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Original Article

Perceived stress among Sri Lankans during the economic crisis: an online survey

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Abstract

Background: The Sri Lankan population's mental health was undoubtedly significantly impacted by the county's economic crisis. This study investigated the prevalence of perceived stress and its socio-demographic predictor.

Methods: A web-based cross-sectional survey was undertaken in July-August 2022, using google forms. The respondents were assessed for socio-demographics, and the level of stress experienced over the previous month. Ten-item self-reported perceived stress scale (PSS) was used to assess stress levels analysis. Descriptive statistics and logistic regression analysis were used.

Results: A total of 1214 respondents, aged ≥18 years were included in the survey. The majority were females (60%). The mean PSS score of this population was 21.95 ±6.09. More than half of the respondents reported moderate levels of stress (68.5%), while 23% registered high levels. A significant association was demonstrated between stress levels and variables age, gender, and residential area. Respondents below the age of 40 years (OR 1.936, 95% CI, 1.365-2.748, P<0.001) were more likely to report higher odds of having increased PSS scores, while men (OR 0.640, 95% CI, 0.491-0.835, P=0.001), and those without children (OR 0.556, 95% CI, 0.409-0.756, P<0.001) had significantly lower odds of reporting PSS.

Conclusion: Respondents experienced moderate to high levels of stress during the financial crisis in Sri Lanka. Higher stress was predicted by younger age, female gender, and having children. The results highlight the urgent need for stress management interventions to boost resilience and improve psychological well-being in this situation.

Keywords: Economic Crisis; Mental Health; Perceived Stress, Sri Lanka

Background

Sri Lanka is facing the worst economic crisis since its independence in 1948, which has led to a shortage of food, fuel, medicine, cooking gas, and other essential supplies [1]. Despite significant expenditures in infrastructure projects and a growth rate that was essentially consistent between 2013 and 2019, Sri Lanka's story was marred by several premature and poorly managed economic policies that contributed to the current collapse [2]. The supply chain disruptions following the Coronavirus disease 2019 (COVID-19) pandemic and the Russia-Ukraine conflict are just two examples of external causes that have exacerbated the disaster [2]. Moreover, increased government spending to implement COVID-19 alleviation measures and the nation's mounting external debts have further damaged the domestic economy structurally [3]. Sri Lanka's real Gross Domestic Production (GDP) is expected to fall by 9.2% in 2022 and a further 4.2% in 2023 [4]. In July 2022, inflation in the country hit a record high of 54.6% while food inflation rose to 80.1% [5]. Sri Lanka's unemployment rate increased to 5.0% in September 2022, from the previously reported figure of 4.6% in June 2022 [6]. The long-lasting impacts of the economic crisis influence many facets of individual behavior and national well-being. According to research on the social determinants of mental health, social, economic, and welfare systems, all have an impact on people's health [7]. Therefore, mental health should be a health area regarded as possibly vulnerable during a recession [8]. Economic crises may worsen protective elements like job stability and welfare protection programs while also posing an increased risk of mental illness by raising risk variables like unemployment, reduction in income, repossession of houses, evictions, debt, family disruption, poor quality of life and loss of socioeconomic status [9]. For instance, these events have been related to poor psychological health, life dissatisfaction, an elevated risk of mortality, suicide, and several mental distress indicators such as anxiety, depression, loss of confidence, and

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reduction of self-esteem [10-12]. Chronic stress negatively influences health and well-being in relation to mental health, cardiovascular disease, diabetes, and obesity [13]. Recent evaluations analyzing the health effects of economic crises have shown a substantial association between these periods and psychopathology, including suicide, the onset or severity of mood and anxiety disorders, heavy drinking, and psychological discomfort. Empirical studies conducted in Italy showed that the consequences of the economic downturn included increased workplace stress and, in some cases, the onset of mental illness [14, 15]. Additionally, according to a series of longitudinal studies conducted in the 1980s in the USA by Conger et al., on the social and psychological effects of a recession on farming communities, it was revealed that economic pressure increased depression and demoralization in parents, which in turn contributed to marital conflicts [16-18]. Without a doubt, the economic crisis majorly affected the mental health of the Sri Lankan people. The recent research that investigated the immediate effects of the economic crisis in Sri Lanka has found that children's and young people's mental health is declining [19, 20]. Therefore, this study aimed to identify the prevalence levels of perceived stress within the community as well as to identify potential socio-demographic predictors of increased risk of stress during the economic crisis.

