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Research Article

Mental health prevalence, healthcare use and access between 2018 and 2022 in Sri Lanka: an analysis of survey data

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Abstract

Background: Sri Lanka has suffered four decades of violent conflict, a tsunami, terrorist attacks and an economic crisis, with unknown mental health consequences. People living with mental health difficulties may experience individual, interpersonal, social or structural barriers to help-seeking. These may include stigma, lack of knowledge, denial, fear of societal repercussions, language, acceptability/appropriateness of care, lack of family support, availability of medication, lack of transport and financial barriers. It is possible that several of these factors may have manifested during the challenging time period for Sri Lankans at which this study took place.

Methods: Using a sample of 4030 respondents from two waves of a nationally representative survey, this study assessed the changes in the prevalence of mental health conditions, and subsequent changes in rates of healthcare usage and access, among adults in Sri Lanka between 2018 and 2022. This spanned a period of crisis and unrest, inclusive of the Easter Sunday attacks in 2019, anti-Muslim riots, the coronavirus disease 2019 pandemic and lockdown measures, as well as the current economic crisis that started in late 2021. Descriptive analyses were conducted to assess the demographic and socioeconomic characteristics of the cohort, and to quantify the prevalence of mental health difficulties within the cohort at each wave. Regression analyses examined the changes in prevalence of mental health difficulties over time. Cross-sectional descriptive analyses examined rates of healthcare use and access among those experiencing mental health difficulties, and regression analyses compared use and access for those experiencing different levels of mental health difficulties, adjusting for age, sex, education, socioeconomic status, ethnicity, religion, region and language.

Results: We found that 2.9% of Sri Lankans experienced high mental health difficulties during 2018–9 and 6.1% in 2021–2. There was a statistically significant increase in prevalence between 2018–9 and 2021–2 ($\beta = 0.23$, 95% confidence interval 0.20 to 0.26; $p < 0.05$). This rise was disproportionately higher amongst older adults, those in the lowest socioeconomic classes, and those not from a minority ethnic group. The gap between inpatient use for those living with the highest and lowest levels of mental health difficulties widened across the study period, though the outpatient use gap remained stable. Finally, while those with high mental health difficulties reported high levels of unmet need for health care, when compared to those with the lowest levels of mental health difficulty, the difference was not found to be significant, likely due to a restricted sample size.

Future work and limitations: It would be beneficial for future studies to investigate issues with measuring mental health, applicability and the cultural safety of mental health measures.

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Conclusions: We explored mental health in Sri Lankans during critical time periods when the country experienced various traumatic events. The lessons learnt from how mental health and healthcare access and use were measured in this study allows us to strengthen methods for future studies, allowing for robust longitudinal analyses of healthcare use and access for those experiencing common mental health difficulties.
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Introduction

The challenges Sri Lankans have faced and impact on mental health

Sri Lanka has suffered four decades of violent conflict, a tsunami, terrorist attacks and an economic crisis, with unknown mental health consequences.[1] Some stability over the following decade was shaken by the Easter Sunday bombings of churches and luxury hotels in 2019 by Islamic State of Iraq and Syria (ISIS) terrorists, killing more than 250 people, which led to increased hostility and outbreaks of violence against Muslims.[2] In 2020, Sri Lanka was hit by the coronavirus disease 2019 (COVID-19) pandemic, with more than 600,000 confirmed cases and over 16,000 official deaths in Sri Lanka.[3] The adoption of large tax cuts in 2020 combined with COVID-19 control measures, which included closing borders, lockdowns and school closures, had substantial negative economic impacts and starved social sectors of fiscal resources, resulting in substantial job losses and disrupted social services, and contributed to the worst economic crisis since the 1930s, which from late 2021 led to a scarcity of fuel, food and medicines.[4] The COVID-19 Delta wave in mid-2021 also resulted in over 3000 infections and 150 deaths per day in August 2021 and overwhelmed the hospital system for several months. Hospitals in the country in 2022 reported shortages of essential medicines and other health items, while frequent power outages affect the delivery of health services.[5] The United Nations Office for Coordinated Humanitarian Affairs estimated in April 2022 that 5.7 million people needed humanitarian assistance including food, fuel, cooking gas, essential supplies and medicines in 25 districts across the country.[6] In June 2022, the World Food Programme estimated that 3 in 10 households (6.2 million people) were food insecure, and food inflation was alarmingly high at 57.4%.[7]

The mental health impacts of conflict, natural disasters and economic crises have been documented in Sri Lanka and globally. The prevalence of mental health disorders in conflict-affected populations is substantially higher than in the average population: 17.3% versus 5.3% for depressive disorders.[8,9] People living in conflict-affected settings are at increased risk of developing depressive, anxiety and psychotic disorders.[10] The negative mental health consequences of the 2004 Indian Ocean tsunami have been investigated particularly amongst mothers and adolescents in Sri Lanka.[11,12] A 2021 study found that the current crisis has led to high levels of distress among young people.[13] The current economic crisis and accompanying political uncertainties, widespread protests and social disruptions have the potential to adversely affect mental health, though this has not been studied extensively. Worsening public mental health in the context of these multiple crises can additionally strain health systems.[14]

Regarding previous prevalence estimates, in 2008, the World Health Organization (WHO) estimated that around 3% of the Sri Lankan population experienced some form of mental ill health.[15] According to 2015 WHO estimates, the prevalence of depressive disorder in Sri Lanka was around 4.1% and anxiety disorder 3.4%.[13] Sri Lanka also has a high suicide mortality rate of 14 per 100,000 in 2019, compared to a global average of 9.2 per 100,000.[16] Higher levels of mental distress are an important risk factor for suicide.[16,17]

