

Impact of the COVID-19 Pandemic on Migration, Livelihood, and Psychosocial Wellbeing of Migrant Construction Workers in Noida and Ghaziabad, Uttar Pradesh: A Quantitative Study

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DOI: <https://doi.org/10.51244/IJRSI.2026.1309000061>

Received: 17 September 2026; Accepted: 22 September 2026; Published: 05 October 2026

ABSTRACT

Background: Migrant construction workers form a large but weakly protected segment of India's informal urban workforce. The COVID-19 pandemic and the ensuing nationwide lockdown disrupted their employment, mobility, housing, and psychosocial wellbeing on an unprecedented scale, yet construction-specific evidence from the National Capital Region remains limited.

Methodology: An exploratory, cross-sectional quantitative design was used. A structured interview schedule was administered to 200 purposively sampled migrant construction workers (100 each from NOIDA and Ghaziabad). Data were analysed using descriptive statistics, chi-square and Mann-Whitney U tests, Spearman's rank correlation, and exploratory univariate intercept tests. Fisher's exact tests were used for sparse suicidal-ideation contingency tables. Here, "impact" denotes workers' self-reported pandemic-related experiences and perceived effects, not an estimate of causal effects.

Results: Respondents were predominantly male (77%), married (77%), and educationally disadvantaged (79.5% with no more than primary schooling). Employment disruption was reported by 91.5% of respondents, and 69.5% reported job loss. Psychological distress was widespread (90.5% reported at least one symptom), and 87.0% reported substance use during the pandemic. Welfare-scheme awareness was negligible (11.6% among respondents), and contractors, not government agencies, were the principal source of support (31.5% vs. 0.5%).

Conclusion: Migrant construction workers reported employment, welfare, and psychosocial vulnerabilities during the pandemic, with support received mainly through informal, contractor-mediated channels rather than formal state mechanisms. Portable welfare entitlements, on-site healthcare, and psychosocial support integrated into labour-welfare schemes are recommended.

Keywords: migrant construction workers; COVID-19; reverse migration; psychosocial distress; informal labour; quantitative study

INTRODUCTION

When the Government of India announced a nationwide lockdown at four hours' notice on 24 March 2020, it triggered what has since been described as the largest movement of people within India since Partition. Within days, highways leading out of Delhi, Mumbai, and Surat filled with men, women, and children walking hundreds of kilometres toward villages they had left years earlier in search of work. Among the most visible of these walkers were construction workers - a workforce whose labour had, until that moment, been largely invisible to the cities it built.

Migration is a defining feature of India's labour-market development, linking places of surplus labour with urban and industrial centres of demand. Workers move from rural and semi-urban areas with limited local employment

toward cities offering wages in construction, manufacturing, transport, domestic work, and services, and the remittances generated support household consumption, education, health care, and debt repayment (Deshingkar & Akter, 2009; Srivastava & Sutradhar, 2016). This mobility, however, does not translate into secure employment. Migrant labour in India is concentrated in the informal sector, characterised by the absence of written contracts, irregular wages, recruitment through contractors, weak bargaining power, and negligible access to social protection (Chen, 2012; International Labour Organization [ILO], 2018). Informality thus functions simultaneously as a pathway into livelihood and as a mechanism that transfers economic and occupational risk onto workers and their households (Bhagat, 2014; Breman, 2013, 2016).

The construction sector illustrates this pattern acutely. Rapid urbanisation and infrastructure expansion in India have generated sustained demand for construction labour, met overwhelmingly by circular and seasonal migrants recruited through informal contractor networks rather than through direct or registered employment relationships (Breman, 1996). Construction workers are typically daily-wage earners with limited education, minimal documentation, insecure accommodation at or near worksites, and negligible registration under welfare schemes established specifically for their protection, such as the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

The COVID-19 pandemic, and the nationwide lockdown imposed in March 2020, converted these structural vulnerabilities into an acute humanitarian crisis. Construction activity halted almost overnight, leaving millions of migrant workers without income, food security, housing certainty, or a means of returning home. Media and early scholarly accounts documented mass reverse migration on foot, along highways, and in overcrowded transport, alongside widespread hunger, discrimination, and psychological distress (Rajan, Sivakumar, & Srinivasan, 2020). Existing Indian evidence on pandemic-affected migrant labour, however, is largely national or multi-sectoral, treating migrants from construction, manufacturing, domestic work, and hospitality as a single homogeneous category (Rajan et al., 2020). This obscures features specific to construction employment, namely daily/short-term wage dependence, temporary worksites, contractor mediation, insecure accommodation, and very limited welfare registration, which are insufficiently examined in studies that do not disaggregate by occupation (Raj, Swain, Behera, & Singh, 2021). Region-specific evidence from the National Capital Region-where NOIDA and Ghaziabad are major construction-labour destinations- remains particularly sparse, and little is known about whether, and how, workers returned to former employers, changed contractors, accepted reduced wages, or remained without fixed employment after the lockdown eased.

Prior Indian and international literature has documented related but partial pieces of this picture. Jha (2021) tracked welfare responses for construction workers nationally and found that a substantial proportion of eligible workers did not receive direct benefit transfers because of registration problems and Aadhaar-seeding difficulties, but did not establish how such barriers operated in NOIDA or Ghaziabad specifically. Tanwar, Sahu, Sahu, and Singhal (2021) and Kumar, Mehra, Sahoo, Nehra, and Grover (2020) documented elevated pandemic-related stress, anxiety, and depressive features among migrant/construction workers in Jaipur and Chandigarh respectively, using standardised cross-sectional measures, but neither study linked psychological symptoms to workers' employment or migration histories, nor examined the National Capital Region. Raj et al. (2021) established that job status, work duration, travel time, and salary shaped the quality of work life of construction labourers in Varanasi, Uttar Pradesh, but this evidence predates the pandemic-specific disruption examined here and concerns a different labour market within the state. No study identified in the literature provides an integrated account of migration trajectories, employment disruption, welfare access, psychosocial experience, and coping specifically among construction workers in NOIDA and Ghaziabad -despite these districts being major construction-labour destinations within the National Capital Region governed by the labour laws, welfare administration, and local networks of Uttar Pradesh. This study addresses that gap by examining the nature of migration, employment disruption, self-reported psychosocial experiences, and support-system access among migrant construction workers in NOIDA and Ghaziabad during and after the COVID-19 pandemic.