Methods

Study design and participants

This was an online cross-sectional survey that was carried out among Sri Lankan adults (age≥ 18 years) in July-August 2022 using Google Forms. Volunteers were invited to participate in the survey by posting a link to the e-questionnaire on social media websites. The survey was conducted in compliance with the guidelines outlined in the Helsinki Declaration [21]. The ethical permission for the study was obtained from the Ethics Review Committee, Nawaloka Hospitals Research and Education Foundation, Colombo, Sri Lanka (Ref No: NHREF-2022-7/3). All participants were fully informed about the study's purpose, privacy policies, and data processing. Participants responded anonymously to the electronic questionnaire after giving informed consent.

Samples Size

The sample size was determined using the online Raosoft sample size calculator [22]. For this calculation, we assumed: a) a Sri Lankan population of 14.4 million, b) a 50% response rate, and c) an expected 20% rate of incomplete forms given the online nature of the survey. This calculation yielded a sample size of 385 with a 95% confidence level and a 5% margin of error. Considering the potential dropouts, the minimal required sample size was adjusted to 482. However, after eliminating duplicate and incomplete entries, a total of 1214 respondents meeting the study's criteria were included in the final analysis.

Inclusion and exclusion criteria

To be eligible for the study, participants must: a) be aged 18 years or older, b) reside in Sri Lanka, and c) hold Sri Lankan nationality. Those unable to give informed consent and participants with unfinished questionnaires were excluded from the study.

Study tool

The questionnaire consisted of 2 parts and was available in all three official languages: English, Sinhala, and Tamil. The first part of the questionnaire inquired about the socio-demographic and socio-economic background of the respondents and the second section measured the level of stress experienced over the last month. In the first part of the survey, respondents were asked about their gender, age, district, residential area (inner city, suburban, and rural), ethnicity (Sinhalese, Sri Lankan Tamil, Indian Tamil, Moors, and Others), educational status (secondary education or below, tertiary education, degree/diploma or above), number of family members, children (having children or not), employment status, and monthly income. In the second section, psychological stress was assessed using the 10-item Perceived Stress Scale (PSS-10), a tool that has been validated across different populations [23]. The PSS-10 is a self-reported scale to measure the global level of perceived stress [24]. The PSS-10 measures how much a person feels their life is out of their control, unpredictable, and overloaded. Each question asks participants to rate how frequently they have felt or thought a particular way during the previous month on a 5-point Likert scale, with 0 being the least frequent and 4 being the most frequent (0 = never, 1= almost never, 2 = sometimes, 3 = fairly often, 4 = very often). The PSS-10 includes two subclasses: subclass 1 (Perceived Helplessness) is made of six negatively phrased items (i.e., items 1, 2, 3, 6, 9, and 10; e.g., "how often have you felt that you were unable to control the important things in your life"); and subclass 2 (Perceived Self-Efficacy) is made of four positively phrased items (i.e., items 4, 5, 7, and 8; e.g., "how often have you felt that things were going your way"). Scores for positively phrased items were reversed to obtain the total score and subscale score for Factor 2 (Perceived Self-Efficacy). Scores range from 0 to 40, with higher composite scores indicating greater perceived stress. The PSS scores ranging from 0–13 would be considered as low self-perceived stress. Scores ranging from 14–26 would be considered moderate self-perceived stress. Finally, scores ranging from 27–40 would be considered as high self-perceived stress.