Barriers to healthcare use and access

People living with mental health difficulties may experience individual, interpersonal, social or structural barriers to help-seeking. The literature consistently highlights that, culturally, social stigma associated with mental health is common in Sri Lanka, whereby negative attitudes lead to people being marginalised in society.[1,13] Patients, carers and families face subsequent social and economic exclusion due to mental health difficulties, depriving them of participating in socioeconomic processes such as work and marriage.[16] Stigma experienced by patients and carers is associated with delays in help-seeking.[17] Lack of knowledge about mental health as a result of these social norms means individuals and carers may not recognise difficulties and in turn may not seek help. If they recognise difficulties, they may avoid seeking help due to stigma, denial or fear of societal repercussions. Even if people recognise that they need support, there is another layer of barriers to obtaining care. Some of these barriers in the context of mental health include language,[18] acceptability/appropriateness of care,[19] lack of family support,[20] availability of medication,[21] lack of transport[22]

and financial barriers.[21] It is possible that several of these factors may have manifested during this challenging time period, for example, the high price of fuel and the lack of availability of medicines, impacting on healthcare use and access. Worldwide systematic reviews also highlight that the rate of healthcare use declined following the COVID-19 pandemic[23] and economic downturn.[24]

Aims

Given the various sociopolitical, health and environmental stressors affecting individuals in Sri Lanka between 2018 and 2022 (*Figure 1*), there is a need to estimate the prevalence of mental health difficulties, as well as healthcare use and access for people experiencing poor mental health, to inform policy and guide service provision.

Using data from two waves of the nationally representative Sri Lanka Health and Aging Study (SLHAS), this study aimed to assess the changes in the prevalence of mental health conditions, and subsequent changes in rates of healthcare usage and access, among adults in Sri Lanka between 2018 and 2022. Specifically, we aimed to explore whether mental health conditions have changed over time between 2018 and 2022, spanning a period of crisis and unrest, inclusive of the Easter Sunday attacks in 2019, anti-Muslim riots, the COVID-19 pandemic and lockdown measures, as well as the current economic crisis that started in late 2021.

While this study focused on mental health, it formed part of a wider National Institute for Health and Care Research (NIHR) Global Health Research award developing a package of care for the mental health of suvivors of violence against women and adolescents, and a substudy exploring the impact of COVID-19 on a variety of health and well-being topics such as healthcare access, employment, income, food security, social isolation, vaccine uptake, testing, COVID-19 symptom prevalence, social contact and public views about the COVID-19 response.

Research questions

The project aims to answer the following questions:

1. How did the prevalence of (common) mental health difficulties amongst adults in Sri Lanka change between 2018–9 (Wave 1) and 2022 (Wave 2)?
2. How do the rates of healthcare use among those with high mental health difficulties compare to those without high mental health difficulties at Waves 1 and 2?
3. How do the rates of healthcare access (unmet need) among those with high mental health difficulties compare to those without high mental health difficulties in Waves 1 and 2?
4. Are the differences in rates of healthcare use and access between those with differing mental health difficulties dependent upon sociodemographic factors?

Methods

Sample

The SLHAS is a national, longitudinal, cohort study managed by a consortium of the Institute for Health Policy, the University of Colombo, University of Peradeniya, University of Ruhuna and the University of Rajarata, approved by the Ministry of Health (MOH), Sri Lanka. The project uses data from the SLHAS, an ongoing nationally representative study of adults (aged 18 years and older) living in Sri Lanka. Six thousand six hundred and sixty-eight adults participated in Wave 1, the majority of which (4548)

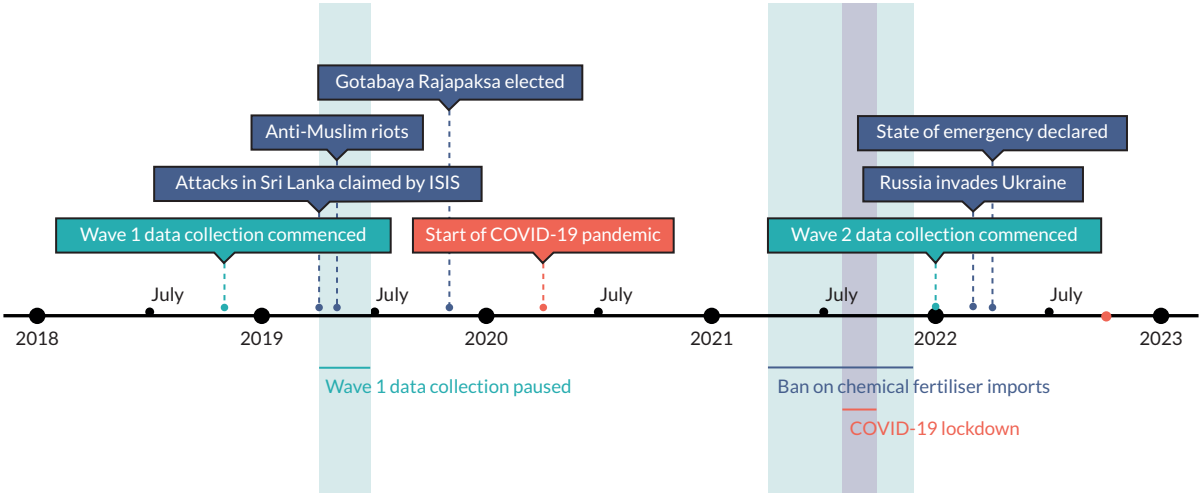

FIGURE 1 A timeline of significant public health and sociopolitical events in Sri Lanka between 2018 and 2022.