The study is guided by an integrated conceptual framework combining Lee's (1966) theory of migration - origin factors, destination factors, intervening obstacles, and personal factors - with an Ishikawa-inspired (1990) structure used solely as a conceptual organising device, rather than as a tested causal model, across the domains of employment and income, migration and mobility, housing and basic needs, psychosocial experience, and institutional support. Within this conceptual framework, the pandemic is considered in relation to the changing

meaning of origin and destination: urban destinations that had drawn workers through employment and wages became associated instead with job loss, housing insecurity, infection risk, and restricted mobility, while places of origin - though offering limited employment - represented family support and perceived safety. The specific objectives of the study were: (1) to examine the nature of migration and employment patterns of migrant construction workers; (2) to assess the support systems available to them during the pandemic; (3) to describe self-reported psychosocial experiences during pandemic-related migration disruption and workers' reported coping mechanisms; and (4) to derive recommendations based on the study findings.

METHODOLOGY

An exploratory, cross-sectional quantitative design was adopted to provide an in-depth understanding of the phenomenon under study. The research setting comprised pre-identified construction sites in NOIDA and Ghaziabad, two major urban construction-labour destinations in the National Capital Region of Uttar Pradesh. In the title and throughout this manuscript, “impact” is used descriptively to refer to how workers reported that their migration, livelihoods, and psychosocial wellbeing were affected during the pandemic. It does not denote a causal effect established by the study. The survey retrospectively documents reported experiences and associations; it includes no pre-pandemic baseline, longitudinal follow-up, unexposed comparison group, or experimental intervention. Comparisons between NOIDA and Ghaziabad describe differences within the surveyed sample and do not estimate the causal effect of the pandemic.

The study population comprised migrant construction workers associated with construction-labour activity during the pandemic. Purposive sampling was used. The sample consisted of 200 migrant construction workers, recruited in equal numbers (100 each, approximately balanced by gender) from construction sites and labour chowks in NOIDA and Ghaziabad. Eligibility criteria required participants to be building or construction workers aged 18–60 years - the age range recognised for beneficiary registration under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 - working at a construction site in NOIDA or Ghaziabad, including both interstate and intrastate migrants who were residing near their worksite during the COVID-19 outbreak.

Data were collected using a socio-demographic proforma and a semi structured interview schedule administered to migrant workers. Data collection followed permission from the departmental ethics committee; informed consent was obtained from all participants after the purpose of the study was explained, and participation was voluntary with the option to withdraw at any stage. Workers were recruited from construction sites and labour chowks - informal daily-hiring points - through personal contacts and site visits.

Quantitative data were entered and analysed in SPSS using descriptive statistics (frequencies, percentages), chi-square tests of independence and Mann-Whitney U tests to examine associations between key variables, Spearman's rank-order correlation to examine relationships among structural and psychological variables, and exploratory univariate intercept tests. Because the GLM was estimated without fixed-factor design terms (an intercept-only specification), the between-subjects F-values obtained reflect the magnitude of each variable's deviation from zero across the full sample rather than predictor-level effects, and are reported and interpreted accordingly as indicators of distributional variation rather than as tests of association. Suicidal-ideation analyses were recalculated from the participant-level data using Python (SciPy), with code 99 treated as missing. Two-sided Fisher's exact tests were used for the gender and study-site associations because expected counts were small. Spearman's correlation with stress was recalculated using all 200 observations. The univariate suicidal-ideation intercept test used binary coding (0 = no, 1 = yes); it tests a mean of zero and is not a test of a pandemic effect.

RESULTS

Socio-demographic profile

Table 1 presents the socio-demographic profile of the 200 respondents across eight characteristics. The sample was predominantly male (77.0%), married (77.0%), and aged between 30 and 49 years (70.0%, combining the 30-39 and 40-49 age bands). Religious composition was largely Hindu (79.0%), with a substantial Muslim

minority (19.0%). Caste distribution spanned all four categories, with General (37.0%), OBC (32.0%), and SC (27.5%) together comprising 96.5% of respondents. Educational attainment was strikingly low: 40.5% were illiterate and a further 39.0% had completed only primary schooling, meaning nearly four in five respondents (79.5%) lacked a middle-school education. Monthly income was concentrated in the Rs. 5,001-15,000 range (85.0% of the sample). Slightly more than half lived in nuclear families (59.5%).

Table 1 Socio-Demographic Profile of Respondents (N = 200)

Characteristic	Category	n	%	Cum. %
Age group				
	18–29 years	16	8.0	8.0
	30–39 years	57	28.5	36.5
	40–49 years	83	41.5	78.0
	50–59 years	44	22.0	100.0
Gender				
	Male	154	77.0	77.0
	Female	46	23.0	100.0
Religion				
	Hinduism	158	79.0	79.0
	Islam	38	19.0	98.0
	Sikhism / Christianity / Others	4	2.0	100.0
Caste category				
	General	74	37.0	37.0
	OBC	64	32.0	69.0
	SC	55	27.5	96.5
	ST	7	3.5	100.0
Marital status				
	Married	154	77.0	77.0
	Single	23	11.5	88.5
	Widowed	11	5.5	94.0
	Divorced/Separated/Others	12	6.0	100.0
Educational qualification				
	Illiterate	81	40.5	40.5
	Primary level	78	39.0	79.5
	Middle level	39	19.5	99.0
	Matriculation & above	2	1.0	100.0
Monthly income (Rs.)				
	0–5,000	16	8.0	8.0
	5,001–10,000	91	45.5	53.5
	10,001–15,000	79	39.5	93.0
	15,001–20,000	12	6.0	99.0
	20,001 and above	2	1.0	100.0
Family type				
	Nuclear	119	59.5	59.5
	Joint/Extended	81	40.5	100.0

Note. N = 200.

Nature of migration

Table 2 documents the migration characteristics of respondents. Bihar (31.0%) and Uttar Pradesh (25.0%) together accounted for 56.0% of the sample's states of origin, with the remainder drawn from Odisha, West Bengal, and other eastern and central states (Figure 5). Unskilled workers formed the majority (68.5%). Although 47.5% of respondents formally classified their migration as a matter of choice, this coexisted with structural indicators of constraint - 40.5% illiteracy, concentration of income in the Rs. 5,001-15,000 range, and reliance on contractor-mediated recruitment - consistent with a characteristic feature of distressed labour migration among informal-sector workers. Employment opportunities were reported by 73.5% of respondents as a primary reason for migration, substantially exceeding all other reported motivations, followed by better economic conditions (30.0%) and higher wages (27.5%). During the 2020 lockdown, 65.5% of respondents returned to their native place; among these, 42.5% travelled by bus, 41.0% by train, and 16.5% on foot. Regarding post-pandemic migration patterns, 37.0% reported increased seasonal/circular migration and 34.5% reported temporary migration.

