The impact of COVID-19 on healthcare accessibility and financial risk protection in Sri Lanka

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Abstract

Introduction: The COVID-19 pandemic negatively impacted the global economy, disrupted essential health services, and distorted social determinants of health, reducing healthcare accessibility and increasing financial risk.

Aim: We aimed to assess the impact of COVID-19 on healthcare accessibility and financial risk protection in Sri Lanka.

Methodology: We conducted a cross-sectional study on a representative sample (multi-stage sampling process) of 3151 households in 105 clusters representing all the districts of Sri Lanka. The data collection was conducted using an interviewer-administered questionnaire in early November 2021. This was important to classify three periods of interest, namely: (1) the pre-lockdown period (2) the nationwide lockdown period, and (3) the new normal period. (After Oct 1 to early November 2021).

Results: Among 11,463 household occupants, 12.6% reported having chronic diseases, with 76.5% diagnosed prior to six months. The majority had heart disease, high blood pressure, or diabetes. Of them, 53.7% have been followed up during the lockdown, increasing to 80.8% in the new normal period. Provincial variations in expenses were observed, with the highest food expenses in the Western Province. Catastrophic health expenditures affected 9.5% and 3.4% of households at 10% and 25%, respectively.

Conclusions: A considerable proportion of those having heart disease, high blood pressure, high blood sugar or diabetes mellitus were not followed up in the lockdown period and the first month of the new normal period. Antenatal care and family planning were the least affected. Participants had incurred high out-of-pocket expenditures for healthcare during the entire period.

Introduction

The Corona Virus Disease of 2019 (COVID-19) pandemic had a damaging impact on all major sectors of the world economy. Disruption of essential health service delivery through multiple pathways had a damaging impact on the health systems globally.

COVID-19 pandemic affected the Sri Lankan health system in many ways. The social determinants of health were distorted due to the negative impact on social support systems, income, transport, and access to health care. Closing schools and formal and informal education centres decreased opportunities for targeted health interventions such as the school health programme [1]. People's health-seeking behaviour was negatively affected due to the fear of accessing care [2]. Extensive lockdowns resulted in reduced access to health services. Within the family, lack of social contacts and reduced income led to limited access to food and other supplies, causing undernutrition. Increased psychological stress leading to gender-based violence, poor mental well-being and an increased tendency to substance abuse were common [2]. The negative impact on education and social opportunities created stress and mental health issues among children and adolescents [1]. Health facilities and staff were re-assigned to cater to the needs of an increasing number of COVID-19 patients. Diversion of the health workforce disrupted the delivery of routine essential services [3]. Disruption of regular health education and counselling programs, disruption of food supplementation and growth monitoring programs also contributed to a poor nutritional level of the community [4].

Higher incidence of COVID-19 related hospitalizations, intensive care admissions and morality was

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observed among people living with underlying chronic medical conditions compared to those who do not have them. Most people who lost their lives due to COVID-19 were older patients [5]. This situation was intensified by reduced access to regular care for older people with multiple co-morbidities needing continuous healthcare. Children and adolescents experienced low access to sexual and reproductive health and mental health services, delayed vaccination, and a greater risk of depression, anxiety and online harassment [4].

In this background, we aimed to assess the impact of COVID-19 on healthcare accessibility and financial risk protection.

Methodology

We conducted a cross-sectional study on a representative sample from all 25 administrative districts of Sri Lanka. The data collection tool was created to gather data on genders and all age groups. The study unit was a household, and an adult male or female who could provide information on all members of the household was asked for the relevant information on each member.

The sample of households was identified from 105 clusters selected proportionate to the population of all districts (n=25). Each cluster included 30 households. The data collection was completed in 3151 households. A multi-stage sampling process was used. Firstly, the required number of DS divisions were selected using simple random sampling. Secondly, one GN division was chosen from the selected DS divisions using simple random sampling. Thirdly, a random geographical starting point was selected within sampled GN divisions, for cluster sampling. Thirty consecutive houses in one direction from this point were sampled and surveyed.

An interviewer-administered questionnaire containing questions on (1)essential demographic characteristics, (2)healthcare accessibility and quality, and (3)financial protection was administered at the household level in each cluster. Data collectors with extensive field data collection experience pretested and administered the questionnaires. KOBO Collet Data Collection Tool was used to facilitate electronic data collection using hand-held electronic devices.