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also completed the follow-up in Wave 2. This study uses an analytic sample of 4030 respondents who participated in the healthcare use module in both Wave 1 and Wave 2 and held information for at least one mental health measure in both surveys.

SLHAS Wave 1 was conducted from November 2018 to November 2019. Detailed information on the recruitment and sampling strategy can be found as part of recent work using data collected in the SLHAS.[25] Recruited participants were invited to a field clinic near their residence to complete in-person interviews. In April 2019, during Wave 1 of data collection, Sri Lanka was impacted by terrorist attacks, which caused a 6-week disruption of field work leading to non-coverage of several primary sampling units (PSUs), a fall in Muslim response rates, and the inability to survey one predominantly Muslim PSU owing to security conditions. The affected PSU was replaced with a substitute PSU from the same stratum matching by district, sector and level of socioeconomic development. However, it was not possible to match the ethnic profile of the original PSU.

SLHAS Wave 2 data collection took place between August 2021 and August 2022. Participants completed interviews by telephone, with information being collected on COVID history, vaccination, mental health, healthcare use and access, household well-being and public opinion.

Across both waves, participants provided information about themselves and their households.

Measures

Outcome: common mental health difficulties

Common mental health difficulties were captured using the Patient Health Questionnaire (PHQ) and/or the Depression Anxiety Stress Scales (DASS). Following standard interpretations, difficulties were categorised as 'minimal', 'mild' and 'moderate to severe'. High mental health difficulties in this study equates to an outcome of a 'moderate to severe' score in the PHQ, in DASS, or in both.

Patient Health Questionnaire

The PHQ-9 is a nine-item scale that assesses symptoms of depression used for diagnostic screening purposes in primary care[26] All participants in Wave 1 completed the nine-item PHQ-9. In Wave 2, due to concerns around the risk to psychological well-being following telephone interviews, participants completed a modified eight-item PHQ, excluding the item addressing suicide ideation. As such, for comparability, standardised PHQ-8 scores ranging from 0 to 24 were used across both waves. Scores between 5 and 9 were categorised as 'mild' depressive symptoms and scores of 10 and above as 'moderate to severe' depressive symptoms.[27]

Depression Anxiety Stress Scales

The DASS-A and DASS-S are self-report questionnaires made up of seven items exploring anxiety and stress, respectively,[28,29] and were administered to individual subsamples (33%) of participants. Those who completed the DASS-A and DASS-S at Wave 1 were administered the same questions in Wave 2. DASS scores ranged between 0 and 42. DASS-A scores of 8–14 denote 'mild' anxiety, and scores >14 'moderate to severe' anxiety; DASS-S scores between 15 and 25 denote 'mild' stress, and scores >25 'moderate to severe' stress.[28]

Healthcare use and access

In Waves 1 and 2, participants were asked about the frequency of their inpatient healthcare use and their outpatient healthcare use in the previous 12 months. For this analysis, healthcare use was categorised as 'none' and 'one or more visits' for inpatients and outpatients. Participants were also asked about their ability to access health care when required. Wave 1 responses consider access to health care in the previous year, and Wave 2 responses consider access in the previous month. Healthcare access responses reflected 'unmet need', 'met need' and 'no need'.

Cohort characteristics and covariates

Self-reported sex, age (in 10-year bands), educational attainment (O level + or below O level), socioeconomic status (in quintiles from a household asset-based index),[25] ethnicity (Sinhala, Tamil, Muslim, other), religion (Buddhist, Hindu, Muslim, Christian), region of residence (by province) and questionnaire language (Sinhala or Tamil) were recorded at each wave.

Time period

As detailed in the introduction, during the 4-year period 2019–22, several significant events took place, both locally and globally, potentially impacting people living in Sri Lanka. *Figure 1* highlights the data collection periods for Waves 1 and 2.

Data analysis

A series of descriptive analyses were conducted to provide an overview of the demographic and socioeconomic characteristics of the cohort, and to quantify the prevalence of mental health difficulties within the cohort at each wave, stratified by socioeconomic subgroups. Subsequent regression analyses examined the changes in prevalence of mental health difficulties over time, again stratified by economic subgroups. Cross-sectional descriptive analyses examined rates of healthcare use and

access among those experiencing mental health difficulties in Waves 1 and 2, and regression analyses compared use and access for those experiencing 'mild' and 'high' mental health difficulties with those experiencing 'minimal' mental health difficulties, adjusting for confounding variables in four stages: unadjusted; adjusted for age and sex; further adjustment for education and socioeconomic status; and further adjustment for ethnicity, religion, region and language.

The cohort was weighted to be representative of the population of Sri Lanka, accounting for sampling design and differential non-response within the second wave of data collection.

All analyses were conducted in STATA® Release 17 (StataCorp LLC, College Station, TX, USA).[30]

Results

Demographic characteristics

The sociodemographic characteristics of the cohort are presented in *Table 1*. The cohort comprised of 4030 participants with a mean age of 49.1 years [standard error (SE): 0.25], 51.2% of which were female. The majority of participants were Buddhist (73.8%), and ethnically Sinhalese (78.3).