Statistics analysis

Descriptive statistics were employed to explore the demographic parameters of the study sample. Categorical variables were expressed as frequency and proportion, while continuous variables were expressed as mean and standard deviation. Mean, standard deviation, frequency count, and percentages were calculated for the perceived stress. The Chi-square test was used to find the association of perceived stress groups (low, moderate, and high stress) with socio-demographic variables. A multivariate analysis was run to predict the PSS score (dependent variable) from the independent variables that showed statistically significant/ near significance association with higher PSS scores on univariate analysis. Crude Odds Ratios (OR) and Adjusted Odds Ratios (AOR) and their 95% confidence intervals (CI) were calculated. For regression analysis respondents with PSS $\geq$ 20 were considered "stressed" while those with PSS $<$ 20 were considered "not stressed". Statistical significance was accepted as $P < 0.05$. All analyses were carried out with the IBM SPSS statistics version. 23.0 (IBM, Chicago, IL, USA).

Results

The socio-demographic characteristics of the respondents are presented in Table 1. A total of 1214 participants were included in this study analysis, including 60% females and 40% men. The mean age of the survey population was 35.08±9.54 years, while most of the respondents were in the age range of 18-34 years. Among the respondents, 42.7% were from the Colombo district, and 38.6% were living in rural areas. The majority of the respondents had a degree-level education (84.1%) and were employed (78.2%). Around 16.4% of the sample was receiving no monthly income. A monthly income of less than 50,000 was earned by 22.5% of respondents, and a monthly income of more than 200,000 LKR by 17.0%. The average family size was 4.11 (1.29), with over half of the respondents (54.1%), having three to four members in the families. Only 36.2% of respondents reported having kids. The mean PSS score of this population was 21.95 ±6.09, with an absolute range of 0–40, median of 22, and inter-quartile range of 18–26. In general, 8.6% of the respondents had low stress, 68.5% had moderate stress, and 23.0% had high stress. As demonstrated by Table 1, there was a significant association between the levels of stress and sociodemographic variables such as age, sex, and place of residence (P<0.05).

Table 1: COVID-19 variants detected in patients entering the northern international border checkpoint in Duhok province, Iraq

Variables	Overall n (%)	Low stress n (%)	Moderate stress n (%)	High stress n (%)	P-value*
Age					
18-30 years	453 (37.3)	37 (3.2)	300 (26.3)	116 (10.2)	**0.027**
31-40 years	397 (32.7)	25 (2.2)	277 (24.3)	95 (8.3)	
>40 years	290 (23.9)	35 (3.1)	201 (17.6)	54 (4.7)	
Age not reported	74 (6.1)	-	-	-	
Sex					
Men	486 (40.0)	50 (4.1)	355 (29.2)	81 (6.7)	**<0.001**
Women	728 (60.0)	54 (4.4)	476 (39.2)	198 (16.3)	
District					
Colombo	518 (42.7)	44 (3.6)	348 (28.7)	126 (10.4)	0.629
Others	696 (57.3)	60 (4.9)	483 (39.8)	153 (12.6)	
Place of residence					
Inner-city	333 (27.4)	21 (1.7)	225 (18.5)	87 (7.2)	**0.011**
Suburban	413 (34.0)	27 (2.2)	293 (24.1)	93 (7.7)	
Rural	468 (38.6)	56 (4.6)	313 (25.8)	99 (8.2)	
Education					
up to O/L or below	22 (1.8)	2 (0.2)	17 (1.4)	3 (0.2)	0.692
up to A/L	171 (14.1)	17 (1.4)	111 (9.1)	43 (3.5)	
Degree or above	1021 (84.1)	85 (7.0)	703 (57.9)	233 (19.2)	
Employment status					
Employed	949 (78.2)	75 (6.2)	659 (54.3)	215 (17.7)	0.251
Unemployed	161 (13.3)	21 (1.7)	102 (8.4)	38 (3.1)	
Full-time student	104 (8.6)	8 (0.7)	70 (5.8)	26 (2.1)	
Monthly family income (in LKR)					
No income	199 (16.4)	18 (1.5)	129 (10.6)	52 (4.3)	0.186
< 50,000	273 (22.5)	25 (2.1)	174 (14.3)	74 (6.1)	
50,000-100,000	263 (21.7)	24 (2.0)	182 (15.0)	57 (4.7)	
100,000-200000	273 (22.5)	19 (2.0)	191 (15.7)	63 (5.2)	
>200000	206 (17.0)	18 (1.5)	155 (12.8)	33 (2.7)	
Family size					
1-2	128 (10.5)	15 (1.2)	88 (7.2)	25 (2.1)	0.355
3-4	657 (54.1)	56 (4.6)	439 (36.2)	162 (13.3)	
5 or more	429 (35.3)	33 (2.7)	304 (25.0)	92 (7.6)	
Children					
No children	744 (63.8)	77 (6.3)	519 (42.8)	178 (14.7)	0.068
Have children	440 (36.2)	27 (2.2)	312 (25.7)	101 (8.3)	