The data collection was conducted in early November 2021. This was important to classify three periods as (1) the pre-lockdown period (before Aug 20 2021), (2) the nationwide lockdown period (from Aug 20 2021 to Oct 1 2021) and (3)the new normal period (After Oct 1 to the early November 2021).

Data analysis was performed using Statistical Package for Social Sciences (SPSS) version 17. Categorical data were presented using proportions/percentages. Chi-squared test was used to assess the significance. The out-of-pocket expenditure (OOPE) for direct health care costs and non-health care costs and the proportion of catastrophic health expenditure (CHE) were estimated. The CHE was estimated using the ratio between out-of-pocket total medical expenditure and total household income, and the CHE threshold was considered as 25%.

Ethical clearance was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Kelaniya (Ref.No:P/47/04/2021). Administrative approval was obtained from the Director General of Health Services, the Ministry of Health, and regional and institutional authorities.

Results

There were 11,463 family members (males=48%, n=5,498) in the surveyed households (n=3,151). Over a quarter of the sampled population was from the Western Province (28.3%, n=3243). The majority were Sinhalese (71.1%, n= 8152) in ethnicity and Buddhists (67.7%, n= 7762) by religion (Table 1). About 1% (n=117) reported a disability. Out of those who had a disability, the commonest type of reported disability involved lower limbs (32%). Disability due to mental illness accounted for 24% of all disabilities.

Table 1. Selected demographic factors of the study population

Characteristic	*n (%)*
Age	
≤ 5 years	733 (6.4)
> 5 to 18 years	2562 (22.4)
> 18 years to 60 years	6466 (56.4)
> 60 years	1702 (14.8)
Ethnicity	
Sinhalese	8152 (71.1)
Sri Lankan Tamils	1746 (15.2)
Moor	1132 (9.9)
Indian Tamils	396 (3.5)
Other	37 (0.4)
Religion	
Buddhists	7762 (67.7)
Hindus	1782 (15.5)
Islamic	1154 (10.1)
Roman Catholic/other Christian	765 (6.7)
Province	
Central	1323 (11.5)
Eastern	1130 (9.9)
North-Central	611 (5.3)
North-Western	1413 (12.3)
Northern	631 (5.5)
Sabaragamuwa	1102 (9.6)
Southern	1411 (12.3)
Uva	599 (5.2)
Western	3243(28.3)
Total	**11463 (100.0)**

About 35% (n=3,998) of the study population was engaged in economic activities. Of them, 1,654 (41.4%) were employed in the private sector, while 730 (18.3%) were employed in the government sector.

Healthcare accessibility and quality

Based on the household survey, 1449 (12.6%) household members reported having a chronic disease at the time of the survey. Out of the members with a chronic illness, 76.5% (n=1108) stated that their condition was identified six months ago and need to be followed up regularly. Most of them (1084 out of 1108) had heart disease, high blood pressure, high blood sugar or diabetes mellitus. Of them, only 582 (53.7%) were followed up in a health institution during the lockdown period and 876 (80.8%) during the first month of the new normal period.

Table 2 gives the distribution of the patients based on age category, disability, and institutions that they are seeking follow-up. Most were followed up in a government allopathic health institution (n=564, 52%). However, this proportion had dramatically reduced during the lockdown period and the early new normal period. Those who are disabled and those who were followed up at the government health institutions were affected more than non-disabled and those who were followed up in the private sector.

The reasons for not visiting a health institution for follow-up varied among the study population. The distance maintained and the physical barriers imposed between the client and the healthcare providers were the key reason (26.1%, n=142) for not coming to the hospital during the lockdown period. Some have not visited the hospital during the lockdown period (19.9%, n=108) due to the fear of acquiring COVID-19 infection in the hospital. About 18% (n = 99) were not attending follow-ups due to the unavailability of their private doctor during the lockdown period. Out of the participants who reported having a chronic disease (n=1449) at the time of the survey, 1192 needed regular medicines. Of them, 1167 (75%) have received regular medicine during the lockdown period; only 2.1% (n=25) have not received the appropriate medication. Most of those who did not receive the medicine were in the low-income category (80%, n=20). The key reason for not being able to receive the medicine during the lockdown period was unaffordability of transport or medications. For those who did not visit a health facility during the new normal period, the key reason was the long waiting time (n=92, 46.5%).

