorders (Deng et al., 2023). The Years Lived with Disability reflect the impact of living with a health condition, considering the years lived with the condition and the severity of the disability (Effatpanah et al., 2024). Mental disorders adversely affect Years Lived with Disability by impairing quality of life, well-being, and daily functioning due to their chronic nature (Effatpanah et al., 2024). The Disability-Adjusted Life Years represent the sum of Years of Life Lost and Years Lived with Disability (Deng et al., 2023; Effatpanah et al., 2024). From 1990 to 2019, the worldwide burden of Disability-Adjusted Life Years attributable to mental disorders surged from 80.8 million to 125.3 million, with their proportion of global

Disability-Adjusted Life Years rising from 3.1% to 4.9% (Effatpanah et al., 2024). Individuals with mental disorders have shown about 2.22 times of Years of Life Lost higher than those of the general population (Walker et al., 2015).

Mental disorders are influenced by a complex interplay of biological (e.g. genetics, neurochemical imbalances, and prenatal conditions), psychological (e.g. personality traits, coping mechanisms, and early life experiences), and socio-economic factors (e.g. poverty, education, employment, and social support) (Dagnino et al., 2020; Kirkbride et al., 2024). They are also influenced by macro and global determinants. For example, geopolitical uncertainties, such as international conflicts, shifting economic alliances, and political instability, contribute to mental distress by disrupting economic stability, social cohesion, and access to essential services (Valsraj et al., 2024). Evidence shows that individuals exposed to armed conflict face significantly higher rates of anxiety, depression, and PTSD compared to non-exposed populations (Lim et al., 2022). In regions like the Eastern Mediterranean, where war, displacement, and prolonged trauma are witnessed, the psychological burden is significant. In post-war Afghanistan, depression and anxiety affected more than 70% of disabled individuals (Cardozo et al., 2004). In Gaza, more than 90% of young adult medical students reported depressive symptoms, along with high rates of anxiety and stress (Aldabbour et al., 2024). Conflict-related violence and war not only contribute to mental disorders but also disrupt social structures, displace populations, undermine economic stability, and reduce public healthcare spending, further worsening mental health crises (Persaud et al., 2018).

The COVID-19 pandemic also exacerbated financial insecurity, unemployment, and social isolation (Smith et al., 2024). Vaccine nationalism compromised immunization efforts in many developing nations, reinforcing global health inequities and heightening psychological distress, as individuals in affected regions faced prolonged uncertainty, loss of livelihoods, and inadequate healthcare access (Valsraj et al., 2024). The consequences of climate change, such as extreme weather events, rising temperatures, and environmental instability, also make people susceptible to mental health issues (Smith et al., 2024). Climate-induced migration forces individuals to leave their homes. Refugees and displaced populations are particularly vulnerable, experiencing discrimination, limited access to mental

health services, and ongoing uncertainty about their future (Smith et al., 2024). The impact of these challenges is particularly evident in low-income nations, where inadequate infrastructure, limited technological advancements, and financial constraints impede their capacity to adapt and respond effectively. (Valsraj et al., 2024).

While research has identified various individual-, interpersonal-, community-, macro-, and global-level determinants of mental disorders, there remains a significant gap in understanding how country-level factors, with key aspects involving mental health policies, resources, and services, impact the global burden of mental disorders due to data limitation. Such findings may be translated into more effective interventions at the population and system level. World Health Organization has emphasized the critical need to include country-level mental health policies, resources, and service availability as integral, interconnected components that shape global mental health outcomes (World Health Organization, 2021a, 2021b). Meanwhile, the World Health Organization has made substantial efforts to promote global mental health, such as initiating the Comprehensive Mental Health Action Plan 2013-2030, which guides global policy development and resource allocation (World Health Organization, 2021a), and the Mental Health Atlas Project, which can strengthen national mental health systems by supporting policy implementation, securing funding, expanding the workforce, and improving care accessibility (World Health Organization, 2021b).

However, the barriers that impede policy implementation and the translation of evidence into policy are witnessed. A critical barrier is inadequate financial investment in mental health by national governments and international organizations, as well as the limited availability of high-quality, human rights-based mental health services (Mahomed, 2020). The World Health Organization (2017) has reported that mental health financing remains insufficient, with only 40 countries able to provide data on their domestic mental health budgets in 2014. Even where funding exists, the quality of mental health services remain areas of concern, as many countries struggle to implement policies that align with international human rights standards (World Health Organization, 2021c). In 2020, only 52% of countries met the target for mental health promotion and prevention programs, with 31% of reported programs lacking dedicated human and financial resources (World Health Organization, 2021c).

In addition, stigma related to mental disorders remains a major obstacle to the development and expansion of mental health services. It is particularly evident in certain cultural contexts where mental health conditions are not widely acknowledged or where Western psychiatric frameworks are met with skepticism (Hamza & Hicks, 2021). For instance, Syrian refugees often perceive psychological issues as highly stigmatizing, and mental health interventions that rely on Western psychiatric labels, such as "depression," may be regarded as inappropriate or disconnected from their cultural and lived experiences (Hamza & Hicks, 2021). In some regions, mental health professionals face the risk of political persecution, while ongoing conflicts, whether external or domestic, further destabilize healthcare infrastructure, limiting the provision of consistent mental health services (Vernier et al., 2019). The need for evidence-based research is thus critical in demonstrating the potential benefits of mental health policies, resources, and services in addressing the global burden of mental disorders, ultimately strengthening international commitment to policy implementation and resource investment.

The Current Study

Mental disorders pose a growing challenge to global public health. While extensive research has examined various determinants of mental disorders at diverse levels, a critical gap remains in understanding how country-level factors particularly mental health policies, resources, and services impact the global burden of mental disorders. Although some studies have investigated the status or impact of mental health resources (e.g., human resources, facilities), services, and policies, many rely on outdated data, focus exclusively on specific countries or regions, and report findings using non-standard global burden indicators, which may fail to provide a comprehensive assessment at the global level (Docrat et al., 2019; McBain et al., 2012; Saxena et al., 2007). Meanwhile, international health organizations, including the World Health Organization, have long advocated for improving mental health policies, services, and resources to alleviate the global burden of mental disorders. However, significant barriers such as inadequate investment in mental health, low-quality services, public stigma, and implementation inefficiencies continue to hinder policy implementation

and the effective translation of resources and services into practice.