*Chi--square test; Bold p-values denote statistical significance at the p<0.05 level

The participant's responses to the 10-PSS are shown in Table 2 below. The following trends were observed in the month preceding the survey: 52.4% of the respondents (fairly or very) often experienced that they were unable to control the important things in their life; 52.1% were often upset because of something that happened unexpectedly; 41.7% of the respondents said they often felt nervous and stressed; 38.6% often felt that difficulties were piling up so high that they could not overcome them; 37.4% said they often felt angry due to things that happened outside of their control; 26.1% often found that they could not cope with all the things that they had to do. Conversely, 39.4% of the respondents often felt confident in their ability to handle personal problems, 30.2% said that they were often able to control irritations in their lives; 22.2% often experienced that they were on top of things and 12.1% often felt that things were going their way.

Table 2: Responses to the Perceived Stress Scale

Items	Never n (%)	Almost never n (%)	Sometimes n (%)	Fairly often n (%)	Very often n (%)
1. Felt upset due to something happened unexpectedly	77 (6.3)	118 (9.7)	387 (31.9)	405 (33.4)	227 (18.7)
2. Felt unable to control the important things in life	112 (9.2)	140 (11.5)	326 (26.9)	376 (31.0)	260 (21.4)
3. Felt nervous and stressed	101 (8.3)	150 (12.4)	457 (37.6)	362 (29.8)	144 (11.9)
4. Felt confident about your ability to handle your problems	94 (7.7)	218 (18.0)	423 (34.8)	282 (23.2)	197 (16.2)
5. Felt that things were going your way	259 (29.6)	379 (31.2)	328 (27.0)	111 (9.1)	37 (3.0)
6. Could not cope with all the things that you had to do	120 (9.9)	235 (19.4)	542 (44.6)	249 (20.5)	68 (5.6)
7. Able to control irritations in life	91 (7.5)	267 (22.0)	489 (40.3)	225 (18.5)	142 (11.7)
8. Felt on top of things	109 (9.0)	337 (27.8)	499 (41.1)	199 (16.4)	70 (5.8)
9. Angered by things outside	125 (10.3)	223 (18.4)	412 (33.9)	350 (28.8)	104 (8.6)
10. Felt difficulties were piling up and could not overcome	120 (9.9)	203 (16.7)	422 (34.8)	334 (27.5)	135 (11.1)

According to the univariate analysis, female respondents, those who were younger in age, had children, and those who earned a monthly income between 100,000 LKR to 200,000 LKR all had significantly higher odds of having higher PSS scores (P<0.05) (Table 3). In the multivariate logistic regression analysis, only the variables aged between 18-40 years, being female, and having children were statistically significant with PSS scores at a P value less than 0.05. The odds of having perceived stress among respondents of the age range 18-30 years old was almost 2 times higher compared to the respondents aged more than 40 years (OR 1.94, 95% CI, 1.37-2.75, P<0.001). Similarly, the respondents aged between 31-and 40 years also showed significantly higher odds of having perceived stress than the participants beyond than age of 40 years (OR 1.74, 95% CI, 1.24-2.44, P=0.001). On the other hand, the male participants were significantly less likely to have perceived stress compared to the females (OR 0.64, 95% CI, 0.49-0.84, P=0.001). Additionally, compared to respondents with children, respondents without children were much less likely to report perceived stress (OR 0.56, 95% CI, 0.41-0.76, P<0.001).