Table 2 Nature of Migration (N = 200)

Variable	Category	n	%	Cum. %
State of origin				
	Bihar	62	31.0	31.0
	Uttar Pradesh	50	25.0	56.0
	Odisha	24	12.0	68.0
	West Bengal	20	10.0	78.0
	MP/Jharkhand/Others	44	22.0	100.0
Nature of work				
	Unskilled	137	68.5	68.5
	Skilled	51	25.5	94.0
	Semi-skilled	12	6.0	100.0
Migration decision				
	Compelled (not by choice)	105	52.5	52.5
	By choice	95	47.5	100.0
Primary reason (MR)				
	Employment opportunities	147	73.5	—
	Better economic conditions	60	30.0	—
	Better wages	55	27.5	—
Lockdown response				
	Returned to native place	131	65.5	65.5
	Stayed at worksite	69	34.5	100.0
Post-pandemic travel mode				
	Bus	85	42.5	42.5
	Train	82	41.0	83.5
	Walking	33	16.5	100.0

Variable	Category	n	%	Cum. %
Post-pandemic migration trend				
	More workers migrating (seasonal)	74	37.0	37.0
	Temporary migration	69	34.5	71.5
	Permanent settlement	57	28.5	100.0

Note. MR = Multiple Response items; cumulative percentages not applicable. N = 200.

Figure 5. State of Origin of Migrant Construction Worker Respondents (N = 200)

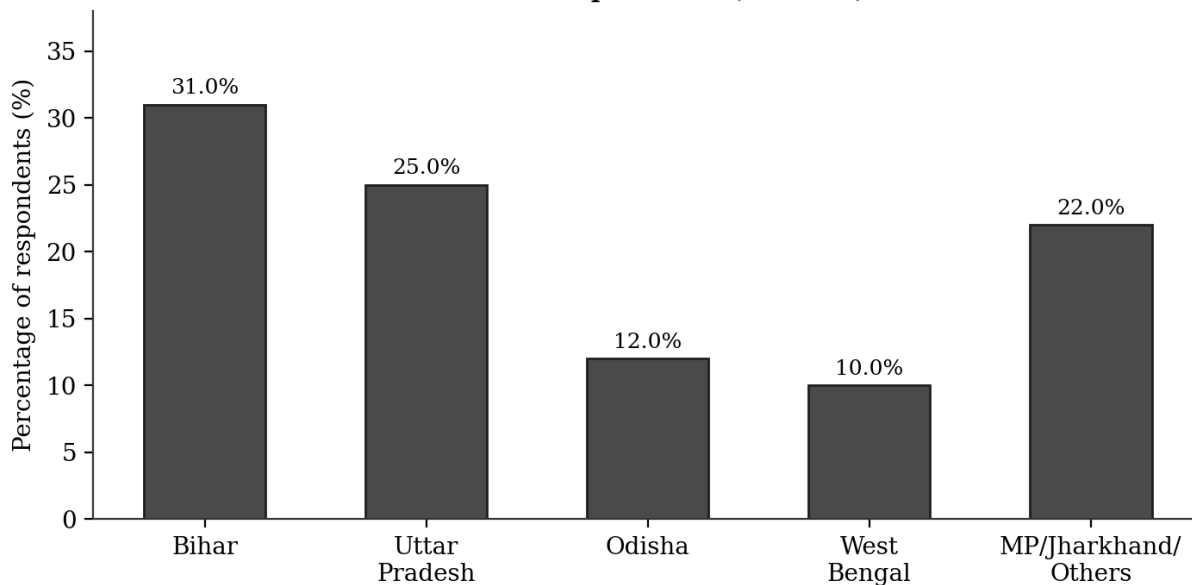


Figure 5. State of origin of migrant construction worker respondents (N = 200).

Employment disruption during the pandemic

Table 3 presents data on employment continuity, reemployment, job-search channels, and welfare-scheme awareness. Only 17 respondents (8.5%) reported that their employment continued without substantial interruption. In contrast, 91 respondents (45.5%) reported disruption or loss of employment during the pandemic, and a further 92 respondents (46.0%) reported temporary, intermittent, or otherwise unclear employment continuity-many describing work for only a few days at a time, temporary shifts to other types of labour, or work that stopped altogether before they returned to their native villages. Continuous employment was therefore uncommon: taken together, 91.5% of the sample reported either clear disruption or unclear/interrupted continuity.

After reemployment, 45.5% of respondents were engaged at residential or building construction sites-the most common worksite type-while 26.0% worked at other construction sites (commercial, road, or infrastructure projects) and 28.5% had no fixed construction site, working instead on a temporary, daily-wage, or project-to-project basis. The majority (55.0%) changed employers post-pandemic, indicating widespread dislocation of previously established contractor-worker relationships. Job search relied almost exclusively on informal networks-family and friends (43.0%) and previous employers (27.5%)-and no respondent reported using a digital job-search platform. Welfare-scheme awareness was negligible: among the 95 respondents who answered this item, 88.4% (n = 84) reported being unaware of, or unregistered under, any welfare scheme, while only 11.6% (n = 11) reported awareness or registration; the remaining 105 respondents did not respond to this item, a limitation discussed further below.

Table 3 Employment Disruption Indicators (N = 200)

Employment Variable	Response	n	%
Sustained employment during pandemic			
	Yes - continuous employment sustained	17	8.5
	No - employment disrupted	91	45.5
	Unclear / temporarily employed	92	46.0
Current site type (reemployed, n = 143)*			
	Residential/building site	91	45.5
	Other construction site	52	26.0
	No fixed construction site	57	28.5
Same employer post-pandemic			
	No - changed employer	110	55.0
	Yes - returned to same employer	90	45.0
Job search channel (MR)			
	Family and friends	86	43.0
	Agency/Organisation	57	28.5
	Previous employer	55	27.5
	Online (digital platform)	0	0.0
Welfare scheme awareness (n = 95)			
	Not registered / unaware	84	88.4
	Registered / aware	11	11.6

Note. *Percentages for current site type computed on the reemployed sub-sample (n = 143). MR = Multiple Response. Welfare scheme awareness assessed among the 95 respondents who provided a response on this item; the remaining 105 did not respond, a data limitation discussed in the Discussion.

