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Original article

Understanding Whether Economic Instability and Food Insecurity During COVID-19 Moderate the Change in Emotional Abuse and Emotional Neglect Over Time: A Longitudinal Pre- and During COVID-19 Analysis From China, Democratic Republic of Congo, Indonesia, and Malawi



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 A B S T R A C T

Purpose: This study explores whether economic instability or food insecurity moderates the changes in emotional abuse and neglect over time.

Methods: We used data from the Global Early Adolescent Study, a longitudinal study among adolescents ages 13–18 years (10–14 during pre-COVID-19 round) from poor urban communities in China (n = 387), the Democratic Republic of Congo (DRC) (n = 285), Indonesia (n = 400), and Malawi (n = 320). Data were collected before (2017 to March 2020) and during the pandemic (June to November 2020). Generalized estimating equations, using inverse probability weights evaluated changes in emotional abuse and neglect pre- and during COVID-19 and tested whether these changes varied by economic instability and food insecurity experiences during COVID-19.

Results: Pre-COVID-19, emotional abuse ranged from 37.2% in DRC to 65.3% in Indonesia, and emotional neglect from 10.9% in DRC to 50.3% in Indonesia. The odds of emotional neglect increased in all sites during COVID-19 except Indonesia (adjusted odds ratio (aOR) ranging from 1.7 in China to 4.1 in Malawi). In Indonesia, odds of abuse and neglect decreased significantly during COVID-19 (aOR ranging from 0.4 to 0.7); however, emotional abuse and/or neglect declines was less pronounced for those who experienced economic instability and/or food insecurity. In Malawi, adolescents who experienced food insecurity had a significant increase in odds of emotional neglect during COVID-19.

IMPLICATIONS AND CONTRIBUTION

This is longitudinal study across several countries exploring whether economic instability and food insecurity during COVID-19 affected changes in emotional abuse and neglect. Experiencing economic instability and/or food insecurity was associated with higher odds of emotional abuse and/or neglect in 2 countries. There is opportunity for policymakers to prioritize investment in

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Discussion: The COVID-19 pandemic exacerbated emotional neglect and emotional abuse among adolescents living in low- and middle-income countries, although this effect varies by place and population. In Malawi and Indonesia, adolescents who experienced economic instability and/or food insecurity had more unfavorable outcomes during COVID-19, highlighting the importance of social programs correcting inequities during pandemics.

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programs and response systems which address economic instability and food insecurity to reduce emotional abuse and/or neglect.

The COVID-19 pandemic caused disruption and instability around the world, affecting all aspects of daily life in addition to causing substantial excess deaths [1]. In response to COVID-19, containment measures were enacted to limit mobility and mandate home isolation. Adolescents experienced school closures, increased proximity with family members, and limited interaction with peers, which impacted their health, social relationships, educational aspirations, and economic opportunities [2]. While these measures worked to curb the epidemiological trend, extended periods of isolation, coupled with financial uncertainty and stress, have raised concerns about the potential risks of heightened exposure to physical and emotional violence against women and children [3,4].

Child maltreatment is a global crisis affecting 3 in 4 children around the world with both short- and long-term consequences on physical, sexual, and mental health [5]. Emotional maltreatment is defined as a repeated occurrence of damaging interactions between a child and a caregiver, which becomes part of a relationship [6]. Emotional maltreatment comprises of abuse and neglect and is more prevalent than physical and/or sexual maltreatment [7]. However, there is limited research on emotional maltreatment because of regional and cultural variations in definition of emotional maltreatment [6,7]. Additionally, the consequences are perceived to be less severe than physical and/or sexual maltreatment (i.e. lack of visible injury). Emotional maltreatment has severe implications on post-traumatic stress disorder, depression, suicide, substance abuse, and obesity [6].

Research in high-income settings has shown that violence against children, including physical, psychological and neglect types of violence, increased during the COVID-19 pandemic [4,8]. Families who were economically vulnerable before the pandemic were more likely to experience job loss and poverty, which increases the risk of violence against children [8]. While people living in low- and middle-income countries (LMICs) have suffered the greatest economic impact from COVID-19 [9], there is limited research exploring the influence of COVID-19 on changes in emotional maltreatment in these settings [7], particularly among the economically vulnerable [4]. Few studies explore how economic instability and food insecurity during COVID-19 affect young people's emotional abuse and emotional neglect experiences over time.

This manuscript therefore addresses the gap in the literature, by exploring whether economic instability and food insecurity during COVID-19 moderate changes in emotional abuse and neglect among adolescents in 4 urban poor LMICs. The study specifically aims to (1) examine the relationship of experiencing emotional abuse and emotional neglect pre-COVID-19 in comparison to during COVID-19 and (2) Understand if these relationships differ according to young people's experiences of economic instability or food insecurity during COVID-19. We

hypothesize that emotional abuse and neglect will increase during COVID-19 with changes differing based on COVID-19 related economic instability and food insecurity.

Methods

This study uses data from the Global Early Adolescent Study (GEAS), a prospective study in 11 urban poor communities across 5 continents, exploring how gender norms shape adolescent health [10]. The current study includes 5 cities across 4 countries (Shanghai, China; Kinshasa, Democratic Republic of Congo (DRC); Denpasar, Indonesia; Semarang, Indonesia and Blantyre, Malawi) that collected data on emotional maltreatment before COVID-19 (pre-COVID-19) and during COVID-19.