Discussion

To the best of our knowledge, this is the first study to investigate the perceived stress of Sri Lankans during the ongoing economic crisis in the country. Respondents to the survey were enrolled from all over the country. However, a higher representation for this online survey was shown by relatively younger people. This might be because of the survey's distribution through social media, which the younger generation uses often. The mean score of the perceived stress scale in this study was 21.95 ±6.09, and high to moderate perceived stress was endorsed by 23%–68.5% of the respondents. Perceived stress levels in this study were slightly higher in comparison to a relatively small number of studies, previously conducted in Sri Lanka [25, 26]. Therefore, it is extremely likely that Sri Lanka's current economic crisis is one of the causes for the comparatively higher levels of perceived stress levels observed in this study. According to the survey results, age, gender, and having children were significant predictors of higher perceived stress. In terms of gender, women reported considerably greater levels of perceived stress than males, which is consistent with the findings of other studies [27-29]. A similar tendency was observed in Finland during the economic downturn, where psychological morbidity increased only for women [30]. A large body of evidence suggests that women typically report higher levels of perceived stress than men, which may be due to their differing roles in home life and employment [31]. In contrast, studies conducted after the 2008 financial crises in China and Australia found no such significant gender differences [32, 33]. The discrepancy in findings on the mental health of women following an economic downturn is not evident, but a combination of biological and societal conditions, such as gender roles, inequality, discrimination, and autonomy may make them more vulnerable to psychological issues [34]. Further, the respondents in the age categories of 18-40 years were significantly more likely to report higher PSS than people aged more than 40 years. Typically, this is the segment of the population that bears the largest share of financial responsibility in society. On the other hand, an economic downturn may be especially tough for young adults who will shortly enter the workforce. Several studies suggest that college students experience economic stress during an economic downturn [35-37]. During an economic recession, undergraduates frequently experience the staggering cost of higher education and the subsequent burden of college debt, as well as the consequences of institutional cost-cutting measures such as increased class size, reduced course offerings, and fewer student support services [38]. Furthermore, it has been reported that since the start of the global economic crisis in 2007, the overall rate of suicide attempts among youngsters in the United States and Europe was three times greater than the rate among individuals over the age of 30 [39]. According to prior research, neither employment status nor monthly income was found to be predictors of perceived stress in the current study. This could be because nearly 80% of the respondents of this survey population are employed and have relatively higher income levels. A review that investigated the relationship between stress and the economic crisis revealed that most of the included studies showed a correlation between an increase in mood disorders, anxiety, depression, dysthymia, and suicide and a rise in unemployment, increased workload, layoffs, and wage reductions [40]. According to a similar study carried out in Finland during the recession, each study year's subjective economic status was substantially correlated with mental disturbance in both sexes.

Table 3: Univariate and multivariate analysis of factors associated with perceived stress

Variables	Univariate analysis		Multivariate analysis	
	OR (95% CI)	**P-value**	**OR (95% CI)**	**P-value**
Age				
18-30 years	1.675 (1.232-2.278)	**0.001**	1.936 (1.365-2.748)	**<0.001**
31-40 years	2.100 (1.519-2.904)	**<0.001**	1.741 (1.241-2.442)	**0.001**
>40 years*	1		1	
Sex				
Men	0.594 (0.465-0.760)	**<0.001**	0.640 (0.491-0.835)	**0.001**
Women*	1		1	
District				
Colombo	0.925 (0.724-1.181)	0.532	-	
Others*	1			
Place of residence				
Inner-city	1.294 (0.956-1.751)	0.095	1.241(0.899-1.715)	0.190
Suburban	1.317 (0.991-1.751)	0.058	1.264 (0.928-1.721)	0.138
Rural*	1		1	
Education				
up to O/L or below	0.978 (0.395-2.422)	0.962	-	
up to A/L	0.963 (0.680-1.362)	0.830		
Degree or above*	1			
Employment status				
Employed	0.937 (0.602-1.458)	0.772	-	
Unemployed	0.818 (0.481-1.393)	0.460		
Full-time student*	1			
Monthly family income (in LKR)				
No income	1.347 (0.892-2.032)	0.156	1.158 (0.718-1.867)	0.548
< 50,000	1.303 (0.891-1.904)	0.172	1.070 (0.691-1.657)	0.762
50,000-100,000	1.419 (0.965-2.087)	0.075	1.301 (0.851-1.990)	0.224
100,000-200000	1.580 (1.073-2.325)	**0.020**	1.406 (0.923-2.140)	0.112
>200000*	1		1	
Family size				
1-2	0.741 (0.490-1.119)	0.154	-	
3-4	1.001 (0.769-1.303)	0.993		
5 or more*	1			
Children				
No children	0.615 (0.474-0.799)	**<0.001**	0.556 (0.409-0.756)	**<0.001**
Have children*	1		1	

