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Original Article

Disparities in socioeconomic effects of COVID-19: Exploration of 11 rounds of panel data from high frequency phone survey of households in Ethiopia

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Abstract

Introduction: *Public health control measures were crucial to curb the health crisis of Corona Virus Disease 2019 (COVID-19). However, these control responses, along with health system fragility and import dependence, are also likely to lead to significant socioeconomic crisis. This study aimed to present empirical evidence on the socio-economic effects of COVID-19 in Ethiopia exploring how differences in effects varied by gender and wealth.*

Methods: *Eleven rounds of panel data from the COVID-19 high frequency phone survey (HFPS) conducted among households in Ethiopia were used. Data were collected between April 2020 and May 2021 among 3249 households in Round 1, which eventually waned and reached 1982 households in Round 11. Employment, income loss, and food insecurity experiences were used to measure economic impacts. Adjusted sample weights were applied to address potential selection bias associated with phone surveys. In addition, we employed reduced panel data economic regressions to estimate the change in outcomes over time and examine differences by gender and socioeconomic status.*

Results: *There was a significant adverse socioeconomic effect in terms of job loss, income loss and food insecurity. The effect was particularly pronounced during the early months of the pandemic with subsequent lingering effect observed in all the rounds. Disparities in outcomes, particularly employment and food insecurity, were observed by gender and wealth status.*

Conclusion: *The early public health measures may have contributed to the socioeconomic shockwaves, with clear indications of disparity. Policy measures should consider the needs of those groups in society predisposed to inequity, and factors that may worsen economic impact, such as import dependence for essential therapeutics.*

Keywords*: COVID-19, Ethiopia, employment, income loss, food insecurity, equity, pandemic policy response*
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Introduction

The COVID-19 pandemic has created a major health and economic crisis worldwide. In addition to the tragic loss of human life, what became apparent as the pandemic was raging and governments started taking public health measures in response, was the serious socioeconomic consequences.

The macroeconomic impact was felt shortly afterwards, where the global economy (measured by real Gross Domestic Product growth) contracted by -3.4% in 2020 with some recovery at 5.5% in 2021 but a projected slowing down with 4.1% growth in 2022 (1). The pandemic has led 97 million more people into poverty (2) reversing some of the gains in poverty reduction prior to the outbreak.

Households have been affected by COVID-19 associated shocks in various ways. Notably, the pandemic has adverse socioeconomic impact such as reduced labour force participation, unemployment, loss of earnings, food insecurity, and access to basic services (3–6). Severe health system fragility along with import dependence for essential health commodities may intensify the economic impact (7). The health system capability is an important consideration because it may affect workforce participation in economic activities and increases the cost of health service utilization markedly.

Furthermore, COVID-19 has brought to the fore inequities in its impact that are associated with already existing gender, racial or socioeconomic inequalities (4,5). There are attempts to examine the socioeconomic impact of COVID-19 in Ethiopia. The existing few studies relied on data early into the pandemic or on specific geographical locations (6,8–14). The aim of this study was to examine the effects of COVID-19 in Ethiopia with a focus on employment, income loss and food insecurity. The study provides empirical evidence and national level estimates about the impact of COVID-19 using 11 rounds of panel data from representative households and adjusting sample weights to ameliorate potential selection bias. In addition, it explores how differences in socioeconomic outcomes vary by gender and household wealth status to understand the equity implications of the impact of COVID-19. We used data from extended survey rounds covering repeated observations over one year period, which is far beyond some of the earlier studies that used the same dataset relied on, providing evidence on the effect of COVID-19 better than the snapshots the earlier studies provided.