All countries followed the same protocol and used a similar survey instrument. However, sampling and data collection mode varied by site to adapt to local context. The study received ethical approval from the Shanghai Institute for Biomedical and Pharmaceutical Technologies (formerly Shanghai Institute of Planned Parenthood Research), Kinshasa School of Public Health, Universitas Gadjah Mada, Indonesia, College of Medicine, Blantyre, and Johns Hopkins Bloomberg School of Public Health. In Kinshasa, ethical approval was obtained for primary data collection from Johns Hopkins Bloomberg School of Public Health and secondary data analysis from Kinshasa School of Public Health. In all the other countries, ethical approval for data collection was obtained from partner countries and secondary approval for data analysis from Johns Hopkins Bloomberg School of Public Health.

Study samples were recruited from low-resource urban communities in each site, given the growing population of young people living in these settings and the health hazards they face [11,12]. In all sites, schools were purposively sampled based on the socioeconomic status (SES) of the student body: a total of 80 schools in DRC, 6 schools in Indonesia, and 3 schools in China and Malawi participated. Within these schools, all eligible students (10–14 years) in China ($n = 1,760$), Malawi ($n = 1,694$), Indonesia ($n = 1,753$ in Denpasar and $n = 1,517$ in Semarang), and a randomly selected group of students (stratified by age and sex) in DRC ($n = 1,682$) participated. In DRC, a subsample of out-of-school adolescents from the same neighborhoods as the in-school sample were randomly selected from household listings ($n = 826$). Both parental consent and adolescent assent were elicited for participation.

Initial data collection started between 2017 in DRC and March 2020 in Malawi, with follow-up surveys scheduled every 12–18 months depending on study site. However, the pandemic redirected GEAS data collection activities to gain information about adolescent's health and social experiences during the pandemic. As a result, a subsample of the GEAS cohorts were invited to participate in COVID-19 specific surveys assessing

adolescents' knowledge, attitudes, and practices related to COVID-19 and the economic, educational, and health implications of the outbreak. A total of 2,103 adolescents were randomly selected to participate in COVID-19 surveys ($n = 621$ in China, $n = 382$ in DRC, $n = 615$ in Indonesia, and $n = 485$ in Malawi), after providing parent consent and adolescent assent. Data collection occurred between June and November 2020. For this manuscript, since all sites other than DRC only included in-school participants, out-of-school participants were excluded ($n = 69$), which resulted in a sample of 2,034.

Pre-COVID-19 (2017 to March 2020), adolescents responded to a 1-hour survey collecting information about the social context of adolescents (economic, family, peers, schools, and neighborhood), perceptions of gender norms and agency, health behaviors and outcomes (self-perceived health, mental and sexual health, interpersonal violence), as well as adverse childhood experiences (13-item scale capturing emotional maltreatment, physical maltreatment, sexual maltreatment, witnessing domestic violence and household dysfunction [13]). Pre-COVID-19 all surveys were collected in person using computer-assisted self-interview (CASI) in China and Indonesia; audio computer-assisted self-interview in Malawi; and computer-assisted personal interview in DRC. The COVID-19 survey lasted 30 minutes on average and collected information about young people's attitudes, knowledge, and experiences during COVID-19 including disruptions in their educational and social interactions, some adverse childhood experiences (emotional maltreatment), and adverse household events. Surveys were conducted in person using CASI in China, audio computer-assisted self-interview in Malawi, and computer-assisted personal interview in DRC. In Indonesia, surveys were completed online using CASI. Table S1 summarizes dates of data collection and provides information about the context of the pandemic at the time of data collection in each site (Table S1).

Measures

Dependent variables. We analyzed 2 binary outcomes: emotional abuse and emotional neglect, derived from 2 questions from the Centers for Disease Control and Prevention Adverse Childhood Experiences (CDC ACEs) scale [13,14], adapted to different time windows. At baseline, Pre-COVID-19, emotional abuse was assessed by asking adolescents if they had **ever** been scared or felt "really bad" because grown-ups had called them names, said mean things, or did not want them. Emotional neglect was assessed by asking adolescents if they had **ever** felt like they were not loved or cared about. During COVID-19, adolescents were asked the same questions but inquiring about these experiences **in the last week**.

Independent variable

The main independent variable was 2 time points: pre-COVID-19 and COVID-19 survey.

Effect modifiers

Given the differences in data collection modalities and context, we stratified all analyses by site. Additionally, we tested for effect modification between time and economic instability as well as time and food insecurity in understanding differential changes based on COVID-19's economic impacts, based on some

preliminary results from high-income countries [8]. Mediation analysis was not possible because economic instability and food insecurity was measured at the same time as the dependent variable during COVID-19. Both measures of economic instability and food insecurity were only collected during COVID-19. Economic instability was a composite variable of 2 questions that asked whether the adolescents' family/parents had lost their jobs/work or income due to COVID-19 or if their family could not afford things that were needed due to COVID-19. If adolescents mentioned yes to either of the questions, they were coded as economically unstable. Food insecurity (no vs. yes) was a composite indicator of 2 items asking whether adolescents were worried if their food would run out before they received money to buy more in the past month; or if they did not have enough food nor the money to get more. Similar to economic instability, if adolescents mentioned 'yes' to either of the 2 questions, they were coded as food insecure.

Adjustment variables

Covariates from the baseline survey (detailed in Table S2) were identified based on the literature, and included individual factors (age and sex), household factors (household composition and SES), parental factors (parental closeness and parental monitoring/awareness), peer factors (peer interaction), and contextual/neighborhood factors (site, neighborhood social cohesion) factors [15–18]. In Malawi, SES and peer interaction was not measured during baseline, so those variables were not included in regression model.