Driven by the existing research gap and the ongoing challenges in global mental health initiatives advocated by the World Health Organization, this study aims to summarize mental health policies, resources, and services globally and regionally (grouped into six regions according to the World Health Organization Mental Health Atlas (2021b) and to examine their associations with Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability. This study endeavors to produce evidence-based findings that inform researchers, professionals, and policymakers about the role of mental health policies, resources, and services in addressing the global burden of mental disorders. The findings are expected to strengthen international commitments to policy implementation, resource allocation, and the broader integration of mental health into national and global health agendas.

According to World Health Organization (2021a, 2021b, 2022), mental health policy generally encompasses the laws, regulations, and guidelines enacted to govern the management and treatment of mental disorders at the national level. Such policies ensure the provision of services, and the allocation of resources towards mental health care. Mental health resources include the human, financial, and physical assets dedicated to mental health care by a country, such as trained mental health professionals, funding for mental health programs, and infrastructure for delivering services. Well-resourced mental health assets (e.g. human and financial resources) are better equipped to provide extensive and timely care, thereby reducing the overall disease burden and the economic impact of mental disorders on society. Mental health service includes a wide range of offerings, from psychiatric treatments and counseling to community support and rehabilitation services. The availability, accessibility, and quality of mental health services are crucial in managing and treating mental disorders. Specifically, the following research questions are proposed:

Research Question 1 (RQ1): What are the global and regional Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability contributed by mental disorders?

Research Question 2 (RQ2): What are the World Health Organization-reported mental health policies, resources, and services both globally and regionally?

Research Question 3 (RQ3): How do the World Health Organization-reported mental health policies, resources, and services associate with the global Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability contributed by mental disorders?

Materials and Methods

The research method followed a six-stage process, beginning with the initial selection and determination of indicators for mental health policies, resources, and services, followed by country identification, comprehensive data collection, and subsequent data refinement and analysis (Irandoust et al., 2024). This process adhered to rigorous methodological procedures established in prior studies for examining the burden of diseases globally and regionally (Emadi et al., 2021; Irandoust et al., 2024; Li et al., 2022).

Stage 1: Initial indicator selection of mental health policies, resources, and services

We focused on the indicators of mental health policies, resources, and services as outlined in the country profiles of the Mental Health Atlas 2020 (World Health Organization, 2021b). It served as a strategic guide for the development and planning of mental health services worldwide. The Atlas 2020 provided insights into the progress made toward the mental health targets established by the global health community and the Comprehensive Mental Health Action Plan 2013-2030 (World Health Organization, 2021a). This edition is the most recent version, recording national and regional data from 2019, and covers a broad range of national-level mental health determinants.

In the country profiles of the Mental Health Atlas 2020, mental health policy falls under the governance dimension of the mental health system and can be assessed by six key indicators related to the presence of a mental health policy, alignment of this policy with human rights, and the policy implementation. Mental health resource is structured into three subcategories: financing, insurance coverage, and workforce. Service indicators cover six areas: integration of services into primary care, outpatient care, inpatient care, mental hospitals, community-based services, and the management of psychosis cases.

Stage 2: Indicator determination for mental health policies, resources, and services

After extensive discussions within our research team and a review of existing frameworks and literature (Go et al., 2022; Kakuma et al., 2011; Melianova et al., 2014; World Health Organization, 2009, 2021b, 2022), six key indicators were identified to represent the mental health policies, resources, and services, as shown in Table 1. The definitions and significance of these indicators were presented in details in Appendix 1. This study focused exclusively on these six indicators to summarize the existence of mental health policies, financial and manpower investments, and the number of available services. These indicators were selected to quantify the mental health policies, resources, and services on both global and regional scales, and were further examined for their associations with the global burden of mental disorders.

	Indicator	Category
1	Stand-alone policy or plan for mental health (1=yes/2=no)	Policy
2	Government's total expenditure on mental health as % of total health expenditure (%)	Resource
3	Number of mental health professionals per 100,000 population	Resource
4	Outpatient care (total facilities)-Mental health outpatient facilities attached to a hospital	Service
5	Inpatient care (total facilities)-Mental hospitals	Service
6	Number of community-based mental health facilities per 100,000 population	Service

Table 1. Indicators of Mental Health Policies, Resources, and Services

Stage 3: Country identification and categorization by region

We included a total of 165 member countries documented in the Mental Health Atlas country profiles 2020, grouping them into six World Health Organization regions according to the region division of the Mental Health Atlas (World Health Organization, 2021b), including the African region (AFRO), Americas region (AMRO), Eastern Mediterranean region (EMRO), European region (EURO), Western Pacific region (WPRO), and South-East Asia region (SEARO).

Stage 4: Data collection for selected indicators and countries

We collected data on six independent indicators to represent mental health policies, resources, and services from 165 member countries, as documented in the Mental Health Atlas Country Profiles 2020 (The most updated version of the World Health Organization Mental Health Atlas documents, with data recorded in 2019) (World Health Organization, 2021b). We gathered three dependent indicators, namely Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability, measured with age-standardized rates per 100,000 populations, from the Global Burden of Disease (GBD) dataset for the year 2019. Covariate data, including Income Group, Population Ages 65 and Above (percentage of total population), Population Female (thousands), Population Density (people per square kilometer of land area), and Political Stability and Absence of Violence/Terrorism: Estimate, due to their potential influence on public health (Irandoust et al., 2024), were sourced from the World Bank Open Dataset for the year 2019. Political instability weakens institutions, disrupts governance, and constrains economic growth, limiting a country's ability to develop and sustain mental health systems (Akongdit, 2013). Unstable governments experience policy uncertainty, frequent leadership turnover, and shifting health priorities, disrupting mental health system planning and implementation (Masry, 2015). It was reported that conflict, unrest, and terrorism increase psychological distress, with one in five individuals in post-conflict settings suffering from anxiety, depression, or PTSD (Charlson et al., 2019). Violence and terrorism also restrict healthcare access, as fear deters individuals from seeking treatment, leading to reliance on under-resourced clinics or avoidance of care (Haushofer & Fehr, 2014). Including this variable accounts for structural conditions influencing mental health burdens and service accessibility beyond policy differences. The data extraction from these databases was independently conducted by two well-trained research assistants.

