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Socioeconomic impacts of COVID-19 lockdown and support for slum dwellers and homeless individuals in Ho Chi Minh City, Vietnam: A cross-sectional study

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Abstract: This study assessed social vulnerabilities, serious psychological distress (SPD), and socioeconomic impacts of the COVID-19 lockdown on slum dwellers and homeless individuals in Ho Chi Minh City (HCMC), Vietnam. It also examined the coverage and sources of cash and food support provided, community actors who assisted with such support, and the continuation of medication for chronic diseases. A cross-sectional survey of 415 participants (383 slum dwellers and 32 homeless individuals) was conducted using a structured questionnaire. Many participants faced social vulnerabilities, and 19.8% exhibited SPD. Job insecurity affected 58.8% of participants, and 60.7% reported income reductions due to the lockdown. During this period, 78.8% received cash support and 84.8% received food support; however, the coverage was significantly lower among homeless individuals, particularly for government-provided assistance. Community actors, most notably neighborhood heads, played key roles in assisting with the provision of cash and food support. The vast majority of patients with chronic illnesses were able to continue their medications during the lockdown, primarily through household drug storage and visits to health facilities. Receiving sufficient food support was significantly associated with reduced odds of SPD. These findings highlight the profound socioeconomic effects of the COVID-19 lockdown on populations with unstable housing in HCMC. The cash and food support, predominantly sourced from the government and donors, achieved high coverage through effective delivery by various community actors. Prescription regulations should be adjusted during lockdowns to allow patients with chronic conditions to stockpile sufficient medication. Mental health support is crucial for populations with unstable housing during pandemics.

***Keywords*:** COVID-19, unstable housing, urban slum, homelessness, social support, serious psychological distress

1. Introduction

Housing plays a crucial role as a key social determinant of health (*1-3*). Housing instability, affecting both migrants and local populations, has been linked to various physical and mental health challenges (*4-6*).

Ho Chi Minh City (HCMC), Vietnam's largest metropolis with a population of 9,456,700 as of 2023 (*7*), is the nation's industrial hub. While unstable housing has long been acknowledged as a major challenge in HCMC, its precise extent has rarely been thoroughly quantified (*8*). In 2004, about 15% of HCMC's housing was made up of slums or squatter settlements. The city's rapid urban growth, driven by the influx of thousands of migrants each year, has placed significant pressure on housing infrastructure, leading to the continued spread of such settlements (*9*). By 2002, city authorities had identified 67,000 households residing in fragile dwellings in slums, with over a third of them located along the city's canals (*10*). In 2024, more than 2,350 homeless people in HCMC were relocated to social shelters (*11*). However, the actual homeless population is estimated to be significantly higher, as this figure excludes those who were not relocated. HCMC was heavily struck by the COVID-19 pandemic from May to September 2021, and the City Government had issued a series of social distancing and stringent lockdown policies to control the situation in the city. The three months of strict lockdown was imposed from July to September 2021. The local authority of HCMC provided cash and food supports as part of its social support program during the same period.

The COVID-19 pandemic and response measures

have caused immense financial, life-related, and mental health impacts on the population worldwide. The COVID-19 lockdowns and extensive mobility restrictions had important effects on employment and household finances (*12,13*). The mental health impacts of the pandemic have been reported from many countries in the world (*14,15*). Mental health challenges are widely recognized as a major concern for individuals living in slums and those experiencing homelessness across the globe, even without the COVID impacts. Several systematic reviews have highlighted the high prevalence of mental health issues within both slum communities (*16*) and homeless populations (*17*).

The objectives of this study were: *i*) To estimate the prevalence of social vulnerabilities and serious psychological distress (SPD) among slum dwellers and homeless individuals in HCMC, and to compare the two groups; *ii*) To assess the impact of the COVID-19 lockdown on jobs and income among slum dwellers and homeless individuals, and to examine differences between the groups; *iii*) To evaluate the coverage and sources of cash and food support provided during the lockdown, and to compare these between the two groups; *iv*) To identify community actors who assisted with the provision of cash and food support during the lockdown; *v*) To assess the continuity of medication use among patients with chronic conditions during the lockdown; and *vi*) To examine the association between SPD and both the impacts of the lockdown and the support received.