Analysis

We first examined demographic differences between the initial GEAS sample, and the COVID-19 analytical sample to identify potential selection bias and found the COVID-19 sample was marginally more likely to live with both parents than the excluded participants (87.30% vs. 82.81%, $p < .001$) (Table S3). Among the sample of 2,034 adolescents who responded to the COVID-19 survey, 242 (11.9%) had missing data on emotional abuse and/or neglect data, 126 (6.1%) had missing data on food insecurity and/or economic instability, and 413 (20.3%) had missing data on any covariates. This resulted in 1,392 adolescents (68.4%) who had complete data. Across all the countries, there were significant differences between the included and excluded cases by economic instability, food insecurity, parental closeness, peer interaction, and neighborhood/social cohesion. Additionally, in some countries, household composition (Malawi), SES (China and Indonesia), parental monitoring and awareness (China and Malawi) were significantly different between the included and excluded cases (Table S4). Due to these differences, we considered selection bias as a concern and therefore, proceeded to calculate an inverse probability weight for each individual [19].

To determine the weights, we first assessed the proportion missing for the covariates in each site. If a covariate had less than 5% missing in the whole sample, we did simple imputation with the most frequent response within the population. If missingness was 5% or more, we recoded the missing as a category (999) and included them as part of the missing sample for the inverse probability weight (Table S5). After the imputation, except for DRC, all other countries had significant differences in covariates between the completed cases and excluded cases. We therefore

Table 1
Sociodemographics and key population characteristics among complete case sample (n = 1,392)

	Shanghai, China N = 387 (%)	Kinshasa, DRC N = 285 (%)	Denpasar/Semarang, Indonesia N = 400 (%)	Blantyre, Malawi N = 320 (%)	p value of differences between countries ^a
Age during baseline					
10–12 years	70.0%	70.2%	51.3%	28.1%	<.001
13–14 years	30.0%	29.8%	48.8%	71.9%	
Sex					
Boy	46.8%	48.8%	43.5%	52.2%	.1
Girl	53.2%	51.2%	56.5%	47.8%	
Household composition					
No parent or single parent	14.0%	33.7%	11.0%	61.6%	<.001
Dual parent	86.1%	66.3%	89.0%	38.4%	
Socioeconomic Status ^b					
Poorest	35.4%	40.7%	30.9%	Not collected in Malawi during baseline	.002
Less poor	42.1%	29.5%	36.9%		
Least poor	22.5%	29.8%	32.3%		
Economic instability					
No	69.8%	35.1%	45.5%	16.2%	<.001
Yes	30.2%	64.9%	54.5%	83.8%	
Food insecurity					
No	79.3%	29.8%	39.3%	16.3%	<.001
Yes	20.7%	70.2%	60.8%	83.8%	
Parental closeness					
Yes (a lot)	64.9%	60.7%	64.0%	75.6%	<.001
No (not at all—somewhat)	35.1%	39.3%	36.0%	24.4%	
Parental monitoring and awareness					
Yes	76.2%	64.9%	53.5%	62.8%	<.001
No	23.8%	35.1%	46.5%	37.2%	
Peer interaction ^b					
Less than 3 days per week	86.6%	30.5%	55.3%	Not collected in Malawi during baseline	<.001
3 days or more per week	13.4%	69.5%	44.7%		
Neighborhood/social cohesion					
Lower	18.4%	8.1%	38.0%	40.3%	<.001
Higher	81.7%	91.9%	62.0%	59.7%	

DRC = Democratic Republic of Congo.

^a The p value is the statistical difference between countries which includes missing values for covariates. If the p value was significant ($\leq .05$), it is bolded black.

^b Socioeconomic status and peer interaction was not collected in Malawi during baseline.

created weights for each individual in China, Indonesia, and Malawi to adjust for missingness in the regression models. These weights were applied to all regression analyses on the non-imputed complete case sample.

Our analysis started with a descriptive assessment of the sociodemographic, moderator, dependent, and covariate variables by site among our complete case sample. Next, we examined differences in emotional abuse and neglect between pre-COVID-19 and COVID-19 surveys by site, using unadjusted generalized estimating equations (GEE). The GEE model used a binomial distribution for family, logit as the link function and an exchangeable correlation structure. Next, we assessed changes in emotional abuse and neglect by time using GEE and adjusting for all covariates based on theoretical justification, regardless of statistical significance in unadjusted models.

Thereafter, as part of the adjusted model, we examined if the changes in emotional abuse and neglect differed based on economic instability (time##economic instability) or food insecurity (time##food insecurity) during COVID-19 in separate models (standard interaction model). There was a significant interaction between time and economic instability on emotional neglect changes for Indonesia. For food insecurity, there was a significant interaction with time for both emotional abuse and/or neglect in Indonesia and Malawi. In countries where economic instability and/or food insecurity were effect modifiers, we displayed graphs of the stratified associations. The graphs indicate

the predicted probability of emotional abuse and/or neglect while setting the covariates at their mean value in the adjusted model. We also reported the stratified associations of the odds of experiencing emotional abuse and emotional neglect based on whether participants were economic stable or food secure during COVID-19 relative to pre-COVID-19 (reference category), separately. A similar association was examined among participants who reported being economically instable or food insecure during COVID-19 versus pre-COVID-19 (reference category). We conducted these stratified analyses, adjusting for all other covariates, irrespective of whether effect modification was significant in 2 separate tables. Unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (95% CIs) were reported. All analyses were conducted using Stata 18.0 [20].