Stage 5: Data refinement and missing data handling

After confirming the data accuracy, a dataset was finalized using Microsoft Excel 2021. It included 14 indicators: one for mental health policy, two for mental health resources, three for mental health services, one for Disability-Adjusted Life Years, one for Years Lived with Disability, one for Years of Life Lost, and five for covariates across 165 countries for the year 2019. Missing data primarily occurred within the independent variables. The primary causes

for these missing values (data non-existence within certain countries, reporting challenges, and regional data that were not aggregated at the national level) suggest that these absences were not random (World Health Organization, 2021b). Multiple imputation was used to handle the missing data, as it is suggested to provide more accurate and less biased estimates than methods such as mean imputation, listwise deletion, or pairwise deletion, considering the pattern of missing data in our sample (Rubin, 1988; Schafer & Graham, 2022)

Stage 6: Data analysis

Following the data refinement, we calculated the Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability caused by mental disorders both globally and regionally, to address RQ1. For RQ2, we calculated and compared the global and regional mental health policies, resources, and services. To address RQ3, we conducted a rigorous selection of six independent indicators that demonstrated significant impacts on the study outcomes, using Independent t-tests, ANOVA, and Pearson correlation analysis through IBM SPSS Version 27.0 (IBM SPSS Statistics, Armonk, NY: IBM Corporation). The indicators independently and significantly associated with Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability were included in the regression model analysis. Ultimately, seven variables consisting of four independent variables and three covariates that independently and significantly explained the Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability were retained and included in the final multiple regression model for statistical analysis. Subsequently, we applied a multivariable regression analysis using the pooled data after applying multiple imputation to address the RQ3.

Results

Global and Regional Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability Contributed by Mental Disorders

Figures 1, 2, and 3 display the Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability across the six World Health Organization regions. Global and regional patterns of the Disability-Adjusted Life Years and Years Lived with Disability (see Figure 1 and 3) were similar, with nearly identical mean values, indicating that the Years Lived with

Disability contributed the most to the burden of mental disorders across all regions. In contrast, the Years of Life Lost (see Figure 2) showed a different pattern, with much lower median values across regions, suggesting that premature mortality due to mental disorders was relatively small. As shown in Table 2, mental disorders contributed to an average burden of 1680.806 Disability-Adjusted Life Years per 100,000 population globally. The Years of Life Lost were notably minimal, with a median of only 0.064 per 100,000 population globally. The Years Lived with Disability were nearly equivalent to the Disability-Adjusted Life Years at 1680.590 per 100,000 population. Regionally, the Disability-Adjusted Life Years ranged from 1445.206 per 100,000 population in the South-East Asia region to 1911.442 per 100,000 population in the Eastern Mediterranean region. The Years of Life Lost were significantly higher at a median value of 0.263 per 100,000 population in the European region ($Z = 42.212$, $p < 0.001$), while the Years Lived with Disability were significantly higher in the Eastern Mediterranean region at 1911.375 per 100,000 population ($F = 11.126$, $p < 0.001$).

Furthermore, the results by income groups reveal that the high-income countries faced a significantly higher burden with 1794.050 Years Lived with Disability per 100,000 population ($F = 7.192$, $p < 0.001$) and notably higher Years of Life Lost at a median value of 0.335 per 100,000 population ($Z = 25.61$, $p < 0.001$). In contrast, the low-middle and upper-middle income countries showed similar levels of the Disability-Adjusted Life Years, ranging approximately from 1598 to 1599 per 100,000 population. Results of correlation tests indicated significant positive relationships between the Years of Life Lost and "the percentage of the total population aged 65 and above" ($F = 0.413$, $p < 0.001$), and between the Years of Life Lost and "the female population (in thousands)" ($F = 0.19$, $p = 0.015$). Additionally, there was a significant negative relationship between the Years of Life Lost and "Political Stability and Absence of Violence/Terrorism: Estimate" ($F = 0.233$, $p = 0.003$).

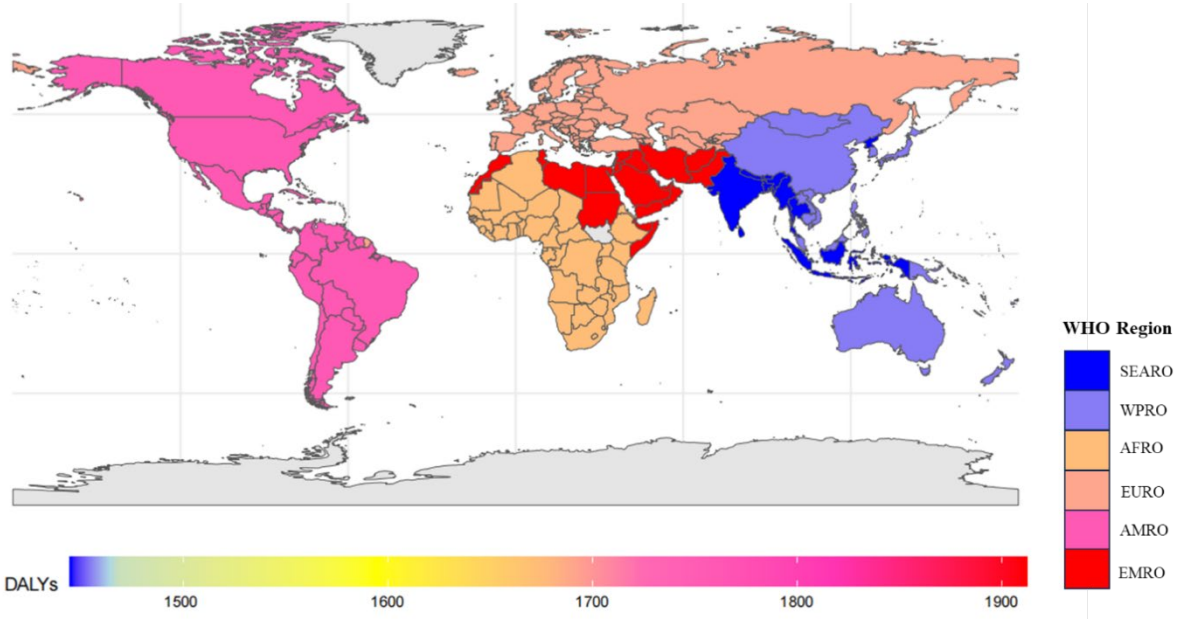


Figure 1. Disability-Adjusted Life Years across Six World Health Organization regions

Note: Each map includes a color gradient bar below it, where values increase from left (dark blue) to right (red). The color assigned to each region on the map matches the section of the gradient bar that represents how close the region's value is to that part of the gradient.

