Epidemiology and Disease Control Division
Department of Health Services
Ministry of Health and Population, Nepal

World Health Organization

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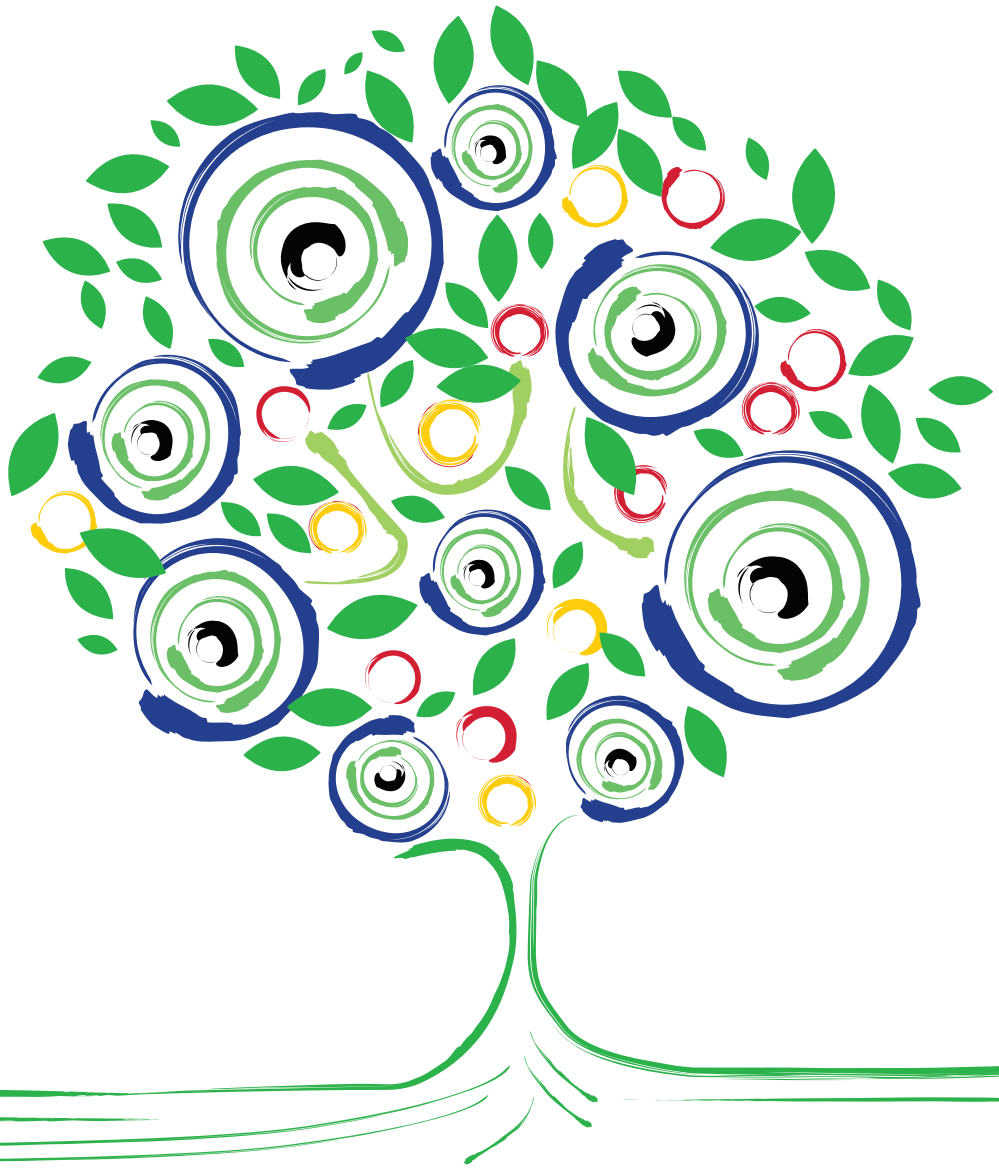
Prevention and management of mental health conditions in

Nepal

The case for investment



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ABBREVIATIONS AND ACRONYMS

GDP	gross domestic product
NCD	noncommunicable disease
NPR	Nepali rupee
PTSD	post-traumatic stress disorder
ROI	return on investment
SEL	social–emotional learning
TB	tuberculosis
UNICEF	United Nations Children's Programme
WHO	World Health Organization

Nepal

The case for investment in mental health

CURRENT BURDEN OF MENTAL HEALTH CONDITIONS

NPR 18 663 million per year (US$154 million)

0.44% of GDP

NPR 4 276 million direct costs (US$ 36 million)

due to healthcare expenditures

NPR 14 387 million indirect costs (US$ 121 million)

due to loss of workforce and reduced productivity

INVESTMENT REQUIRED OVER 20 YEARS

NPR 39 583 million (US$ 335 million)

(NPR 1 303 per capita or US$ 11)

Investment required for selected clinical packages and population-based preventive interventions over a 20-year period

ANXIETY DISORDERS	DEPRESSION	PSYCHOSIS	BIPOLAR DISORDER	EPILEPSY
5 732 million NPR (US$ 48.5 million)	**6 999** million NPR (US$ 59.2 million)	**3 802** million NPR (US$ 32.1 million)	**10 036** million NPR (US$ 85 million)	**2 397** million NPR (US$ 20.2 million)

ALCOHOL USE DISORDER	PESTICIDE BAN	UNIVERSAL SCHOOL-BASED INTERVENTIONS
1 768 million NPR (US$ 15 million)	**1 842** million NPR (US$ 15.5 million)	**7 007** million NPR (US$ 59.3 million)

RETURN ON INVESTMENT OVER 20 YEARS

NPR 232 billion (US$ 1 964 million)

includes productivity gains and social value of health

	ROI	Healthy life-years gained	Total productivity gained
Anxiety disorders	1.7	156 926	NPR 5.7 million (US$ 48 268)
Depression	2.5	325 561	NPR 9.3 million (US$ 78 753)
Psychosis	0.8	69 695	NPR 3.4 million (US$ 28 791)
Bipolar disorder	-0.5*	51 933	NPR 0.2 million (US$ 1 693)
Epilepsy	5.6	158 761	NPR 15.2 million (US$ 128 715)
Alcohol use disorder	5.6*	67 097	NPR 11.0 million (US$ 93 149)
Pesticide ban	2.6	78 588	NPR 9.2 million (US$ 77 206)
Universal school-based interventions	-0.1	87 091	NPR 1.0 million (US$ 8 468)

*Benefit-cost ratio

EXECUTIVE SUMMARY

Mental, neurological and substance use conditions pose significant challenges in Nepal, as depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorder are major causes of morbidity and mortality. These conditions are associated not only with human suffering and represent a burden on public health but also have significant social and economic consequences, including an increasing financial burden on the health system and loss of productivity, as individuals with mental health conditions are more likely to leave the labour force (due to premature death or disability), miss days of work (absenteeism) or work at reduced capacity (presenteeism).

The Ministry of Health and Population of Nepal in collaboration with development partners conducted a mental health investment case to quantify the long-term health, social and economic benefits of investment in mental health. It first provides an assessment of the current situation of mental health in the country, including challenges and opportunities for development of the mental health system. It then presents economic evidence of the attributable, avertable burden due to a number of mental, neurological and substance use conditions. Intervention costs, health gains and economic benefits were estimated for clinical interventions for six leading mental health conditions (depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorder) and two population-based interventions (a pesticide ban and universal socio-emotional learning (SEL) interventions in schools).

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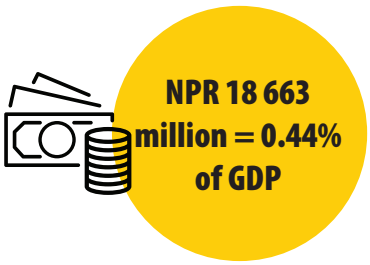
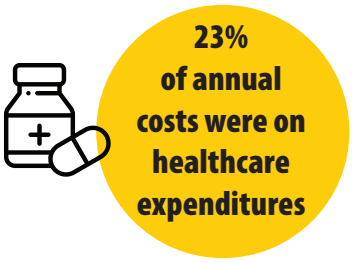
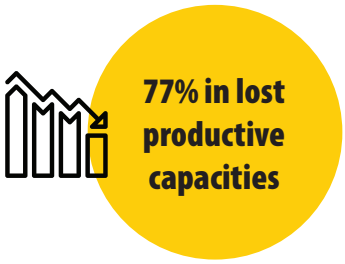
Main findings

The cost of mental health conditions







The burden of mental, neurological and substance use conditions in Nepal is substantial and is due to a complex context of social and environmental determinants, including poverty, natural disasters and gender-based violence. The economic analysis revealed that the annual cost of mental health conditions to the Nepalese economy was NPR 18 663 million (US$ 154 million), equivalent to 0.44% of gross domestic product (GDP) in 2021. Only 23% of the annual costs were direct expenditure on health care, while 77% was accounted for by indirect costs due to premature death, disability and reduced productivity. The large productivity losses indicate that, with the current level of investment, mental health care does not meet the needs of the population. Furthermore, the losses suggest that many sectors could benefit from investment and that multisectoral and whole-of-society engagement are necessary.

Why invest in interventions

By acting now, Nepal can reduce the burden of mental health conditions. The findings of the investment case demonstrate that investment in evidence-based, cost-effective mental health interventions would provide both health and economic benefits.

Save over 17 000 lives

By investing in mental health now, Nepal can save almost 17 000 lives and gain almost one million healthy life years over the next 20 years by reducing the incidence, duration or severity of leading mental health conditions. Nearly 2.5 million prevalent cases of anxiety disorder, depression, psychosis, bipolar disorder, epilepsy and alcohol use disorder will be averted by investing in the modelled intervention packages, drastically reducing the burden on the population and the economy.

Provide economic benefits

By investing in mental health now, Nepal can gain economic benefits of NPR 67 billion in productivity and in the social value of health over 10 years, which would accrue to NPR 232 billion in 20 years. Most of the modelled interventions result in a favourable benefit–cost ratio, interventions for epilepsy, alcohol use disorder, depression and the pesticide ban having the highest returns on investment (ROIs). While other interventions, including for bipolar disorder, resulted in lower ROIs, investment is essential to support health and human rights in Nepal.

Recommendations

The results of the investment case demonstrate that Nepal can reduce the socioeconomic consequences of mental health conditions by investing in a set of evidence-based intervention packages for leading mental health conditions. The investment can significantly improve the quality of life for people with mental health conditions, increase life expectancy and reduce economic losses for the country. Nepal could consider the following recommendations for achieving these tangible benefits:

1. Increase access to mental health care by scaling up the mental health workforce, facilities and community services and efficiently targeting groups at risk.
2. Reduce the stigmatization of mental health and understand mental health issues as a multidimensional issue.
3. Invest in the evidence-based, cost-effective clinical and population-based mental health interventions modelled in the investment case.
4. Strengthen multisectoral engagement and coordination and encourage a whole-of-government approach to mental health.
5. Invest in research on mental health and development of interventions.

INTRODUCTION

Mental health is an indispensable component of health and well-being at every stage of life. Mental health affects how an individual thinks, perceives and senses the world. It can be affected by numerous factors, such as environmental events, neighbourhood, macro-economic issues and socio-cultural factors (1). Global increases in exposure to adverse determinants of mental health and in life expectancy are associated with increases in the prevalence and burden of mental health conditions (2).

The increased prevalence of mental health conditions such as psychosis, depression, dementia and alcohol dependence has economic consequences for society at large. Individuals with mental health conditions are more likely to suffer from on-the-job productivity losses (presenteeism) and miss work (absenteeism), reducing their overall productivity (3). From the perspective of economic growth, the impact of mental health conditions not only increases health-care costs but also reduces the labour pool because of higher morbidity and mortality rates (4). A meta-analysis showed that the risk of mortality from any cause is significantly higher among individuals with mental health conditions than those without and that 14.3% of deaths globally every year may be attributable to mental health conditions (5).

Untreated mental health conditions can result in negative social outcomes, including impeding healthy development in children and young people, disrupting family life, stigmatization by society, reducing educational attainment and increasing the risk of suicide (2, 6). While the importance of addressing mental health conditions has been recognized, global investment remains low, comprising less than 1% of all international development assistance for health (7, 8). The global average expenditure on mental health is just 2.1% of all health spending by governments (9). Investing in mental health also supports global efforts to improve human rights and equity in health care. Aligning mental health care with the Convention of the Rights of Persons with Disabilities is essential for countries to ensure the human rights of all citizens (10).

To respond to growing calls to address the global mental health burden, WHO issued a Comprehensive mental health plan 2013–2020 for more effective leadership in addressing mental health and to promote integration of mental health into social services for communities (11). The action plan was subsequently adopted by the 66th World Health Assembly and extended until 2030 by the Seventy-second World Health Assembly in 2019. In 2019, WHO also launched The WHO special initiative for mental health (2019–2023): Universal health coverage for mental health to advance mental health policies and further promote inclusion of mental health in universal health coverage (12). Investment must be made in mental health in order to advance and contribute to the vision of the SDGs and especially poverty reduction (SDG goal 1), good health and well-being (SDG goal 3), gender equality (SDG goal 5), decent work and economic growth (SDG goal 8), reduced inequality (SDG goal 10), sustainable cities (SDG goal 11) and strengthened partnerships (SDG goal 17) (2).

Strengthening policy and increasing investment in mental health have benefits for both public health and sustainable development, particularly in low- and middle-income countries where the burden is high and systems under-resourced.

SITUATION ANALYSIS	METHODS	RESULTS	CONCLUSION
Presents the mental health situation in Nepal and the current and planned responses by the Government.	Describes the methods and tools used in the economic analysis.	Presents the results, including total costs, and the expected health and economic benefits.	Outlines the conclusions to be drawn from these findings and provides recommendations for the Government of Nepal.