Materials and Methods

Data source

The study used longitudinal data from the World Bank (WB)'s COVID-19 high frequency phone survey (HFPS) (15). The HFPS sample is a subsample of households who took part in the latest round (2018-19, wave 4) of the Ethiopia Socioeconomic Survey (ESS) (16). The HFPS sampling procedures are detailed in the survey's website (17). But to briefly describe, the ESS is conducted among a nationally and regionally representative sample of households and a total number of 5,374 households who provided at least one valid phone number in wave 4 formed the sampling frame for the HFPS. The target sample household size to achieve representativeness at national level as well as urban and rural strata was 3,300 (17). Twelve rounds of HFPS data are collected to date. The final sample size ranged from 3,249 households in Round 1 to 888 in Round 12. The anonymised HFPS data and documentations are publicly available for use through the WB Microdata Library (18). This study draws data from the first 11 rounds since Round 12 focuses on outcomes among the youth population such as aspirations and employment.

Round 1 survey was conducted during the period of 22 April and 13 May 2020 and Round 11 surveys between 12 April and 11 May 2021 (18), providing repeated observations among households over approximately one year period. However, different rounds administered different modules. As a result, data for some outcome variables are not available in all rounds. (See Supplementary Material 1 for summary information on the survey rounds including total sample size and sample size stratified by urban and rural areas.).

Outcomes and measurement

Employment

The question about employment uses two timeframes - employment in the immediate seven days (current employment) and employment during the previous month (previous employment). The question about 'current employment' asks whether the respondent did any work to generate income last week. This is a binary variable taking the value 1 if they are currently working and 0 otherwise. The question about 'previous employment' asks respondents whether they were working during the early months in the pandemic (Round 1) or before the last survey call (subsequent rounds). Similarly, the previous employment variable takes binary responses indicating whether respondents were previously working (1) or not working (0). For respondents who were not working in the previous month (previous employment), further questions elicited reasons for stopping work. We rely on this information to explore various reasons for work stoppage.

Income change

Participants provided information on the various sources of household income. They were also asked to qualitatively evaluate if there was change in income from different sources compared to the pre-pandemic level (Round 1) or previous survey rounds (subsequent rounds). Following Josephson et al. (3), we construct income change indicators to signify changes in income conditional on different income sources they reported. The indicators capture changes in income from farming, non-farm business, wage, remittances, other sources (such as income from properties, investments or savings, pension and assistance) and any change in income if there is a change in income from any of these sources. These indicators were measured as a binary response variable where 1 indicates households reporting a decline in income (partial or total loss) and 0 otherwise (remained the same or increased).

Food insecurity

Food insecurity, assessed in the previous 30 days, was measured using the Food Insecurity Experience Scale (FIES) (19). The FIES assesses households' experiences of food insecurity with eight items that ask about their conditions of access to food of adequate quantity and quality (19,20).

Specifically, the FIES questions solicit responses to whether the respondent or other adult household members, because of a lack of money or other resources, (a) were worried they would not have enough to eat, (b) were unable to eat healthy and nutritious food, (c) ate only a few kinds of foods, (d) had to skip a meal, (e) ate less than they thought they should, (f) ran out of food, (g) were hungry but did not eat, or (h) went without eating for a whole day. It was administered in seven rounds (Rounds 1 to 6 and 11) but only the first three items were administered in Round 1. In this study, we did not create a summary measure of food insecurity to categorise across different levels of food insecurity. Instead, analysis for all the FIES items was separately performed and presented.

Disparity by gender and wealth

We examined for differences in economic outcomes by gender and wealth. To that end, gender of the household head and pre-pandemic household consumption quintile were used. The latter variable was used as a proxy for pre-pandemic wealth or economic status. It ranks households from the lowest (poorest) to the highest (richest) quintile and is calculated based on household per capita consumption expenditure, which came from the ESS conducted before the COVID-19 outbreak.