Employment-related problems

Table 4 and Figure 2 present the employment problems experienced by respondents, recorded on a multiple-response basis. Employment disruption was widespread, with 69.5% reporting temporary or permanent job loss, 51.0% reporting delayed or unpaid wages, and 30.0% reporting reduced working hours during the pandemic period. Together, these three categories affected an estimated 90% of the sample, with considerable overlap between categories. Only 5.0% reported no employment problems at all.

Table 4 Employment-Related Problems Reported by Respondents (Multiple Response, N = 200)

Employment Problem	n	% of Respondents
Temporary/permanent job loss	139	69.5
Wages delayed or unpaid	102	51.0
Reduced working days/hours	60	30.0
Paid less than agreed wages	11	5.5

Unpaid overtime	8	4.0
No employment problems reported	10	5.0

Note. Multiple responses permitted; percentages are of total respondents (N = 200).

Figure 2. Employment-Related Problems During the Pandemic (N = 200, MR)

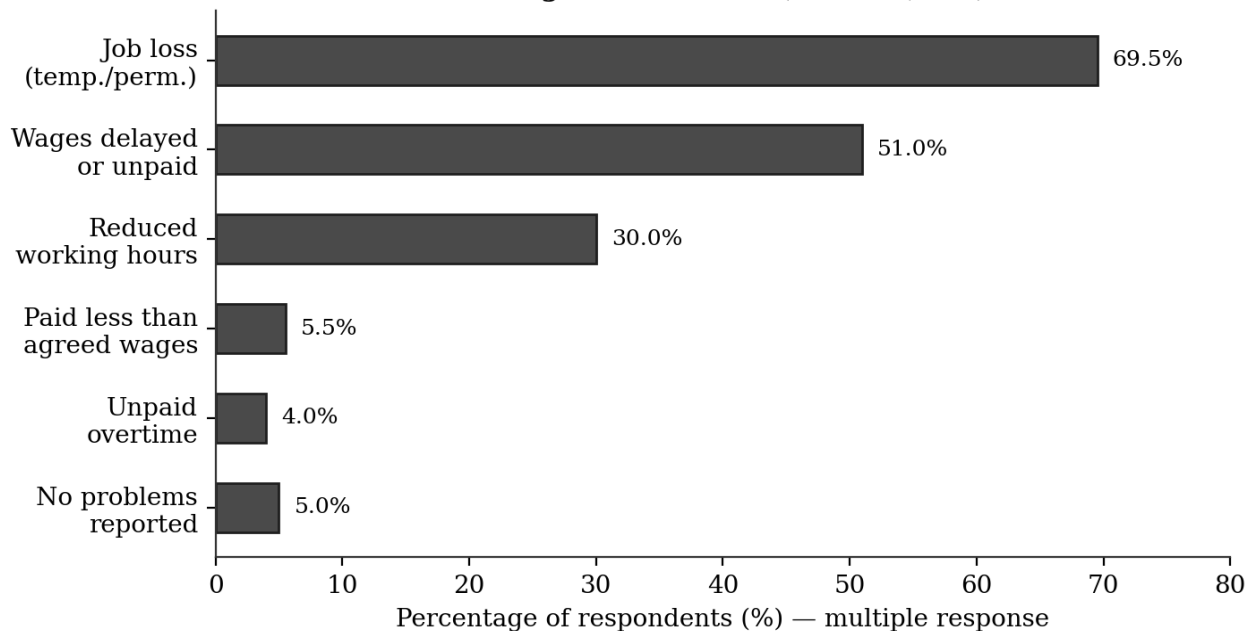


Figure 2. Employment-related problems reported during the pandemic (N = 200, multiple response).

Psychological and emotional distress

Table 5 and Figure 1 present the prevalence of psychological and emotional distress symptoms, ranked by frequency, along with Mann-Whitney U comparisons between the two study sites. Self-reported indicators of psychological distress were common, particularly stress, anxiety, helplessness, and hopelessness. Stress was the most frequently reported symptom (56.5%), followed by anxiety (49.5%), helplessness (48.5%), and hopelessness (45.5%). Sleep disturbance (43.0%), anger/irritability (38.5%), and frequent crying (27.5%) were also widely reported. Suicidal ideation was reported by 1.5% of respondents (n = 3). Only 9.5% of respondents (n = 19) reported no symptoms of any kind-meaning 90.5% reported at least one psychological or emotional symptom. Mann-Whitney U comparisons between NOIDA and Ghaziabad yielded no significant difference for most symptoms; the borderline finding for hopelessness ($p = .050$) merits monitoring in future research. For suicidal ideation, a two-sided Fisher's exact test was used because of sparse counts: 0 of 100 respondents in NOIDA and 3 of 100 in Ghaziabad reported suicidal ideation ($p = .246$). No respondent reported accessing professional psychological support services at any point during the pandemic.

Table 5 Psychological and Emotional Distress Symptoms (N = 200)

Psychological Symptom	N	%	Rank	p-value (site)
Stress	113	56.5	1	.511 (NS)
Anxiety	99	49.5	2	.696 (NS)
Helplessness	97	48.5	3	.842 (NS)
Hopelessness	91	45.5	4	.050 (Borderline)

Poor sleep / insomnia	86	43.0	5	.473 (NS)
Anger / irritability	77	38.5	6	.208 (NS)
Frequent crying episodes	55	27.5	7	.868 (NS)
Suicidal ideation	3	1.5	8	.246 (Fisher; NS)
No symptoms reported	19	9.5	-	-

Note. NS = Not significant. Borderline = p approaching .05. Mann-Whitney U tests compare NOIDA vs. Ghaziabad sub-samples, except for suicidal ideation, for which a two-sided Fisher's exact test is reported because of sparse counts.