Chapter 1
Situation analysis

1. SITUATION ANALYSIS

1.1 Demography

The approximate geographical area of Nepal is 147 000 km^2, and its population is 29.14 million (13). The three main ethnic groups in Nepal are indigenous Nepalese, Indo-Nepalese and Tibeto-Nepalese, and the main language is Nepali. Nepal was declared a secular state in 2008. The main religious groups are Hindu, Buddhist, Muslim and Christian (14).

Nepal has moved from a low-income to a lower–middle-income country according to World Bank criteria (15). Nepal has a young population, 28.8% of whom are 15 years of age and only 5.8% over the age of 65 (16). Most (79.4%) of the population lives in rural areas (16). The total labour force in 2020 was 16.02 million, representing a decrease from 2019 (16.61 million). Of the total labour force, 13.4% of women and 10.6% of men were unemployed. The literacy rate is 59.7% for females and 78.6% for males (17).

The healthy life expectancy is 62.1 years for women and 60.6 years for men (17), while the global averages in 2019 were 64.9 and 62.5 year, respectively (18). The maternal mortality rate is 186 per 100 000 live births, while the global average is 211 per 100 000 live births (19). In 2019, approximately 25% of women who had ever had a partner had experienced gender violence in her lifetime, which is among the lowest rates in the South-East Asian Region, with India and the Maldives (17).

Nepal ranks 142 (of 189 countries) on the Human Development Index and remains one of the poorest and slowest-growing economies in Asia, with 17.4% of the population experiencing multidimensional poverty (20–22). In 2021, Nepal's GDP was US$ 34.27 billion, and its GDP per capita was US$ 1173 (23, 24). Nepal has a low GDP growth rate, with a sharp decrease from 8.98% in 2017 to 1.8% in 2021 (25), although the projected GDP growth rate for 2022 is 4.4% (26). The unemployment rate improved somewhat between 2015 and 2019 (from 3.1% to 2.85%); it has been estimated that 80.8% of all employment is informal (27).

1.2 Epidemiology of mental health conditions

Globally, 10–20% of children and adolescents have a mental health condition. One third of of people have a first mental condition before the age of 14 and almost half before the age of 18 years (28). According to the National Mental Health Survey in 2019–2020, the prevalence of mental health disorders was 5.2% among adolescents and 4.3% among adults in Nepal. Among adolescents, 3.9% were found to have current suicidal thoughts, and the lifetime rate of suicidal attempts was 0.7%. Among adults, the prevalence of neurotic and stress-related disorders was 3%, 6.5% had current suicidal thoughts and 1.1% had attempted suicide (29). The suicide rate

increased by 14.2% between 2020 and 2021 and had increased at an alarming rate of 7.4% annually between 2015 and 2020.

A nationwide cross-sectional study showed that the crude prevalence of anxiety among adults aged 18–65 years was 22.7% and that of depression was 11.7% (30). Research on mental health in children in Nepal found associations with family risk factors, including mental health conditions in parents (31). A study published in The Lancet showed that the COVID-19 pandemic has led to sharp increases in the prevalence of depressive and anxiety disorders globally in 2020, with 53.2 million and 76.2 million cases of additional cases of anxiety and major depressive disorders (32). In the Nepal Drug Users Survey in 2020, the estimated total number of illicit drug users (excluding alcohol and cigarette users) was 130 424, with an average annual growth rate of 5.06%. Approximately 76.8% of drug users were under the age of 30, and 39.7% were unemployed. Cannabis, tranquilizers and opioids were the drugs reported most commonly. Reported reasons for drug use included peer pressure (89.4% of users), mental stress (30.6%) and depression (14.9%) (33). Anxiety was positively associated with urban residency, and depression was positively associated with marijuana use (30).

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Experts consider that these numbers might be due to underreporting because of stigmatization and fear of legal procedures. Concern has been expressed about the increasing use of substances among secondary school-age students (34).

According to a "STEPS" survey in Nepal in 2019, 4.8 million adults (3.7 million men and 1.1 million women) or 23.8% of all adults (38.5% of men and 10.8% of women) drink alcohol, and 11.7% of men (almost 1 in 8) and 1.4 million adults drink daily or almost daily. More than one in four current drinkers engaged in heavy episodic drinking (35). According to the Global School-based Student Health Survey in 2015–2016, 5.2% of students aged 13–17 years were current drinkers, and 73% had had their first drink before the age of 14 years (36).

Nepal relies heavily on subsistence agriculture, which exposes the population to high levels of pesticides. Frequent exposure to pesticides has been linked to increased rates of depression and suicide (37). Pesticide self-poisoning is the cause of 20.5% of all suicides in Nepal, and the rate has increased by 13 times since 1980. Methyl-parathion is the main pesticide used for self-poisoning, even though it has been banned since 2006 (38, 39). Pesticide self-poisoning accounts for one in seven suicides globally, particularly in developing countries (40), and governments are advised to develop and frequently update a list of highly hazardous pesticides to be banned or phased out while proposing alternatives and raising awareness (41). WHO and the United Nations Development Programme recommend that class I and II pesticides be banned and that the timing of use of pesticides or pesticide banks be restricted (34). For example, the rate of suicide in Sri Lanka fell by 70% after highly hazardous pesticides were banned (42).

Comorbid conditions that occur concomitantly with mental health conditions are described in **Box 1**.

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Box 1. Mental health and comorbid conditions

Mental, neurological and substance use conditions often occur concomitantly with other health concerns, particularly HIV, tuberculosis (TB) and smoking. Mental health conditions are linked with higher risks for exposure to HIV and TB (43), and people living with these conditions have two and three times higher rates of depression, respectively, which affects adherence to treatment and overall outcomes (44–46). Strong links have also been found between drug and alcohol use disorders, acquisition of HIV and TB and death due to HIV (44). Such "syndemics" indicate the importance of integrating care for mental health and acceleration of work to end the HIV and TB epidemics (47).

The new Global Fund Strategy (2023–2028) encourages such integration and working with people living with disabilities or mental health conditions to improve their outcomes, including comorbidity with HIV and TB (48). Integration of mental health and psychosocial support into HIV and TB services has been forecast to reduce infection by 924 000 and 14 million cases, respectively, equivalent to or greater than the total incidence currently expected in 1 year (48). There is also a clear economic argument for addressing these conditions together, as every US$1 invested in mental health will return up to US$5.70 saved in economic costs and health, and US$1 invested in HIV or TB care will return US$6.40 and US$43, respectively (45, 49, 50). Integration of care by consolidating investments can synergistically increase economic benefits (45).

There are also strong links between cigarette smoking and common mental health conditions. People with mental health conditions are more likely to smoke (and more), and smokers are twice as likely to experience anxiety than non-smokers (51). Smoking cessation interventions are known to be cost–effective, providing another opportunity to integrate care and concurrently address two pressing health issues (52).

The COVID-19 pandemic affected mental health significantly, with estimated increases in the prevalence of major depressive disorder (27.6%) and anxiety disorders (25.6%) globally (53). These increases add to the higher risks for severe illness and death due to COVID-19 of people with mental health conditions (53). Mental health services should be scaled up to address the heightened disease burden during pandemic response and recovery and to narrow the gap in treatment for mental health conditions.

These comorbid conditions provide a compelling reason for integrating mental health care with other disease programmes for synergistic benefits.

1.3 Social and environmental determinants of mental health

A number of social and environmental factors contribute to the occurrence of mental health conditions in Nepal. While Nepal has made good progress in reducing poverty since 2014, 17.5% of the population still lived in multidimensional poverty in 2019 (from 30.1% in 2014). A survey conducted by UNICEF in November 2021 showed that 33% of households with children were at risk of poverty (54). Poverty increases the risk of mental health conditions and can be both a causal factor and a consequence of those conditions (55). Job insecurity also affects mental health, and unemployment is associated with an increased risk of depression (56). Research begun at the start of the COVID-19 pandemic indicates that 52% of people employed in January 2020 lost a job or earnings during the first wave of COVID-19, women and younger people being affected the most (57). A nationwide study conducted in 2020 indicated that more than half of Nepali households were at increased risk of falling back into poverty due to job and income losses incurred during the pandemic (58). Almost half (49%) of the urban population of Nepal lives in slums (59), which is associated with major challenges to mental health. Global research on women living in slums suggests that they are at higher risk than men of experiencing mental health conditions (60, 61).

Exposure to disasters is also associated with adverse mental health, including post-traumatic stress disorder (PTSD), substance use disorder and other psychological effects (62). Nepal is vulnerable to natural disasters, including drought, earthquakes, floods and landslides (63), and the effects are far-reaching. Natural disasters can cause distress reactions, increase risky behaviour, such as increased use of alcohol and tobacco, and exacerbate or cause mental health conditions (64). Children are at particularly high risk; research suggests that experiencing a natural disaster before the age of 5 years significantly increases the risk of mental health and substance abuse disorders as an adult and can also negatively affect parenting behaviour (64). A study of adolescents who were exposed to the 7.8 magnitude earthquake which occurred in Nepal in 2015 found that living in severely affected areas was associated with symptoms of PTSD and depressive symptoms 31 months later, and the risk was even greater for adolescents living in severely affected areas and exposed to trauma after the earthquake (65). Health-care services are commonly disrupted in the aftermath of a disaster, interrupting services for people who already have mental health conditions and significantly delaying treatment of new cases after the disaster (66). The earthquake in 2015 destroyed up to 90% of health facilities in the worst-affected areas (67).

Gender-based violence is prevalent in Nepal. A Government survey conducted in 2016 found that more than one in five women had experienced physical violence since the age of 15, and more than one in four women who had ever been married had experienced physical, sexual or emotional spousal violence (68). Women and girls are at increased risk of gender-based violence, trafficking and child marriage after natural disasters (69). Women who experience intimate partner violence are more likely to experience depressive and anxiety symptoms, PTSD and suicidal thoughts (70).

1.4 Financing of mental health

Nepal's total health expenditure is 5.5% of the GDP, of which general Government expenditure accounts for 30.7% (71). For fiscal year 2017–2018, NPR90.6 billion were allocated to the health budget, of which NPR60.7 billion (67%) to the Ministry of Health and Population. A steadily increasing health budget has been allocated since fiscal year 2016–2017, when the health sector received NPR49.8 billion (72). Out-of-pocket expenditure on health is high, accounting for 57.7% of current health expenditure, while external resources account for a further 13.5% (71).

In 2017–2018, total expenditure for mental health in Nepal was US$29.1 million, corresponding to a mere 1.9% of current health expenditure. Most mental health care in Nepal is paid for out-of-pocket. Public Health Service Regulation 2020 mentions provisional diagnosis, symptomatic treatment, counselling and referral of common mental health problems and alcohol and substance abuse. Community treatment for anxiety disorder, depression, conversion disorder, psychosis, alcohol use disorder, tobacco use disorder and epilepsy were included in the standard treatment protocol for the basic health service package 2078 and are free of charge for all citizens (73).

In the health sector budget for fiscal year 2020–2021, the Government committed US$42.1 million for physicians to provide basic health-care services in local health facilities, including for the treatment of mental health conditions (74). In 2015–2016, about 5% of the population was covered by the national health insurance programme (75), while insurance for the ultra-poor, poor and marginalized groups were subsidized by the Government (76). The aim of Nepal's Five-year Development Plan 2019/2020–2023/2024 is to enrol 60% of the population in health insurance and to reduce out-of-pocket expenditure to 40%.

The main source of funds for the care and treatment of severe mental disorders in Nepal is households, through direct out-of-pocket payments and private insurance. The Government, through national and subnational public health insurance and reimbursement schemes and nongovernmental organizations (NGOs; for-profit and not-for-profit) finance the remainder (77).

People with mental health and psychosocial disabilities are entitled to various benefits according to the severity of the condition or the patient's socio-economic status. The schemes include a monthly cash allowance, free health care and assistive products, an education allowance, a concession on fees for public transport or exemption from taxes on income, housing or vehicles. Despite these provisions, a large proportion of the eligible population is not entitled to them.

1.5 Mental health policy and legislation

The Constitution of Nepal includes a provision for free basic health services and equal access to health services for every citizen. Mental health care is included in the list of basic health services in sub-section 4(e) of Section 3 of the Public Health Services Act, 2075 (2018). Similarly, mental health services are included in the "basic and emergency health services" in schedules 1 and 2 of the Public Health Regulations 2077 (2020), and arrangements for mental health services at federal, provincial and local levels are in place. Chapter 7 of the Act Relating to Rights of Persons with Disabilities, 2074 (2017) provides for every citizen's right to health, rehabilitation, social security and recreation. Sections 35 and 36 of the Act also ensure additional services for people with mental or psychosocial disabilities.

The National Mental Health Policy 2053 (1997), Mental Health Services Operation Guidelines 2064 (2007) under Integrated Primary Health Care and the Multisectoral Strategy for the Prevention and Control of Non-Communicable Diseases (2014–2020) provide a framework for addressing mental health.

The Government of Nepal's 15th Five-year Plan (2019/20–2023/24) includes a plan to extend access to mental health services at all levels. The Government has implemented an action plan that includes mental health initiatives, in line with the Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases (2014–2020).

The National Health Policy 2019 (78) includes plans to develop and extend mental health services, including ensuring access of the population to mental health and psychosocial services in primary-care hospitals by promoting transfer of knowledge, service-oriented skills and special training. To address the changing disease burden in the country, the policy includes extending access to health services by establishing at least one basic health service centre in every local ward and additional primary, secondary, provincial and highly specialized hospitals throughout the country (78).

The National Mental Health Strategy and Action Plan 2020 (79) is designed to ensure equal, efficient access to high-quality mental health services; to integrate mental health services into primary health care; to maintain participation and cooperation between the Government, NGOs and the private sector; and to provide comprehensive mental health services that are rights-based and inclusive. Among the proposed advocacy initiatives of the strategy are to remove discriminatory elements of existing laws, to provide guidelines for health-care institutions, rehabilitation homes and community organizations, and to ensure coordination among sectors for access to care for individuals with substance use disorder (76). There are, however, gaps in coordination and collaboration between Government agencies and NGOs for implementation of the action plan (34).