Data analysis

Various statistical approaches were employed to examine the effects of COVID-19. First, the mean values of the outcome variables were estimated. HFPS is prone to selection bias, owing to factors such as differences in phone ownership or lower response rate of phone surveys compared to face-to-face, and poses a challenge in the representativeness of the sample and making population level inferences (21,22). Following suggestions and similar works (3,21,22), adjusted sampling weights that correct for potential selection bias were applied in estimating the mean values. These values provide an estimate of an average household-level incidence of a given outcome variable. For example, the weighted mean for business income loss variable provides an estimate of the average household-level incidence of business income loss. Second, the adjusted sampling weights can allow us making inferences and estimating the total number of people affected (3). Therefore, we estimated the affected total number of households associated with the outcome variables. For instance, the total number estimates for business income loss variable provides estimates of the total number of households experiencing business income loss. Finally, we performed regression analyses to examine the differences in the pattern of the outcome variables across time, gender and socioeconomic status. Taking advantage of the nature of the data, we estimated panel data models instead of using pooled ordinary least square (OLS) methods. We performed several logistic regression analyses. First, we estimated models regressing the outcome variables on time (rounds), which was followed by regressions on gender of household head and consumption quintiles, controlling for time.

Some variables, such as consumption quintiles which are available from pre-pandemic survey, are time invariant and random effects model was estimated. Where appropriate, we applied a Hausman test to compare between fixed and random effects estimates. Data management, cleaning and analysis was conducted using Stata 16 (23). Codes used for data cleaning, panel data preparation from rounds and some of the analyses draw from a similar study (24).

Results

Employment

Overall, about two-thirds of participants (63.4%) reported that they were not currently working (last seven days) during the early stages of the pandemic - Round 1, April/May 2020 (Figure 1, panel (a)). Afterwards, this figure rose initially and subsequently stabilised with the proportion of people who reported not currently working falling. Responses to previous employment (worked last four weeks) also demonstrated a relatively stable proportion of people were not only currently working but also had engaged in some employment activity in the recent past (Figure 1, panel (b)). Although changed later, the previous employment question was posed only for respondents who reported not working currently (previous 7 days). The proportion of people who reported job losses due to COVID-19 were highest (62.5%) in Round 1 and fell over time (Figure 2). However, there was an exception observed in this trend, where reported current unemployment rate in the last rounds, rounds 10 and 11, rose back almost to the level of the early stages of the pandemic.

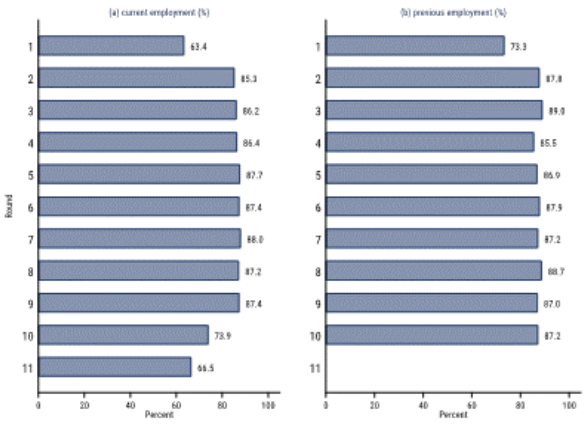

Figure 1. Employment during the COVID-19 pandemic

(a) current employment: percentage of respondents that reported undertaking any work for pay, any kind of business, farming or other activity to generate income, by survey rounds;

(b) previous employment: percentage of respondents that reported working during early months of the COVID-19 outbreak in Round 1 or before the last survey call (approximately four weeks ago) in subsequent rounds, by survey rounds.