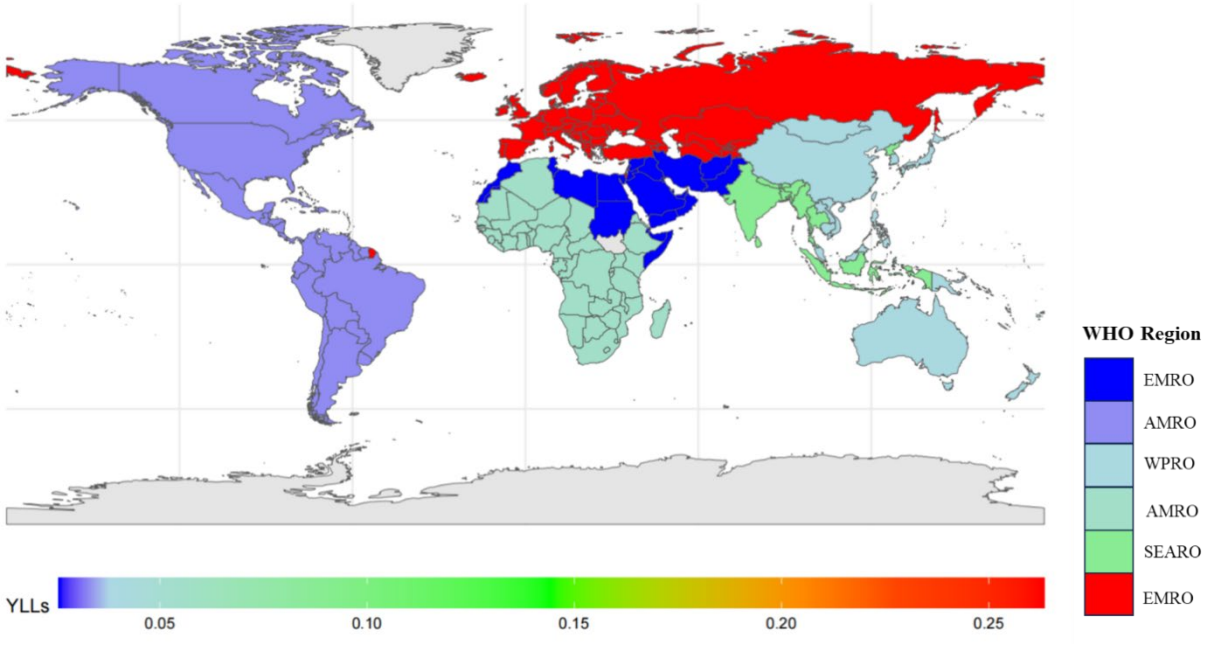


Figure 2. Years of Life Lost across Six World Health Organization regions

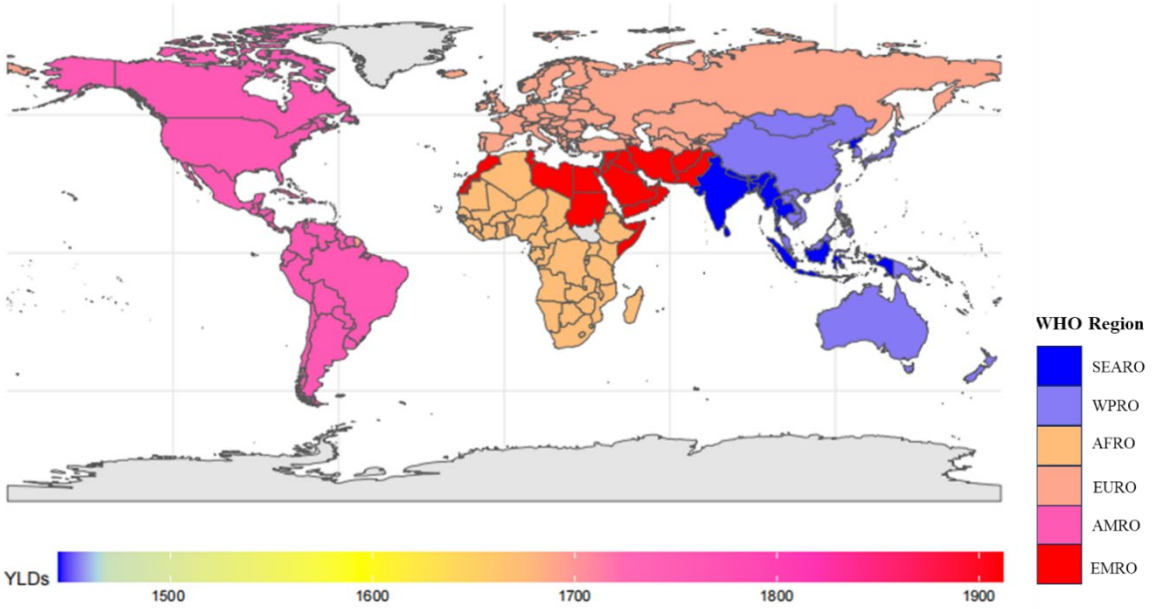


Figure 3. Years Lived with Disability across Six World Health Organization regions

	Disability-Adjusted Life Years (Per 100,000) Mean (SD)	**Years of Life Lost** (Per 100,000) Medium (P25,P75)	**Years Lived with Disability** (Per 100,000) Mean (SD)
Globally	1680.806 (267.769)	0.064 (0.026, 0.150)	1680.590 (267.683)
Regionally			
African Region (AFRO)	1674.030 (171.408)	0.056 (0.043, 0.090)	1673.964 (171.414)
Americas Region (AMRO)	1758.192 (158.809)	0.033 (0.018, 0.090)	1758.045 (158.729)
Eastern Mediterranean Region (EMRO)	1911.442 (167.524)	0.026 (0.018, 0.036)	1911.375 (167.548)
European Region (EURO)	1690.843 (318.559)	0.263 (0.127, 0.663)	1690.348 (318.265)
Western Pacific Region (WPRO)	1454.555 (290.174)	0.041 (0.018, 0.141)	1454.297 (290.086)
South-East Asia Region (SEARO)	1445.206 (200.229)	0.089 (0.061, 0.123)	1445.112 (200.253)
F/Z value	11.109	42.212[1]	11.126
p value	<0.001**	<0.001**	<0.001**
Income Group Countries			
Low	1756.891 (195.485)	0.043 (0.028, 0.054)	1756.848 (195.493)
Low-middle	1599.245 (187.784)	0.071 (0.043, 0.097)	1599.136 (187.814)
Upper-middle	1598.386 (258.000)	0.056 (0.020, 0.118)	1598.296 (257.986)
High	1794.579 (300.623)	0.335 (0.035, 0.719)	1794.050 (300.526)
F/Z value	7.214	25.610[1]	7.192
p value	<0.001**	<0.001**	<0.001**