Results

Table 1 presents the distribution of sociodemographic and key population characteristics among the complete case sample (n = 1,392). More than half of participants were between 10 and 12 years at baseline, except in Malawi where a majority were 13–14 years. Except for Indonesia, where there was a higher proportion of girls, the other countries had relatively similar representation between boys and girls. More than two-third of adolescents lived in a dual-parent household, except in Malawi, where 62% lived in a no-parent or single-parent household. The

poorest tertile of SES varied across countries ranging from 30.9% in Indonesia to 40.7% in DRC. Economic instability and food insecurity was measured during COVID-19 and ranged from 30.2% in China to 83.8% in Malawi and from 20.7% in China to 83.8% in Malawi, respectively.

Patterns in emotional abuse and neglect are presented in Figure 1. Pre-COVID-19, the percentage of adolescents who reported ever experiencing emotional abuse ranged from 37.2% in DRC to 65.3% in Indonesia, while emotional neglect ranged from 10.9% in DRC to 50.3% in Indonesia. During COVID-19, emotional abuse ranged from 31.6% in DRC to 63.4% in Malawi and emotional neglect ranged from 19.7% in DRC to 51.3% in Malawi. Except for Indonesia, experiencing emotional neglect in the past week, during COVID-19, was higher than pre-COVID-19 levels in all countries.

Multivariate analysis using GEE models is presented in Table 2. The odds of experiencing emotional abuse were higher during COVID-19 in China (OR: 1.4 (95% CI: 1.01–2.4)) and Malawi (OR: 2.3 (95% CI: 1.6–3.1)), but lower in Indonesia (OR: 0.4 (95% CI: 0.3–0.5)). Emotional neglect was higher during COVID-19 in all countries (China: 1.7 (95% CI: 1.3–2.3); DRC: 2.0 (95% CI: 1.3–3.1); and Malawi: 4.1 (95% CI: 3.0–5.7)), except Indonesia where it was lower (OR: 0.7 (95% CI: 0.6–0.9)). In addition, results indicate higher odds of emotional abuse and neglect among adolescents who experienced food insecurity and economic instability in China relative to adolescents who did not; higher odds of emotional abuse and neglect among those

who experienced food insecurity in Indonesia relative to those who did not; and higher odds of emotional abuse and neglect among those who experienced food insecurity or economic instability relative to those who did not in Malawi, respectively.

The exploration of differential patterns in emotional abuse and neglect according to the presence or absence of economic instability showed significant interaction with time in Indonesia ($p = .03$) (Table 3). After controlling for all covariates, adolescents who were economically stable during COVID-19, had significantly reduced odds of emotional neglect in comparison to pre-COVID-19 levels (OR: 0.5 (95% CI: 0.3–0.8)); however, this reduction was not seen among those who were economically unstable during COVID-19 (OR: 1.0 (95% CI: 0.7–1.4)) (Figure S1). There was also borderline interaction between time and economic instability on changes in emotional abuse in China ($p = .053$). Adolescents who were economically unstable during COVID-19 had a significant increase in emotional abuse (OR: 2.1 (95% CI: 1.2–3.5)) in comparison to pre-COVID-19. However, there was no significant association seen between emotional abuse pre-COVID-19 and among those who were economically stable during COVID-19.

Patterns also differed significantly according to the presence or absence of food insecurity during COVID-19 in Indonesia ($p < .001$ for emotional abuse and neglect) and in Malawi ($p = .02$ for emotional neglect) (Table 4). In Indonesia, both food secure and insecure adolescents reported a reduction in emotional abuse during COVID-19. However, the decrease was greater among