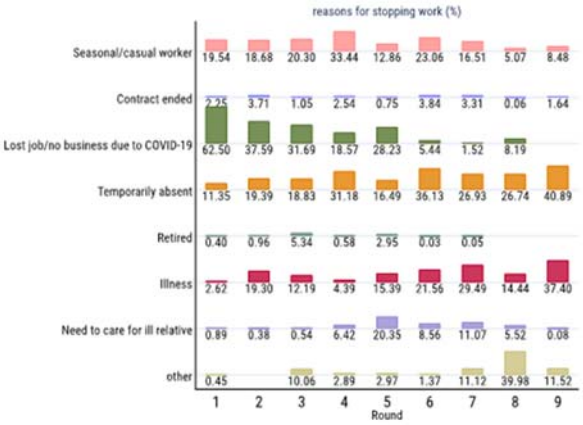

Figure 2. Reasons for stopping work

Reasons identified for stopping work among respondents who reported working during the early months of the COVID-19 outbreak or before the last survey call (four weeks ago) but not currently working, by survey rounds.

The regression results show these observed changes and patterns in employment outcomes were significant (Table 1). State of employment during the pandemic differed significantly by gender and socioeconomic status. Overall, compared to male headed households, female headed ones reported lower levels of current or previous employment, controlling for socioeconomic status and time (Table 1). Similarly, employment outcomes varied significantly by socioeconomic status where, compared to households in the lowest wealth quintile, those in higher quintiles reported lower levels of current or previous employment.

Income loss

At the start of the pandemic, majority (55.7%) of households reported experiencing income loss from one or more of their income sources (Figure 3). Reported income losses started to fall and stabilise overtime. Further breakdown by income sources shows that, across various income sources, high income loss was reported at the start of the pandemic. Those highly hit during the early shock of the pandemic appear to be households operating family businesses and non-farm enterprise. Among households who reported to earn business income, 85.1% experienced income loss at baseline (Figure 3). Although this started to fall, business income loss remained high at 41.9% in Round 6.

Table 1. Regression results of the effect of gender and wealth on employment during the pandemic

	CURRENT EMPLOYMENT	**PREVIOUS EMPLOYMENT**
	GENDER	
MALE	Ref.	Ref.
FEMALE	0.184***	0.167***
	(0.144, 0.233)	(0.127, 0.220)
	CONSUMPTION QUINTILE	
RICHEST	Ref.	Ref.
POOREST	1.753**	2.260***
	(1.120, 2.742)	(1.344, 3.800)
POORER	1.593**	1.715**
	(1.084, 2.340)	(1.103, 2.667)
MIDDLE	0.810	0.914
	(0.577, 1.136)	(0.620, 1.347)
RICHER	0.734**	0.759
	(0.547, 0.983)	(0.543, 1.062)
	TIME	
ROUND 1	Ref.	Ref.
ROUND 2	4.626***	1.935***
	(3.936, 5.437)	(1.606, 2.332)
ROUND 3	5.965***	2.567***
	(5.046, 7.051)	(2.117, 3.112)
ROUND 4	7.214***	1.373***
	(6.059, 8.590)	(1.140, 1.654)
ROUND 5	7.228***	1.750***
	(6.056, 8.626)	(1.444, 2.120)
ROUND 6	7.058***	1.817***
	(5.908, 8.432)	(1.496, 2.205)
ROUND 7	7.783***	1.826***
	(6.470, 9.363)	(1.497, 2.228)
ROUND 8	6.669***	2.058***
	(5.507, 8.076)	(1.666, 2.541)
ROUND 9	7.478***	1.737***
	(6.128, 9.125)	(1.403, 2.150)
ROUND 10	2.610***	1.709***
	(2.196, 3.103)	(1.388, 2.104)
ROUND 11	1.879***	1.935***
	(1.579, 2.235)	(1.606, 2.332)
OBSERVATIONS	28,736	28,073
NO. OF HHS	3,247	3,247
RHO	0.728	0.797

Note:

*** p<0.01, ** p<0.05, * p<0.1

- Odds ratios are reported, 95% confidence interval in parentheses
- The Rho values show the level of variation in an outcome variable that is related to inter-household differences in the variable