Figure 1. Prevalence of Psychological and Emotional Distress Symptoms (N = 200)

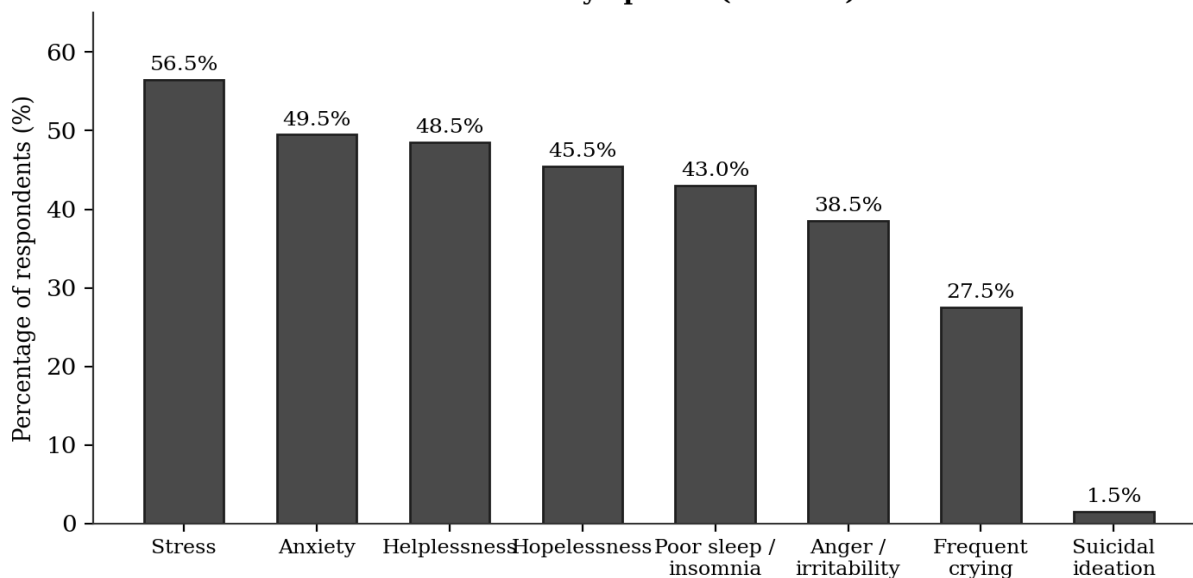


Figure 1. Prevalence of psychological and emotional distress symptoms (N = 200).

Support systems and welfare access

Table 6 presents the sources, types, and perceived effectiveness of support received by respondents during the pandemic (see also Figures 3 and 6). The employer or contractor was the primary source of help for 31.5% of respondents-the single largest category. NGOs and civil-society organisations helped 18.0%, religious groups helped 9.5%, and 20.0% received no formal assistance of any kind. Government agencies assisted only 0.5% of respondents-a single individual out of 200. In terms of support type, financial assistance was the most frequently received (52.5%), followed by healthcare support (43.0%) and housing assistance (21.5%). Critically, skill development, psychological/mental-health support, and employment-security support were received by no respondent (0.0% across all three categories). Among those who received some form of support, 46.8% rated it very effective and 38.8% rated it somewhat effective; only 10.8% rated it not effective.

Table 6 Support Systems: Sources, Types, and Perceived Effectiveness (N = 200)

Support Variable	Category	N	%
Primary source of help			
	Employer/Contractor	63	31.5
	No formal help received	40	20.0
	NGO/Civil society	36	18.0
	Religious groups	19	9.5
	Government agency	1	0.5
Type of support (MR)			

	Financial assistance	105	52.5
	Healthcare/medical support	86	43.0
	Housing/living support	43	21.5
	No support of any kind	42	21.0
	Skill development	0	0.0
	Psychological/mental health support	0	0.0
Perceived effectiveness (n = 139)			
	Very effective	65	46.8
	Somewhat effective	54	38.8
	Not effective	15	10.8
	Don't know	3	2.2

Note. MR = Multiple Response for type of support. Perceived effectiveness computed on the sub-sample who received any support (n = 139).

Figure 3. Primary Source of Pandemic-Period Support (N = 200)

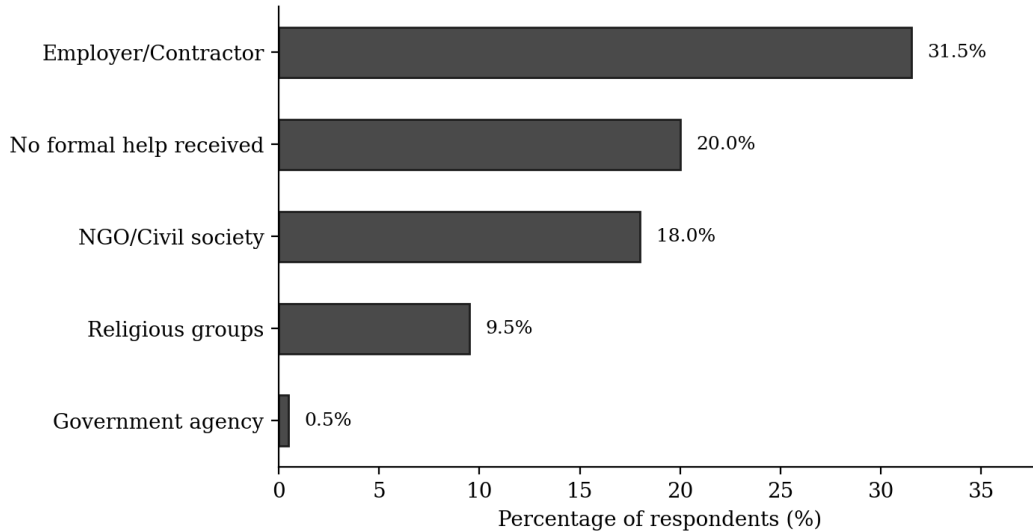


Figure 3. Primary source of pandemic-period support (N = 200).

Figure 6. Type of Pandemic-Period Support Received (N = 200, MR)

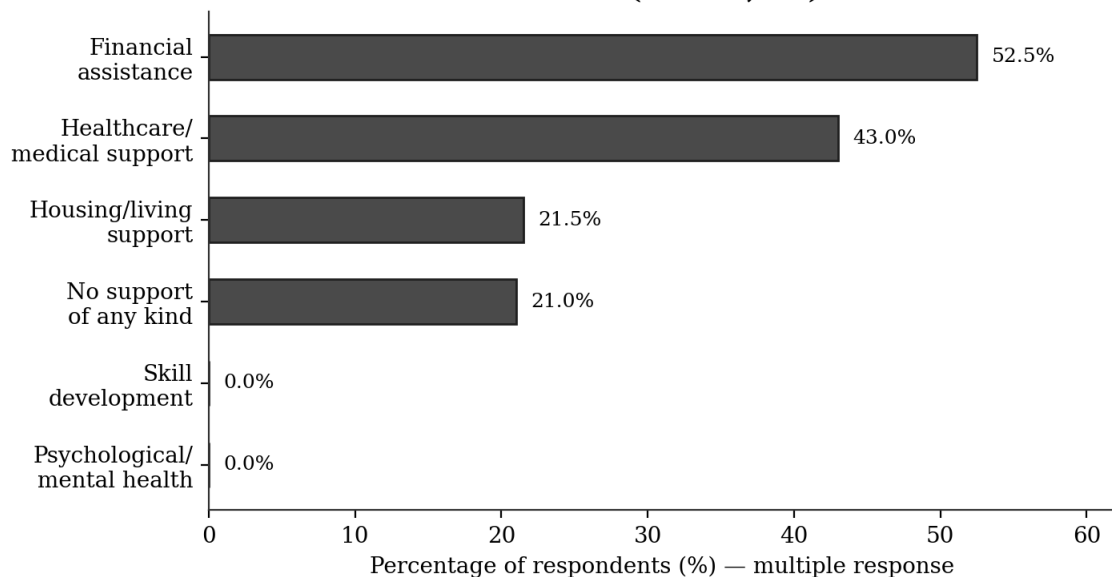


Figure 6. Type of pandemic-period support received (N = 200, multiple response).