2. Materials and Methods

2.1. Target population

The current study focused on individuals facing housing instability, including slum dwellers and those experiencing homelessness, who were either reached by the outreach team of the Center for Supporting Community Development Initiative (SCDI) or utilized its drop-in services in HCMC. Participants were included based on the following criteria: *i*) being present during household visits and *ii*) being at least 18 years old. Exclusion criteria included: *i*) refusal to participate in the survey and *ii*) inability to comprehend the study explanation or to communicate effectively with the research team. Participants living in slums were recruited from 13 sites supported by SCDI, spanning ten wards in four of HCMC's 16 urban districts. These locations comprised particular alleys, neighborhoods surrounding hostels, and communities of garbage scavengers. Homelessness was defined as having slept outside of a home environment within the past 30 days. This encompassed individuals staying in public areas like sidewalks, bus stations, markets, parks, or under bridges, as well as in workplaces, hammock cafés, or internet cafés.

2.2. Sampling

In 13 slum areas served by SCDI, local collaborators conducted pre-visits to identify potential participants. Since only 77% of residents were officially registered at their current addresses, a complete sampling frame was not established beforehand. Instead, local collaborators relied on their familiarity with the communities to identify individuals aged 18 or older residing in the target slums, aiming to include all eligible participants. Residents who agreed to participate were listed, resulting in a total of 460 names. Survey teams later visited all listed individuals, and 383 ultimately took part in the survey, achieving a response rate of 83.3%. The main reason for non-participation was the absence of residents during the survey period, often due to travel outside HCMC, highlighting their highly mobile lifestyle. Based on local demographic data, the estimated number of individuals aged 18 or older living in non-permanent housing across the 10 wards containing these slums was 1,792, meaning those listed represented approximately 26% of this population. For homeless individuals, all those approached by the SCDI team — either during outreach activities or through drop-in services — who consented to join the study were included; thus, a non-random sampling approach was used. In total, 415 individuals with unstable housing were recruited for the study, including 383 slum residents and 32 homeless individuals.

2.3. Data collection

The study utilized a structured questionnaire incorporating the Kessler Psychological Distress Scale (K6) to assess serious psychological distress (SPD), defined as a K6 score of ≥ 13. The Vietnamese version of the K6 has been validated, demonstrating reliable internal consistency and strong construct validity (*18*). In our survey data, the Cronbach's alpha of the K6 was 0.863, indicating a high level of internal consistency.

It also gathered detailed information on the following areas: basic sociodemographic characteristics (*e.g.*, age, gender, years of schooling, migrant status or birth in HCMC, marital status, household size, and the number of children by age group), socioeconomic conditions (*e.g.*, primary source of income, monthly earnings, private home ownership, and sleeping arrangements over the past 30 days), identification and registration status, health insurance coverage, experiences of labor exploitation, incarceration or detention history, indebtedness, job and income impacts of the COVID-19 lockdown, and cash and food support provided during the lockdown.

Data collection occurred between November 2023 and April 2024. Among the information collected, data on the impact of the COVID-19 lockdown on employment and income, cash and food support received during the lockdown period, and prevalence of chronic

diseases requiring continuous medication and the continuation of medication during the lockdown were obtained retrospectively. Participants were asked, at the time of the survey, to report information on the lockdown impacts, support received, and the continuation of medication for chronic illnesses limited to the period when the lockdown was in effect (July–September 2021). In contrast, information on sociodemographic characteristics, socioeconomic conditions, psychological distress, and other vulnerabilities was collected based on participants' status at the time of the survey (November 2023–April 2024).

2.4. Statistical analysis

We calculated the proportions of participants with respect to social vulnerability, SPD, the impacts of the COVID-19 lockdown and related support, the presence of chronic diseases, and medication continuity during the lockdown. Differences between slum dwellers and homeless individuals were assessed using Chi-square tests for statistical significance. We also conducted bivariate analyses of the association between SPD and COVID-19 impacts and supports. Statistical significance was set at $p < 0.05$. Data analyses were performed using SPSS version 27 (IBM Corp., Armonk, NY, USA).