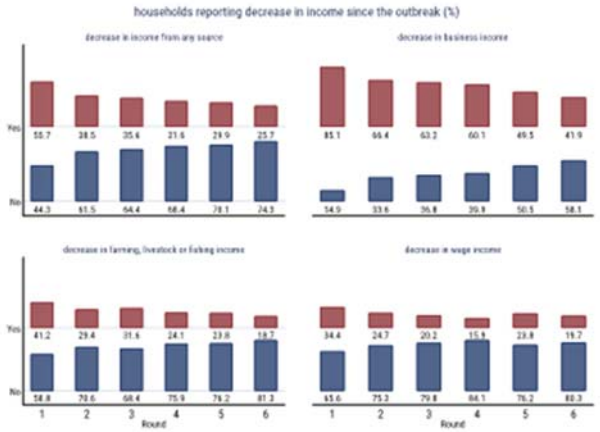

Figure 3. Income loss during the COVID-19 pandemic

Percentage of respondents reporting income loss by survey rounds and selected income sources

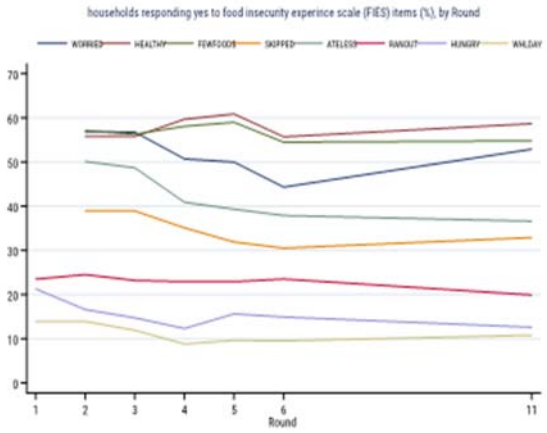

Figure 4. Experiences of food insecurity during the COVID-19 pandemic

Percentage of respondents who reported experiencing food insecurity, by FIES items and survey round

The differences in the households' experiences of income loss and the changes over time were statistically significant (see Table 2 for the regression results). Examining differences in income loss by gender, the effect of gender was significant among households earning income from farming or other sources (such as properties, investments or savings, pension and assistance). Compared to male headed households, and controlling for socioeconomic status and time, farm income loss was significantly higher among female headed households. The results did not show a clear pattern of significant differences in income loss by socioeconomic status. One notable exception here is income loss from other sources. Compared to households in the lowest strata, those in higher levels of socioeconomic status reported experiencing higher loss of income from other sources.

Food insecurity

Households reported experiencing different levels of food insecurity measured by the FIES food insecurity indicators (Figure 4). Higher proportion of households (ranging between 44 and 61%) consistently reported experiencing food insecurity during the last 30 days across three indicators: worry about not having enough food to eat, inability to eat healthy and nutritious/ preferred foods and ate only a few kinds of foods because of a lack of money or other resources. (Additional details about the incidence of food insecurity and estimated total number of affected households is provided in supplementary material 4.).

The results show experiences of food insecurity varied by gender where female headed households consistently reporting higher levels of food insecurity across all indicators than male headed ones (Table 3). Similarly, poor households reported experiencing higher food insecurity than those with more means.

WORRIED: were worried about not having enough food to eat because of lack of money or other resources during the last 30 days; **HEALTHY**: unable to eat healthy and nutritious/preferred foods because of a lack of money or other resources during the last 30 days; **FEWFOODS**: ate only a few kinds of foods because of a lack of money or other resources during the last 30 days; **SKIPPED**: had to skip a meal because there was not enough money or other resources to get food during the last 30 days; **ATELESS**: ate less than you thought you should because of a lack of money or other resources during the last 30 days; **RANOUT**: ran out of food because of a lack of money or other resources during the last 30 days; **HUNGRY**: were hungry but did not eat because there was not enough money or other resources for food during the last 30 days; **WHLDAY**: went without eating for a whole day because of a lack of money or other resources during the last 30 days.