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1.6 Mental health services – governance and access

Nepal's health delivery system is decentralized and comprises a mix of public health facilities, private sector providers and the involvement of NGOs at federal, provincial and local levels (73, 80). Basic and emergency health facilities include basic health service centres, basic hospitals, general hospitals, specialist and specialized hospitals, teaching hospitals under the Institute of Health Sciences, Ayurveda service centres, specialist Ayurveda hospitals and homeopathy hospitals and polyclinics (73). Cases seen in primary health care are referred to secondary and tertiary facilities according to need (73, 81, 82).

The National Mental Health Survey in 2020 (83) found that 23% of adults with mental health conditions had sought care. Mental health care is provided mainly at secondary or tertiary level, at one specialist public–private psychiatric hospital and four private psychiatric hospitals. Mental health care is also provided for inpatients in many of the 364 private general hospitals and 27 Government hospitals in the country (12, 84). Nepal has pilot-tested use of tele-mental health services in two district hospitals connected to the central hospital in order to extend access. Training programmes for health-care workers in these districts were conducted as part of the study (34). The WHO Mental Health Gap Action programme tool was adapted for use in the 2017 Community Mental Health Package to increase care of common mental health conditions in primary health care (12).

Despite the size of its population, there are only 144 psychiatrists (of whom 110 are in private health facilities), three child psychiatrists, 75 psychiatric nurses and 30 psychologists in private practice in Nepal, with 700 lay counsellors in the public sector. Because of the lack of training programmes for specialists in psychiatry and clinical psychology, only 15–20 psychiatrists and 2–3 clinical psychologists graduate every year (84). For children and adolescents, there is only one outpatient mental health unit, at Kanti's Children Hospital, and no dedicated inpatient facilities (85). Experts have advised that mental health interventions for children should be available from local to federal level. This is particularly important in Nepal, as children under the age of 18 comprise about 42% of the population (34). Furthermore, mental health specialists tend to be concentrated in cities, limiting access for the large segment of the population that lives in rural areas (86, 87).

Mental health components for children and adolescents are being integrated into social protection programmes such as child protection services. The Ministry of Health and Population plans to introduce a package of mental health interventions in schools; private schools often have counsellors, but public and Government schools do not (84). Practitioners comment that younger people appear to be even less well served, as very few financial resources are provided for child and adolescent mental health, and children with neurodevelopmental disabilities have no access to aid in schools (34).

Although Nepal has policy frameworks in which mental health is one of its health-care priorities, primary health-care centres cannot readily provide mental health services because of gaps such as lack of monitoring of mental health services and policies, lack of participation of service users in policy and planning, inadequate training of mental health workers and an insufficient supply of psychotropic drugs (88). Referrals are required to access mental health services at district level; however, there is no clear referral mechanism, and many patients with mental conditions cannot obtain timely referrals or adequate treatment (87). Practitioners are reported to lack follow-up and maintenance of training in mental health and receive low Government compensation, which exacerbates the shortage of providers (34).

To mitigate the lack of primary mental health-care services in the conventional medical system, practitioners of non-allopathic medicine, such as folk healers, continue to provide much primary care to the population (77). NGOs are instrumental in promoting mental health awareness in the public, as well as providing mental health services, training and other resources, especially during major disasters or conflicts (89).

1.7 Barriers to access to mental health services

A significant barrier to access to and use of mental health services in Nepal is social and cultural stigmatization (90). In the National Mental Health Survey in 2020–2021, 15.6% of the adults surveyed reported that they were concerned that they "might be seen as weak for having a mental health problem", and 10.5% were concerned that they "might be seen as crazy" (83). In rural areas, treatment of mental health is reported to be strongly stigmatized by the community, resulting in either underutilization of mental health services or compelling people to travel long distances to obtain treatment (90, 91).

More information on how mental health is stigmatized in local cultural norms and beliefs would be useful. While there is no national Nepali concept of how mind–body relations are constructed, because of its cultural diversity, the literature distinguishes between heart–mind (emotions and desires), brain–mind (thoughts and cognition), spirit (consciousness and soul) and the physical body (92). Mental health conditions are likely to be considered brain–mind issues, and individuals with these conditions are likely to be stigmatized and socially excluded from a community because they are considered to have a "broken mind", unlike those perceived to be facing only heart–mind issues (77, 92). This understanding of the mind–body dichotomy can have important implications for the type of treatment sought by an individual, who may first turn to traditional healers, who are considered specialists in this area (81, 93).

Other barriers such as lack of awareness about mental health, lack of access to mental health services and lack of family support could dissuade people from seeking help for mental health conditions, precluding early identification and treatment (94). Although the national insurance scheme covers many mental health services, only a small proportion of the population is covered, and expenses for mental health care are paid out of pocket by this generally poor population (81). Because of the lack of human resources, treatment is often provided by non-specialists. Other factors that affect access to mental health care in Nepal are the health-care delivery systems, budgets, culture, attitudes and beliefs. A nationwide study showed that the first carers of the majority of mental health patients (28%) were faith healers, followed by psychiatrists (26%); almost half (49%) of cases of severe mental conditions made contact first with a faith healer (95). The median duration of untreated illness was 4 weeks, although the median delay for epilepsy was much longer, at 25.5 weeks. In hilly regions, poor transport increases the difficulty of accessing psychiatric services. Faith healers are 7% less likely to refer patients to psychiatrists than non-psychiatric doctors, charge more and may also provide false assurances of "cures". During the COVID-19 pandemic, local practitioners have reported more cases of PTSD, grief, anxiety and depression (34), with constant low employment and patient uptake of psychiatry. These observations add urgency to improving mental health services in Nepal and removal of barriers to access.

1.8 Multi-sectoral action for mental health

The Multi-sectoral action plan on the prevention and control of noncommunicable diseases (NCDs) in Nepal 2014–2020 was established by the Government and the WHO Country Office to introduce a multi-sectoral approach to address gaps (96). A "multisectoral response" is one of the 11 strategic policies in the action plan, with the aim of finding functional mechanisms for multi-sectoral partnerships and alliances in the health and other sectors, including agriculture, education, finance, information, sports, urban planning, trade and transport, and multiple stakeholders, such as Government, civil society, academia, the private sector and international organizations. Actions for mental health addressed improving basic minimum care in community mental health services and initiating referral in primary care. One lesson learnt from implementation of the action plan 2014–2020 was that Government structures are essential to ensure successful implementation of the plan and adoption of effective policies by other stakeholders.

The Multi-sectoral action plan on the prevention and control of NCDs in Nepal 2021–2025 was approved in 2022 (97). The new plan also recommends a multisectoral approach and describes the roles of non-health sectors in the prevention and control of NCDs and their risk factors. Reorganizing high-level committees, building institutional structures and coordinating mechanisms are identified as stages in the approach. The plan includes a target to increase access to mental health services by 25%.

The Government of Nepal is collaborating with WHO in its special initiative for mental health to strengthen and reform its mental health-care system. This includes a multiyear framework aligned with the National mental health strategy and action plan (98). The initiative has five outcomes and outputs: 1) governance structures, policies and legislative support to optimize access to mental health services and ensure the rights of persons living with mental health conditions and psychosocial disabilities; 2) financial systems to facilitate the delivery of affordable, accessible, high-quality mental health services; 3) an increased mental health workforce equitably distributed at national, provincial and local levels; 4) scaled-up, high-quality mental health interventions that are accessible to people of all ages and to particularly vulnerable people; and 5) routine information management and evidence to inform policies and practice for mental health and psychosocial interventions (99).

A new national minimum standard introduced by the Ministry of Women, Children and Senior Citizens provides for comprehensive care and support, in which psychosocial and mental health services for victims of human trafficking and domestic violence are prioritized (87). The Ministry is also establishing "safe houses" with counsellors for women who have experienced gender-based violence. After the 2015 earthquake, counselling centres were set up in the 14 heavily affected districts. The Ministry of Women, Children and Social Welfare has contacted municipalities and several NGOs to conduct similar initiatives (34). The Ministry of Health and Population established 80 "one-stop" crisis management centres in December 2021 in 77 districts of the country, which provide free treatment, including for mental health conditions (100). United Nations agencies also provide support to ensure multi-sectoral services to address gender-based violence, including

capacity-building for both State and non-State providers, particularly during the COVID-19 pandemic (101). "Female-friendly spaces" have been established in 14 districts, which provide information, support, services and appropriate referrals after natural disasters, including the 2015 earthquake (69).

Work is under way to integrate mental health into the education sector. School counsellors are present in many private schools but not yet in public or Government schools. The Ministry of Health and Population has initiated a school nurse programme, which creates an important opportunity for integrating a package of mental health interventions. The Government has been instructed by the Women and Social Committee of the House of Representatives to integrate mental health awareness and suicide prevention into the health curricula of primary and secondary schools in Nepal (84). A training manual for teachers on responding to psychosocial issues is gradually being introduced throughout the country. The Ministry of Education has launched an initiative to prohibit punishment in schools, which has included several campaigns and announcements on radio and television (34).

Nepal has conducted media orientation training and developed draft guidelines for reporting, which are anticipated to be endorsed by the Ministry of Health and Population in the near future. Training has been conducted with more than 35 personnel.1 Interaction with the media for responsible reporting of suicide is an effective evidence-based intervention under LIVE LIFE, WHO's approach to suicide prevention (102).

A partnership programme between communities and police was established at grass-roots level, which includes domestic violence, substance abuse and mental health conditions in communities. Suicide awareness programmes have been implemented as part of the programme, although lack of human resources limits their reach. Collaboration with a "cyber unit" ensures that services for individuals who have expressed suicidal ideation are made available immediately, and this has so far saved 26 lives.1

A Coordination Division in the Ministry of Health and Population is responsible for coordination among all areas of health; however, stronger coordination is necessary to ensure that NGO services are not provided outside the public health system (34). NGOs increasingly contribute to the development of national policy on mental health; however, they face problems of sustainability because of high staff turnover and the lack of a formally accredited training system (77). More investment is necessary to scale up mental health initiatives in partnership with NGO programmes in all municipalities (34). For example, in collaboration with the Government, one NGO provided emergency mental health support and psychosocial support to approximately 88 000 people and psychosocial services, including therapy, to a further 75 800 people between 2005 and 2017 (103). Another organization conducts community empowerment programmes in Gorkha and Lamjung and in Tanahun and provides mental health and psychosocial support services, including therapy and counselling, as well as capacity-building of mental health professionals and volunteers (104). Traditional healers and religious leaders are a primary source of mental health treatment in communities (87). Most traditional healers operate independently of the formal mental health

care system, although in some regions they are trained (non-structured and individually planned) in mental health, resulting in more referrals to formal mental health services (77, 105). Traditional healers have no formal organization, and consultations can result in large out-of-pocket expenditure for patients. Local physicians stress the importance of raising awareness of mental health to increase demand. This could be done by faith and traditional healers, who have the trust of the community and can refer patients to allopathic providers; female community health volunteers, who are the "backbone" of the health-care system and could be trained in mental health; and district medical officers and paramedics, who can prescribe medication (77).

The contributions of non-health sectors to the response to mental health conditions are described in **Box 2**.

Box 2. Mental health: Contributions of non-health sectors (*106*)

Mental health, like other aspects of health, is affected by a range of socioeconomic factors. A comprehensive, coordinated response to mental health promotion, protection and care therefore requires action and partnerships in multiple sectors, including health care, education, employment, judiciary, housing and social welfare.

- **Education:** Evidence-based school interventions to improve the socio-emotional skills of young people can help build their resilience to adverse life events and encourage them to seek help early. Evidence-informed school programmes to counteract bullying, problem behaviour and substance misuse should also be implemented to reduce rates of self-harm, suicide and mental health problems. Support services at schools can be an important first line of help or referral.
- **Social welfare:** Individuals and households at risk need legal protection (such as child welfare), social protection (such as support for low-income households) and financial protection (such as for people who are unemployed or in debt) to lower the risk of mental health problems. Family support programmes for those at risk improve the social and emotional skills of both children and parents.
- **Employment:** Awareness campaigns and educational programmes in workplaces can build mental health literacy and encourage individuals to seek help early. Wellness at work positively affects productivity. Workplaces should offer accessible first-line mental health help or referrals to their employees.
- **Housing:** Contact with green areas and good-quality living conditions positively affect mental health. Moreover, many people with mental health conditions require help in finding housing to avoid homelessness.
- **Judiciary:** Population-based restrictions on the availability and marketing of alcohol and tobacco can reduce the incidence of mental health conditions. Mental health problems are exacerbated by smoking, alcohol and drug abuse as well as by obesity and poor nutrition.

1.9 Mental health in emergencies

After the earthquake in 2015, a cluster system was introduced to strengthen coordination and facilitate information-sharing (107). A mental health sub-cluster was established under the health cluster and a psychosocial support sub-cluster under the protection cluster. A strong working relation was established between the mental health and psychosocial support sub-clusters to ensure coordination and facilitate cross-referrals (108). After the earthquake, a Government focal point for mental health was established, initially under the Primary Healthcare Revitalization Division, which has since been integrated into the Epidemiology and Disease Control Division as a separate unit for NCDs and mental health. This section has taken a leading role in coordinating the work of domestic and international NGOs (107).

The United Nations Framework for Responding to the Socio-economic Impacts of COVID-19 in Nepal led to recognition of a documented increase in mental health conditions and the necessity of improving access to mental health services, particularly during the pandemic. The framework includes support for research on psychological first aid and psychosocial support services and strengthening links to mental health service providers, especially for hard-to-reach, isolated populations (109). The Ministry of Health and Population, in coordination with the WHO Country Office, developed a COVID-19 Mental Health and Psychological Support intervention and held regular sub-cluster meetings to coordinate the work of several partners. More than 40 000 people received some form of psychosocial support, and 160 community psychosocial counsellors were trained. In collaboration with the Government, the WHO Country Office, Transcultural Psychosocial Organization Nepal and Tribhuvan University Teaching Hospital, an online platform was launched to support the mental health needs of health-care providers (110).