Correlation with below covariates， r/ρ (*p* value)			
Population ages 65 and above (% of total population)	0.029 (0.711)	0.413 (<0.001**)	0.029 (0.716)
Population, female (Thousands)	0.111 (0.160)	0.190 (0.015*)	0.111 (0.158)
Population density (people per sq.km of land area)	-0.096 (0.222)	-0.010 (0.901)	-0.096 (0.222)
Political Stability and Absence of Violence/Terrorism: Estimate)	-0.075[2] (0.340)	0.233 (0.003**)	-0.076[2] (0.336)

Note: [1] means Z values, others mean F values; [2] means r value, others mean ρ value; * means significant results with $p < 0.05$; ** means significant results with $p < 0.001$, sample size varies due to missing data.

Table 2: Average Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability Per 100,000 Globally, Regionally, and by Income Group (N=165)

Global and Regional Mental Health Policies, Resources and Services

As shown in Table 3, among the 165 countries, 141 (85.5%) of them reported they had already established the national mental health policies. All eight countries in South-East Asia region had national mental health policies, while the African region and Western Pacific region had the lowest policy adoption rates (around 80%). Globally, the median value of mental health professionals per 100,000 populations was 12.53 (2.48, 42.71) while the government mental health expenditure was 2.60 (1.00, 4.80). The median numbers of outpatient, inpatient, and community-based mental health facilities were 12 (3, 44), 2 (1, 11), and 0.65 (0.11, 3.22), respectively. The European region had the highest median value of government mental health expenditure at 3.60, and it also reported the highest median values of mental health professionals per 100,000 population (43.28), inpatient care facilities (8.5), and community-based facilities per 100,000 population (2.6). The South-East Asia region, with full policy adoption, had the highest median number of outpatient mental health facilities (36).

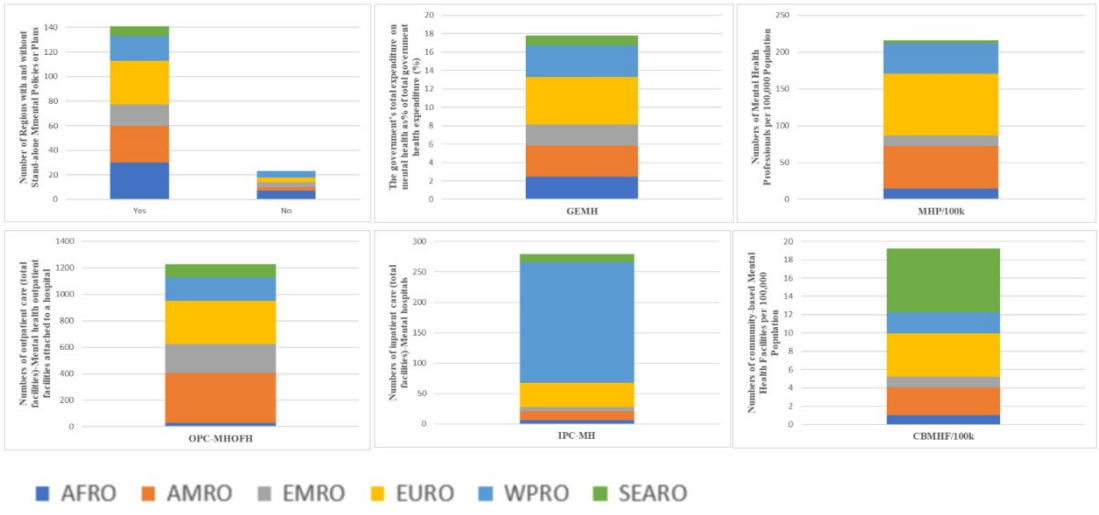
	Stand-alone Mental Health Policies or Plans		**GEMH***	**MHP/100k***	**OPC-MHOFH***	**IPC-MH***	**CBMHF/100k***
	Yes, N(%)	No, N(%)			Medium (P25,P75)		
Globally	141 (85.5)	23 (13.9)	2.60 (1.00, 4.80)	12.53 (2.48, 42.71)	12 (3, 44)	2 (1, 11)	0.65 (0.11, 3.22)
Regionally							
AFRO	30 (81.1)	7 (18.9)	1.15 (0.02, 4.07)	1.77 (0.64, 7.02)	3 (1, 16)	1 (1, 3)	0.04 (0.02, 0.51)

AMRO	30 (90.9)	3 (9.1)	2.90 (1.70, 4.90)	17.58 (5.39, 64.05)	9 (2, 60)	2 (1, 7)	1.80 (0.32, 0.93)
EMRO	17 (81.0)	4 (19.0)	1.80 (0.02, 4.35)	6.52 (2.21, 24.13)	19 (6.5, 44)	2 (1, 11)	0.49 (0.05, 1.22)
EURO	36 (90.0)	4 (10.0)	3.60 (2.55, 6.30)	43.28 (20.96, 141.74)	27.5 (6.25, 152)	8.5 (3, 29)	2.6 (0.62, 6.30)
WPRO	20 (80.0)	5 (20.0)	1.95 (1.00, 6.55)	15.42 (4.72, 53.99)	4 (1, 52.25)	1 (1, 36.5)	0.46 (0.10, 2.46)
SEARO	8 (100)	0	0.95 (0.20, 2.08)	2.75 (1.12, 6.03)	36 (15.25, 166.25)	4 (1.75, 27.25)	0.96 (0.08, 14.10)

Note: GEMH means: The government's total expenditure on mental health as% of total government health expenditure (%); MHP/100k means: Mental Health Professionals per 100,000 Population; OPC-MHOFH means: Outpatient care (total facilities)-Mental health outpatient facilities attached to a hospital; IPC-MH means: Inpatient care (total facilities)-Mental hospitals; CBMHF/100k means: Community-based Mental Health Facilities per 100,000 Population

Table 3: Global and Regional Mental Health Policies, Resources and Services

Figure 4 displays the proportional differences in mental health policies, resources, and services across the six World Health Organization regions. All of the regions had established national mental health policies, with the South-East Asia region contributing the smallest portion. Only about 20 countries did not have national mental health policies. Disparities were evident in resource allocation and service implementation. The European region led in mental health expenditure and the number of mental health professionals per 100,000 population, while the Americas region accounted for the majority of outpatient mental health facilities. The Western Pacific region had the most inpatient mental health facilities, and the South-East Asia region had the highest number of community-based mental health services but the lowest government mental health expenditures. The African region had the fewest mental health services.