DISCUSSION

This study presented evidence on the effect of COVID-19 in Ethiopia focusing on employment, income loss, and food insecurity. It further examined potential inequity in impact distribution by evaluating how the effects are felt by different groups with a particular focus on gender and wealth. Several key issues are worth highlighting. The adverse effect of the pandemic was visible across all the outcomes considered. There was an immediate shock felt by households in loss of employment, income loss or experiences of food insecurity in the early months of the pandemic. There was a rebound from the early shock, although there are also observed rises in some outcomes, namely unemployment and food insecurity, almost after a

Table 2. Regression results of the effect gender and wealth on income loss during the pandemic

	Any income	**Farm income**	**Business income**	**Wage income**	**Remittance income**	**Other income**
Gender						
Male	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Female	0.971	1.442*	1.155	0.971	0.775	0.639***
	(0.815, 1.156)	(0.982, 2.119)	(0.906, 1.472)	(0.695, 1.356)	(0.512, 1.171)	(0.474, 0.863)
Consumption quintile						
Richest	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Poorest	1.497**	1.005	0.742	2.555**	0.928	0.547**
	(1.089, 2.057)	(0.595, 1.696)	(0.430, 1.280)	(1.179, 5.540)	(0.257, 3.352)	(0.304, 0.987)
Poorer	2.000***	1.272	1.014	3.347***	1.450	0.690
	(1.524, 2.625)	(0.766, 2.111)	(0.693, 1.484)	(1.859, 6.027)	(0.663, 3.172)	(0.415, 1.146)
Middle	1.740***	0.912	1.305	2.462***	1.296	1.020
	(1.368, 2.213)	(0.554, 1.503)	(0.933, 1.823)	(1.528, 3.968)	(0.722, 2.329)	(0.673, 1.545)
Richer	1.245**	0.798	0.922	1.608**	1.377	0.927
	(1.012, 1.531)	(0.485, 1.313)	(0.699, 1.216)	(1.109, 2.332)	(0.841, 2.254)	(0.647, 1.328)
Time						
Round 1	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Round 2	0.312***	0.544***	0.183***	0.345***	0.161***	0.440***
	(0.271, 0.360)	(0.418, 0.709)	(0.132, 0.254)	(0.266, 0.448)	(0.0955, 0.272)	(0.320, 0.605)
Round 3	0.262***	0.519***	0.165***	0.247***	0.0640***	0.357***
	(0.226, 0.303)	(0.395, 0.682)	(0.118, 0.230)	(0.188, 0.324)	(0.0325, 0.126)	(0.257, 0.494)
Round 4	0.178***	0.288***	0.0943***	0.152***	0.0649***	0.278***
	(0.153, 0.207)	(0.215, 0.386)	(0.0681, 0.131)	(0.114, 0.203)	(0.0342, 0.123)	(0.199, 0.390)
Round 5	0.142***	0.208***	0.0716***	0.185***	0.0547***	0.162***
	(0.121, 0.166)	(0.151, 0.285)	(0.0512, 0.100)	(0.140, 0.245)	(0.0273, 0.110)	(0.111, 0.237)
Round 6	0.0946***	0.154***	0.0343***	0.116***	0.0626***	0.153***
	(0.0802, 0.112)	(0.110, 0.214)	(0.0242, 0.0487)	(0.0854, 0.157)	(0.0329, 0.119)	(0.103, 0.229)
Observations	15,162	4,392	3,732	7,726	1,531	3,394
No. of HHs	3,213	1,268	1,237	1,893	797	1,214
Rho	0.521	0.596	0.316	0.669	0.444	0.415

Note:

*** p<0.01, ** p<0.05, * p<0.1

- Odds ratios are reported, 95% confidence interval in parentheses
- The Rho values show the level of variation in an outcome variable that is related to inter-household differences in the variable

Table 3. Regression results of the effect of gender and wealth on food insecurity during the pandemic