2.5. Ethical considerations

The study protocol, participant information sheet with the consent form, withdrawal form, and questionnaire underwent review and received approval from the National Center for Global Health and Medicine (NCGM) Ethics Review Committee on July 9, 2023 (NCGM-S-004698-00), and the Ethics Review Board of the Institute for Social Development Studies (ISDS) in Vietnam on September 28, 2023, prior to initiating data collection. Written consent, including participants' signatures, was secured from all individuals before their participation. The participant information sheet detailed the study's objectives, procedures, potential risks, and benefits. Participants were informed that participation was entirely voluntary, that declining to participate would not result in any disadvantages, and that they retained the right to withdraw their consent at any stage, even after the data collection.

3. Results

3.1. Basic characteristics of the study participants

Table 1 presents the key social, demographic, and economic characteristics of the 415 participants included in this study. The mean age of the participants was 44.12 years (SD: 0.65). Females represented the majority, accounting for 244 participants (58.8%). There were 383 participants (92.3%) residing in slums, while the remaining 32 (7.7%) were homeless. Among all participants, 219 individuals (52.8%) had migrated from other provinces, while 196 (47.2%) were native to HCMC. The average duration of formal education was 5.93 years (SD: 3.86). Regarding marital status, 101 participants (24.3%) were married, and 79 (19.0%) were cohabiting with partners without formal marriage. The average household size was 3.06 members (SD: 1.90). The mean monthly income was 134.45 US dollars (SD: 122.30). In terms of livelihood, 104 participants (25.1%) had no independent income and relied on others for financial support; 85 (20.4%) were employed in informal jobs; 58 (14.0%) worked as garbage collectors; 39 (9.4%) were motorcycle drivers or delivery workers; 29 (7.0%) sold lottery tickets; and 26 (6.3%) were street vendors.

Table 1. Basic characteristics of the study participants

Characteristics	Figures
Total number of study participants	415
Age, mean (SD) in years	44.12 (0.65)
Female gender, *n* (%)	244 (58.8)
Housing status	
Slum dweller, *n* (%)	383 (92.3)
Homeless, *n* (%)	32 (7.7)
Migrant or born in HCMC	
Migrant, *n* (%)	219 (52.8)
Born in HCMC, *n* (%)	196 (47.2)
Duration of schooling, mean (SD) in years	5.93 (3.86)
Marital status	
Married, *n* (%)	101 (24.3)
Cohabiting without formal marriage, *n* (%)	79 (19.0)
Separated, divorced or widowed, *n* (%)	37 (8.9)
Never married, *n* (%)	101 (24.3)
Household size, mean (SD) in persons	3.06 (1.90)
Monthly income, mean (SD) in US dollars[a]	134.45 (122.30)
Means of earning a living	
No income and dependent on others, *n* (%)	104 (25.1)
Informal employment	85 (20.4)
Garbage collector	58 (14.0)
Motorcycle driver/shipper	39 (9.4)
Lottery ticket seller	29 (7.0)
Street vender	26 (6.3)
Housemaid	13 (3.1)
Construction worker	12 (2.9)
Shopkeeper	12 (2.9)
Formal employment	10 (2.4)
Others	27 (6.5)

[a]Based on the exchange rate as of February 1, 2024.

3.2. Prevalence of socioeconomic vulnerabilities and serious psychological distress (SPD)

Table 2 presents the prevalence of socioeconomic vulnerabilities and serious psychological distress (SPD) among the study participants, comparing slum residents and homeless individuals. The absence of civil registration, as indicated by the lack of ID cards, was more common among the homeless (37.5%) than among slum dwellers (9.7%), with statistical significance ($p < 0.001$). Similarly, the absence of registration at the current residence was more frequent among the homeless

Table 2. Prevalence of socioeconomic vulnerabilities and serious psychological distress (SPD) among the study participants

Items	Slum dwellers (n = 383)	Homeless (n = 32)	Total (n = 415)	$Chi^{2,a}$	p value
Lack of ID card	37 (9.7%)	12 (37.5%)	49 (11.8%)	21.981	0.000*
Lack of registration at living location	88 (23.0%)	26 (81.3%)	114 (27.5%)	50.335	0.000*
Lack of health insurance coverage	154 (40.2%)	21 (65.6%)	175 (42.2%)	7.823	0.005*
Faced any form of labor exploitation	264 (68.9%)	22 (68.8%)	286 (68.9%)	0.000	0.983
Currently in debt	168 (43.9%)	13 (40.6%)	181 (43.6%)	0.126	0.723
Serious psychological distress (SPD)	71 (18.5%)	11 (34.4%)	82 (19.8%)	4.672	0.031*

*$p < 0.05$; [a]Chi^2 values for the difference between the proportion among slum dwellers and that among homeless individuals; ID: identification.