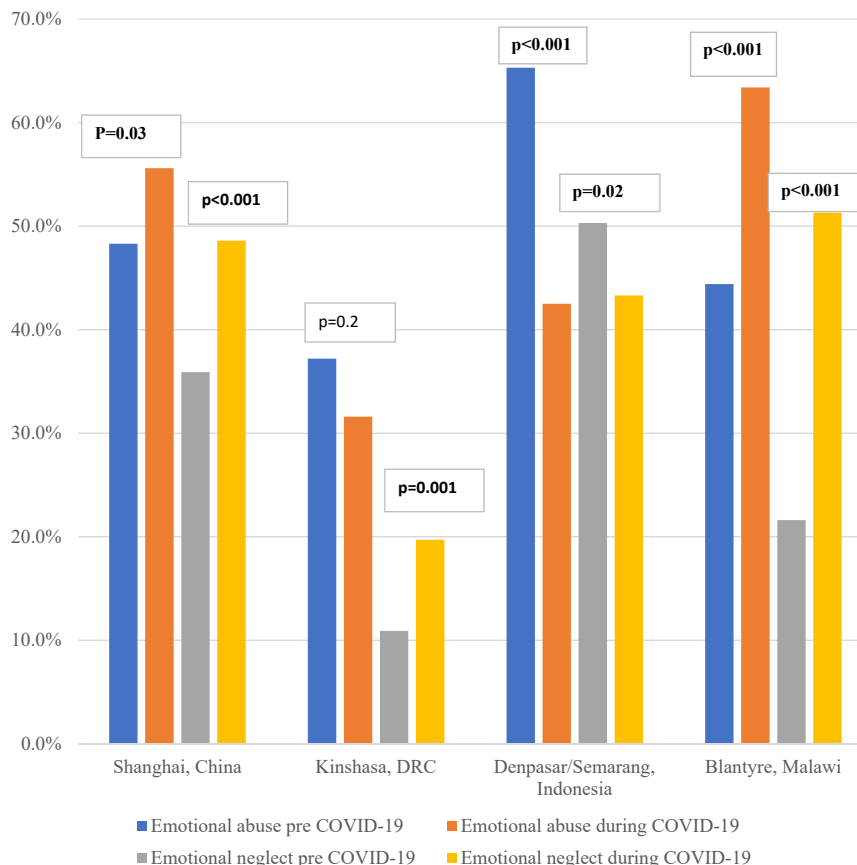


Figure 1. Emotional abuse and neglect across different contexts and time.

Table 2
Generalized estimating equation testing the relationship between emotional abuse and neglect over time

	Emotional abuse				Emotional neglect			
	Shanghai, China N = 387 OR (95% CI) (p value)	Kinshasa, DRC N = 285 OR (95% CI) (p value)	Denpasar/ Semarang, Indonesia N = 400 OR (95% CI) (p value)	Blantyre, Malawi N = 320 OR (95% CI) (p value)	Shanghai, China N = 387 OR (95% CI) (p value)	Kinshasa, DRC N = 285 OR (95% CI) (p value)	Denpasar/ Semarang, Indonesia N = 400 OR (95% CI) (p value)	Blantyre, Malawi N = 320 OR (95% CI) (p value)
Time								
Pre-COVID (2017–2020)	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
COVID-19 (2020)	1.4 (1.01–2.4) (p = .05)	0.8 (0.5–1.1) (p = .2)	0.4 (0.3–0.5) (p < .001)	2.3 (1.6–3.1) (p < .001)	1.7 (1.3–2.3) (p < .001)	2.0 (1.3–3.1) (p = .002)	0.7 (0.6–0.9) (p = .02)	4.1 (3.0–5.7) (p < .001)
Food insecurity								
No	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Yes	1.5 (1.01–2.4) (p = .04)	1.6 (1.0–2.5) (p = .06)	2.0 (1.5–2.8) (p < .001)	1.7 (1.01–2.8) (p = .05)	1.9 (1.3–2.8) (p = .002)	1.6 (0.8–3.1) (p = .2)	2.3 (1.7–3.2) (p < .001)	1.8 (1.0–3.2) (p = .07)
Economic instability								
No	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Yes	1.7 (1.2–2.5) (p = .002)	0.7 (0.5–1.1) (p = .2)	1.0 (0.7–1.3) (p = 1.0)	1.6 (0.9–2.6) (p = .054)	1.5 (1.02–2.1) (p = .04)	0.9 (0.5–1.6) (p = .7)	1.0 (0.7–1.5) (p = .8)	2.2 (1.3–3.9) (p = .01)
Age								
10–12 years	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
13–14 years	1.2 (0.8–1.6) (p = .4)	0.9 (0.6–1.4) (p = .8)	1.0 (0.8–1.4) (p = .8)	1.3 (0.9–1.8) (p = .2)	1.1 (0.8–1.6) (p = .4)	1.2 (0.7–2.1) (p = .5)	1.1 (0.8–1.5) (p = .5)	0.8 (0.6–1.3) (p = .4)
Sex								
Male	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Female	1.0 (0.8–1.4) (p = .8)	0.7 (0.5–0.99) (p = .05)	1.1 (0.8–1.5) (p = .7)	0.8 (0.6–1.1) (p = .2)	1.3 (1.0–1.9) (p = .08)	0.7 (0.4–1.2) (p = .1)	1.7 (1.3–2.4) (p = .001)	0.7 (0.5–1.1) (p = .1)
Household composition								
Single parent/other	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Dual parent	1.0 (0.7–1.6) (p = .9)	0.9 (0.6–1.3) (p = .5)	0.8 (0.5–1.3) (p = .3)	0.8 (0.5–1.1) (p = .2)	0.9 (0.6–1.4) (p = .7)	0.8 (0.5–1.3) (p = .4)	0.7 (0.4–1.1) (p = .1)	0.7 (0.5–1.1) (p = .1)
Socioeconomic status								
Poorest	-ref-	-ref-	-ref-	Not collected in	-ref-	-ref-	-ref-	Not collected in
Less poor	1.0 (0.7–1.4) (p = .9)	1.0 (0.6 t 1.6) (p = 1.0)	0.8 (0.5–1.1) (p = .1)	Malawi	0.9 (0.6–1.2) (p = .4)	0.6 (0.3–1.2) (p = .2)	1.1 (0.7–1.5) (p = .7)	Malawi
Least poor	1.2 (0.8–1.8) (p = .5)	1.4 (0.9–2.1) (p = .2)	0.7 (0.5–1.0) (p = .07)	during	1.2 (0.8–1.9) (p = .3)	0.7 (0.4–1.3) (p = .3)	0.8 (0.6–1.3) (p = .4)	baseline
Parental closeness				baseline				
Yes (a lot)	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
No (not at all—somewhat)	1.3 (0.9–1.8) (p = .2)	1.2 (0.8–1.7) (p = .4)	1.4 (1.0–1.9) (p = .06)	1.5 (1.1–2.3) (p = .03)	1.8 (1.3–2.5) (p < .001)	1.7 (1.02–2.9) (p = .04)	1.8 (1.3–2.6) (p < .001)	1.5 (0.9–2.3) (p = 1.0)
Parental monitoring and awareness								
Yes	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
No	1.8 (1.2–2.8) (p = .004)	1.2 (0.8–1.8) (p = .3)	1.4 (1.1–1.9) (p = .03)	1.4 (0.9–1.9) (p = .09)	1.5 (1.02–2.1) (p = .04)	0.6 (0.3–1.1) (p = .07)	1.3 (0.9–1.8) (p = .1)	1.2 (0.8–1.9) (p = .3)
Peer interaction								
Less than 3 days per week	-ref-	-ref-	-ref-	Not collected in	-ref-	-ref-	-ref-	Not collected in
3 days or more per week	1.2 (0.7–1.9) (p = .5)	1.0 (0.6–1.5) (p = .9)	1.0 (0.7–1.4) (p = .9)	Malawi	1.1 (0.7–1.9) (p = .5)	2.2 (1.1–4.2) (p = .02)	1.1 (0.8–1.5) (p = .5)	Malawi
Neighborhood/social cohesion				during				baseline
Lower	-ref-	-ref-	-ref-	baseline				
Higher	1.1 (0.8–1.7) (p = .5)	0.9 (0.5–1.8) (p = .8)	1.2 (0.8–1.6) (p = .4)	1.3 (0.9–1.9) (p = .1)	1.1 (0.7–1.7) (p = .7)	2.1 (0.7–6.7) (p = .2)	1.0 (0.8–1.5) (p = .8)	0.7 (0.5–1.01) (p = .6)