	WOR-RIED	HEALTHY	FEW-FOODS	SKIPPED	ATE-LESS	RA-NOUT	HUNGRY	WHLDAY
GENDER								
MALE	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
FEMALE	1.827*** (1.460, 2.286)	1.801*** (1.461, 2.219)	1.628*** (1.332, 1.991)	1.878*** (1.474, 2.392)	1.664*** (1.339, 2.067)	2.109*** (1.715, 2.594)	1.420*** (1.136, 1.775)	1.525*** (1.205, 1.930)
CONSUMPTION QUINTILE								
RICHEST	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
POOREST	15.37*** (10.17, 23.22)	10.53*** (7.170, 15.46)	7.444*** (5.166, 10.73)	21.72*** (14.11, 33.44)	15.65*** (10.60, 23.11)	5.615*** (3.898, 8.087)	9.266*** (6.357, 13.51)	12.77*** (8.621, 18.90)
POORER	7.427*** (5.231, 10.55)	5.784*** (4.168, 8.027)	4.812*** (3.514, 6.589)	9.506*** (6.535, 13.83)	6.681*** (4.767, 9.362)	3.647*** (2.642, 5.035)	5.016*** (3.563, 7.063)	6.955*** (4.852, 9.968)
MIDDLE	4.946*** (3.629, 6.740)	4.482*** (3.360, 5.980)	3.783*** (2.866, 4.993)	6.600*** (4.714, 9.241)	4.772*** (3.532, 6.447)	3.662*** (2.744, 4.889)	4.554*** (3.337, 6.215)	4.261*** (3.044, 5.966)
RICHER	2.224*** (1.702, 2.907)	2.019*** (1.574, 2.589)	2.009*** (1.580, 2.554)	2.551*** (1.891, 3.442)	2.639*** (2.027, 3.435)	2.226*** (1.723, 2.876)	2.233*** (1.679, 2.971)	2.328*** (1.705, 3.177)
TIME								
ROUND 1†						Ref.	Ref.	Ref.
ROUND 2†	Ref.	Ref.	Ref.	Ref.	Ref.	0.885 (0.756, 1.036)	0.397*** (0.330, 0.478)	0.665*** (0.543, 0.815)
ROUND 3	0.950 (0.823, 1.097)	0.971 (0.844, 1.117)	1.068 (0.931, 1.225)	0.950 (0.810, 1.115)	0.946 (0.818, 1.095)	0.804*** (0.685, 0.943)	0.259*** (0.212, 0.316)	0.437*** (0.351, 0.543)
ROUND 4	0.585*** (0.504, 0.678)	1.357*** (1.177, 1.565)	1.162** (1.010, 1.337)	0.675*** (0.572, 0.798)	0.541*** (0.464, 0.631)	0.885 (0.753, 1.041)	0.276*** (0.225, 0.338)	0.380*** (0.301, 0.479)
ROUND 5	0.517*** (0.445, 0.601)	1.313*** (1.137, 1.516)	1.119 (0.971, 1.290)	0.526*** (0.443, 0.625)	0.522*** (0.447, 0.610)	0.783*** (0.663, 0.924)	0.344*** (0.282, 0.420)	0.394*** (0.311, 0.499)
ROUND 6	0.361*** (0.309, 0.421)	0.961 (0.831, 1.112)	0.836** (0.724, 0.966)	0.415*** (0.347, 0.496)	0.407*** (0.347, 0.478)	0.785*** (0.664, 0.928)	0.304*** (0.248, 0.374)	0.332*** (0.260, 0.425)
ROUND 11	0.740*** (0.627, 0.873)	1.345*** (1.146, 1.579)	0.975 (0.832, 1.142)	0.494*** (0.406, 0.601)	0.481*** (0.404, 0.573)	0.735*** (0.609, 0.887)	0.251*** (0.197, 0.320)	0.428*** (0.327, 0.561)
OBSERVATIONS	16,482	16,482	16,483	16,485	16,483	19,723	19,725	19,726
NO. OF HHS	3,206	3,206	3,206	3,206	3,206	3,247	3,247	3,247
RHO	0.668	0.634	0.615	0.680	0.638	0.607	0.566	0.546