Note: GEMH means: The government's total expenditure on mental health as% of total government health

393 expenditure (%); MHP/100k means: Mental Health Professionals per 100,000 Population; OPC-MHOFH means:
394 Outpatient care (total facilities)-Mental health outpatient facilities attached to a hospital; IPC-MH means:
395 Inpatient care (total facilities)-Mental hospitals; CBMHF/100k means: Community-based Mental Health
396 Facilities per 100,000 Population

397 **Figure 4.** Regional Differences among Mental Health Policies, Resources, and Services

398 **Associations of Mental Health Policies, Resources, Services with the Global Burden of**
399 **Mental Disorders**

400 Results of multivariable regression analysis (see Table 4) indicated that according to the
401 World Health Organization-reported data, the establishment of stand-alone mental health
402 policies or plans was significantly associated with the Disability-Adjusted Life Years (b =
403 117.857, p = 0.046) and Years Lived with Disability (b = 117.808, p = 0.046). Similarly, the
404 number of mental health professional per 100,000 population was significantly associated
405 with the Disability-Adjusted Life Years (b = 0.873, p = 0.008) and Years Lived with Disability
406 (b = 0.872, p = 0.008). The total number of inpatient care facilities in mental hospitals was
407 significantly associated with the Years of Life Lost (b = 0.001, p = 0.001). In contrast, the
408 government expenditures on mental health as percentages of total health expenditures showed
409 non-significant associations with the Disability-Adjusted Life Years (b = 10.819, p = 0.255),
410 Years of Life Lost (b = 0.008, p = 0.655), and Years Lived with Disability (b = 10.811, p =
411 0.255).
412

	Unstandardized b	Coefficients Std. Error	t	Sig.
Disability-Adjusted Life Years				
The government's total expenditure on mental health as % of total government health expenditure	10.819[-9.056,30.693]	9.006	1.201	0.255
Inpatient care (total facilities)-mental hospitals	-0.218[-0.537,0.101]	0.163	-1.342	0.180
Mental health professionals No.per 100,000 population	0.873[0.227,1.520]	0.330	2.648	**0.008**
Stand-alone policy or plan for mental health (1=yes/0=no)	117.857[2.141,233.574]	59.040	1.996	**0.046**
Years of Life Lost				

The government's total expenditure on mental health as % of total government health expenditure	0.008[-0.031,0.047]	0.017	0.467	0.655
Inpatient care (total facilities)-mental hospitals	0.001[0.00029,0.001198]	0.000231	3.219	**0.001**
Mental health professionals No.per 100,000 population	0.001[-0.0002, 0.00167]	0.000436	1.542	0.123
Stand-alone policy or plan for mental health (1=yes/2=no)	0.050[-0.117,0.216]	0.085	0.586	0.558
Years Lived with Disability				
The government's total expenditure on mental health as % of total government health expenditure	10.811[-9.036,30.658]	8.996	1.202	0.255
Inpatient care (total facilities)-mental hospitals	-0.219[-0.537,0.1]	0.162	-1.346	0.178
Mental health professionals No.per 100,000 population	0.872[0.226,1.519]	0.330	2.647	**0.008**
Stand-alone policy or plan for mental health (1=yes/2=no)	117.808 [2.119,233.497]	59.026	1.996	**0.046**

Note: The four independent variables were analyzed individually across four separate multiple regression models, with three confounding indicators adjusted for as covariates in each analysis.

Table 4: Mental Health Policies, Resources, Services and Their Associations with the Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability

Discussion

The predominance of Years Lived with Disability over Years of Life Lost in the global burden of mental disorders highlights the chronic and non-fatal nature of mental disorders. Mental disorders such as depression, anxiety, and schizophrenia can typically impair individuals' functional capabilities and quality of life rather than leading directly to death (Han et al., 2018; Weye et al., 2020). The findings reflect the long-term, often lifelong, associations or potential impacts of mental disorders have with/on personal well-being. These also suggest that the main concern in mental health may be the challenges that mental disorders imposed to the maintenance and enhancement of life quality over time. It is recommended that mental health policies prioritize sustained, long-term intervention programs along with consistent funding and the integration of mental health care into general healthcare systems, rather than reacting only during crises. Strategies such as early intervention, accessible community-based services, and workplace mental health support can help prevent severe conditions, reduce long-term healthcare costs and improve overall well-being.

The Eastern Mediterranean region exhibited the highest Disability-Adjusted Life Years and Years Lived with Disability, likely due to psychological distress from ongoing conflicts and socioeconomic instability, elevating the prevalence of mental health disorders (Charara et al., 2017). Decades of war, political unrest, and humanitarian crises in the countries of this region have led to elevated rates of mental disorders among affected populations. For example, following the Iraq War, prolonged exposure to war-related trauma including bombings, forced migration, loss of family members, and the destruction of livelihoods has had lasting psychological consequences, including increased PTSD and depressive symptoms (Bolton, 2013). In Syria, where more than a decade of civil war has displaced millions, children and adolescents, in particular, exhibit high levels of trauma-related mental health disorders due to exposure to extreme violence and insecurity (Hendrickx et al., 2020). Similarly, in Gaza, repeated military conflicts and blockade-related socioeconomic deprivation have resulted in alarmingly high levels of anxiety and stress (Aldabbour et al., 2024). This region also showed lower government expenditure on mental health and fewer mental health professionals, consistent with prior findings highlighting underfunding and inadequate infrastructure (Gearing et al., 2013). Social stigma surrounding mental disorders further discourages treatment-seeking behavior, exacerbating the under-prioritization of mental health services (Mohammadzadeh et al., 2020). It is suggested that policymakers in the region consider mental health an integral part of post-conflict reconstruction and humanitarian aid efforts and implement cost-effective interventions, such as mobile mental health units, telepsychiatry, and task-shifting strategies, where trained general healthcare workers provide basic mental health care to help reduce the burden of mental disorders. Mental health education to combat stigma and the integration of mental health services into refugee health programs are encouraged to strengthen sustainable service delivery.