Table 3. COVID-19 lockdown impacts on the jobs and income of the participants

Items	Slum dwellers (n = 383)	Homeless (n = 32)	Total (n = 415)	$Chi^{2,a}$	p value
COVID-19 impact on jobs					
Faced job insecurity	224 (58.5%)	20 (62.5%)	244 (58.8%)	0.141	0.707
Lost job	41 (10.7%)	4 (12.5%)	45 (10.8%)	0.098	0.754
Had to change job	56 (14.6%)	5 (15.6%)	61 (14.7%)	0.024	0.878
Had to stop working temporarily	127 (33.2%)	11 (34.4%)	138 (33.3%)	0.020	0.888
Unemployed from before COVID	16 (4.2%)	2 (6.3%)	18 (4.3%)	0.306	0.580
No change	139 (36.3%)	10 (31.3%)	149 (35.9%)	0.326	0.568
Others	4 (1.0%)	0 (0.0%)	4 (1.0%)	0.337	0.561
COVID-19 impact on income					
Faced income reduction	234 (61.1%)	18 (56.3%)	252 (60.7%)	0.291	0.590
Complete loss of income	41 (10.7%)	3 (9.4%)	44 (10.6%)	0.055	0.814
Reduction of income	177 (46.2%)	14 (43.8%)	191 (46.0%)	0.072	0.788
Temporary reduction of income	16 (4.2%)	1 (3.1%)	17 (4.1%)	0.083	0.773
No change	110 (28.7%)	11 (34.4%)	121 (29.2%)	0.457	0.499
Faced income increase	21 (5.5%)	0 (0.0%)	21 (5.1%)	1.848	0.174
No income from before COVID	18 (4.7%)	3 (9.4%)	21 (5.1%)	1.344	0.246

(81.3%) than among the slum-dwelling counterparts (23.0%) ($p < 0.001$). The lack of health insurance coverage was also more prevalent among the homeless (65.6%) than among slum dwellers (40.2%) ($p = 0.005$). While 68.9% of participants reported experiences of labor exploitation and 43.6% were in debt, no significant differences were observed between the two groups. Finally, the prevalence of SPD, defined by a K6 score of ≥ 13, was higher among the homeless (34.4%) than among slum dwellers (18.5%) ($p = 0.031$).

3.3. Impacts of the COVID-19 lockdown on jobs and income

Table 3 depicts the impacts of the COVID-19 lockdown on jobs and income among the participants. Overall, 58.8% of participants either lost their jobs, changed jobs, or were forced to stop working temporarily, with no significant difference observed between the slum dwellers and the homeless individuals. Additionally, 60.7% of participants reported varying degrees of income reduction, with no significant difference observed between the two groups.

3.4. Coverage and sources of cash and food support provided during the COVID-19 lockdown

Table 4 summarizes the coverage and sources of cash and food support provided during the lockdown. The majority of participants (78.8%) received cash support during the COVID-19 lockdown, with the proportion among the slum dwellers (80.7%) and the homeless (56.2%) differing significantly ($p = 0.001$). The most common source of cash support was the government (76.1%), although this proportion was significantly lower among the homeless than among the slum dwellers ($p = 0.006$). Other notable sources of cash support included landlords (9.6%) and donors (6.1%).

Most participants (84.8%) also received food support, with the proportion among the slum dwellers (85.6%) and the homeless (71.9%) also differing significantly ($p = 0.034$). The most common source was donors (56.6%), with similar proportions observed between slum dwellers and homeless individuals. These "donors" included individuals participating in the "One Egg A Day" project organized by private companies and public agencies including foreign embassies. Other significant sources of food support were the government (32.0%), though these proportions were significantly lower among the homeless ($p = 0.038$), and the local authorities (22.9%). Overall, government-provided support, both in terms of cash and food, reached significantly lower proportion of homeless individuals compared to slum dwellers.