Mental health prevalence

The prevalence of high common mental health difficulties in Wave 1 was 2.9% (n = 115) and 6.1% (n = 247) in Wave 2. During Wave 1, 25.1% of the cohort experienced mild mental health difficulties, and 72.0% experienced minimal difficulties. During Wave 2, 41.5% experienced mild mental health difficulties, while 52.4% experienced minimal difficulties. Prevalence estimates of common mental health difficulties differed by age, sex, ethnicity, SES, education, region and religion, and are presented in *Table 1*.

Change in prevalence of mental health difficulties over time

Table 2 displays multivariable regression analyses comparing prevalence of mental health difficulties between waves. The levels of high mental health difficulties changed significantly between the two waves [β = 0.23, 95% confidence interval (CI) 0.20 to 0.26; $p < 0.05$], highlighting the increased prevalence of common mental health distress in Wave 2 compared to in Wave 1. This change in prevalence was greater for women, older people, people in lower SES quintiles, people with below O-level education, non-Buddhist people and non-Sinhala people.

Healthcare use and access

Figure 2 displays the overlap of high mental health difficulties and the use of outpatient and inpatient medical services during Waves 1 and 2. Among the people experiencing high common mental health difficulties, rates of outpatient use in the previous 12 months decreased by 3.1% between waves, from 35.4% to 32.3% in Waves 1 and 2, respectively (see *Table 3*). However, rates of inpatient use in the previous 12 months increased by 7.7% between waves (Wave 1: 16.0%; Wave 2: 23.7%).

When adjusted for confounders, those experiencing high mental health difficulties were significantly more likely to access outpatient services in both Wave 1 [adjusted odds ratio (aOR) = 2.15, 95% CI 1.27 to 3.63] and Wave 2 (aOR = 1.96, 95% CI 1.34 to 2.85) than those with minimal difficulties (see *Table 4*). Similarly, those experiencing high mental health difficulties were significantly more likely to use inpatient services than those with minimal difficulties in both waves (Wave 1: aOR = 2.03, 95% CI 1.10 to 3.76; Wave 2: aOR = 2.76, 95% CI 1.80 to 4.22).

In addition, while 27.7% of the cohort experiencing high mental health difficulties did not access medical services when required in the 12 months prior to Wave 1, they were not statistically significantly less likely to access services than those with minimal mental health difficulties (aOR = 2.53, 95% CI 0.71 to 9.06). In the month prior to Wave 2 responses, 8.6% of participants experiencing high mental health difficulties did not access needed medical services, again not significantly more than those with minimal mental health difficulties (aOR = 1.02, 95% CI 0.71 to 1.48).

Discussion

This study estimated the changes in prevalence of common mental health difficulties amongst the adult population of Sri Lanka over an extended period of crises. It also estimated the rates of both outpatient and inpatient healthcare use, and unmet need based on issues accessing health care, over the same time period, for those with high mental health difficulties compared to those with mild and minimal difficulties.

Primary findings and concordance with previous research

Prevalence of high mental health difficulties rose significantly over the study period. This rise was not equal across different sociodemographic groups, with a disproportionate increase in mental health difficulties amongst older adults, those in the lowest socioeconomic classes and those not from minority ethnic groups. In addition, the gap between inpatient use for those living with the highest and lowest

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TABLE 1 Characteristics of Sri Lankan adults in the SLHAS 2018–9 and 2021–2 and their mental health difficulties

				Common mental health difficulties											
				Wave 1						Wave 2					
		Sample descriptives		Minimal		Mild		High		Minimal		Mild		High	
		n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Full analytic sample		4030	100	2901	72.0	1014	25.1	115	2.9	2112	52.4	1671	41.5	247	6.1
Sex	Male	1948	48.3	1489	76.5	422	21.7	36	1.9	1000	51.4	839	43.1	108	5.6
	Female	1082	51.7	1412	67.8	591	28.4	79	3.8	1112	53.4	832	39.9	139	6.7
Age	18–24 years	501	12.4	376	75.0	115	22.9	10	2.1	180	59.5	110	36.4	13	4.1
	25–34 years	769	19.1	588	76.5	170	22.1	10	1.4	423	54.9	313	40.7	34	4.4
	35–44 years	986	24.5	722	73.3	234	23.8	29	3.0	533	54.7	381	39.1	60	6.1
	45–54 years	699	17.3	500	71.6	177	25.3	22	3.1	369	49.4	324	43.3	55	7.4
	55–64 years	603	15.0	400	66.3	178	29.6	25	4.1	322	49.9	285	44.1	39	6.1
	65–74 years	473	11.7	314	66.5	139	29.5	19	4.1	285	48.4	258	43.7	47	8.0
SES	5	913	22.7	716	78.4	181	19.9	16	1.8	511	54.9	373	40.1	47	5.1
	4	874	21.7	665	76.1	185	21.2	24	2.8	498	54.8	366	40.3	45	4.9
	3	817	20.3	589	72.1	214	26.2	13	1.7	430	52.4	341	41.6	49	5.9
	2	726	18.0	508	70.0	189	26.1	29	3.9	392	49.9	332	42.2	62	7.9
	1	701	17.4	424	60.5	244	34.9	33	4.7	281	48.2	258	44.2	45	7.6
Education	O level+	2236	55.5	1731	77.4	468	21.0	36	1.6	1183	52.9	928	41.5	125	5.6
	Below O level	1794	44.5	1169	65.2	545	30.4	79	4.4	929	51.8	743	41.4	123	6.8
Religion	Buddhist	2976	73.8	2295	77.1	618	20.8	62	2.1	1491	50.1	1270	42.7	215	7.2
	Hindu	388	9.6	184	47.5	181	46.7	22	5.7	238	61.4	143	36.9	7	1.7
	Muslim	368	9.1	229	62.1	121	33.0	18	4.9	241	65.5	118	32.2	9	2.3
	Christian	298	7.4	193	64.7	93	31.1	13	4.2	142	47.7	139	46.6	17	5.7