1.10 Institutional and context analysis: Summary of achievements, challenges and opportunities in the mental health sector in Nepal

The increasing prioritization of mental health by the Government of Nepal and the multisectoral response, including the recent Mental Health Strategy and Action Plan, are important steps for strengthening mental health in Nepal (100). The work of the Government in collaboration with development partners and NGOs will help Nepal progress towards achievement of the SDGs and particularly SDG 3 (To ensure healthy lives and promote well-being for all at all ages).

Nepal has notably strengthened services for mental health. The Government is extending access to mental health and psychological services through the network of basic health service centres and primary care hospitals and also in provincial and specialized hospitals. In 2021, Nepal launched its Strategy for Mental Health and has pilot-tested modules of the strategy in several provinces. This has included training in child and adolescent mental health for medical officers, paediatricians and general practitioners in three provinces. Nepal has also encouraged training at all levels of

the Ministry of Health and in non-health sectors (100). Several mental health initiatives are being conducted at district level, including pilot-testing of telehealth and task-shifting, establishing counselling centres and training community health-care workers in mental health.

Several challenges were identified during the situation analysis and in the analysis of the institutional context. Nepal's clinical mental health services are underfunded and understaffed, creating an estimated treatment gap of over 90%. The lack of clinical services starts with a paucity of educational opportunities for physicians in psychiatry and psychology. Social stigmatization and cultural boundaries with regard to mental health conditions and lack of awareness are additional challenges. Discrimination continues, and human rights and protection against discrimination should be strengthened. While research on mental health has been encouraged, including in the National Demographic and Health Survey and the Seventh National Summit of Health and Population Scientists held in Nepal, research on mental health remains insufficient. The Summit stressed the importance of evidence from public health emergencies such as the COVID-19 pandemic and held a dedicated session on mental health and substance abuse (100). Other social and environmental factors relevant to the current mental health situation should also be addressed.

Fortunately, Nepal can seize a number of opportunities to strengthen its mental health response. Task-shifting and tele-mental health services, which are currently being pilot-tested, could increase the availability of and access to mental health services. NGOs give strong support by providing mental health services, raising community awareness and reducing stigmatization. To learn from initiatives in municipalities, their effectiveness should be monitored and shared. A national suicide prevention strategy is being prepared, which is vital in view of the growing prevalence.

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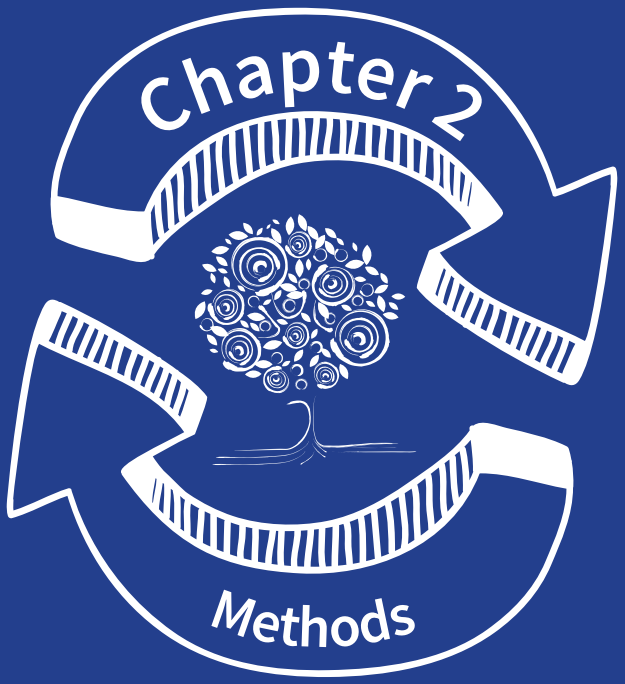
Chapter 2
Methods

2. METHODS

An economic analysis was conducted to determine the total costs and the expected health and economic benefits (such as healthy life years gained, mortality averted and productivity gained) of implementing clinical and population-based preventive mental health interventions. A multiagency, multidisciplinary team comprising staff from Nepal's Ministry of Health, WHO, the United Nations Inter-Agency Task Force on the Prevention and Control of Noncommunicable Diseases, UNDP and Deakin University (Melbourne, Australia) undertook remote data collection and an institutional context analysis. The team consisted of health economists, social development specialists and experts in mental health and public health. Intensive follow-up work, described below, was undertaken. This section outlines the methods and economic models used at various stages of the analysis, to:

- estimate the economic burden attributable to mental health conditions in terms of direct costs (i.e., Government expenditure on health care) and indirect costs (i.e., productivity losses due to absenteeism, presenteeism and premature death);
- cost the interventions;
- assess the health impacts of interventions; and
- analyse ROIs.

This section also briefly describes the methods used for the situational analysis and the institutional context analysis.

2.1 Institutional context analysis

The economic analysis was complemented by an analysis of the institutional context of Nepal by the investment case team. The analysis was based on discussions with representatives of:

- mental health practitioners
- Ministry of Agriculture
- Police Psychiatry Unit
- Ministry of Women, Children and Senior Citizens
- Ministry of Education, Science and Technology
- Ministry of Labour, Employment and Social Security
- Ministry of Home Affairs
- Ministry of Law, Justice and Parliamentary Affairs
- Ministry of Health and Population
- Ministry of Industry, Commerce and Supplies

- Ministry of Federal Affairs and General Administration
- Ministry of Finance
- National Planning Commission
- Parliamentary Committee of the Federal Parliament
- Transcultural Psychosocial Organization Nepal

The meetings addressed how mental health affects the national development agenda, the priorities of various sectors and stakeholders and how they could support a strengthened whole-of-government response, including implementation of the interventions recommended in the investment case. The insights gained from these discussions are included in the report and informed its findings and conclusions.

2.2 Economic consequences of mental health conditions

A model was developed to estimate the current economic burden attributable to the direct and the indirect costs of six mental health conditions and suicide in Nepal. Population data were obtained by age and sex for the period 2021–2041 from the Nepal Central Bureau of Statistics and the United Nations Department of Economic and Social Affairs World Population Prospects study. The OneHealth tool (**Box 3**) was used to model prevalence and mortality rates by age and sex for six mental health conditions: depression, anxiety, psychosis, bipolar disorder, epilepsy and alcohol use disorder. The model enabled estimation of the projected number of prevalent cases and deaths for each condition between 2021 and 2041, while holding current prevalence rates constant.[1] These projections were summarized as the total number of prevalent cases and deaths occurring in the entire population and in the working-age population (aged 15–64 years).

Box 3. OneHealth tool and its mental health module

The OneHealth tool is software designed for national strategic health planning in low- and middle-income countries. Development of the tool is overseen by a group consisting of experts from United Nations agencies and development institutions.

A mental health module was devised as part of the tool for estimating the costs and health impacts of mental health services and interventions at population level. The module allows estimation of the number of people living with mental health conditions in a country and linkage of the epidemiology of mental health conditions to national life tables for estimation of the numbers of cases averted and healthy life-years gained over time at population level.

1 The model provided estimated growth in prevalence and mortality due to population growth only – not growth in disease rates.

The direct and indirect economic burdens of six mental health conditions and suicide in Nepal were estimated with the following approach.

The direct economic burden of mental health conditions and suicide in Nepal comprises all health-care expenditure for the management and care of people living with a mental health condition. An estimate of the total health expenditure on mental health was derived from data on Nepal National Health Accounts for 2017–2018 (converted to 2021 prices). This estimate comprises all mental health-related expenditures by governments, corporations, households, local non-profit organizations and international funders. The resulting estimate excluded non-health care costs such as transport, waiting times and informal care.

The indirect economic burden of mental health conditions and suicide in Nepal comprises productivity lost due to impaired mental health. Lost productivity can result from: (1) absenteeism, when people take days from work because of a mental health condition; (2) presenteeism, when people's job performance is impaired due to a mental health condition; and (3) premature death, which refers to the lost productivity of people who die due to a mental health condition. The steps involved in estimating the indirect economic burden are described below.

1 ESTIMATION OF TOTAL EMPLOYED LABOUR FORCE

First, the annual value (in terms of economic output) of each full-time worker in Nepal was calculated from the GDP per employed person, defined as the country's GDP (NPR4266 billion in 2021) divided by its total employed labour force. Local data on the total labour force aged ≥ 15 years, the unemployment rate and the labour force participation rate were used to determine the total employed labour force.

2 ESTIMATION OF REDUCTION IN WORKER PRODUCTIVITY DUE TO MENTAL HEALTH CONDITIONS

Secondly, data were obtained to quantify the reduction in worker productivity due to each mental health condition. As in a previous global study of ROI (48), rates from the World Mental Health Surveys were used to describe: the reduction in labour force participation due to each of the six mental health conditions;[2] the reduction in full-time hours worked due to mental health-related absenteeism; and the reduction in productivity due to mental health-related presenteeism.

3 ESTIMATION OF NUMBER OF WORKERS WITH MENTAL HEALTH CONDITIONS

Thirdly, the number of Nepali workers with a mental health condition during 2021 was estimated after adjustment for labour force participation, unemployment and mortality. This involved taking the total number of people aged 15–64 years with a mental health condition and then subtracting those who were not participating in the labour force (e.g., still at school), were unemployed, could not participate in the labour force because of their mental health condition or were no longer alive.

4 CALCULATING ECONOMIC LOSSES

Finally, the economic losses attributable to absenteeism, presenteeism and premature death among workers with a mental health condition were calculated by taking the reductions in productivity quantified for each mental health condition, applying these to the total number of Nepali workers with a mental health condition and then multiplying the result by the GDP per employed person. This calculation resulted in the total indirect economic burden of mental health conditions in Nepal.

2 Anxiety, depression, psychosis, bipolar disorder, epilepsy and alcohol use disorder.

2.3 Costs and health effects of scaling up clinical and population-based intervention packages

Two broad categories of interventions were used in the economic analysis: clinical interventions and population-based interventions. Clinical interventions comprised various evidence-based intervention packages (i.e., collections of related interventions) for the identification and management of mental health conditions. The packages were derived from the WHO Mental Health Gap Action Programme Intervention Guide. Examples of clinical interventions in the intervention guide are: "basic psychosocial support", which comprises psychoeducation, stress reduction, social support and promotion of functioning in daily activities and community life; and "psychological treatment", which comprises evidence-based, structured psychological treatments such as cognitive behavioural therapy and interpersonal psychotherapy.

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The second category of interventions comprised population-based interventions to prevent the onset of mental health conditions and/or deaths by suicide by targeting the broader population. This includes regulatory bans on highly hazardous pesticides to restrict access to a common method of suicide in low- and middle-income countries, and universal SEL programmes to increase the psychological resilience of adolescent students and, in turn, reduce the risk of mental health problems later in life.

The OneHealth tool was used to estimate the costs arising from selected clinical interventions for each of the six mental health conditions. Custom-built Excel® models were then used to estimate the costs associated with two population-based mental health interventions: a nationwide regulatory ban on highly hazardous pesticides to prevent suicide and universal delivery of SEL programmes to adolescents in schools to prevent depression, anxiety and suicide. Each intervention modelled in the OneHealth tool and the custom-built Excel® models included assumptions made by WHO experts about the quantity of resources required for implementation and enforcement at national level. In line with the methodological guidance for mental health investment cases (2), the main categories of resource cost were:

- **inpatient care:** people with mental health conditions who require hospitalization (e.g., 5% of moderate–severe cases of depression, for an average stay of 14 days);
- **outpatient and primary care:** for most cases, who require regular outpatient visits (e.g., from four visits per case per year for basic psychosocial support or pharmacological management to monthly or bi-monthly visits for moderate–severe cases receiving psychological treatment);
- **medication:** essential psychotropic medications that include anti-psychotics, antidepressants and anti- epileptics; and
- **programme costs and shared health system resources:** including programme management, administration, training and supervision.

Unit costs for each resource item were obtained from local sources (e.g., the Nepal Department of Health Services, Government salary scales) and the WHO-CHOICE database (111, 112). Interventions were assumed to be delivered in both communities and facilities.

To estimate the health impact of these interventions, a population-based model was used in the OneHealth tool to calculate the number of healthy years of life lived at current and target levels of coverage (see **Table 1**). Healthy life years include both expected changes in life expectancy (e.g., as a result of a decrease in the case fatality rate after introduction of a pesticide ban) and also non-fatal health outcomes (e.g., reduced incidence or duration of depressive episodes after treatment). Default effect sizes for the modelled interventions were taken from WHO's cost–effectiveness work programme and are summarized in **Table 1**.