Table 4. Coverage and sources of cash and food support provided during the COVID-19 lockdown

Items	Slum dwellers (n = 383)	Homeless (n = 32)	Total (n = 415)	Chi^{2,a}	p value
Receipt of cash support during the COVID-19 pandemic[a]					
Received cash support	309 (80.7%)	18 (56.2%)	327 (78.8%)	10.548	0.001*
From the government	298 (77.8%)	18 (56.3%)	316 (76.1%)	7.555	0.006*
From landlords	40 (10.4%)	0 (0.0%)	40 (9.6%)	3.699	0.054
From donors[b]	25 (6.5%)	0 (0.0%)	25 (6.1%)	2.223	0.136
From others/ Do not remember	4 (1.0%)	0 (0.0%)	4 (1.0%)	0.337	0.561
Not received cash support	74 (19.3%)	14 (43.8%)	88 (21.2%)	10.548	0.001*
Receipt of food support during the COVID-19 pandemic[b]					
Received food support	329 (85.6%)	23 (71.9%)	352 (84.8%)	4.512	0.034*
From donors[c]	217 (56.7%)	18 (56.3%)	235 (56.6%)	0.002	0.964
From the government	128 (33.4%)	5 (15.6%)	133 (32.0%)	4.294	0.038*
From local authorities	91 (23.8%)	4 (12.5%)	95 (22.9%)	2.121	0.145
From landlords	28 (7.3%)	0 (0.0%)	30 (7.2%)	2.509	0.113
From neighbors	16 (4.1%)	1 (3.1%)	17 (4.1%)	0.083	0.773
From others/ Do not remember	21 (5.5%)	0 (0.0%)	21 (5.1%)	1.848	0.174
Received food support sufficient for living	171 (44.9%)	11 (34.4%)	182 (44.1%)	0.337	0.561
Not received food support	54 (14.4%)	9 (28.1%)	63 (15.2%)	4.512	0.034*

*$p < 0.05$; [a]Chi^2 values for the difference between the proportion among slum dwellers and that among homeless individuals; [b]Some participants received support from multiple sources; [c]Donors included individuals who donated eggs through the "One Egg A Day" project, private companies, and organizations and agencies, including foreign embassies.

Table 5. Continuation of medical treatment for chronic conditions during lockdown due to COVID-19

	Slum dwellers (n = 383)	Homeless (n = 32)	Total (n = 415)	Chi^{2,a}	p value
Participants with chronic conditions[b] requiring continuous medical treatment	74 (19.3%)	10 (31.3%)	84 (20.2%)	2.603	0.107
Participants who could continue medical treatment during lockdown[c]	64 (86.5%)	9 (90.0%)	73 (86.9%)	0.096	0.757
Strategies applied to continue medical treatment[d]					
Stored enough drugs at home	20 (31.3%)	4 (44.4%)	24 (32.9%)	0.622	0.430
Managed to visit health facilities for refill	14 (21.9%)	2 (22.2%)	16 (21.9%)	0.001	0.981
Neighbor brought drugs	5 (7.8%)	0 (0.0%)	5 (6.8%)	0.755	0.385
Peer supporters brought drugs	2 (3.1%)	1 (11.1%)	3 (4.1%)	1.277	0.258
Clinic delivered drugs	3 (4.7%)	0 (0.0%)	3 (4.1%)	0.440	0.507
Others[e]	20 (31.3%)	2 (22.2%)	22 (30.1%)	0.138	0.710

[a]Chi^2 values for the difference between the proportion among slum dwellers and homeless individuals; [b]Including hypertension, diabetes, hepatitis B, tuberculosis, HIV, and drug addiction; [c]Percentage figures are among those who had chronic conditions requiring continuous medical treatment; [d]Percentage figures are among those who could continue medical treatment during the lockdown; [e]Other strategies applied by the slum dwellers included buying drugs themselves, having family members buy drugs, and asking police to buy drugs.

Receipt of cash support, primarily sourced from the government, was statistically significantly associated with ID card possession (p = 0.001) and registration at the living location (p = 0.008). In contrast, receipt of food support, primarily sourced from various private donors, was not significantly associated with ID card possession or registration at the living location.