Bolded values are statistically significant ($p \leq .05$).

CI = confidence interval; DRC = Democratic Republic of Congo; OR = odds ratio.

adolescents who were food secure (OR: 0.2 (95% CI: 0.1–0.3)) compared to those who were food insecure (OR: 0.6 (95% CI: 0.4–0.8)) (Figure S2). These differentials also applied to emotional neglect in Indonesia, as odds of experiencing emotional neglect were significantly lower during COVID-19 among adolescents who had no food insecurity (OR: 0.3 (95% CI: 0.2–0.5) but

remained unchanged among those who experienced food insecurity (OR = 1.2 (0.8–1.6)) (Figure S3). In Malawi, odds of experiencing emotional neglect was significantly higher among those who experienced food insecurity during COVID-19 (OR: 4.7 (95% CI: 3.3–6.7)); however, this association was not found among those who did not experience food insecurity during

Table 3

Generalized estimating equations testing the moderating effect of economic instability on emotional abuse and emotional neglect changes (adjusted for other variables and covariates)

	Emotional abuse				Emotional neglect			
	Shanghai, China N = 387 OR (95% CI) (p value)	Kinshasa, DRC N = 285 OR (95% CI) (p value)	Denpasar/ Semarang, Indonesia N = 400 OR (95% CI) (p value)	Blantyre, Malawi N = 320 OR (95% CI) (p value)	Shanghai, China N = 387 OR (95% CI) (p value)	Kinshasa, DRC N = 285 OR (95% CI) (p value)	Denpasar/ Semarang, Indonesia N = 400 OR (95% CI) (p value)	Blantyre, Malawi N = 320 OR (95% CI) (p value)
Overall moderating effect between economic instability and time (standard interaction model)	1.8 (0.99–3.3) (p = .053)	1.7 (0.8–3.5) (p = .2)	1.4 (0.8–2.6) (p = .2)	1.2 (0.5–2.6) (p = .7)	1.5 (0.8–2.8) (p = .1)	0.8 (0.3–2.2) (p = .7)	1.8 (1.1–3.2) (p = .03)	0.6 (0.2–1.8) (p = .4)
Stratified associations of the moderating effect of economic stability on emotional abuse and neglect pre–COVID-19 versus during COVID-19								
Pre–COVID-19	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Economic stability during COVID-19	1.4 (0.8–1.6) (p = .4)	0.6 (0.3–1.0) (p = .051)	0.3 (0.1–0.4) (p < .001)	1.9 (0.9–4.1) (p = .09)	1.5 (1.1–2.1) (p = .02)	2.4 (1.02–5.8) (p = .04)	0.5 (0.3–0.8) (p = .002)	6.6 (2.3–19.1) (p = .001)
Stratified associations of the moderating effect of economic instability on emotional abuse and neglect pre–COVID-19 versus during COVID-19								
Pre–COVID-19	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Economic instability during COVID-19	2.1 (1.2–3.5) (p = .01)	0.9 (0.6–1.4) (p = .7)	0.4 (0.3–0.6) (p < .001)	2.3 (1.6–3.3) (p < .001)	2.3 (1.4–3.8) (p = .002)	1.9 (1.1–3.3) (p = .02)	1.0 (0.7–1.4) (p = .8)	3.9 (2.7–5.4) (p < .001)

Bolded values are statistically significant ($p \leq .05$).

CI = confidence interval; DRC = Democratic Republic of Congo; OR = odds ratio.