Inferential associations: chi-square, Fisher's exact, and Mann-Whitney U tests

Table 7 reports the results of chi-square tests of independence, Fisher's exact tests, and Mann-Whitney U tests used to examine statistically significant associations among key study variables. The strongest association was between study site and current site type ($\chi^2 = 17.833$, $df = 2$, $p < .001$), indicating differences in reported work-location categories between NOIDA and Ghaziabad. A statistically significant association was also observed between domicile and lockdown response ($\chi^2 = 9.701$, $df = 4$, $p = .046$), and between study site and post-pandemic travel mode ($\chi^2 = 6.163$, $df = 2$, $p = .046$). Younger workers (18–29 years) showed significantly higher rates of frequent crying than older age groups ($\chi^2 = 13.773$, $df = 3$, $p = .003$). A borderline association was observed between site and lockdown response ($\chi^2 = 3.739$, $df = 1$, $p = .053$), while gender and suicidal ideation showed no significant association (two-sided Fisher's exact $p = 1.000$; 3/154 male and 0/46 female respondents).

Rather than showing the conventionally expected inverse association between education and psychological distress, respondents with relatively higher educational attainment reported significantly greater stress (Mann-Whitney $U = 3,997.5$, $p = .015$) - a pattern for which heightened awareness of employment insecurity, financial responsibility, and unmet occupational expectations are possible explanations, although these mechanisms were not tested. Access to healthcare support differed significantly across caste categories (Mann-Whitney $U = 3,375.0$, $p < .001$), and site and financial support access also differed significantly (Mann-Whitney $U = 4,109.5$, $p = .016$). Gender differences emerged in healthcare-support access (Mann-Whitney $U = 4,160.0$, $p = .029$). The highly significant association between domicile group and overall psychological-symptom burden (Mann-Whitney $U = 294.5$, $p < .001$) indicates that respondents from different domicile groups differed markedly in the overall distribution of reported psychological distress. A borderline association was found between domicile and hopelessness (Mann-Whitney $U = 4,183.5$, $p = .050$).

Table 7 Significant and Selected Non-Significant Chi-Square, Fisher's Exact, and Mann-Whitney U Results

Variables Tested	Test Statistic	df	p-value
Site × Current Site Type	$\chi^2 = 17.833$	2	< .001 ***
Domicile × Lockdown Response	$\chi^2 = 9.701$	4	.046 *
Site × Post-Pandemic Travel Mode	$\chi^2 = 6.163$	2	.046 *
Age Group × Frequent Crying	$\chi^2 = 13.773$	3	.003 **
Site × Lockdown Response	$\chi^2 = 3.739$	1	.053 (Borderline)
Gender × Suicidal Ideation	Fisher's exact	-	1.000 (NS)
Education × Stress (M-W)	$U = 3,997.5$	-	.015 *
Domicile × Hopelessness (M-W)	$U = 4,183.5$	-	.050 *
Site × Financial Support (M-W)	$U = 4,109.5$	-	.016 *
Gender × Healthcare Support (M-W)	$U = 4,160.0$	-	.029 *
Caste × Healthcare Support (M-W)	$U = 3,375.0$	-	< .001 ***
Domicile × All Symptoms (M-W)	$U = 294.5$	-	< .001 ***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. NS = Not significant. M-W = Mann-Whitney U test. For Mann-Whitney U tests, predictor-variable distributions were compared between respondents who reported and those who did not report each binary (0/1) outcome. The gender–suicidal ideation result uses a two-sided Fisher's exact test because of small expected counts; no chi-square statistic or degrees of freedom apply to that test.

A note on contingency detail: Tables 7-7f below present the full cell-level contingency tables (value labels and cell counts, with row percentages in parentheses) underlying each contingency-table association summarized in

Table 7, including the borderline and non-significant associations. Data are drawn from the SPSS CROSSTABS output (COUNT cells only; N = 200 valid cases per test unless noted).

Table 7a Study Site × Current Site Type (Type of Work Location) - Full Contingency Table (significant)

Study Site		Current Site Type (Type of Work Location)			
		Construction	Factory/Industry	Other/Unspecified ^a	Total
Study Site	NOIDA/Gautam Buddha Nagar	26 (26.0%)	58 (58.0%)	16 (16.0%)	100 (100.0%)
	Ghaziabad	26 (26.0%)	33 (33.0%)	41 (41.0%)	100 (100.0%)
Total		52 (26.0%)	91 (45.5%)	57 (28.5%)	200 (100.0%)

Note. $\chi^2 = 17.833$, $df = 2$, $p = < .001$ ***. Cell values are counts, n (row %). ^aSPSS output code 99 for CURR_SITE was not assigned a value label in the working data file; category retained as reported.

Table 7b Domicile Group (State of Origin, Grouped) × Lockdown Response-Full Contingency Table (significant)

Domicile Group (State of Origin, Grouped)		Lockdown Response		
		Stayed at workplace	Returned hometown	Total
Domicile Group (State of Origin, Grouped)	Bihar	15 (24.2%)	47 (75.8%)	62 (100.0%)
	Uttar Pradesh	25 (50.0%)	25 (50.0%)	50 (100.0%)
	Odisha	6 (25.0%)	18 (75.0%)	24 (100.0%)
	West Bengal	6 (30.0%)	14 (70.0%)	20 (100.0%)
	MP/Jharkhand/Others	17 (38.6%)	27 (61.4%)	44 (100.0%)
Total		69 (34.5%)	131 (65.5%)	200 (100.0%)

Note. $\chi^2 = 9.701$, $df = 4$, $p = .046$ *. Cell values are counts, n (row %).