*Reference variable, Bold p-values denote statistical significance at the p<0.05 level; CI- confidence interval; OR- odds ratio; P- probability value.

Further, nearly 50% of people who thought of their economic conditions as poor also had mental disorders [30]. Additionally, our research revealed that respondents with kids were more likely to experience higher levels of stress than those without kids. Poor economic conditions can make parents more stressed even if their employment situation remains the same because there are fewer options for the unemployed to obtain work and more job instability among working people [41]. Additionally, it has been found that parental stress from financial hardship affects children's emotional well-being and cognitive development [42]. A systematic review conducted by Rajmil et al. to examine how the 2008 financial crisis affected kids and young people revealed a rise in newborn mortality in Greece during the financial crisis [43]. However, this study is associated with several limitations. The survey's participants tended to be younger, employed more frequently, and well-educated. The study population might not have included the illiterate people in Sri Lanka. Therefore, the results must be understood in the context of potential selection bias, and generalizability may be limited. Second, the data were self-reported by the participants which could lead to recall bias. Third, some factors linked to depression, like social support, health, and pre-existing psychiatric problems, were not studied. Also, it was impossible to determine the causal relationship between depression and other variables because of the study's cross-sectional methodology. Despite all the limitations, this study provides information on the perceived stress of Sri Lankans during the peak time of the economic crisis in the country. Hence, this research will serve as the starting point for potential therapies and interventions that might be given to vulnerable people during the crisis period which is still ongoing. Although the long-term effects of the current crisis on mental health and the services that support it won't be understood right away, we may infer from the past that they won't likely be good. Therefore, it is advised to conduct large-scale future studies with participants from various social backgrounds to identify more vulnerable populations and create effective coping mechanisms to avoid the potentially harmful effects of stress.

Conclusion

In summary, our findings showed that the population had a prevalence of 23% high and 68.5% moderate perceived stress levels, respectively. Results confirmed that stress seemed to be attributed to gender, age, and having children. Particularly, respondents aged less than 40 years, females, and having children were more likely to experience higher stress levels. Therefore, early intervention to manage stress is strongly recommended.

Abbreviation

COVID-19: Coronavirus disease 2019; GDP: Gross Domestic Production; PSS-10: 10-item Perceived Stress Scale; SPSS: Statistical Package for Social Science; CI: Confidence Interval; AOR: Adjusted Odds Ratios; LKR: Sri Lankan Rupees

Declaration

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Availability of data and materials

Data will be available by emailing ghazwan.ahmed@uod.ac

Authors' contributions

Piumika Sooriyaarachchi (PS), and Ranil Jayawardena (RJ) conceived and designed the online survey questionnaire; distributed the questionnaire; PS analyzed and interpreted the data; PS drafted the manuscript; RJ revised the manuscript. All authors read and approved the final manuscript. All authors have read, reviewed, and approved the final manuscript.

Ethics approval and consent to participate

We conducted the research following the declaration of Helsinki. The ethical approval was obtained from the Ethics Review Committee, Nawaloka Hospitals Research and Education Foundation, Colombo, Sri Lanka (Ref No: NHREF-2022-7/3). Informed consent was obtained from the participants before filling out the survey questionnaire

Consent for publication

Not applicable

Competing interest

The authors declare that they have no competing interests.

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