COVID-19 (OR: 1.7 (95% CI: 0.9–3.7)) (Figure S4). There was borderline interaction between time and food insecurity on changes in emotional abuse in Malawi ($p = .054$). Adolescents who were food insecure during COVID-19 had a significantly greater odds of experiencing emotional abuse during COVID-19 versus pre–COVID-19 (OR: 2.6 (95% CI: 1.8–3.6)). However, this difference was not seen among those who were food secure during COVID-19 versus pre–COVID-19 (OR: 2.1 (95% CI: 1.0–4.5))

Discussion

This longitudinal multisite study adds to the limited evidence regarding the impact of COVID-19 on emotional abuse

and neglect among adolescents from low-resource settings. There were diverse patterns by economic instability, food insecurity, site, and population. Specifically, we found higher emotional neglect during COVID-19 in all sites except Indonesia. For emotional abuse, there was more variation with a rise over time in China and Malawi, reduction in Indonesia, and no change in DRC during COVID-19. We also found growing disparities in Indonesia and Malawi, as adolescents who reported economic instability and/or food insecurity during COVID-19 had less favorable changes in emotional abuse and/or neglect than adolescents who reported no economic instability and/or food insecurity. Borderline interactions were also seen in China.

Table 4

Generalized estimating equations testing the moderating effect of food insecurity on emotional abuse and emotional neglect changes (adjusted for other variables and covariates)

	Emotional abuse				Emotional neglect			
	Shanghai, China N = 387 OR (95% CI) (p value)	Kinshasa, DRC N = 285 OR (95% CI) (p value)	Denpasar/ Semarang, Indonesia N = 400 OR (95% CI) (p value)	Blantyre, Malawi N = 320 OR (95% CI) (p value)	Shanghai, China N = 387 OR (95% CI) (p value)	Kinshasa, DRC N = 285 OR (95% CI) (p value)	Denpasar/ Semarang, Indonesia N = 400 OR (95% CI) (p value)	Blantyre, Malawi N = 320 OR (95% CI) (p value)
Overall moderating effect between food insecurity and time (Standard Interaction Model)	1.5 (0.8–2.9) (p = .2)	1.4 (0.7–3.1) (p = .4)	3.1 (1.7–5.8) (p < .001)	2.1 (1.0–4.5) (p = .054)	1.7 (0.8–3.5) (p = .2)	0.7 (0.2–2.3) (p = .6)	3.5 (1.9–6.3) (p < .001)	2.5 (1.1–5.4) (p = .02)
Stratified associations of the moderating effect of food security on emotional abuse and neglect pre–COVID-19 versus during COVID-19								
Pre–COVID-19	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Food secure during COVID-19	1.3 (0.9–1.7) (p = .1)	0.6 (0.3–1.2) (p = .1)	0.2 (0.1–0.3) (p < .001)	1.2 (0.6–2.4) (p = .6)	1.5 (1.1–2.1) (p = .01)	2.7 (0.9–7.8) (p = .06)	0.3 (0.2–0.5) (p < .001)	1.9 (0.9–3.7) (p = .08)
Stratified associations of the moderating effect of food insecurity on emotional abuse and neglect pre–COVID-19 versus during COVID-19								
Pre–COVID-19	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-	-ref-
Food insecure during COVID-19	1.9 (1.04–3.4) (p = .04)	0.9 (0.6–1.3) (p = .5)	0.6 (0.4–0.8) (p = .003)	2.6 (1.8–3.6) (p < .001)	2.6 (1.3–5.0) (p = .01)	1.9 (1.2–3.2) (p = .01)	1.2 (0.8–1.6) (p = .4)	4.7 (3.3–6.7) (p < .001)

Bolded values are statistically significant ($p \leq .05$).

CI = confidence interval; DRC = Democratic Republic of Congo; OR = odds ratio.

The cross-cultural perspective of our study allows comparison of levels of emotional abuse and neglect using similar measures among the same cohort. Such comparison provides important insights showing both commonalities and differences in the patterns of adversities pre- and during COVID-19 among this diverse geographic, economic, and cultural representation of young people living in impoverished urban settings. Across sites, emotional abuse was more common than neglect pre–COVID-19, although the difference generally narrowed during COVID-19 due to higher emotional neglect in most sites except Indonesia, where there was a decline. Differences were also striking, both in terms of pre–COVID-19 levels of adversities and during the COVID-19 period. Abuse and neglect were highest in the Asian sites and lowest in the African sites pre–COVID-19. In Malawi, we saw a significant increase in emotional neglect if adolescents were food insecure versus food secure during COVID-19. While Malawi did indeed experience fewer direct COVID-19–related deaths than some other countries and lower government regulations [21], there was extensive disruption to life during the period of restrictions. This especially affected urban poor communities from which the study sample was drawn in 2 respects: there was a total closure of schools implemented from early in the pandemic that led to serious disruption of education but also loss of access to school feeding programs and the social life that accompanies normal school attendance [22]. The ordinary life of adolescents was curtailed with an absence of activities such as informal sports and social gathering in communities. The second aspect was the sudden loss of employment among adults, who relied on informal day laboring. Unlike their counterparts in rural areas who were mostly subsistence farmers and thus more resilient with respect to sources of food, urban families suddenly lost livelihoods and this imposed huge pressures in the absence of an emergency subsistence response [William Stones, PhD, e-mail communication, February 2024]. We consider this may have been a major source of stress on families could have led to the reported increase in emotional abuse and neglect [William Stones, PhD, e-mail communication, February 2024]. A qualitative study conducted during COVID-19 among adolescents across 13 diverse countries, including Malawi; showed that experiencing emotional abuse and neglect within sub-Saharan Africa was a result of poverty [23]. Young people outlined harassment by family members, neighbors, and classmates because of lack of money to pay fees or buy new school uniforms [23].