Table 3 gives the prevalence of self-reported disease conditions according to age categories. The prevalence of heart disease or high blood pressure was 6.8%, while self-reported high blood sugar/diabetes mellitus was 6.6% among adults aged 18 to 69.

Table 2. Distribution of patients who are being followed up for a heart disease/high blood pressure/high blood sugar during the lockdown and new normal period (same cohort of patients followed up in the pre-COVID period)

	Pre-lockdown n (%)	*Lockdown n (%)*	*New-normal n (%)*
Age			
Age 60 years or less	497 (45.8)	254 (43.6)	378 (43.2)
Age over 60 years	587 (54.2)	328 (56.4)	498 (56.8)
		χ^2=1.16, DF=2, P=0.45	
Disability			
Yes	43 (4.0)	1 (0.2)	6 (0.7)
No	1041 (96.0)	581 (99.8)	870 (99.3)
		χ^2=39.68, DF=2, P< 0.01	
Health seeking institute			
Allopathic – Government	564 (52.0)	30 (5.2)	32 (3.7)
Allopathic – Private	474 (43.7)	300 (51.5)	460 (52.5)
Traditional – Government or Private	46 (4.2)	252 (43.3)	384 (43.8)
		χ^2=945.1, DF=4, P< 0.01	
Total	**1084 (100.0)**	**582 (100.0)**	**876 (100.0)**

Table 3. Prevalence of selected chronic diseases

	Less than 18 years	*18 to 69 years*	*More than 69 years n (%)*	*Total*
Family members suffer from a self-reported chronic disease				
Heart condition/ high blood pressure*				
Yes	8 (0.2)	504 (6.8)	241 (31.7)	753
No	3287 (99.8)	6902 (93.2)	519 (68.3)	
High blood sugar/diabetes mellitus**				
Yes	1 (0.0)	486 (6.6)	160 (21.1)	647
No	3294 (100.0)	6920 (93.4)	600 (78.9)	
Total	**3295 (100.0)**	**7406 (100.0)**	**760 (100.0)**	**1400**

Four per cent (n=458) of the study sample experienced an acute illness or related symptoms within the four weeks prior to the administration of questionnaire (i.e. new normal period). The commonest was fever (45.9%). Among those who reported an acute illness or symptoms of an acute illness, 85.2% (n=390) sought healthcare services from a health institution. The main reasons for not seeking healthcare services were: (1) the perception that non-medicinal and traditional therapies were sufficient for the condition (n=21, 30.9%), and (2) feeling unsafe due to the fear of acquiring COVID-19 infection (n=20, 29.4%).

There were 88 pregnant women in the sample. Among the currently pregnant women, 83% (n=73) reported that their area PHM visited or called to check their condition during the lockdown period. Most pregnant women (67%, n=59) have attended a clinic conducted by the Medical Officer of Health (i.e. antenatal clinic) during the lockdown period. The key reason for not attending the antenatal clinic was "feeling unsafe to attend an antenatal clinic" (n=13, 44.8%).

Family planning methods were used by 52.3% (n=1280) of the married women between 18 to 49 years of age. However, 572 married women between the age of 18 to 49 years have not given consent for administering questions related to family planning. Of the consented current family planning users, about 58% did not need the medical services to continue the family planning method during the lockdown period. Within the last three months, 97.5% of the women had no difficulties obtaining or continuing their preferred family planning methods. Only seven women stated in the household questionnaire that they had difficulties obtaining family planning methods in the last three months.

Financial protection

The median healthcare cost incurred during the last 30-day period was Rs. 1500.00 (interquartile range (IQR)=Rs. 250.00). Out-of-pocket expenditure was primarily incurred on channeling specialists, investigations, and medications. Expenditure incurred increased during and after the COVID-19 pandemic. The median food-related expenditure per household was Rs. 20,000.00 (IQR: Rs. 13,000.00). Remarkable provincial variations were observed for health, food and total household expenditure. The highest food-related expenditure was reported from the Western Province (median=Rs. 25000, IQR = Rs. 14000) while the lowest was reported from the Uva province (median = Rs. 15,000, IQR= 8000). The median family income in the last 30-day period prior to data collection was Rs. 40,000.00 (IQR=35,000.00). Compared to the pre-lockdown period, household income decreased in 60.5% (n=1907) of households in the lockdown period and in 44.3% (n=1395) of households in the new normal period. However, 51% (n=1599) of households reported no change in income in the new normal period compared to the pre-COVID period.