Table 1. Interventions considered in the mental health investment case

Intervention	Baseline coverage (2021) (%)	Target coverage (2041) (%)	Health impacts assessed
Anxiety disorders *(Service delivery: Primary health care)*			
Basic psychosocial support for mild cases	4	30	Improved functioning or level of disability (7–12%) and rate of remission (36–42%) among people with anxiety disorder aged ≥ 15 years after adjustment for non-adherence (30–40%)[a]
Basic psychosocial support plus anti-depressant medication for moderate– severe cases	8	40	
Psychological treatment plus anti-depressant medication for moderate–severe cases	4	30	
Depression *(Service delivery: Primary health care)*			
Basic psychosocial support for mild cases	4	30	Improved functioning or level of disability (4–9%) and rate of remission (15–25%) among people aged > 15 years with depression, after adjustment for non-adherence (30–40%)[b]
Basic psychosocial support plus anti-depressant medication for first episode of moderate–severe depression	8	40	
Psychological treatment plus anti-depressant medication for first episode of moderate–severe depression	4	30	
Psychological treatment plus anti-depressant medication for recurrent episodic moderate–severe depression	4	30	
Psychological treatment plus anti-depressant medication for recurrent moderate–severe depression for maintenance	1	30	As above, plus reduced incidence of recurrent episodes (28%), after adjustment for non-adherence (30%)
Psychosis *(Service delivery: Secondary health care)*			
Basic psychosocial support plus anti-psychotic medication	16	60	Improved functioning or level of disability among people aged ≥ 15 years with psychosis (22.5– 32.9% after adjustment for adherence)[c]
Psychological treatment plus anti- psychotic medication	4	30	
Bipolar disorder *(Service delivery: Secondary health care)*			
Basic psychosocial support plus mood-stabilizing medication	16	50	Improved functioning or reduced level of disability among people aged ≥ 15 years with bipolar disorder (10.4–11.4%, after adjustment for adherence)[d]
Psychological treatment plus mood-stabilizing medication	4	20	

Intervention	Baseline coverage (2021) (%)	Target coverage (2041) (%)	Health impacts assessed
Epilepsy *(Service delivery: Primary health care)*			
Basic psychosocial support plus antiseizure medication	30	90	Improved functioning or level of disability (47%) and rate of remission (60%) among people aged ≥ 1 year with epilepsy, after adjustment for non-adherence (30%)[e]
Alcohol use disorder *(Service delivery: Secondary health care)*			
Identification and assessment of new cases of alcohol use disorder	5	40	Improved rate of remission (10–15%) among people aged ≥ 15 year, after adjustment for non-adherence (50%)[f]
Brief interventions and follow-up for alcohol use disorder	5	40	
Management of alcohol withdrawal	5	40	
Population-based mental health interventions			
Nationwide regulatory ban on highly hazardous pesticides to prevent suicide	40	100	A reduction in relative risk for pesticide-related suicide (35%), subsequently linked to overall suicide and mortality in the population[g]
Universal school-based SEL intervention to prevent depression, anxiety and suicide in adolescents aged 12–17 years	20	100	A reduction in relative risk for depression and anxiety (16%) and for suicide (5.8%) among adolescents attending school[h]

a Details of treatment impacts in reference 49.
b Details of treatment impacts are provided in references 49 and 113.
c Details of the model and its parameters are provided in reference 114.
d Details of the model and its parameters are provided in reference 115.
e Details of the model and its parameters are provided in reference 116.
f Details of the model and its parameters are provided in reference 117.
g Details of the model and its parameters are provided in reference 118.
h Details of the model that was developed and populated are provided in a background paper prepared and presented by Dr Yong Yi Lee and others at an expert consultation held at WHO headquarters on 20–21 August 2019, and which is being submitted for publication in a peer-reviewed academic journal.

The universal school-based SEL intervention is described in **Box 4**.

Box 4. School-based social–emotional learning (SEL) interventions

The onset of depression and suicide increases rapidly during adolescence (10–19 years). Prevention of depression and suicide during these crucial developmental stages could result in substantial health gains during the life-course of an individual. School-based SEL interventions to prevent depression and/or suicide typically involve a trained facilitator (e.g., a teacher, health professional or lay worker) who delivers a series of modules to teach psychotherapeutic strategies to improve overall well-being and/or reduce the risk of poorer mental health outcomes. Evidence has been published that school-based SEL interventions targeting adolescents are effective in reducing the incidence of depression and/or suicide (119–121). Schools are increasingly recognized as an important platform for population delivery of preventive mental health interventions to young people (121, 123). Psychological interventions at school are typically delivered to all students, regardless of their risk profile.

2.4 Analysis of return on investment

An Excel® model was developed by WHO to analyse ROI. The model can be used to estimate the economic gains that accrue from investing in a range of cost–effective mental health interventions previously identified by WHO, which are listed in **Table 1**. Estimates were made of how each of the mental health interventions would improve national productivity, measured in terms of GDP. For all of the interventions (except those for psychosis, bipolar disorder and epilepsy), restored productivity was estimated by a "direct method" for explicit calculation of the increased productivity attributable to: (1) increased labour force participation by avoided mortality and illness; (2) reductions in absenteeism; and (3) reductions in presenteeism. An "imputed method" was used for indirect quantification of productivity gains attributable to interventions for psychosis, bipolar disorder and epilepsy because of lack of data on the labour force outcomes of people living with these three mental health conditions.

In the direct method for estimating restored productivity, the economic value of increases in the healthy labour force due to avoided mortality was calculated by: taking the total number of deaths avoided; adjusting this number to account for people who participate in the labour force and are currently employed; and then multiplying by the net present value of foregone GDP per capita over the model period of 20 years. The economic value of increases in the healthy labour force due to avoided cases of illness was calculated by: taking the total number of prevalent cases averted; applying the same employment-related adjustments as above; multiplying by the annual GDP per employed person; and then further multiplying the result by 5%, the increase in labour force participation of people with a mental health condition who receive treatment. This was based on the findings of a previous global ROI study, in which 5% restored productivity was applied after mental health treatment (49). The economic value of reducing absenteeism and presenteeism was estimated in a similar manner. In this case, however, multiplication by 5% represented the decrease in absenteeism and presenteeism among those with a mental health condition who received treatment.

Productivity gains resulting from each mental health intervention (excluding interventions for psychosis, bipolar disorder and epilepsy) were calculated with the direct method as the sum of the productivity gains attributable to increased labour force participation (by avoided mortality and illness) and reduced absenteeism and presenteeism. In the case of the universal school-based intervention for adolescents, only productivity gains due to increased labour force participation could be estimated. Productivity gains due to reduced absenteeism and presenteeism were not estimated for the school intervention, as they are not relevant to people of non-working age. Moreover, there is currently no established method for determining how impacts on educational attainment during adolescence (which can be improved by preventing mental ill health) translate into better earning potential later in life.

The imputed method was used to estimate restored productivity resulting from treatment of psychosis, bipolar disorder and epilepsy. A Lancet commission on investing in health concluded that the value of a healthy life year gained is approximately 1.5 times the GDP per capita (124, 125). Two thirds of this value (1.0 times GDP per capita) is attributable to the instrumental value of improved health – i.e., increased job productivity in the workplace. Conversely, one third (0.5 times GDP per capita) is attributable to the intrinsic value of health – i.e., the social value of health as an end in itself. For the current analysis, productivity gains for treatment of psychosis, bipolar disorder and epilepsy were estimated by taking the total healthy life years gained by an intervention, multiplying this by the GDP per capita for Nepal and further multiplying the result by a factor of 1.0 (i.e., quantifying the productivity-related instrumental value of health as a multiple of GDP per capita).

Two base case scenarios were examined for the ROI analysis. The first was the impact of only productivity gains as the main economic benefit (i.e., the instrumental value of health), while the second addressed the joint impact of productivity gains and the social value of health (i.e., the instrumental and intrinsic values of health). Both the direct and imputed methods for estimating restored the productivity focus on quantifying productivity gains (the instrumental value) attributable to improvements in health. The additional impact of the social value of health as a measure of economic gain was estimated by multiplying each healthy life year gained by 0.5 times GDP per capita and then adding this to the total productivity gains estimated with either the direct or the imputed method.

In a sensitivity analysis, separate assessments were made to determine how the base case results might change under different assumptions. The first sensitivity analysis (SA1) was of the impact of using the imputed method rather than the direct method to value the productivity gains made by interventions for anxiety disorders, depression and alcohol use disorder. The second (SA2) was of the impact of reducing the instrumental economic value assigned to 1 year of healthy life by 50% when applying the imputed method to interventions for psychosis, bipolar disorder and epilepsy. This would reduce the productivity gains attributable to 1 healthy life year gained to 0.5 times GDP per capita (instead of 1.0 times GDP per capita).

The concept of healthy life years gained is explained in **Box 5**.

Box 5. Healthy life years gained

"Healthy life years gained" (equivalent to disability-adjusted life years averted) is commonly used in the global health literature as a summary measure of population health. National life tables are used to compute healthy life years, **which reflect the combined time spent by the population in a state of health with a known degree (or absence) of disability.** A disability weight ranging from 0 (denoting death) to 1 (denoting perfect health) is used to adjust the time spent in a particular health state. For example, if a person lives with disease X for 10 years and the disability weight for disease X is 0.4, the total healthy life years gained for that person is 4 (10 multiplied by 0.4).

The ROI for each intervention was calculated by comparing the productivity gains made by the intervention (measured as an increase in GDP) with the total costs of setting up and implementing the intervention. Projected costs and projected productivity gains were estimated with the net present value approach when applying a 3% annual discount rate. Future impacts on health, productivity and future intervention costs were discounted to their present value to account for the time value of money, whereby a unit of money obtained in the future is worth less than the same unit of money in the present. The ROI resulting from each intervention was presented in two alternative metrics: (1) the benefit–cost ratio, defined as the present value of total health and/or productivity gains divided by the present value of total intervention costs; and (2) the ROI ratio, defined as the present value of total health and/or productivity gains minus the present value of total intervention costs, divided by the present value of total intervention costs (2). The formulae used to calculate the benefit–cost ratio in the two base case scenarios are presented below in equations 1a and 1b (where PV denotes "present value"). The formulae used to calculate the ROI ratio for the two base case scenarios are presented in equations 2a and 2b.

Eq. 1a

$$\text{Benefit-to-cost ratio (productivity only)} = \frac{\text{PV of productivity gains}}{\text{PV of intervention costs}}$$

Eq. 1b

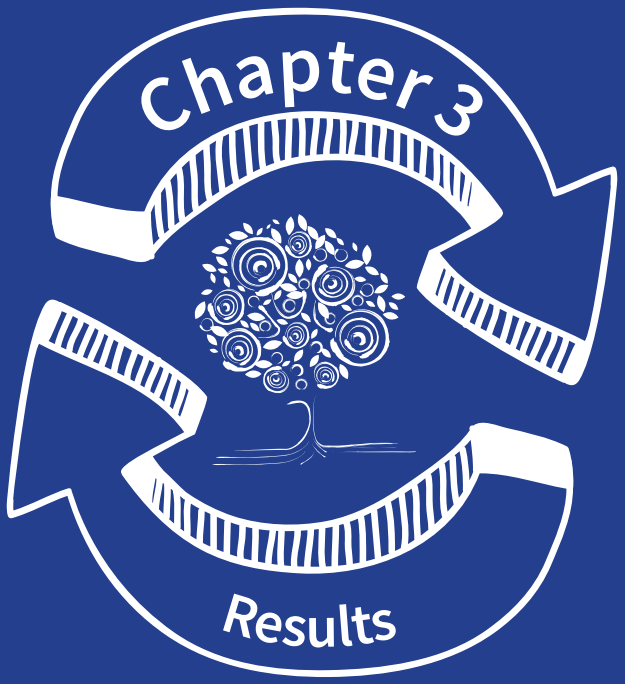
$$\text{Benefit-to-cost ratio (productivity + social)} = \frac{\text{PV of productivity gains + PV of social value}}{\text{PV of intervention costs}}$$

Eq. 2a

$$\text{ROI ratio (productivity only)} = \frac{\text{(PV of productivity gains -PV of intervention costs)}}{\text{PV of intervention costs}}$$

Eq. 2b

$$\text{ROI ratio (productivity + social)} = \frac{\text{((PV of productivity gains + PV of social value)-PV of intervention costs)}}{\text{PV of intervention costs}}$$


Chapter 3
Results

3. RESULTS

This section describes the economic burden of mental health conditions and suicide in Nepal; summarizes the components of the ROI analysis (including health impacts, economic gains and total costs); and includes a discussion of the benefit–cost ratio and ROI for each intervention package..

3.1 Economic burden

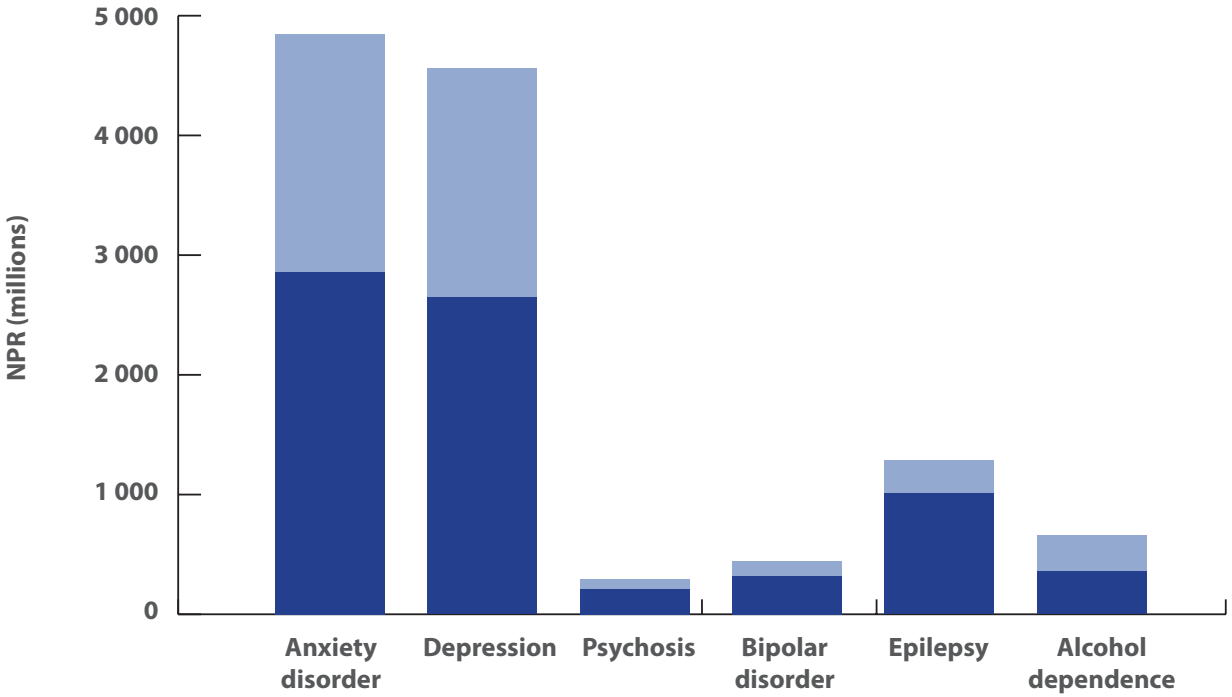
Direct costs

The total health expenditure for mental health in Nepal in 2021 was NPR 4276 million, from the following sources of financing: the Government (9.0%), private corporations (1.8%), households (73.0%), non-profit organizations (0.2%) and international funders (16.0%). Household out-of-pocket payments are consequently the primary source of funding for care for mental, neurological and substance use conditions, which could not be disaggregated by individual condition.