				Common mental health difficulties											
				Wave 1						Wave 2					
		Sample descriptives		Minimal		Mild		High		Minimal		Mild		High	
		n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Ethnicity	Sinhala	3156	78.3	2432	77.1	659	20.9	65	2.1	1577	50.0	1354	42.9	225	7.1
	Tamil	480	11.9	228	47.5	220	45.9	32	6.6	286	59.6	182	37.9	12	2.5
	Muslim	370	9.2	229	61.9	123	33.2	18	4.9	242	65.3	120	32.4	9	2.3
	Other	24	0.1	12	50.0	12	50.0	0	0.0	8	31.9	15	61.1	2	7.0
Region	WP	1211	30.1	907	74.9	271	22.4	33	2.7	673	55.4	472	38.9	69	5.7
	CP	483	12.0	334	69.0	136	28.2	13	2.7	257	52.8	202	41.6	27	5.6
	SP	540	13.4	425	78.8	104	19.3	11	2.0	279	52.1	212	39.6	45	8.3
	NP	208	5.2	96	46.0	93	44.5	20	9.5	131	62.8	75	35.8	3	1.4
	EP	252	6.3	151	60.1	92	36.6	8	3.2	170	67.8	77	30.6	4	1.7
	NWP	470	11.7	352	74.9	104	22.1	14	2.9	231	49.4	208	44.5	29	6.2
	NCP	247	6.1	177	71.6	67	27.1	3	1.3	101	40.9	122	49.1	25	10.0
	Uva	226	5.6	157	69.8	63	27.7	6	2.5	89	39.8	117	52.4	18	7.8
	Sab	393	9.8	302	76.7	83	21.2	8	2.1	181	45.8	186	47.1	28	7.1
Language	Sinhala	3234	80.3	2457	76.0	707	21.9	70	2.2	1641	49.7	1421	43.1	238	7.2
	Tamil	796	19.7	444	55.8	306	38.5	46	5.7	471	64.6	249	34.2	9	1.2

CP, Central province; EP, Eastern province; NCP, North Central province; NP, Northern province; NWP, North Western province; Sab, Sabaragamuwa province; SES, socioeconomic status; SP, Southern province; Uva, Uva province; WP, Western province.

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TABLE 2 Mental health use and access of Sri Lankan adults in the SLHAS 2018–9 and 2021–2

				Common mental health difficulties											
				Wave 1						Wave 2					
			Cohort size	Minimal		Mild		High		Minimal		Mild		High	
			n	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Healthcare use in previous month	Outpatient	None	4030	2298	79.2	715	70.5	74	64.6	1765	83.6	1325	79.3	166	67.2
		Once or more		604	20.8	299	29.5	41	35.4	348	16.5	346	20.7	81	32.8
	Inpatient	None	4030	2655	91.5	903	89.1	97	84.0	1919	90.9	1481	88.6	189	76.3
		Once or more		246	8.5	111	10.9	18	16.0	193	9.1	190	11.4	59	23.7
Unmet need for medical care	Previous year	No need	2708	218	10.9	111	17.6	6	7.2	–	–	–	–	–	–
		Met need		1640	82.2	434	68.8	54	65.1	–	–	–	–	–	–
		Unmet need		137	6.9	85	13.5	23	27.7	–	–	–	-	–	–
	Previous month	No need	4009	–	–	–	–	–	–	825	39.3	647	38.8	91	37.0
		Met need		–	–	–	–	–	–	1195	57.0	938	56.3	134	54.4
		Unmet need		–	–	–	–	–	–	77	3.7	81	4.9	21	8.6