3.5. Community actors who assisted with provision of cash and food support

Cash support in communities was facilitated by neighborhood heads (69.7%), landlords (15.9%), neighborhood police (6.1%), ward officials (5.2%), and neighbors (4.0%). Similarly, food support was facilitated by neighborhood heads (34.4%), neighbors (16.8%), landlords (11.3%), and neighborhood police (3.1%).

3.6. Continuation of medication among patients with chronic diseases during the COVID-19 lockdown

Table 5 shows the status of the continuation of medical treatment for chronic diseases during the lockdown. A total of 84 participants (20.2%) had chronic conditions requiring ongoing medical treatment, including hypertension, diabetes, hepatitis B, tuberculosis, human immunodeficiency virus (HIV) infection, and drug addiction. The prevalence was higher among the homeless (31.3%) than among slum dwellers (19.3%) but not statistically significant (p = 0.107). Among these individuals, 73 (86.9%) were able to continue their medical treatment during the lockdown,

Table 6. Bivariate analyses of associations between serious psychological distress (SPD) and job/income impacts and receipt of cash and food support among the participants during the COVID-19 lockdown

Explanatory variables	*n*	OR (95% CI)	*p* value
Faced job insecurity[a] due to COVID-19	244	0.778 (0.475-1.276)	0.320
Faced income loss/reduction due to COVD-19	252	0.951 (0.581-1.557)	0.841
Received cash support during COVID-19	327	0.674 (0.386-1.178)	0.164
Received food support during COVID-19	352	0.752 (0.397-1.424)	0.381
Received food support sufficient for living during COVID-19	183	0.520 (0.312-0.869)	0.012*
Could continue treatment of chronic medical conditions during COVID-19	73	1.514 (0.400-5.736)	0.539

*$p < 0.05$; CI: confidence interval; [a] Includes job loss, had to change job, and had to stop working temporarily.

indicating that there was no significant disruption in treatment for most participants. There was no significant difference in the proportion of successful continuation of treatment between slum dwellers and the homeless ($p = 0.757$). Additionally, lack of valid health insurance was not significantly associated with the continuation of treatment. The most common strategy employed to continue medical treatment was stockpiling sufficient medication at home (32.9%), followed by visiting health facilities for refills (21.9%), and asking neighbors to bring medications (6.8%).

3.7. Associations between serious psychological distress (SPD) and the COVID-19 lockdown impacts as well as support provided

Table 6 presents the association between SPD and two socioeconomic impacts of the COVID-19 lockdown: job insecurity and income loss/reduction, the receipt of cash and food support, the receipt of food support that was sufficient for living, and the continuation of treatment for chronic medical conditions during the lockdown. Only the receipt of food support sufficient for living was statistically significantly associated with a reduced odds of SPD (OR = 0.520, 95% CI: 0.312–0.869, $p = 0.012$).

4. Discussion

In addressing its six objectives, this study found that: *i*) A high proportion of participants — particularly homeless individuals — experienced social vulnerabilities and serious psychological distress (SPD); *ii*) The majority of participants faced both job insecurity and income reduction during the COVID-19 lockdown, with no significant difference between slum dwellers and the homeless; *iii*) Most participants received both cash and food support during the lockdown, but coverage was significantly lower among the homeless, especially for government-provided support; *iv*) Various community actors, most notably neighborhood heads, facilitated the provision of cash and food support; v) The vast majority of patients with chronic illnesses were able to continue their medication during the lockdown, primarily through household drug storage and visits to health facilities; and *vi*) Receiving sufficient food support was significantly associated with reduced odds of SPD.

The prevalence of SPD was 18.5% among slum dwellers and 34.4% among the homeless (Table 2), both significantly higher than the rates reported in the general populations of the United States (US) (*19*) and Japan (*20*), which range from 2.7% to 4.0% and 4.0% to 4.2%, respectively. This elevated prevalence of SPD likely reflects the underlying vulnerability of our participants, stemming from their precarious housing status, poverty, indebtedness, food insecurity, and labor exploitation, which may have been exacerbated by the temporary stress caused by the COVID-19 lockdown.