We estimated the provincial catastrophic spending at 10% and 25% (Table 4). At the 10% cut-off, the catastrophic spending exceeded 10% in the Central and Sabaragamuwa provinces. At 10% and 25% cut-offs, catastrophic spending was observed in respectively 9.5% and 3.4% of households island-wide.

Nearly a quarter of the households (27%, n = 845) in the study population reported that their income was less than their expenditure. The majority (53%; n=445) of these households reported borrowing money to purchase food items. Forty-four per cent (n=371) reported that they have compensated by eating less preferred food. Pawning/selling assets such as land and jewellery was an option for 30% (n =256). One per cent (n=8) reported that they sent their children for jobs, and 7% (n=59) had to cut down on the expenditure incurred for schooling their children.

Table 4. Catastrophic health expenditure by Province at 10% and 25% cut-off levels

Province	*Percentage of health expenditure out of the total income (%)*	
	10%-25% (%, n)	*Above 25% (%, n)*
Central	12.2 (44)	3.6 (13)
Eastern	6.3 (19)	4.0 (12)
North-Central	9.2 (17)	3.2 (6)
North-Western	7.1 (30)	5.5 (23)
Northern	8.2 (15)	1.1 (2)
Sabaragamuwa	17.8 (53)	4.4 (13)
Southern	6.8 (25)	0.5 (2)
Uva	7.7 (14)	3.3 (6)
Western	9.5 (81)	3.4 (29)
Total	**9.5 (298)**	**3.4 (106)**

Discussion

This study assessed the impact of COVID-19 on healthcare accessibility and financial risk protection in Sri Lanka. The nationally representative study sample included 11,463 family members living in 3151 households across the country making this, one of the few studies of this magnitude conducted in Sri Lanka.

There is a heavy disease burden due to non-communicable diseases (NCD) in Sri Lanka. For example, the leading cause of hospital deaths was ischaemic heart disease over the last few decades [6]. The present study reported a prevalence was 6.8% and 6.6% for high blood sugar and diabetes mellitus, respectively. A national survey conducted in year 2015, reported that 7.4% of adults are estimated to have raised blood glucose or diabetes (7.3% males and 7.6% females) by laboratory assessment [7]. The same survey reported that 8.1% were having high blood pressure during the year prior to the survey. Therefore, a lower prevalence was reported for both diabetes mellitus and high blood pressure in the present assessment as compared to the "NCD and risk factor survey" (i.e. WHO steps survey) conducted in 2015. This suggests that a sizable community population is unaware of having high blood pressure and diabetes mellitus. Therefore, it is essential to enhance the screening programs for identifying these conditions and the associated risk factors [8]. The Healthy Lifestyle Centres (HLC), which are established for screening NCD risk factors, did not function optimally due to the impact of COVID-19. Therefore, the gap would have widened between those with known diabetes/ high blood pressure and those who have not been detected to have diabetes/ high blood pressure. Thus, the importance of early resumption of the HLCs is evident.

Patients with NCD require regular follow-up [9]. However, only 50.9% had visited a health institution for follow-up during the lockdown periods. Follow-up of the patients with NCDs ensures patient satisfaction, accessibility, early detection, and timely referral and reduces the disease severity and mortality [10] and is crucial to minimize the long-term burden of NCD [11].

Maternal and child health-related domiciliary care is vital to the Sri Lankan preventive health system [12]. The Public Health Midwife (PHM) is expected to visit the households of her target population and provide the necessary services. These services have been interrupted at the peak of the pandemic due to various reasons. The interruption of domiciliary care provided by the PHM impacted the quality of family planning programs, antenatal care, post-natal care and child nutrition for the population groups who need them most. These interruptions to domiciliary care would have a negative impact on the long-term gains in maternal and child health indicators. Analysis of maternal deaths that occurred during the first wave of the pandemic revealed the poor quality of care [1]. Although the services have resumed towards the early part of the new normal period, the programme may need further strengthening.