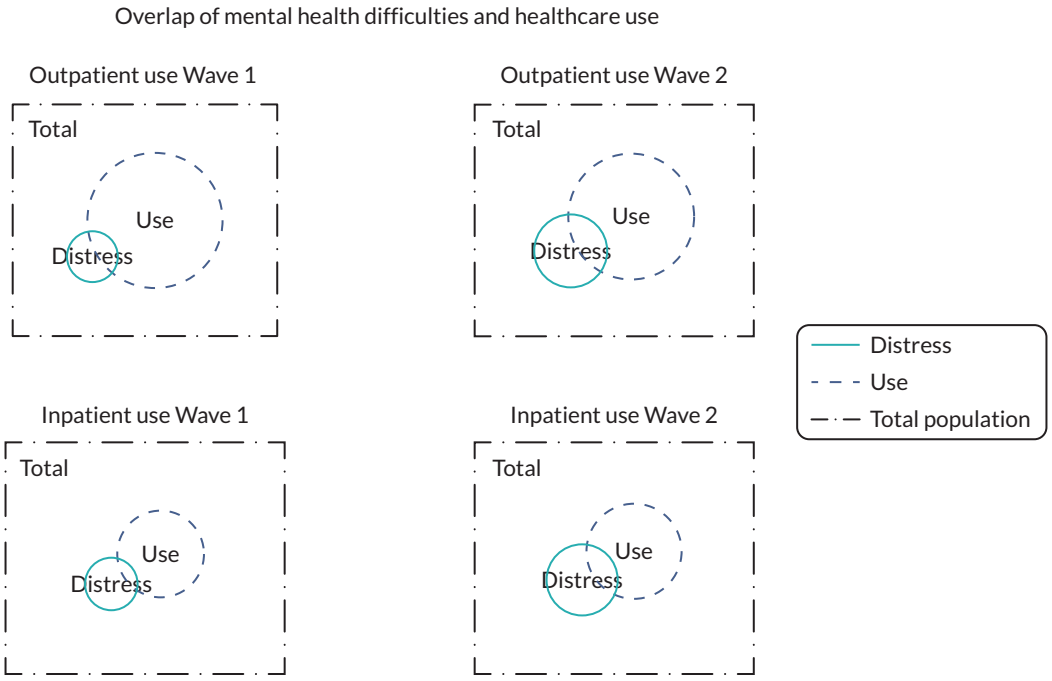

FIGURE 2 Inpatient and outpatient use of medical care for Sri Lankans reporting 'moderate to severe' mental health difficulties in SLHAS 2018–9 and 2021–2.

levels of mental health difficulties widened across the study period, though the outpatient use gap remained stable. Finally, while those with high mental health difficulties reported high levels of unmet need for health care, when compared to those with the lowest levels of mental health difficulty, the difference was not found to be significant, likely due to a restricted sample size.

These results are largely concordant with previous research. Prevalence of mental health difficulties increased throughout the study period, mirroring a qualitative rapid needs assessment in Sri Lanka, which found reduced mental health and psychosocial well-being at the household level since the start of the economic crisis.[31] Globally, studies consistently report a worsening of population mental health following periods of public health crises such as the COVID-19 pandemic;[32] economic disruption;[33] and exposure to ethnically and politically driven riots and protests.[34] In addition, the overall decrease in use of healthcare services estimated in this study, particularly in terms of outpatient services, is consistent with findings from worldwide systematic reviews focused on rates of healthcare utilisation following the COVID-19 pandemic[23] and economic downturn.[24]

Increase in prevalence of mental health difficulties

Our results indicate that those groups that were disproportionately affected by an increase in mental health difficulties were also at increased risk of exposure to the health and sociopolitical crises afflicting Sri Lanka during the study period. Older adults were particularly at risk of severe illness as a result of COVID-19,[35] those within minority ethnic groups were more likely to be vulnerable during the riots, and those with the lowest socioeconomic statuses were less likely to be able to afford basic housing and food, all of which could contribute to worsening mental health.

Changes in healthcare utilisation

There are a multitude of factors associated with utilisation of outpatient services, including individual, interpersonal and structural barriers – all of which are affected during health and sociopolitical crises. For example, individual awareness of, and self-evaluated importance of, healthcare needs are likely to change during times of economic disruption, especially for those in lower socioeconomic classes with financial barriers to access.[36] Familial and social support networks can be disturbed during periods of mandated social isolation, such as during national lockdowns.[37] In addition, the COVID-19 pandemic led to significant healthcare disruptions, with reduced availability of services, increased wait times and reductions in use of medical services owing to the fear of patients contracting COVID-19. Notably, the gap between outpatient use for those with the highest and lowest mental health difficulties remained stable over the course of the study period, indicating these barriers appear to have affected those with the highest and lowest mental health difficulties equally during this time frame.

TABLE 3 Change in prevalence between SLHAS 2018–9 and 2021–2: unadjusted and adjusted models [aOR (CI)]

	Model 1	Model 2	Model 3	Model 4
Wave 2 mental health difficulties (ref: Wave 1)	0.23 (0.20 to 0.26)	0.23 (0.20 to 0.26)	0.23 (0.20 to 0.26)	0.23 (0.20 to 0.26)
Sex (ref: male)				
Female		0.05 (0.01 to 0.08)	0.04 (0.01 to 0.07)	0.04 (0.00 to 0.07)
Age (ref: 16–24 years)				
25–34 years		0.00 (–0.08 to 0.08)	0.00 (–0.08 to 0.07)	0.00 (–0.08 to 0.08)
35–44 years		0.04 (–0.04 to 0.11)	0.02 (–0.05 to 0.10)	0.03 (–0.04 to 0.11)
45–54 years		0.07 (–0.01 to 0.15)	0.05 (–0.02 to 0.12)	0.06 (–0.02 to 0.13)
55–64 years		0.10 (0.03 to 0.18)	0.07 (0.00 to 0.15)	0.08 (0.00 to 0.15)
65–74 years		0.11 (0.03 to 0.19)	0.08 (0.00 to 0.15)	0.08 (0.01 to 0.16)
SES quartile [ref: 5 (highest)]				
4			0.03 (–0.2 to 0.08)	0.03 (–0.2 to 0.07)
3			0.06 (0.01 to 0.11)	0.06 (0.01 to 0.11)
2			0.11 (0.06 to 0.15)	0.11 (0.05 to 0.15)
1			0.16 (0.10 to 0.22)	0.14 (0.08 to 0.20)
Education (ref: O level +)				
Below O level			0.04 (0.00 to 0.07)	0.03 (0.00 to 0.07)
Religion (ref: Buddhist)				
Hindu				–0.04 (–0.17 to 0.09)
Muslim				–0.15 (–0.46 to 0.17)
Christian				0.04 (–0.04 to 0.11)
Ethnicity (ref: Sinhala)				
Tamil				0.19 (0.04 to 0.34)
Muslim				0.24 (–0.09 to 0.57)
Other				0.24 (0.06 to 0.42)
Province (ref: WP)				
CP				0.03 (–0.03 to 0.08)
SP				0.00 (–0.06 to 0.05)
NP				0.03 (–0.07 to 0.13)
EP				–0.03 (–0.11 to 0.05)
NWP				0.03 (–0.03 to 0.09)
NCP				0.10 (0.03 to 0.17)
Uva				0.08 (0.00 to 0.15)
Sab				0.04 (–0.02 to 0.10)
Language (ref: Sinhala)				
Tamil				–0.12 (–0.25 to 0.02)

CP, Central province; EP, Eastern province; NCP, North Central province; NP, Northern province; NWP, North Western province; Sab, Sabaragamuwa province; SES, socioeconomic status; SP, Southern province; Uva, Uva province; WP, Western province.
Model 1 = unadjusted; Model 2 = adjusted for age and sex; Model 3 = further adjustment for education and socioeconomic status; Model 4 = further adjustment for ethnicity, religion, region, and language.