Indirect costs

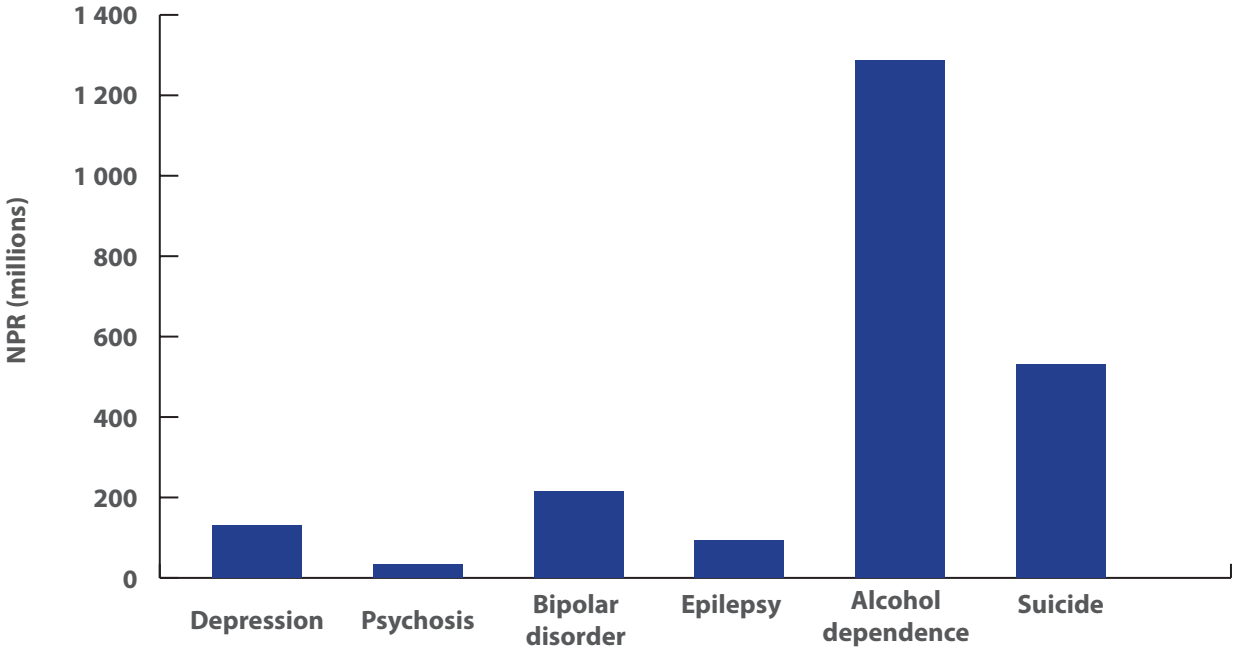
The indirect economic losses due to mental health conditions and suicide were estimated as the sum of losses due to absenteeism, presenteeism and premature death. The total combined cost of absenteeism and presenteeism in Nepal is presented in **Fig. 1**. The total number of working days absent was estimated to be 7.1 million for absenteeism and 4.5 million for presenteeism, which resulted in a total cost of NPR 12 098 million in 2021. The costs of absenteeism and presenteeism are highest for anxiety disorders. Although anxiety is associated with fewer days off work than depression for the average individual, the estimated prevalence of anxiety in Nepal was higher than that of depression.

Fig. 1. Costs of absenteeism and presenteeism for mental health conditions (2021 NPR, millions)



The total cost of premature death due to mental health conditions was estimated to be NPR 2290 million in 2021 (**Fig. 2**).

Fig. 2. Costs of premature death for mental health conditions (2021 NPR, millions)



Bipolar disorder and alcohol use disorder are the costliest mental health conditions in terms of premature death, which is due to the high excess mortality estimated for these two conditions in the Global Burden of Disease study, which is the source of the epidemiological data in the OneHealth tool (e.g., six times more estimated deaths in the population than due to depression or psychosis). High mortality among cases of alcohol use disorder was due to various causes of death, from cancers to injuries (e.g., traffic accidents and falls). Anxiety disorders may not lead to death but, as described above, are associated with a high economic burden due to absenteeism and presenteeism. It should be noted that the data do not account for known co-morbid conditions, such as common co-morbid alcohol use disorder with major depressive, bipolar and anxiety disorders (126), which could influence mortality rates.

Total economic costs

Table 2 shows the total direct and indirect costs of mental health conditions and suicide in Nepal. The indirect economic losses are much higher than the direct losses. Total expenditure on health care for mental health conditions was NPR 4276 million. In addition, the losses to the economy due to absenteeism, presenteeism and premature death amounted to NPR14 387 million.

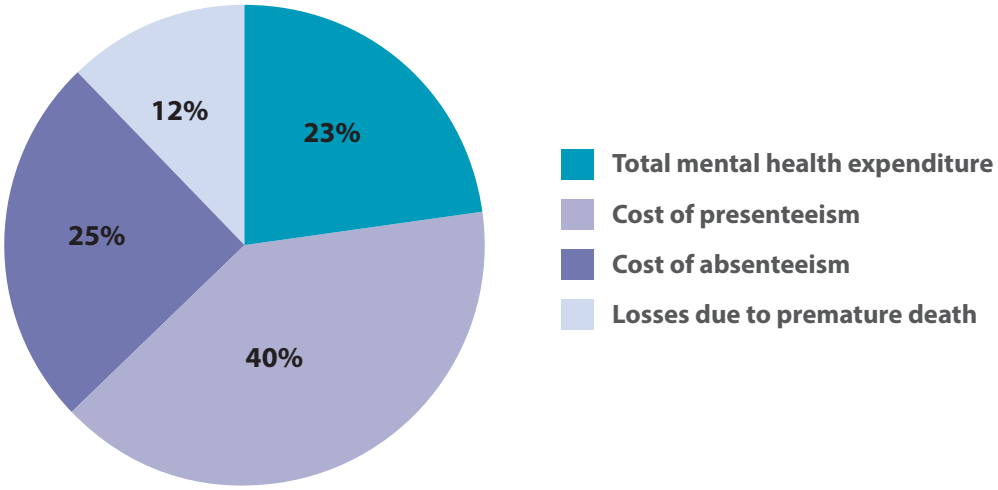
Table 2. Economic burden of mental health conditions in Nepal (2021 NPR, millions)

Item	Total costs (2021 NPR, millions)
Direct costs	
Health care	4 276
Total direct costs	4 276
Indirect costs	
Absenteeism	7 402
Presenteeism	4 695
Premature deaths	2 290
Total indirect costs	14 387
Total	**18 663**

The total economic burden of the selected mental health conditions and suicide on the Nepali economy in 2021 was estimated to be NPR18 663 million, equivalent to 0.44% of the GDP in 2021. Nevertheless, the treatment gap remains substantial.

Fig. 3 shows the structure of the economic burden of mental health conditions in Nepal in 2021. Total health care expenditure represented 23% of all mental health-related costs – a minor proportion of the overall economic burden.

Fig. 3. Structure of the economic burden of mental health conditions in Nepal



3.2 Costs of intervention

The costs of the interventions were estimated for the period 2021–2041. **Table 3** shows the absolute costs during each of the first 5 years of this period plus the net present value of the 10-year and 20-year total costs. **Table 4** shows the corresponding per capita costs.

Table 3. Estimated absolute costs of interventions (NPR, millions), 2021–2041

Intervention package	2021	2022	2023	2024	2025	Total for 10 years [a]	Total for 20 years [a]
Clinical interventions							
Anxiety disorders	124	163	202	240	277	2 706	5 732
Depression	102	168	224	276	324	3 155	6 999
Psychosis	55	72	91	112	133	1 412	3 802
Bipolar disorder	112	171	234	301	369	3 914	10 605
Epilepsy	86	98	110	121	132	1 252	2 397
Alcohol use disorder	35	48	61	73	85	823	1 768
Population-based interventions							
Pesticide ban	610	122	122	122	115	1 842	1 842
Universal school-based SEL intervention	108	94	197	197	197	3 437	7 007
Total	**1 228**	**929**	**1 230**	**1 427**	**1 613**	**18 344**	**39 583**

a Totals are presented as a net present value, discounted at a 3% annual rate.

Table 4. Estimated per capita costs of interventions (NPR), 2021–2041

Intervention package [a]	2021	2022	2023	2024	2025	Total for 10 years [b]	Total for 20 years [b]
Clinical interventions							
Anxiety disorders	4.1	5.4	6.6	7.9	9.1	89.1	188.7
Depression	3.4	5.5	7.4	9.1	10.7	103.9	230.4
Psychosis	1.8	2.4	3.0	3.7	4.4	46.5	125.2
Bipolar disorder	3.7	5.6	7.7	9.9	12.2	128.8	349.1
Epilepsy	2.8	3.2	3.6	4.0	4.3	41.2	78.9
Alcohol use disorder	1.1	1.6	2.0	2.4	2.8	27.1	58.2
Population-based interventions							
Pesticide ban	20.1	4.0	4.0	4.0	3.8	60.6	60.6
Universal school-based SEL intervention	3.6	3.1	6.5	6.5	6.5	113.2	230.7
Total	**40.4**	**30.6**	**40.5**	**47.0**	**53.1**	**603.8**	**1303.0**

a Mental health intervention packages for clinical interventions include multiple intervention approaches (e.g., basic psychosocial support, psychological treatment and medications) in primary and secondary health care.
b Totals are presented as a net present value, discounted at a 3% annual rate.

Clinical interventions for bipolar disorder incurred the largest estimated costs because of the many care and support requirements for this condition. Implementation of the entire package of clinical interventions (excluding population-based interventions) would cost NPR 13 065 million (or NPR 430 per capita) over the 10-year scaling-up period and NPR 30 735 million (or NPR 1012 per capita) over the 20-year scaling-up period.

The total cost of the two population-based mental health interventions (pesticide ban and universal school-based SEL intervention) were among the lowest of all intervention packages. Together, they would cost NPR 5279 million (or NPR 174 per capita) over 10 years and NPR 8849 million (or NPR 291 per capita) over 20 years.

Interventions involving psychological treatment and anti-depressant medication have large planned costs. Nevertheless, numerous low-cost interventions exist, including basic psychosocial support (for anxiety disorders and depression particularly), and a nationwide regulatory ban on highly hazardous pesticides could reduce the number of deaths by suicide.

3.3 Health impacts

All the interventions significantly increase the total number of healthy life years gained (absolute results presented in **Table 5**). As explained in Box 5, healthy life years gained is a measure of the years of healthy life added by an intervention after adjustment for disease-related health states by application of disability weights. The greatest impacts were observed with interventions for depression (75 873 healthy life years gained over 10 years), the universal school-based SEL intervention (38 012), epilepsy (34 563) and the pesticide ban (34 285). At 20 years, the total healthy life years gained by the epilepsy intervention package increases substantively relative to the other mental health intervention packages due to the comparatively high target coverage of 90% (see Table 1).

Table 5. Estimated absolute health impacts

Intervention package [a]	Total healthy life-years gained		Prevalent cases averted		Total deaths avoided	
	20 years	10 years	20 years	10 years	20 years	10 years
Clinical interventions						
Anxiety disorders	29 615	156 926	128 271	778 741	Not applicable	Not applicable
Depression	75 873	325 561	237 403	1 014 290	477	2112
Psychosis	13 697	69 695	Not applicable	Not applicable	Not applicable	Not applicable
Bipolar disorder	10 004	51 933	Not applicable	Not applicable	1539	5 923
Epilepsy	34 563	158 761	26 202	163 948	147	1 039
Alcohol use disorder	11 768	67 097	34 403	167 761	734	3 966
Population-based interventions						
Pesticide ban	34 285	78 588	Not applicable	Not applicable	1 373	3 294
Universal school-based SEL intervention	38 012	87 091	128 847[a]	309 825[a]	261[b]	535[b]
Total	**247 817**	**995 652**	**555 126**	**2 434 565**	**4 531**	**16 869**

a Prevalent cases of depression or anxiety.
b Deaths due to suicides attributable to depression.

Certain interventions also reduce mortality, either directly (pesticide ban, school-based SEL interventions) or because they reduce the prevalence of conditions associated with an excess rate of mortality (depression, alcohol use disorder).

Bipolar disorder and psychosis are less common conditions than, for instance, depression and anxiety; however they are severe mental health conditions that often result in substantial suffering and human rights abuses, and they usually persist throughout the life of an affected individual. The main benefit of treatment is a reduction in the severity of symptoms and improvement in daily functioning. This is reflected as a reduction in the disability weight of these two mental health conditions. Hence, the primary impact on healthy life years gained is reductions in the disability weight for these conditions and not reductions in the number of prevalent cases or deaths.

3.4 Productivity gains

The total net present value of productivity gains due to application of the mental health intervention packages are presented in **Table 6** (categorized by the method used to estimate restored productivity). Application of the direct method for estimating restored productivity showed that reduced mortality had a large impact on productivity due to increased labour force participation (with productivity gains worth NPR 6179 million over 10 years), followed by avoided cases of illness, reduced presenteeism and reduced absenteeism (NPR 10 050 million altogether). With the implicit method, productivity gains were seen with treatment of psychosis (NPR 1656 million), bipolar disorder (NPR 1211 million) and epilepsy (NPR 4196 million). The mental health packages resulted in a net present value of NPR 23 292 million in productivity gains over 10 years, which would accrue to NPR 86 578 million over 20 years.