In contrast, the European region reported the highest Years of Life Lost, potentially due to its comprehensive mental health screening and treatment infrastructure, which facilitates better diagnosis and reporting of mental disorders (World Health Organization, 2021a, 2022). The rapidly aging population in Europe, susceptible to degenerative diseases such as Alzheimer's, likely contributes to this trend (Alzheimer Europe, 2021). Additionally, lifestyle factors like high alcohol consumption and smoking rates may exacerbate mental health

conditions such as depression and anxiety in this region (Janssen et al., 2021). It might be beneficial for policymakers in the region to continue strengthening mental health screening and diagnostic efforts while expanding initiatives that address key risk factors for mental disorders, such as alcohol and substance use disorders, through harm reduction programs, behavioral intervention strategies, and suicide prevention initiatives. Meanwhile, leveraging financial support from developed regions or countries to enhance cross-border collaboration in mental health research, standardize insurance coverage for psychiatric care, and promote workplace mental health programs may also contribute to reducing the overall mental health disease burden in the region.

The South-East Asia region reported the lowest Disability-Adjusted Life Years and Years Lived with Disability, alongside minimal government investment in mental health. This may reflect the absence of comprehensive mental health legislation, inadequate detection of disorders due to a shortage of trained staff, and limited public awareness of mental health issues (Sharan et al., 2017). Environmental factors, including natural disasters and climate change, may further strain mental health resources (World Health Organization, 2024). Despite the low reported global burden of mental disorders, these figures may indicate underreporting due to insufficient resources for mental health detection and care (Luitel et al., 2015). It is recommended that policies in this region focus more on the establishment of standardized mental health screening protocols in primary care settings to improve early detection and strengthen mental health surveillance systems to reduce underreporting and enhance national data accuracy. If necessary, mental health support should be integrated into disaster response frameworks to ensure that psychological first aid and mental health interventions are available during potential disasters and emergencies.

The African region's report of the fewest mental health services may be due to the financial prioritization of infectious diseases and malnutrition over mental health, reflecting urgent survival needs over long-term health planning (Patel et al., 2018). Cultural stigma and a scarcity of trained professionals further limit both the establishment of new facilities and the effective operation of existing ones in this region (World Health Organization, 2021a). It is encouraged that policies in this region advocate for increased mental health funding within national health budgets, given the potential risks posed by mental disorders and the long-term

neglect of these diseases. Deploying mobile mental health clinics in remote and underserved regions can expand service reach. Governments should also consider launching nationwide mental health literacy campaigns to enhance public understanding and encourage treatment-seeking behavior. Furthermore, developing regional training hubs can help increase the number of psychiatrists, psychologists, and psychiatric nurses, which may be helpful to address workforce shortages in mental health sectors.

The Western Pacific region, which includes countries such as Australia, Japan, and China, had the highest number of inpatient mental health facilities. These countries have well-established infrastructure to support specialized mental hospitals. For instance, Japan and China have historically emphasized institutional care for mental health (Baum & Lin, 2020; Kanata, 2016). The region's diverse populations and large urban centers also contribute to the increased demand for specialized mental health services. Conversely, the Americas region exhibited the highest number of outpatient mental health facilities, driven by policies promoting decentralization of services to make mental health care more accessible and integrated into primary care (Alarcón Garavito, 2023). The region viewed outpatient facilities as a cost-effective alternative to inpatient care, enabling early detection and conserving resources (Orozco et al., 2022).

Our findings indicate that regions such as Europe and the Americas, which report relatively high mental health expenditures, also exhibit higher Years Lived with Disability and Years of Life Lost due to mental disorders. Previous studies suggest that targeted prevention strategies, such as child-focused and parent-focused cognitive behavioral therapy, are more cost-effective than universal approaches in alleviating mental disorders (Le et al., 2021; Simon et al., 2013). However, in some regions, resources are often directed toward treatment and crisis management rather than early intervention and targeted prevention (World Health Organization, 2021b). As a result, while severe cases receive care, the overall burden remains high due to inconsistent efforts in preventing mental disorders from developing or worsening. High-income countries tend to have more advanced diagnostic systems, leading to higher reported mental health burdens compared to regions where underdiagnosis is common. Mental disorders often co-occur with physical health conditions such as diabetes and cardiovascular diseases, further increasing healthcare costs and economic strain. Additionally,

differences in regional healthcare structures and expenditure evaluations limit the generalizability of cost-effectiveness findings across regions (Le et al., 2021). Therefore, a more detailed examination of how mental health budgets are allocated, particularly the balance between prevention, early intervention, and crisis response, warrants further attention.

The presence of mental health policies was positively associated with the Disability-Adjusted Life Years and Years Lived with Disability likely due to improved surveillance and reporting systems accompanying policy implementation. The establishment of supportive policies may improve public awareness and lead to more comprehensive data collection for mental health disorders (World Health Organization, 2021a, 2021b). National mental health policies also facilitate infrastructure for diagnosing and documenting mental health conditions, leading to higher reported prevalence and disability metrics (Liang et al., 2018). Broader definitions and recognition of mental health conditions, facilitated by these policies, may further expand diagnostic criteria, thereby increasing the scope of reported cases (Kessler et al., 2009; Patel et al., 2016). In higher-income and politically stable countries, financial resources and consistent policy execution enable better detection, diagnosis, and treatment of mental disorders, contributing to the increased burden (Brown, 1983). It should be noted that while mental health policies improve detection and reporting, their effectiveness varies based on enforcement, funding, and integration into primary healthcare. Some policies remain symbolic without tangible service expansion, leading to discrepancies between legislative progress and real-world impact (World Health Organization, 2021c). Expanding policies without adequate resource allocation may create a diagnostic-treatment gap, where more individuals are identified but lack access to proper care, resulting in increased burden of mental disorders (Mahomed, 2020). It remains essential for relevant organizations to increase investments in mental health resources and services while systematically evaluating policy implementation and addressing potential barriers to effective execution.

We also found positive associations between the number of mental health professionals and Disability-Adjusted Life Years and Years Lived with Disability. A larger workforce facilitates mental health education and outreach, raising public awareness and encouraging help-seeking behavior (Jorm, 2012; Rickwood et al., 2005). As awareness grows, more individuals seek mental health services, resulting in more identified and documented cases.