TABLE 4 Medical care use and access for Sri Lankan adults reporting mild and high mental health difficulties in SLHAS 2018–9 and 2021–2

			Cohort size	Common mental health difficulties (ref: minimal) [aOR (CI)]			
				Wave 1		Wave 2	
			n	Mild	High	Mild	High
Healthcare use in previous month	Outpatient	Model 1	4152	1.59 (1.29 to 1.96)	2.09 (1.27 to 3.43)	1.32 (1.07 to 1.64)	2.48 (1.62 to 3.36)
		Model 2		1.49 (1.20 to 1.85)	1.81 (1.10 to 2.99)	1.30 (1.05 to 1.62)	2.36 (1.63 to 3.41)
		Model 3		1.48 (1.19 to 1.84)	1.79 (1.08 to 2.96)	1.30 (1.05 to 1.61)	2.31 (1.61 to 3.32)
		Model 4		1.66 (1.33 to 2.07)	2.15 (1.27 to 3.63)	1.19 (0.96 to 1.49)	1.96 (1.34 to 2.85)
	Inpatient	Model 1	4152	1.32 (0.98 to 1.77)	2.06 (1.14 to 3.71)	1.28 (0.98 to 1.67)	3.10 (2.04 to 4.71)
		Model 2		1.31 (0.97 to 1.77)	2.03 (1.12 to 3.68)	1.26 (0.96 to 1.65)	2.97 (1.96 to 4.48)
		Model 3		1.27 (0.94 to 1.72)	1.87 (1.03 to 3.43)	1.25 (0.95 to 1.63)	2.85 (1.87 to 4.33)
		Model 4		1.32 (0.97 to 1.79)	2.03 (1.10 to 3.76)	1.20 (0.91 to 1.58)	2.76 (1.80 to 4.22)
Unmet need for medical care	Previous year	Model 1	2780	0.57 (0.41 to 0.80)	1.59 (0.53 to 4.73)	–	–
		Model 2		0.54 (0.38 to 0.75)	1.39 (0.45 to 4.31)	–	–
		Model 3		0.56 (0.40 to 0.79)	1.55 (0.49 to 4.92)	–	–
		Model 4		0.72 (0.50 to 1.03)	2.53 (0.71 to 9.06)	–	–
	Previous month	Model 1	4131	–	–	1.02 (0.86 to 1.22)	1.11 (0.76 to 1.60)
		Model 2		–	–	0.99 (0.82 to 1.18)	1.01 (0.71 to 1.45)
		Model 3		–	–	0.99 (0.83 to 1.19)	1.02 (0.71 to 1.46)
		Model 4		–	–	0.98 (0.82 to 1.18)	1.02 (0.71 to 1.48)

Conversely, that gap between inpatient service use for those with high and minimal mental health difficulties increased across the study period. The pathway to utilisation of inpatient services is different to that of outpatient services. Particularly during periods of conflict, and public health crises (e.g. the COVID-19 pandemic), admittance to an inpatient service is a medical necessity, regardless of personal, interpersonal and structural barriers. It is possible that the utilisation gap has widened as a result of an increase in those with high levels of mental health difficulties presenting to inpatient services with advanced symptoms that could have previously been treated at outpatient services. However, there is a bidirectional relationship between inpatient utilisation and mental health distress,[38] and further research is necessary to unpick the complex nature of this widening gap.

Unmet need for healthcare services

Utilising healthcare services does not necessarily equate to the fulfilment of healthcare needs. As the particular type of health service accessed by participants cannot be distinguished, there is no certainty that the mental health needs of those with the highest levels of mental health difficulties are being met. Indeed, 27% of those respondents in Wave 1 indicated an unmet need for health care. There are several reasons why the mental health needs of the cohort are not being met. There is significant stigma around the topic of mental health in Sri Lanka, which may contribute to reluctance to disclose mental health difficulties in a healthcare setting. In addition, clinician response to the presentation of mental health-related symptoms may be affected by stigma. Alternatively, somatisation of mental health may lead to the treatment of physical symptoms without addressing the underlying mental health cause. Again, somatisation can affect unmet need twofold: a patient may not be aware of the link between their symptoms and mental health or may feel disclosure of physical symptoms is more likely to lead to effective treatment; and a practitioner may (1) not recognise underlying mental health difficulties, (2) prioritise physical symptoms and/or (3) not be trained in mental health.

Strengths

A key strength of this study is that it utilises a large, nationally representative sample. To our knowledge,

this study is the first population prevalence estimate for common mental health difficulties in Sri Lanka across the adult population. Moreover, this study provides longitudinal prevalence estimates, highlighting changes in prevalence between two critical periods for Sri Lankans pre- and post-COVID-19. Furthermore, surveys were completed at critical stages in times when the population was facing significant social, political and economic unrest. Therefore, the surveys have captured mental health difficulties during a particularly challenging period of time for Sri Lankans, when they have experienced significant barriers to meeting their basic needs such as access to food and fuel in 2022.