Most pregnant mothers (67%) attended antenatal clinics during the lockdown period, and almost all mothers attended the clinic during the new-normal period. This is probably due to the continuous advocacy and guidelines issued throughout the COVID-19 pandemic by the health authorities, specifically the Family Health Bureau of the Ministry of Health [1,13]. The practice of family planning may not have been greatly impacted during the lockdown period or the new normal period, as approximately 58% of

the family planning users did not need medical services to continue their family planning method. The majority of the family planning users did not have any difficulties in obtaining/continuing their family planning method within three months prior to the survey which includes the new normal period and the lockdown period. However, the initiation of modern family planning methods would have been impacted due to the absence of counselling and health education sessions.

The COVID-19 pandemic greatly impacted the economic status of the people. According to our findings, income had reduced in 60.5% of households during the lockdown period and in 44.3% of households during the new-normal period. The income reduction has impacted the health-seeking behaviour of people. For example, (1) most people who have not received medicine for their chronic illnesses were in the low-income category, (2) some people have not visited clinics due to economic constraints limiting affordability of transport and laboratory investigations. The health-seeking behaviour for chronic diseases seems more impacted due to economic issues compared to acute illnesses and maternal health care. People have used many coping strategies to overcome the reduced household income. Over 16% of the population is eating less, and over 44% are eating less preferred foods. These changes in dietary patterns would impact the general nutritional status of the community and would result in long-term negative health consequences [14]. The study population reported cutting down the expenditure for schooling (7%) and sending their children for work (1%). This may lead to adverse consequences for their health and future prospects and will lead to more social issues in these communities [15,16]. Catastrophic health expenditure is defined as out-of-pocket spending for health care that exceeds a certain proportion of a household's income with the consequence that household suffer the burden of disease. Different approaches are being used to estimate the ability to pay for health care [17-19]. We calculated the budget share; the ratio between out-of-pocket health care expenditure (numerator) and pre-defined share of the household's ability to pay for health care (Denominator) [19]. A general accepted way to define the pre-defined share of household's ability to pay for health care, is the household income or gross expenditure in a specified period of time, generally one year.

The median drug and investigation costs incurred during the COVID-19 pandemic and the new normal period were slightly lower compared to the pre-COVID period. This may be due to reduced health seeking for chronic illnesses during the COVID-19 pandemic. However, the out-of-pocket expenditure is incurred mostly for drugs, investigations and channeling specialists [20]. It was clearly evident that all components of out-of-pocket expenditure increased during the COVID-19 period except the drug cost. The reduced expenditure for drugs may have occurred due to reduced purchasing associated with poor health seeking or closure of private pharmacies. The measures taken by health institutions to deliver routine medication to clinic patients through the postal services may have been a determinant of reduced drug cost for the people [21]. Of the participants, 9% and 3% had incurred catastrophic healthcare expenses at 10% and 25% of their total income. Many disadvantages could occur when health systems rely on out-of-pocket healthcare payments, people may not seek the care they need or suffer severe financial hardship due to incurring such payments while seeking healthcare. Generally, health services will be traded for other necessities such as food and education.

Conclusions and recommendations

A sizable proportion of the study sample those who need to be followed up in a health institution for heart disease, high blood pressure, high blood sugar or diabetes mellitus were not followed up (53.7%) in the lockdown period (46.7%) and in the first month of the new normal period (19.2%). Those who are disabled and those who were followed up at the government health institutions were affected more than their counterparts. The main reasons for not coming to the hospital during the lockdown period were "distance maintained and the physical barriers imposed between the client and the service providers", "fear of getting COVID-19 in the hospital" and "unavailability of their private doctor during the lockdown period". However, only 2.1% (n=25) have not received the appropriate medication during the lockdown period. Therefore, it is recommended to identify a novel methodology to monitor the biophysical parameters of patients with chronic diseases in future situations similar to the COVID 19 pandemic. At the same time, antenatal care and family planning services were not affected to a great extent, possibly due to the strong public health systems in Sri Lanka. However, it could be recommended to adapt family planning methods which do not require regular contact with the women (e.g. implantation) rather than those which require regular logistic supply (e.g. condoms, medroxyprogesterone acetate).

Considering the financial impact, household income and expenditure due to COVID-19 was significant. The median costs incurred due to chronic illnesses were not much affected due to COVID-19. There was a slight reduction of the total cost, drug cost and also the investigation cost during the lockdown and the new normal period. The country needs to invest in resilient health systems to be better equipped to face similar challenges and provide uninterrupted service for healthcare needs of the people under any circumstances.

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