Table 7c Study Site × Post-Pandemic Travel Mode-Full Contingency Table (significant)

Study Site		Post-Pandemic Travel Mode			
		Bus	Train	Walking	Total
Study Site	NOIDA/Gautam Buddha Nagar	41 (41.0%)	48 (48.0%)	11 (11.0%)	100 (100.0%)
	Ghaziabad	44 (44.0%)	34 (34.0%)	22 (22.0%)	100 (100.0%)
Total		85 (42.5%)	82 (41.0%)	33 (16.5%)	200 (100.0%)

Note. $\chi^2 = 6.163$, $df = 2$, $p = .046$ *. Cell values are counts, n (row %).

Table 7d Age Group × Frequent Crying-Full Contingency Table (significant)

Age Group		Frequent Crying		
		No	Yes	Total
Age Group	18–29 years	7 (43.8%)	9 (56.2%)	16 (100.0%)
	30–39 years	48 (84.2%)	9 (15.8%)	57 (100.0%)
	40–49 years	63 (75.9%)	20 (24.1%)	83 (100.0%)
	50–59 years	27 (61.4%)	17 (38.6%)	44 (100.0%)
Total		145 (72.5%)	55 (27.5%)	200 (100.0%)

Note. $\chi^2 = 13.773$, $df = 3$, $p = .003$ **. Cell values are counts, n (row %).

Table 7e Study Site × Lockdown Response-Full Contingency Table (borderline / not significant)

Study Site		Lockdown Response		
		Stayed at workplace	Returned hometown	Total
Study Site	NOIDA/Gautam Buddha Nagar	28 (28.0%)	72 (72.0%)	100 (100.0%)
	Ghaziabad	41 (41.0%)	59 (59.0%)	100 (100.0%)
Total		69 (34.5%)	131 (65.5%)	200 (100.0%)

Note. $\chi^2 = 3.739$, $df = 1$, $p = .053$ (borderline, NS). Cell values are counts, n (row %).

Table 7f Gender × Suicidal Ideation - Full Contingency Table (not significant)

Gender		Suicidal Ideation		
		No	Yes	Total
Gender	Male	151 (98.1%)	3 (1.9%)	154 (100.0%)
	Female	46 (100.0%)	0 (0.0%)	46 (100.0%)
Total		197 (98.5%)	3 (1.5%)	200 (100.0%)

Note. Two-sided Fisher's exact $p = 1.000$ (NS). Cell values are counts, n (row %). Expected counts for suicidal ideation were 2.31 for males and 0.69 for females, supporting the use of an exact test. Only three events were observed; a non-significant result should not be interpreted as evidence of equivalence between genders.

Spearman's rank correlation analysis

Table 8 presents the Spearman rank-order correlation matrix for key structural and psychological variables. Three correlations warrant discussion. First, education was weakly but positively correlated with stress ($\rho = .17$, $p < .01$), indicating that respondents with relatively higher educational attainment reported slightly higher levels of stress; this association does not establish whether education increases or reduces psychological distress. Second, lockdown experience was positively correlated with anger ($\rho = .14$, $p < .05$). Third, the recalculated correlation between stress and suicidal ideation was weak and not statistically significant ($\rho = .108$, $p = .127$; $N = 200$). In addition, gender was negatively correlated with hopelessness ($\rho = -.12$, $p < .05$), and education was negatively correlated with hopelessness ($\rho = -.13$, $p < .05$).

Table 8 Spearman's Rho Correlation Matrix - Selected Variables (N = 200)

Variable	Site	Gender	Educ.	Lockdown	Stress	Hopeless	Anger
Site	1	-.10	.09	-.14*	.03	.05	-.11
Gender	-.10	1	.03	.10	-.02	-.12*	.01
Education	.09	.03	1	-.03	.17**	-.13*	-.06
Lockdown	-.14*	.10	-.03	1	.00	.01	.14*
Stress	.03	-.02	.17**	.00	1	-.05	.01
Hopeless	.05	-.12*	-.13*	.01	-.05	1	.02
Anger	-.11	.01	-.06	.14*	.01	.02	1

Note. * $p < .05$, ** $p < .01$. Two-tailed. $N = 200$. Suicidal ideation column omitted from the printed matrix for space; recalculated stress–suicidal ideation $\rho = .108$, $p = .127$, $N = 200$ (not significant; reported in text).

Exploratory univariate intercept tests

Table 9 presents the univariate (intercept) F-values for selected variables by domain. The self-reported lockdown-experience variable (labelled “Lockdown Impact” in the analysis) recorded the largest reported intercept F-value ($F = 2412.063$, $p < .001$), followed by Income ($F = 2053.703$) and Choice of Migration ($F = 1855.837$) among migration-domain variables - reflecting tests of whether the coded variable means differed

from zero, rather than the magnitude of pandemic effects. Three variables - Online Job-Seeking, Skill Development Support, and Psychological Support - showed zero variance across the full 200-respondent sample, meaning not a single respondent accessed these resources. Discrimination recorded an F-value of 921.595 ($p < .001$). Suicidal ideation, while comparatively lower in F-value ($F(1, 199) = 3.030, p = .083$), did not show a statistically significant intercept test; this test does not establish a pandemic effect. These values are reported descriptively, as indicators of variable-level distributional variation rather than as tests of predictor-level association; a fully specified multivariate GLM incorporating fixed factors is recommended for predictor-level inference in future analyses.

Table 9 Univariate Intercept Tests (Selected Variables by Domain)

Variable Domain / Variable	F (Intercept)	Significance
Migration-related variables		
Lockdown Impact	2412.063	< .001
Income	2053.703	< .001
Choice of Migration	1855.837	< .001
Travel Freedom	1153.316	< .001
Employment disruption variables		
Same Employer Continuity	1931.707	< .001
Employment Loss	453.459	< .001
No Wage During Lockdown	207.122	< .001
Online Job-Seeking	Zero variance	N/A
Psychological distress variables		
Stress	258.471	< .001
Substance Use	382.476	< .001
Suicidal Ideation	3.030	.083 (NS)
Support systems variables		
Help Source	531.111	< .001
Discrimination	921.595	< .001
Skill Development Support	Zero variance	N/A
Psychological Support	Zero variance	N/A

Note. F-values derived from the Intercept row of the SPSS GLM Between-Subjects Effects output (Type III SS, $df = 1$, intercept-only design). These reflect the magnitude of each variable's mean deviation from zero across the full sample and should be interpreted as indicators of distributional characteristics rather than predictor-level effects. "Zero variance" indicates a universal response — no respondent in the 200-person sample varied on this item. Full domain listing (32 variables) available from the authors on request. "Lockdown Impact" is the original analysis label for a self-reported lockdown-experience variable; it is not a causal impact estimate.