Limitations

This study explores common mental health difficulties measured by the PHQ and DASS – depression, stress and anxiety; however, it does not provide insight into more complex or less common mental health disorders. Additionally, it was not possible to capture whether people with mental health difficulties used or accessed mental health care, distinct from health care more broadly. Although data on self-reported reasons for using medical care were collected in Wave 1, the reported percentage of visits was too low to include in the analysis, possibly due to systematic under-reporting. Similarly, the differences in questions asked between Wave 1 and Wave 2, and the proportion of people asked, limit conclusions that can be drawn around healthcare use and access. As such, only the prevalence estimates are longitudinal, while the estimates of use and access to medical care are cross-sectional, and therefore could not be compared between time periods.

It is unknown whether negative attitudes towards mental health may have led to underestimation of mental distress in this study. As noted above, due to the COVID-19 pandemic, Wave 1 was undertaken in-person and Wave 2 via telephone, which may have further deterred disclosure of mental health difficulties during this time period. Although this has not yet been analysed among Sri Lankan adults, there is evidence that the PHQ performs well in phone modality.[39] It would be beneficial for future studies to investigate issues related to measuring mental health, applicability and cultural safety of mental health measures.

Equality, diversity and engagement

The sampling design[28] prioritised coverage of all demographics including socioeconomically disadvantaged communities by maximising the number of clusters in relation to the overall sample size, explicitly including socioeconomic indicators in the stratification of PSUs within the sampling frame and ensuring that all districts and sectors within districts were covered in the final sample. To include participants from all ethnicities who speak different languages, interviews were carried out by a team of field staff who spoke Sinhala, Tamil and English. If the selected participant spoke a language not spoken by the interviewer, the interview was rescheduled to another time by another interviewer. Following the ISIS terrorist attacks in April 2019, there was a fall in Muslim response rates, and it became unfeasible to survey one predominantly Muslim PSU due to security reasons. Despite replacing this PSU with a substitute from the same stratum matching by district, sector and level of socioeconomic development, it was not possible to match the ethnic profile of the original PSU. During the analysis stage, under-representation of specific ethnic groups or geographical regions in the final sample was directly dealt with by unweighting that took into account these characteristics. Regarding diversity of the research team, there was a range of expertise, spanning epidemiology, social science, public health and statistics. Three of the paper's authors are early career researchers.

Community engagement and involvement

The SLHAS has maintained contact with its participants by sending all participants a newsletter updating them on progress and developments in the study, and including postcards for participants to send back feedback, which many have. The SLHAS also makes efforts to widely communicate its research findings and publications to the general public via social media and the local news media.

Conclusion and recommendations

This study estimates the prevalence of common mental health difficulties for Sri Lankans and healthcare use and access by demographic features using a nationally representative data set of adults. It found that 2.9% of Sri Lankans experienced high mental health difficulties during 2018–9 and 6.1% in 2021–2. It shows that there was a statistically significant increase in prevalence between 2018–9 and 2021–2. Those groups that were disproportionately affected by an increase in mental health difficulties were also at increased risk of exposure to the health and sociopolitical crises afflicting Sri Lanka. This suggests the need for targeted interventions to support the mental health needs of older adults and socially and racially minoritised population adults.

The study also found an overall decrease in the use of healthcare services, and while those with high mental health difficulties reported high levels of unmet need for health care, when compared to those with the lowest levels of mental health difficulty, the difference was not found to be significant. This is an important study that

explores mental health in Sri Lankans during critical time periods where the country experienced the trauma of terrorist attacks, ethnicity-based violence and the COVID-19 pandemic. In addition, the lessons learnt from how mental health and healthcare access and use were measured in this study allows us to strengthen methods for future studies and make them more robust, allowing for longitudinal analyses of healthcare use and access for those experiencing common mental health difficulties.

Additional information

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Thilagawathi Abi Deivanayagam (https://orcid.org/0000-0002-1130-2333) (NIHR Academic Clinical Fellow in Public Health) contributed to study design and data acquisition, co-ordinated the analysis and drafting process and drafted the manuscript.

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Ravindra Prasan Rannan-Eliya (https://orcid.org/0000-0002-5013-2816) (Executive Director at the Institute of Health Policy, Sri Lanka) conceived, designed and managed the data acquisition.

SLHAS Collaborators conceived, designed and managed the data acquisition.

All authors contributed to editing the manuscript and read and approved the final version of the manuscript.

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Data-sharing statement

Any queries on the new data created in the preparation of this article should be submitted to the corresponding author for consideration. Access to anonymised data may be granted following review.

Ethics statement

Ethical approval for the SLHAS data collection was obtained from the Sri Lanka Medical Association (ERC/18-022). Data for this study were requested from the Institute of Health Policy, Colombo, Sri Lanka.

Information governance statement

University College London (UCL) is committed to handling all personal information in line with the UK Data Protection Act (2018) and the General Data Protection Regulation (EU GDPR) 2016/679. Under the Data Protection legislation, UCL is the Data Controller.

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List of abbreviations

aOR	adjusted odds ratio
DASS	Depression Anxiety Stress Scales
NIHR	National Institute for Health and Care Research
PHQ	Patient Health Questionnaire
PSU	primary sampling unit
SE	standard error
SLHAS	Sri Lanka Health and Aging Study
WHO	World Health Organization

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