Reflecting the global implementation of social distancing measures, including lockdowns, in response to the COVID-19 pandemic, job insecurity has been reported among slum dwellers in various low- and middle-income countries (LMICs), including Ghana (*21*), Kenya (*22*), Uganda (*23*), and Thailand (*24,25*). Reported rates of job insecurity ranged from 94% to 96%, while complete job loss ranged from 26% to 73%. In comparison, our findings of 58.5% experiencing job insecurity and 10.7% experiencing complete job loss (Table 3) are substantially lower than those reported in previous studies. These differences may reflect variations in employment types and the stringency of lockdown measures. Job insecurity among homeless populations has also been documented in the US (*26,27*) and Australia (*27*), with 41% reporting job insecurity and 16% reporting complete job loss. Our findings for homeless individuals of 62.5% reporting job insecurity and 12.5% reporting complete job loss (Table 3) are generally consistent with these previously reported figures.

Income reduction due to COVID-19 lockdown has also been reported among slum dwellers in various LMICs, including India (*28*), Thailand (*25*), the Philippines, Myanmar, Indonesia (*29*), Pakistan (*30*), and Kenya (*31*), with the proportion ranging from 50% to 95%. Our finding that 61.1% of participants experienced income reduction (Table 3) is consistent with these previous reports. Among homeless populations, income reduction has been reported in the US (*26*), France (*32*), Brazil (*33*), and China (*34*), with 33% to 81% experiencing income reduction, and 26.3% facing complete income loss in Brazil (*33*). Our findings of

56.3% experiencing income reduction and 9.4% facing complete income loss (Table 3) are generally consistent with figures reported outside of Vietnam.

Cash support for slum dwellers during the COVID-19 lockdown has been reported in Argentina (*35*), Bangladesh (*36*), and Thailand (*24*), with the proportion of recipients ranging from 20% to 64%. The lack of ID cards and mobile phones among these populations hindered their registration for cash transfers in Thailand (*24*). In contrast, our result of 80.7% (Table 4) was higher than the figures reported from other countries, potentially reflecting the relatively high proportion of ID card possession (90.3%) and registration at living locations (77.0%) among slum dwellers in HCMC (Table 2). Cash support for homeless people has been reported in the US (*26*) and Brazil (*37*), with the proportion of recipients ranging from 5% to 45%. In Brazil, the lack of documentation, absence of services in the areas they lived, and lack of knowledge hindered the receipt of cash transfers among the homeless population (*37*). Our result of 56.2% (Table 4) was higher than the figures reported from other countries, potentially reflecting their modest proportion of ID card possession (62.5%) (Table 2).

Food support for slum dwellers during the lockdown has been reported in Bangladesh (*36*) and Argentina (*35*), both with 96% coverage. Our result of 85.6% coverage (Table 4) was lower than these figures, but still high. Food support for homeless people has been reported in the US (*26*) and Brazil (*37*), with coverage ranging from 83% to 100%. Again, our result of 71.9% coverage (Table 4) was lower than these figures but still considered high.

Government support, both in cash and food assistance, was significantly lower among homeless individuals than among slum dwellers in HCMC. This disparity reflects the lower proportion of homeless individuals who possess ID cards and are registered at their current residences, making their identification difficult and their legal entitlement to social support precarious. The receipt of cash support, which was predominantly sourced from the government, was statistically significantly associated with ID card possession and registration at the living location, whereas receipt of food support, which was predominantly sourced from various private donors, was not significantly associated with ID card possession or registration. This highlights the importance of private channels of support in reaching out to populations with precarious housing and compromised ID and registration status, as well as the limitations of government support in reaching these populations. During the COVID-19 lockdown, the HCMC government launched an emergency relief package that included utility bill waivers, meal provisions for people in lockdown, and cash support for vulnerable populations. However, in response to COVID-19, HCMC authorities transferred 1,500 to 2,000 homeless individuals to the Social Support Center in 2020. Those who escaped this relocation were excluded as recipients of the government's support package (*38*).

The participation of various community actors in cash and food support provision underscores the importance of community engagement in pandemic response to ensure that no one is left behind. In India (*39*), settlement leaders in slums played key roles in communicating and soliciting government support for slum dwellers. In Thailand (*25*) and Kenya (*40*), civil society organizations (CSOs) and non-governmental organizations (NGOs) played vital roles in providing food, jobs, income generation, health services, sanitation services, health information, and education services to slum dwellers.