Table 6. Estimated productivity gains provided by the mental health intervention packages (NPR, millions), 2021–2041

Method used to estimate restored productivity	Total productivity gains [a]	
	10 years	20 years
Direct method [b]		
Increased labour force participation due to avoided mortality	6 179	18 588
Increased labour force participation due to avoided cases of illness	3 350	13 411
Reduction in absenteeism	3 350	13 411
Reduction in presenteeism	3 350	13 411
Implicit method [c]		
Productivity gains for psychosis	1 656	6 868
Productivity gains for bipolar disorder	1 211	5 106
Productivity gains for epilepsy	4 196	15 782
Total	**23 292**	**86 578**

a Totals are presented as a net present value, discounted at a 3% annual rate.
b The direct method for estimating restored productivity was applied to the mental health intervention packages for anxiety disorders, depression, alcohol use disorder, the pesticide ban and universal school-based SEL. Restored productivity is presented here by the type of productivity gain generated (i.e., increased labour force participation due to avoided mortality or illness and reductions in absenteeism and presenteeism).
c The implicit method for estimating restored productivity was applied to the mental health packages for psychosis, bipolar disorder and epilepsy.

3.5 Return on investment

Restored productivity is presented by mental health intervention package in **Table 7**. Identical productivity gains were observed for increased labour force participation due to avoided cases of illness, reductions in absenteeism and reductions in presenteeism. This was due to the common application of a 5% estimate of restored productivity for each category, as seen in the broader literature (see methods section for further details). Table 7 demonstrates that most of the mental health intervention packages result in a benefit–cost ratio > 1.0 over 20 years. This indicates that these intervention packages provide a positive ROI, such that total productivity gains exceed total costs. For some interventions, the ratio is lower, largely due to relatively high intervention costs (e.g., alcohol use disorder, bipolar disorder) or methodological limitations in quantification of long-term productivity outcomes (i.e., universal school-based SEL).

Table 7. Costs, benefits (productivity gains only) and benefit–cost ratios at 10 and 20 years, by intervention package (2021 NPR, millions)

Intervention package [a]	Total costs [a]		Total productivity gains [a]		Benefit–cost ratio (productivity gains only)		Return on investment ratio (productivity gains only)	
	10 years	20 years	10 years	20 years	10 years	20 years	10 years	20 years
Anxiety disorders	2 706	5 732	3 190	15 725	1.2	2.7	0.2	1.7
Depression	3 155	6 999	7 060	24 811	2.2	3.5	1.2	2.5
Psychosis	1 412	3 802	1 656	6 868	1.2	1.8	0.2	0.8
Bipolar disorder [b]	3 717	10 036	1 211	5 106	0.3	0.5	-0.7	-0.5
Epilepsy	1 252	2 397	4 196	15 782	3.4	6.6	2.4	5.6
Alcohol use disorder	823	1 768	2 729	11 660	3.3	6.6	2.3	5.6
Pesticide ban	1 842	1 842	3 204	6 545	1.7	3.6	0.7	2.6
Universal school-based SEL intervention [c]	3 437	7 007	45	82	0.01	0.01	-1.0	-1.0

a Totals are presented as a net present value, discounted at a 3% annual rate.
b The ROI for the bipolar disorder intervention package was lower than those for other intervention packages as the treatment largely reduces the disability weight of this disorder rather than prevalence or mortality. Additionally, this intervention package has less potential to increase labour force participation. There may be strong non-economic reasons for choosing to invest in an intervention package with a low ROI (e.g., to protect human rights, rule of rescue).
c These results exclude productivity gains among students due to methodological limitations of estimating future productivity gains among students with improved mental health.

The epilepsy intervention package had the highest benefit–cost ratio: for NPR 1 invested in the package, the expected return is NPR 3.4 over 10 years and NPR 6.6 over 20 years. The alcohol use disorder interventions similarly provide a benefit–cost ratio of 3.3 over 10 years and 6.6 over 20 years. Even though the psychosis intervention package has a relatively high cost per person, an investment of NPR1 can provide an expected return of NPR 1.2 at 10 years and NPR 1.8 PR at 20 years. Over 10 years, the intervention packages for bipolar disorder and the universal school-based SEL intervention had negative ROI ratios (i.e., benefit–cost ratios < 1.0). Despite the lack of a positive economic return, there may be compelling non-economic reasons for further investment in these intervention packages, including ensuring the human rights of people affected by mental health conditions, achievement of universal health coverage, alleviating the burden on carers and families and, in the case of the universal school-based SEL intervention, improved mental health promotion and education.

Table 8 shows the impact of including the social value of health in addition to productivity gains when calculating the benefit–cost ratio, i.e., the intrinsic value of improving health as an end in itself, estimated to be one healthy life year gained multiplied by 0.5 times GDP per capita. The benefit–cost ratios for all the intervention packages at 10 and 20 years increased substantially after inclusion of the social value of health. The largest increases in benefit–cost ratios were observed for the intervention package for depression, the pesticide ban and the universal school-based SEL intervention. The highest benefit–cost ratios were observed for the interventions for epilepsy, depression and alcohol use disorder and the pesticide ban. The economic benefit of these interventions are NPR 8.2 (epilepsy), NPR 6.5 (depression), NPR 5.8 (alcohol use disorder) and NPR 5.1 (pesticide ban) for every NPR 1 invested over 10 years. Over 20 years, the packages could provide NPR 16.2 (epilepsy), NPR 10.3 (depression), NPR 12.0 (alcohol use disorder) and NPR 10.2 (pesticide ban) of economic benefit for every NPR 1 invested.

Inclusion of the social value of health with productivity gains led to positive ROIs (i.e., benefit–cost ratios > 1.0) for the bipolar disorder intervention package over 20 years and the universal school-based SEL intervention over 10 and 20 years. Inclusion of the social value of health strengthens the case for investing in interventions for bipolar disorder and universal school-based SEL, and particularly for the latter, as the economic value of productivity gains (i.e., restored productivity) among students aged 12–17 years is negligible when compared with the economic value of the resulting health gains (i.e., social value of health).

Table 8. Costs, benefits (productivity gains plus social value of health) and benefit–cost ratios at 10 and 20 years, by intervention package (2021 NPR, millions)

Intervention package [a]	Total costs [a]		Total productivity gains plus social value of health [a]		Benefit–cost ratio (productivity gains plus social value of health)		Return on investment ratio (productivity gains plus social value of health)	
	10 years	20 years	10 years	20 years	10 years	20 years	10 years	20 years
Anxiety disorders	2 706	5 732	8 384	38 152	3.1	6.7	2.1	5.7
Depression	3 155	6 999	20 492	72 169	6.5	10.3	5.5	9.3
Psychosis	1 412	3 802	4 065	16 857	2.9	4.4	1.9	3.4
Bipolar disorder [b]	3 717	10 036	2 973	12 533	0.8	1.2	-0.2	0.2
Epilepsy	1 252	2 397	10 300	38 738	8.2	16.2	7.2	15.2
Alcohol use disorder	823	1 768	4 788	21 188	5.8	12.0	4.8	11.0
Pesticide ban	1 842	1 842	9 366	18 864	5.1	10.2	4.1	9.2
Universal school-based SEL intervention [c]	3 437	7 007	6 912	13 775	2.0	2.0	1.0	1.0

a Totals are presented as net present value, discounted at a 3% annual rate.
b The ROI for the bipolar disorder intervention package was lower than those for other intervention packages, as treatment largely reduces the disability weight of this disorder, rather than its prevalence or mortality. Additionally, this intervention package is less likely to increase labour force participation. There may, however, be strong non-economic reasons for choosing to invest in an intervention package with a low ROI, e.g., to protect human rights or the "rule of rescue".
c These results exclude productivity gains among students due to methodological limitations of estimating future productivity gains among students with improved mental health.

Public Health Service Regulation 2020 includes community treatment of anxiety disorders, depression, psychosis, epilepsy and alcohol use disorder in the basic health service package. Inclusion of the intervention packages for the five mental health conditions in the basic health service package would result in aggregate benefit–cost ratios of 2.0 at 10 years and 3.6 at 20 years, when only the value of productivity gains is considered. The ratios increase to 5.1 at 10 years and 9.0 at 20 years when the social value of health is added to productivity gains.

Despite its low ROI, the intervention package for bipolar disorder is critical to ensure that Nepal has the services necessary to meet its human rights objectives and for universal access to person-centred health care. This condition is often highly distressing and disruptive to both the individuals experiencing it and to their families and communities. The ROI for the bipolar disorder intervention package was lower than those for other mental health interventions because the treatment mainly reduces the disability weight of this disorder rather than its prevalence or mortality. Furthermore, this treatment option has less potential to increase labour force participation.

The clinical intervention packages for epilepsy, alcohol use disorder and depression show the best value for money by maximizing productivity gains, as they result in the highest ROIs over 10 and 20 years. Similarly, the high ROI observed for the pesticide ban intervention should motivate the Nepali Government to build on past work to restrict access to highly hazardous pesticides as a cost–effective means for reducing deaths by suicide in Nepal. While 24 highly hazardous pesticides have been banned since 2001, a significant number remain among the 171 pesticides that are registered for use in Nepal (39). Continued enforcement of existing pesticide bans and mitigation of cross-border smuggling should be ensured, as methyl-parathion is reported to be a frequently used pesticide for self-poisoning in Nepal, despite having been banned in 2006 (39).

The ROI for the universal school-based SEL intervention is an underestimate of the potential economic gains to be accrued when adolescents have better mental health. At the time of the study, no method was available to calculate the net present value of future gains in productivity or employment due to better educational outcomes among adolescents after they reach adulthood. Therefore, productivity gains were restricted to quantification of reductions in premature mortality in the short-term.

The results of the one-way sensitivity analysis are presented in **Table 9**. The analysis involving application of the imputed value of 1.0 times GDP per capita to each healthy life year gained when estimating productivity gains for all mental health conditions (SA1) did not substantially change the benefit–cost ratios. Those for anxiety disorders, depression and alcohol use disorder all remained > 1.0. In another sensitivity analysis, the effect of halving the value attached to the instrumental value of a healthy life year to 0.5 times GDP per capita (SA2) reduced the overall benefit–cost ratios for the intervention packages for psychosis, bipolar disorder and epilepsy. When the scope of economic gains was restricted to productivity gains, the benefit–cost ratios for psychosis fell below 1.0. When the social value of health was included with productivity gains, however, the benefit–cost ratio for psychosis remained > 1.0, while the benefit–cost ratio for bipolar disorder approached 1.0. Overall, the results of the two sensitivity analyses indicate that the results of the base case analysis are largely robust to changes in important methodological assumptions.

Table 9. Percentage change in benefit–cost ratios at 20 years for each sensitivity analysis scenario relative to the base case (2021 NPR)

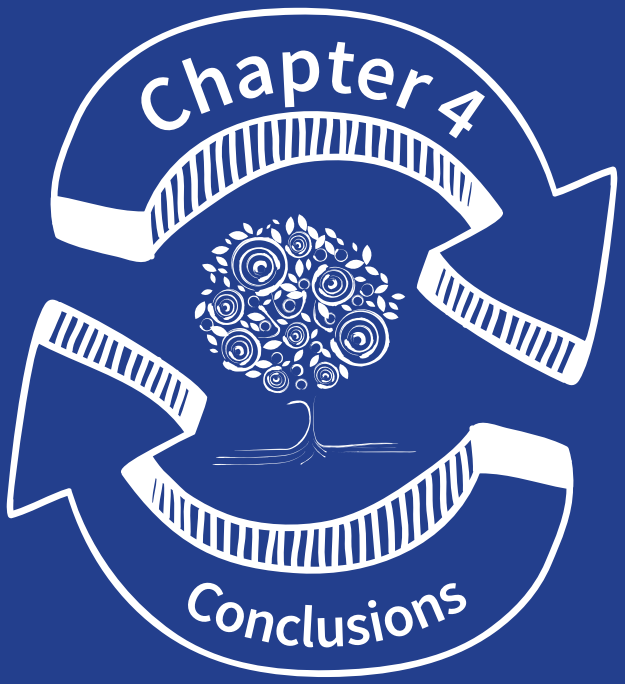
Intervention package [a]	Benefit–cost ratio (productivity gains only)			Benefit–cost ratio (productivity gains plus social value of health)		
	Base case	SA1 [a]	SA2 [b]	Base case	SA1 [a]	SA2 [b]
Anxiety disorders	2.7	2.7	NA	6.7	6.6	NA
Depression	3.5	4.7	NA	10.3	11.4	NA
Psychosis	1.8	NA	0.9	4.4	NA	3.5
Bipolar disorder	0.5	NA	0.3	1.2	NA	1.0
Epilepsy	6.6	NA	3.3	16.2	NA	12.9
Alcohol use disorder	6.6	3.7	NA	12.0	9.1	NA
Pesticide ban	3.6	NA	NA	10.2	NA	NA
Universal school- based SEL intervention[c]	0.01	NA	NA	2.0	NA	NA

NA not applicable

a Sensitivity analysis SA1 involves using the imputed method to estimate the restored productivity resulting from interventions for anxiety disorders, depression and alcohol use disorder

b Sensitivity analysis SA2 involves a 50% reduction of the instrumental economic value assigned to one year of healthy life (i.e., 0.5 times GDP per capita) when applying the imputed method

c These results exclude productivity gains among students due to methodological limitations around estimating future productivity gains among students with improved mental health


Chapter 4
Conclusions

4. CONCLUSIONS AND RECOMMENDATIONS FOR POLICY AND PRACTICE

In this report, we present an assessment of the current mental health situation in Nepal, gaps in information and opportunities for improving the situation. It provides a first estimate of the overall economic burden attributable to mental health conditions in Nepal and economic evidence for investment in treatment of the attributable and avertable burden of six leading mental, neurological and substance use conditions (anxiety disorders, depression, psychosis, bipolar disorder, epilepsy and alcohol use disorder). The costs and impacts on health of interventions, economic gains and ROIs were estimated for increasing treatment of these conditions and for two population-based interventions for preventing depression, anxiety and suicide.