Changes in emotional abuse and neglect also varied by site, showing negative changes in 3 sites, but more favorable changes in Indonesia. While differences in the time period of the measures used pre–COVID-19 versus COVID-19 measure (ever vs. 1 week), modality of data collection (online vs. in-person), and school closure status (schools closed during data collection vs. open) prevents interpretation of the 20% and 7% percentage point drop in emotional abuse and neglect during COVID-19, respectively; this decline was not reported elsewhere. Studies conducted during the pandemic in Indonesia have indicated that family resilience through open communication, time together, cooperation and division of roles, finding solution to problems, adhering to government regulations of the health protocols, financial stability, religiosity/spiritual well-being, and being optimistic could play a role in mitigating the effects of emotional abuse and maltreatment [24,25]. The qualitative interviews conducted as part of the GEAS study also suggested that school

and work shut down during COVID-19 increased family bonding due to reduced academic stress and work-related pressures [Anggriyani wahyu pinandari, M.P.H, e-mail communication, February 2024]. There is limited evidence about changes in emotional abuse and neglect in LMICs. Studies, mostly conducted in high resource settings, show mixed trends, and rely on facility-based or police reports of maltreatment rather than adolescent responses. An umbrella review from predominantly high-income countries demonstrated increase in emotional abuse, neglect, and psychological abuse but decrease in physical and sexual abuse cases [26].

Changes in emotional abuse and/or neglect varied according to economic instability and food insecurity in Indonesia and food insecurity in Malawi. This raises concern over rising social inequalities induced by the pandemic. In particular, food insecurity is likely a result of persistent socioeconomic disadvantage that were present before the pandemic. Economic impacts such as food insecurity, income loss, and housing insecurity may have led to increased intrafamilial adversity exposing children to increased parental anxieties [27,28]. These findings corroborate systematic reviews and studies in high-income countries showing that as food insecurity increased, adverse childhood experiences also increased [28–30]. The rise in disparities, however, was not evidenced in all of our settings, which may partly be explained by the fact that economic hardship was ubiquitous in the African settings, while food insecurity was rare in China, perhaps due to government social programs to mitigate the economic impact of COVID-19 for socially vulnerable urban populations [31]. These results highlight the need to supplement public health responses to global pandemics with social safety net programs to reduce social disparities that extend beyond COVID-19 morbidity and mortality to broader harmful exposures, including emotional maltreatment that have lifelong consequences for the health and wellbeing of populations [32,33].

The interpretation of our results needs to be considered with several limitations in mind. First, the difference in time frames of emotional abuse and neglect (ever been exposed pre–COVID-19 vs. 1 week exposure during COVID-19) prevents a true trends analysis, as pre–COVID-19 exposure may suffer recall bias while past week exposure may not accurately capture the experiences of adversities at different times during COVID-19. This is especially striking when comparing the associations we see for emotional abuse and neglect. It is possible that when asking adolescents to recall experiences of emotional abuse and neglect, there may be differential recall. For example, adolescents may recall abuse with greater clarity than neglect, leading to higher reporting of experiencing abuse ever and in the past week abuse, relative to neglect. If such biases exist this would exacerbate the associations seen during COVID-19; however, more research is needed to confirm this hypothesis. In addition, COVID-19 containment measures, including school closures varied by site, which may affect young people's exposure to household adversities. Furthermore, we may not be able to generalize the study findings beyond low-resource urban settings in LMICs due to the purposive nature of our sample. The COVID-19 module was conducted among a subsample of the original GEAS cohort in each site, which is drawn exclusively from urban poor communities, limiting stratified analyses to verify if the changes differed by demographic characteristics. Although we saw changes over time across all countries, we were not able to qualitatively understand why these changes

existed; future studies should use mixed methods to triangulate results. Finally, emotional abuse and/or neglect may be under-reported, especially in the DRC where data was collected face to face.

Despite the limitations of our findings, this study is among the few to compare the impact of COVID-19 on adolescent emotional abuse and neglect in low-resource settings using longitudinal data. The levels, changes, and disparities in emotional abuse and neglect during the pandemic call for integrated policies that respond to the public health emergency but also provide social protection to prevent the indirect consequences of the pandemic on the health and well-being of vulnerable populations. Examples of interventions that could mitigate the adverse impact of economic instability and food insecurity include subsidizing food and replacing school feeding programs with food delivery at home or cash transfers [34]. Such interventions should be embedded into existing government and global pandemic preparedness plans to ensure effective delivery and sustainability while reaching the most vulnerable populations [34]. Research implications include (1) continuing longitudinal analysis looking at trends in child abuse and maltreatment among a larger sample; (2) understanding the relationship between different types of economic disadvantage and child abuse; and (3) conducting qualitative analyses among groups of higher and lower SES to understand how experiences of emotional maltreatment differ.

Conclusions

The unprecedented economic impact of the COVID-19 pandemic has exacerbated the experience of emotional abuse and/or neglect among adolescents living in some urban poor communities around the world. The implementation of mitigation measures against the spread of pandemics and their unintended negative impacts on vulnerable children and adolescents highlights the complexities that policymakers may encounter while trying to control a global pandemic. Putting children and adolescents at the center of recovery plans should be at the forefront and may lead to immediate- and long-term benefits. Governments and policymakers must invest in financial support programs that reduce the economic impacts of emergencies and disasters. To effectively address emotional abuse and/or neglect, response systems during emergencies and disasters should be multisectoral and should be targeted within and beyond public health.

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Supplementary Data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jadohealth.2024.09.002>.

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