The prevalence of chronic medical conditions among slum dwellers has been reported to be 22% in Egypt (*41*), 34-41% in Bangladesh (*42*), and 34% in India (*43*). Our result of 19.3% (Table 5) was slightly lower than these figures; however, they are not directly comparable because our figure represents the prevalence of chronic conditions requiring continued medication. The prevalence of chronic conditions among homeless people has been reported to be 74% in the US (*44*) and 75% in Canada (*45*). These figures are more than double our figure of 31.3% (Table 5), though, again, they are not directly comparable. In the US study (*44*), the prevalence of chronic conditions among the homeless was significantly higher than that among the non-homeless. The higher prevalence observed among the homeless than among slum dwellers in our study (Table 5) is consistent with the above findings from other countries.

Disruption of the continuation of medical treatment for chronic conditions during the COVID lockdown has been reported in Bangladesh (*46*) and India (*47*). The former reported that 23% of adults aged > 60 years faced difficulty accessing medication (*46*). A study of slums in Bangladesh, Kenya, Nigeria, and Pakistan (*48*) observed a reduction in access to healthcare during COVID-19 lockdowns. In this context, the fact that 86.9% of our participants requiring continuing medication were able to continue their treatment during the lockdown (Table 5) is notable. The major coping strategies, such as storing enough drugs at home and managing to visit health facilities for refills (Table 5), highlight the need for health authorities to adjust prescription regulations during lockdowns. The absence of valid health insurance was not significantly associated with treatment continuation, potentially because drugs stored at home were primarily obtained from private pharmacies rather than public health facilities, which are not covered by insurance.

Our study revealed that food support sufficient for living was statistically significantly associated with reduced odds of SPD, with an odds ratio (OR) of 0.52 (Table 6). Consequently, the OR for insufficient food support was 1.92. In a study in the US among the Hispanic population, low and very low food security were associated with SPD, with ORs of 1.99 and 4.43, respectively (*49*). Among teenage girls residing in slums in India, food insecurity was associated with SPD, with

an OR of 10.86 (*50*).

This study has certain limitations. First, since we used non-probability sampling methods without complete sampling frames for both slum dwellers and homeless individuals — largely because many residents were unregistered at their current addresses and had a highly mobile lifestyle — our findings are not generalizable to all slum residents supported by SCDI or to all homeless individuals in areas under SCDI's coverage. Additionally, the results cannot be extended to represent all slum dwellers and homeless populations in HCMC or other cities in Vietnam. Second, we did not examine the incidence of COVID-19 infection among our participants or their access to healthcare when infected, which prevented us from assessing the full impact of the pandemic. Third, we did not evaluate the prevalence of food insecurity among our participants or how the COVID-19 lockdown affected this issue. Fourth, the time gap between the COVID-19 lockdown in 2021 and the survey conducted in 2023–2024 may have introduced recall bias in the assessment of both the lockdown impacts and the support provided. Furthermore, the observed significant association between SPD and sufficient food support is difficult to interpret because SPD was assessed based on conditions at the time of the survey, whereas sufficient food support occurred during the lockdown. The mitigating effect of sufficient food support may have diminished by the time the survey was conducted two years later.

5. Conclusion

The present study offers the following five lessons for preparing for and responding to future pandemics. First, the pandemic not only caused a disease burden due to the pandemic itself but also resulted in immense negative socioeconomic impacts, particularly job insecurity and income reduction, because of the enforcement of public health measures, especially lockdowns and mobility restrictions, among vulnerable populations with unstable housing. Second, both public and private entities played crucial roles in mobilizing resources for cash and food support in response to these socioeconomic impacts. The latter was especially important in reaching populations with limited ID documentation and registration status. Third, the involvement of community actors in the delivery of cash and food support was essential to ensure that no one was left behind, particularly considering the precarious registration status of slum dwellers and homeless people. Fourth, health authorities need to adjust prescription regulations during lockdowns to allow patients with chronic conditions to store sufficient medication at home, ensuring continuity of treatment. Lastly, mental health support is essential for populations with unstable housing who experience a high prevalence of SPD during and after pandemics, and sufficient food support has proven effective in alleviating SPD.

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