Main findings

Economic burden

In 2021, the total economic burden of the selected mental health conditions and suicide on the Nepalese economy was estimated to be NPR 18 663 million (US$154 million), equivalent to 0.44% of the national GDP in 2021. NPR 14 388 million, or 77.1%, were indirect costs related to absenteeism, presenteeism and premature death. The costs of absenteeism and presenteeism were highest for anxiety disorders, while bipolar disorder and alcohol use disorder were the costliest mental health conditions in terms of premature death.

Costs of interventions

Implementation of all the clinical interventions (but not the population-based interventions) would cost NPR 13 065 million (NPR 430 per capita) over the 10-year scaling-up period and NPR 30 735 million (NPR 1012 per capita) over 20 years. Clinical interventions for bipolar disorder incurred the largest estimated costs, while the total costs for the two population-based mental health interventions (a pesticide ban and universal school-based SEL intervention) were among the lowest of all intervention packages. Altogether, these would cost NPR 5279 million (NPR 174 per capita) over 10 years and NPR 8849 million (NPR 291 per capita) over 20 years.

Health and economic gains

If the intervention packages are implemented over 20 years, nearly 17 000 deaths will be avoided and more than 2.4 million cases will be averted. Over the same period, nearly 1.0 million additional years of healthy life can be expected. The greatest health impacts (over 20 years) were observed for interventions targeting depression (325 561 total healthy life years gained) and epilepsy (158 761 total healthy life years gained). The mental health packages resulted in a net present value of NPR 23 292 million in productivity gains over 10 years, which would accrue to NPR 86 578 million over 20 years.

Return on investment

When only productivity gains are considered, a benefit–cost ratio > 1.0 at 20 years was observed for interventions targeting anxiety disorders, depression, psychosis, epilepsy and alcohol use disorder and a pesticide ban. For NPR 1 invested in the package of interventions, the expected return is highest for epilepsy at 3.4 for 10 years and 6.6 for 20 years, followed by 3.3 over 10 years and 6.6 over 20 years for alcohol use disorder, 2.2 over 10 years and 3.5 over 20 years for depression, 1.7 over 10 years and 3.6 over 20 years for a pesticide ban, 1.2 over 10 years and 2.7 for 20 years for anxiety disorder and 1.2 for psychosis at 10 years and 1.8 over 20 years. Over 10 years, the intervention packages for bipolar disorder and the universal school-based SEL intervention would have negative ROI ratios.

Inclusion of the social value of health increased the benefit–cost ratio for all the intervention packages, with the greatest gains observed for the intervention package for depression, a pesticide ban and the universal school-based SEL intervention. The highest benefit–cost ratios were observed for treatment of epilepsy, depression and alcohol use disorder and the pesticide ban. These interventions would result in an economic benefit of NPR 8.2 (epilepsy), NPR 6.5 (depression), NPR 5.8 (alcohol use disorder) and NPR 5.1 (pesticide ban) for every NPR 1 spent over 10 years. Over 20 years, these intervention packages could result in an economic benefit NPR 16.2 (epilepsy), NPR 10.3 (depression), NPR 12.0 (alcohol use disorder) and NPR 10.2 (pesticide ban) for every NPR 1 spent. Overall, the intervention packages provide economic benefits in terms of productivity gains and the social value of health over 20 years (NPR 232 276 million) and 10 years (NPR 67 280 million), which would significantly outweigh the implementation costs of all the intervention packages over 20 years (NPR 39 583 million) and even over 10 years (NPR 18 344 million).

ESTIMATED HEALTH IMPACT

ALL INTERVENTION PACKAGES	10 years	20 years
LIVES SAVED	4 500	17 000
HEALTHY LIFE-YEARS GAINED	248 000	566 171

PRODUCTIVITY GAINS AND SOCIAL VALUE OF HEALTH

MENTAL HEALTH PACKAGE	Total cost OVER 10 YEARS (NPR)	Total cost OVER 20 YEARS (NPR)	ROI FOR EVERY NPR INVESTED OVER 10 YEARS	ROI FOR EVERY NPR INVESTED OVER 20 YEARS
ANXIETY DISORDER	2 706 million	5 732 million	0.2	1.7
DEPRESSION	3 155 million	6 999 million	1.2	2.5
PSYCHOSIS	1 412 million	3 802 million	0.2	0.8
BIPOLAR DISORDER	3 717 million	10 036 million	-0.7	-0.5
EPILEPSY	1 252 million	2 397 million	2.4	5.6
ALCOHOL USE DISORDER	823 million	1 768 million	2.3	5.6

Recommendations

A range of evidence-based interventions could be used in Nepal's health system to reduce the burden of mental health conditions and promote mental health. According to the National Mental Health Survey, the prevalence of mental health disorders was 5.2% among adolescents and 4.3% among adults in Nepal in 2020. Common mental health conditions include anxiety and depression, with an increasing suicide rate among adults during the past decade. Nepal, like many countries, is experiencing socioeconomic factors that can increase mental health conditions, such as environmental disasters, poverty, urbanization, and gender-based violence. Financing of mental health services in Nepal in 2017–2018 was equivalent to 1.9% of current health expenditure. While many mental health services are covered under the standard treatment protocol in the basic health services package 2078, only 22.5% of the population is covered by national health insurance, so that most costs for mental health care are paid out-of-pocket. The National Mental Health Strategy and Action Plan (2020) calls for integration of mental health services into primary health care, fostering multisectoral partnership and providing rights-based mental health services. Nepal has a decentralized health system based on the principles of primary health care; however, mental health services are provided mainly at secondary and tertiary levels. Only 23% of adults with mental health conditions sought care in 2020.

Both challenges and opportunities were identified during the situation and context analyses that were conducted for the investment case. The challenges include understaffing (due mainly to lack of training) and underfunding of mental health services, which result in an estimated treatment gap of over 77%. Social factors such as stigmatization of mental health conditions also affect access to services. The lack of mental health research and data limits decision-making. Opportunities for strengthening mental health services in Nepal include potential scaling-up of current pilot programmes, including telemedicine, integration of mental health services into secondary care facilities and partnerships for increasing community awareness. A national suicide prevention strategy is planned, and research in the country could be scaled up to ensure local data as a basis for further financing, policy and services for mental health.

The analysis draws attention to areas that should be strengthened to implement cost–effective preventive and clinical interventions for mental health conditions in Nepal. The results build on evidence of the benefits of interventions within the basic health service package. The COVID-19 pandemic has increased the prevalence of severe PTSD, grief, anxiety and depression, thereby increasing the importance of improving Nepal's mental health-care system. Investment in mental health is recommended, as investment in scaled-up mental health interventions will have both substantial economic returns and improve the health and well-being of the population. Nepal could consider taking the following actions to convert mental health investment into improved policy and practice.

The investment case results provide a compelling rationale for the Government to consider prioritizing investments in mental health care for the country's population through evidence based mental health promotion, prevention, and accessible, affordable services. There is also an existing body of work, advocacy, and experience in the country around mental health, an enabling policy environment and receptivity about the importance of mental health across the Government. To build on this landscape, there are three key thematic recommendations that can play a catalytic role in making a substantive contribution to making mental health everyone's business in the country.

1 Increase access to mental health care through a set of coordinated actions:

- **Increase the capacity of mental health care workforce:**

» Develop and implement a mental health workforce plan after a comprehensive assessment of existing mental health workforce, their competency to deliver services at all levels of care and to implement the *Nepal Mental Health Strategy and Action Plan 2020*.

» Expand and strengthen ongoing initiative to train health care workers in providing basic and essential mental health care at primary care level along with a strong supportive supervision to improve clinical skills and competency through task sharing.

» Prioritize strengthening provision of psychological and social services as an integral part of mental health care at all levels: community level, primary care level and referral care level

» Collaborate with academic institutions to strengthen mental health education: as a part in general medical education (Paramedics, Nurses, GPs, Public Health) and through expansion of new academic programs such as on clinical psychology, addiction, child mental health and geriatric health.

- **Increase access to mental health services including the access to psychotropic medications:**

» *Implement new National Mental Health Service Strengthening Programme 2022* to scale up quality mental health interventions which includes integrating mental health into different service delivery platform. It includes integration of 'Basic Mental Health Services' at primary health care level to be made available for free to every citizen. Investing in improving access to care for MNS conditions identified as basic has a strong economic argument- when only productivity gains are considered, for NPR 1 invested in the package of interventions, the expected return is highest for epilepsy at 3.4 for 10 years and 6.6 for 20 years, followed by 3.3 over 10 years and 6.6 over 20 years for alcohol use disorder, 2.2 over 10 years and 3.5 over 20 years for depression, 1.2 over 10 years and 2.7 for 20 years for anxiety disorder and 1.2 for psychosis at 10 years and 1.8 over 20 years.

» Invest in establishing dedicated teams that offer effective mental health services at district hospitals, as an essential but often overlooked component of mental health services. The ongoing initiative to deploy Mental Health nurse and a visiting psychiatrist need to be protected, mainstreamed, and scaled up to consolidate the service provision at district hospital.

» Ensure multidisciplinary mental health care at general hospitals at Provinces and at Centre with in-patient /out patent and community outreach facilities. This will require increase in slots for psychiatrist and addition of clinical psychologists in the civil service system

» Integrate child and adolescent mental health services into health and educational platform as per national and international best practices. Capacity building of school nurses on socio-emotional learning and the early identification and initial management of childhood mental health problems are strong opportunities.

» An efficient, functional drug procurement and distribution system to ensure regular availability of essential psychotropic medication as outlined in the Essential Medicine List across primary care clinics will be an essential component of making mental health care more affordable.

» Ensure the financial protection of persons with mental health conditions as per UHC through implementation of basic interventions and strengthening the services covered in Social Health Insurance schemes

» Expand community mental health care. Review small-scale community mental health care programmes for best practices.

» Promote the interface of mental health with other priority public health and social protection programs such as maternal health, TB, HIV, One Stop Crisis Management Centres or emergency preparedness and response readiness.

2 Ensure multi-sectoral coordination and community engagement to promote mental health, foster help seeking and reduce stigma and discrimination:

- **Strengthen multisectoral engagement and coordination and encourage a whole-of-government approach to mental health. The Ministry of Health would benefit from strengthened collaboration with the following sectors:**

» The Ministry of Education to integrate mental health into the school curriculum, conduct awareness-raising programmes and implement the SEL interventions modelled in the investment case.

» The Ministry of Agriculture to implement the regulatory ban on highly hazardous pesticides and ban other hazardous pesticides.

» The Ministry of Women and Senior Citizens to strengthen measures against gender-based violence, including mental health interventions, and increase the number of safe houses, with counsellors for survivors of gender-based violence.

» The Ministry of Labor, Employment and Social Security to provide basic training in mental health for civil servants in social welfare organizations, improve social welfare provisions and increase the number of qualified mental health service providers, for example by providing incentives to students and additional support for educational institutions.

- Prioritize implementing population wide and targeted interventions for suicide prevention. WHO LIVE Life package could provide a strategic direction to implement effective interventions: limiting access to pesticides, media interaction for responsible reporting practices. A pesticide ban would have the greatest impact, with an ROI of 4.1 over 10 years when the social value of health is included, which increases to 9.2 over 20 years. The use of harmful pesticides in suicide is a serious challenge, and a pesticide ban should be prioritized, accompanied by monitoring, supervision, and legal enforcement.
- Strengthen school health initiatives to promote Socio-emotional learning of adolescents including interventions against bullying and child abuse. Continue expansion of care giver support, parenting and early childhood development initiatives in collaboration with maternal health actors. The ROI of universal school-based interventions is 1.0 over 10 years, although this is an underestimate because it does not include the net present value of future gains in productivity or employment due to improved educational outcomes among adolescents when they reach adulthood. The intervention nevertheless results in considerable health gains for this population, with nearly 2.5 million prevalent cases of mental health conditions averted, representing an opportunity that should not be missed.
- Implement programs to create safe spaces for people with mental health conditions to share their personal experiences and protect their rights. Initiate mental health friendly workplace to promote and protect mental health of workers.

3 Invest in building strong national governance systems for mental health.

- The Government may consider establishing a dedicated and adequately resourced mental health division within the Ministry of Health and Population as proposed in National Mental Health Strategy and Action Plan 2020. As mental health depends on a complex interplay of social, economic and environmental determinants, a whole-of-government, whole-of-society approach should be promoted by establishing a national mental health coordination committee, which should include various sectors, such as education, finance, agriculture, labor, environment, justice and civil society. People with lived experience should also be represented on the committee and should be included in discussions of future policies, plans and service provision.
- It is recommended that the national Government set technical, financial and legislative standards, while provinces and municipalities implement the designated programmes, partly in cooperation with NGOs.
- Multisectoral programmes should be coordinated in collaboration with the relevant ministries. It is important that mental health be included, budgeted for, and financed in the budgets of all the relevant ministries at federal and provincial level.
- Support and enhance the technical and managerial capacity of the Province and Municipal governments on mental health. The existing practices to training mid-level program managers and build leadership of senior program manager could be protected and expanded with a platform for regular connection and exchange of information.
- Nepal would benefit from strengthening mental health research and surveillance systems to increase access to local data as a basis for further financing, policy and services for mental health. Nepal could consider collaboration with academic institutions to conduct regular epidemiological studies in accordance with the recommendations of the WHO Assessment instrument for mental health systems (128). Nepal would also benefit from strengthening its health information systems, including integrating information on mental health into the national health management information system (129). Health workers at basic health centres should be trained to record diagnoses accurately, calculate and review data routinely and centralize suicide-related information in one information system. Nepal should continuously conduct quality control and intervention studies to assess the efficacy and safety of mental health interventions.

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