Greater availability of professionals reduces waiting times and increases access to early diagnosis and treatment (Kakuma et al., 2011), which may lead to more recorded cases. Additionally, a larger workforce supports the development of specialized services and research, improving the management of chronic conditions and potentially extending life expectancy, which could further contribute to Years Lived with Disability (Bruckner et al., 2011; Kazdin & Rabbitt, 2013). The positive association in this study reflects improved care and management rather than a worsening of health outcomes (World Health Organization, 2021b). That being said, policymakers should be aware that a larger mental health workforce does not automatically translate to improved outcomes, as factors such as quality of training, distribution of professionals, and service efficiency still matter. In some countries, rapid workforce expansion through shortened training programs or task-shifting strategies may lead to variability in treatment quality, affecting long-term patient outcomes despite increased service availability. Continuous evaluation of professional service quality and the corresponding impact of workforce expansion should be integrated into the mental health initiative agenda. Additionally, workforce shortages in conflict-affected regions remain a major barrier to mental health service delivery. In these regions, healthcare infrastructure is often severely disrupted, transportation is limited, and security concerns hinder the movement of both professionals and individuals seeking care (Ahmed & Heun, 2024). Traditional in-person mental health services become difficult to sustain due to logistical constraints, staff shortages, and stigma related to mental health (Ahmed & Heun, 2024). Addressing workforce disparities through scalable and context-specific interventions requires greater effort.

Inpatient mental health facilities were found to be associated with Years of Life Lost, as they often treat patients with acute psychiatric conditions, including severe depression, psychosis, and substance use disorders, which elevate the risk of mortality (Patel et al., 2018). In regions with limited inpatient care, deaths related to mental disorders are more likely to be underreported or misclassified, leading to an underestimation of Years of Life Lost caused by mental health conditions (World Health Organization, 2021b, 2022). In contrast, economically developed and politically stable countries with robust healthcare infrastructure are better equipped to accurately document Years of Life Lost (Tremblay et al., 2009). Additionally, countries with aging populations may exhibit higher Years of Life Lost due to increased

582 vulnerability to conditions such as depression and Alzheimer's disease.

583 The negative correlation between Years of Life Lost and Political Stability and Absence
584 of Violence/Terrorism in the findings suggests that as political stability declines (e.g., due to
585 politically motivated violence, terrorism, and war), premature mortality from mental disorders
586 increases. Current conflicts, such as the Russia-Ukraine war and regional disputes in Africa
587 and the Middle East, have subjected people to prolonged exposure to violence, displacement,
588 and resource scarcity, leading to higher risks of suicide, addiction, and psychiatric morbidity
589 (Bollfrass & Herzog, 2023). The psychological toll of threats involving weapons of mass
590 destruction has been well-documented in historical cases such as Hiroshima, Nagasaki, and
591 Halabja, where survivors exhibited long-term PTSD, depression, and anxiety disorders.
592 Ongoing nuclear threats have intensified global psychological distress, affecting not only
593 direct war victims but also populations fearing escalation (Ben-Ezra et al., 2012). The
594 collapse of healthcare infrastructure in war-affected regions such as Syria and Yemen
595 exacerbates the crisis by reducing access to mental health services and psychiatric care. The
596 displacement of healthcare professionals, the destruction of hospitals, and severe economic
597 destabilization have forced affected populations to endure untreated mental illnesses,
598 increasing the risk of suicide and self-harm (Ahmed & Al Diab Al Azzawi, 2024). Large-scale
599 mental health interventions, such as psychological first aid, trauma counseling, and suicide
600 prevention programs, are recommended in conflict zones. Public awareness campaigns and
601 policy considerations for mental health interventions are needed in reducing the long-term
602 mental health burden associated with geopolitical instability (Ahmed & Al Diab Al Azzawi,
603 2024).

604 **Limitations**

605 This study utilized data from 165 countries documented in the World Health Organization
606 Mental Health Atlas 2020, grouped into six World Health Organization regions. Indicators for
607 mental health policies, resources, and services were selected based on existing literature and
608 team discussions. Missing data were managed using multiple imputation and multivariable
609 regression. Due to its cross-sectional design, the study cannot make predictions or confirm
610 cause-and-effect relationships. Future research could incorporate longitudinal approaches to

examine how mental health policies, services, and resources influence the global burden of mental disorders over time. Given the potential delayed effects of policy implementation, the relationships between country-level policies, mental health service capacity, and resources may shift as policies take effect. Longitudinal studies could provide a clearer understanding of causal pathways and the long-term impact of country-based mental health initiatives on population-level outcomes. Further studies could also consider investigating how associations between country-based mental health determinants and disease burden differ across geographic and socioeconomic contexts. It may be meaningful to distinguish between war-torn and stable countries when assessing mental health service capacity, as conflict-affected regions may experience distinct challenges in service accessibility, resource allocation, and policy effectiveness. Such examinations may provide more evidence-based insights into regional disparities and help inform targeted interventions. Likewise, future research could incorporate additional factors, such as socioeconomic inequalities, healthcare system capacity, and cultural perceptions of mental health, which may moderate or mediate the relationship between mental health indicators and disease burden, providing more actionable insights for policymakers.

Conclusions and Implications

The escalating global burden of mental disorders presents a formidable challenge to public health worldwide. This study examined the global and regional burden of mental disorders, as well as mental health policies, resources, and services, and their associations. This study contributes to addressing the research gap concerning the determinants of country-based mental health indicators related to the global burden of mental disorders. The findings provide valuable insights for mental health researchers, offering an overview of national efforts and guiding future investigations to reduce the global burden of mental disorders at national, regional, and global levels. Mental health policymakers and professionals can derive important insights into the current status of national mental health efforts and their impacts, thereby identifying regions or countries in need of policy, resource, and service improvements. Additionally, this study emphasizes the necessity of considering the complex interplay among political, economic, social, and cultural factors in shaping mental health policies, services, and

resources to effectively mitigate the global burden of mental disorders. The findings suggest that the presence of mental health policies and investments in resources and services have not clearly translated into lower rates of Disability-Adjusted Life Years, Years of Life Lost, and Years Lived with Disability. Therefore, sustained global and regional efforts are still required to address mental health challenges and reduce the global burden of mental disorders.

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