Note:

*** p<0.01, ** p<0.05, * p<0.1

- Odds ratios are reported, 95% confidence interval in parentheses
- The Rho values show the level of variation in an outcome variable that is related to inter-household differences in the variable
- † For the last three items the reference (base) time was Round 1 because data on these items were collected starting from Round 1 and Round 2 was the reference time for first five items since data were collected starting from Round 2.

year into the pandemic indicating a potentially persistent effect of COVID-19.

In addition, the results have shown disparities in outcomes, notably in employment and food insecurity, by gender and wealth. Although relatively lower levels of employment are reported in the last survey rounds, the figure was consistent with results from a national labour survey conducted around the same time that reported a total labour force participation rate of 65% (25). There are no straightforward explanations for the observed fall in employment but this could in part be associated with a marked surge in new COVID 19 cases that coincided with this period (see supplementary Material 5). In addition, the number of participants in the survey has been declining with subsequent survey rounds. The decline was pronounced among participants in rural areas but less so in urban areas (see supplementary Material 1) and recent evidence has shown unemployment is predominant in urban than rural areas (25).

Early into the pandemic, Ethiopia instituted a strict policy response, including closures and stay-at-home requirements. For instance, the average COVID-19 stringency index over a period of six months (mid-March to mid-August 2020) was 76 (100 being strictest) (26). These early measures may have been crucial and in part triggered by an understanding of weak and inadequate health system to handle the health crisis caused by COVID-19. However, this may also have contributed to the early socioeconomic shock and the lingering effects felt by households.

Strong mitigation strategies on potential economic impacts would have been required. In addition, health systems strengthening, and pandemic preparedness may help address not only the health crisis but also mitigate potential socioeconomic impacts of future health emergencies or pandemics (27,28). Furthermore, reducing existing inequities and building resilience of households, businesses, the health system and the economy can help with the recovery from the consequences of COVID-19 and better prepare to address challenges and mitigate the potential socioeconomic impacts of similar health crises (27,29–31).

One of the strengths of this study is that it draws data from publicly available large-scale household survey to highlight the adverse socioeconomic effects of COVID-19. We also applied adjusted sampling weights in our estimations to address biases which phone surveys are prone to. Furthermore, to take better advantage of the panel data, we estimated reduced form panel data models instead of pooled OLS estimations. With all its strengths, the study has certain limitations that future works can address. While it highlights the socioeconomic effect of the pandemic, the focus has been on selected outcomes and further research can help address the issue with broader set of social and economic outcome domains. Similarly, while examining disparities the effect of COVID-19, we employed reduced models only accounting for gender and wealth. Expanded analysis controlling for individual, household, community, or country level factors may help expand the analysis and examining the robustness of the results obtained with the reduced form models.

CONCLUSION

The findings of this study highlighted the adverse consequences of COVID-19 on households in Ethiopia. The results also indicated the role of existing inequities in differently experiencing the burden. Attention should be given in mitigating the burden of the pandemic and control measures on households. System wide pandemic preparedness and systemic resilience should be a priority to deal with potential future health emergencies and associated socioeconomic shocks.

Declaration

Ethics approval and consent to participate:
Not applicable

Consent for publication:
Not applicable

Availability of data and material:
The data used in this study are freely available and can be downloaded from the World Bank Microdata Library: https://microdata.worldbank.org/index.php/catalog/3716.

Competing interests:
The authors declare that they have no competing interests.

Authors' contributions
EA and AF conceived and designed the study. EA performed data extraction, analysis and interpretation. EA and AF drafted the manuscript. All authors read, reviewed and approved the manuscript.

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Supplementary 1-5 https://bit.ly/3gZ6CzU