Substance use during the pandemic

Substance use during the pandemic was reported by 87.0% of respondents ($n = 174/200$; Figure 4): 52.5% ($n = 105$) reported using multiple substances (tobacco and alcohol combined), 27.0% ($n = 54$) reported tobacco use only, and 7.5% ($n = 15$) reported alcohol use only. Only 13.0% ($n = 26$) reported no substance use or cited unavailability of substances during the lockdown as the reason for non-use.

Figure 4. Substance Use During the Pandemic (N = 200)

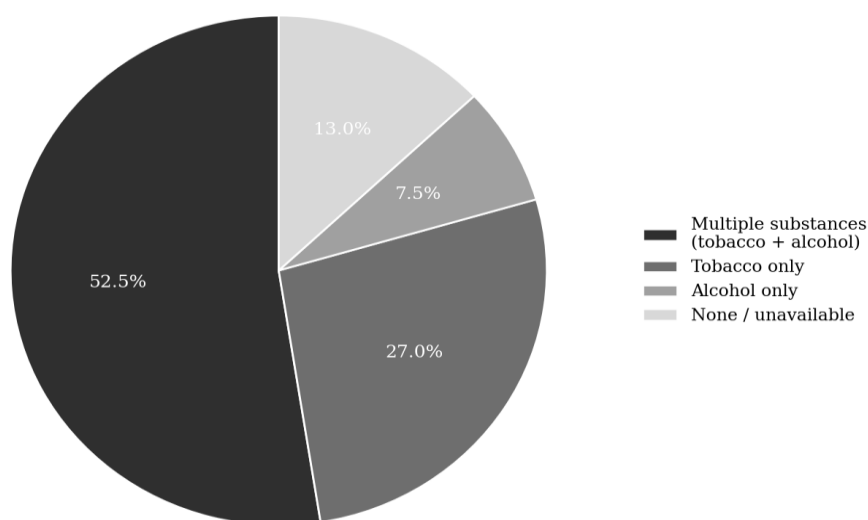


Figure 4. Substance use during the pandemic (N = 200).

DISCUSSION

The findings document low education, low and irregular income, dependence on informal, contractor-mediated employment, and reported pandemic-period difficulties among migrant construction workers in NOIDA and Ghaziabad. These observations are consistent with accounts of structural vulnerability, but the absence of pre-pandemic baseline measurements prevents estimation of whether, or by how much, vulnerability increased during the lockdown. This pattern is consistent with Breman's (1996, 2016) characterisation of the Indian informal economy, in which contractors function simultaneously as employers, recruiters, providers of accommodation, and - as this study shows - as the principal source of crisis-time assistance (31.5%, versus 0.5% for government agencies). The near-total absence of government support and the very low awareness of welfare-scheme entitlements (88.4% unaware or unregistered, among those who responded) support interpretation through the lens of social exclusion (Sen, 2000; Silver, 1994): the reported gaps in support are consistent with barriers to accessing welfare systems built around permanent residence, ration-card portability, and Aadhaar-linked entitlements (Pattenden, 2016). The survey does not establish which administrative mechanisms accounted for these gaps.

The coexistence of nominal 'choice' in migration decisions with structural conditions of constraint-limited local employment, low education, family responsibility-echoes the conditions component of Lee's (1966) framework, in which perceived options at the origin, rather than free preference, shape migration decisions. Reported employment and migration difficulties can be interpreted in relation to destination-side pull factors (employment, wages, urban services) and intervening obstacles (lockdown restrictions, transport closure, documentation barriers) within the conceptual model guiding this study. This interpretation provides context for the reported return to native places (65.5%) and travel on foot (16.5%), but does not establish the causes of these migration decisions.

The high prevalence of psychological distress (90.5% reporting at least one symptom) alongside a complete absence of formal psychological support (0.0%) is a striking finding with direct policy relevance. It corroborates, in a construction-specific and NCR-specific sample, the elevated stress, anxiety, and depressive features previously reported among migrant/construction workers in Jaipur (Tanwar et al., 2021) and Chandigarh (Kumar et al., 2020), while extending those cross-sectional findings by linking distress statistically to employment and migration variables-for instance, the significant association between domicile and overall symptom burden ($U = 294.5$, $p < .001$) and between education and stress ($U = 3,997.5$, $p = .015$). That respondents with higher

educational attainment reported significantly more stress, rather than less, suggests that awareness of insecurity and unmet expectations-rather than a simple deficit model of resilience-may be relevant to reported distress in this population; this is a possible interpretation requiring further investigation, not a demonstrated mechanism. The association between substance use and suicidal ideation could not be estimated: substance-use responses were missing for all three respondents reporting suicidal ideation, and the 71 respondents with valid substance-use data had no suicidal-ideation events. No correlation is therefore reported for these variables.

The negligible awareness of welfare schemes and the near-total absence of government-provided support echo Jha's (2021) national finding that direct benefit transfers frequently failed to reach eligible construction workers because of registration and Aadhaar-seeding barriers, and provide descriptive evidence of low reported awareness among responding workers in the NOIDA and Ghaziabad sample, without establishing the causes of that awareness gap. Read alongside international evidence that formal policy inclusiveness does not guarantee usable protection for migrant workers (Istiko, Durham, & Elliott, 2022) and that food and income insecurity among migrants reflects administrative exclusion as much as economic loss (Ahmed, Benavente, & Diaz, 2023; Moura et al., 2023), the present findings suggest that the gap between entitlement on paper and entitlement in practice is a central, not peripheral, feature of migrant construction workers' pandemic experience.

These results extend prior national-level accounts of pandemic-affected migrant labour (Rajan et al., 2020) by describing reported disruption and support alongside occupation-specific features of construction employment, including contractor mediation, daily-wage dependence, and worksite-based accommodation. They also extend region-specific evidence on construction-worker quality of work life (Raj et al., 2021) by documenting reported job and wage disruption alongside psychosocial difficulties and welfare-access gaps, without establishing causal relationships among these domains.

The gender- and caste-patterned differences observed in this study-women's slightly lower reported hopelessness, and caste- and gender-based differences in healthcare-support access - resonate with broader accounts of intersectional pandemic vulnerability among Indian migrant populations. Azeez, Negi, Rani, and Kumar (2021), studying women migrant workers in Delhi and Gurugram, documented livelihood loss compounded by unpaid care responsibilities and disrupted access to services, while Mukherjee (2020) identified migrant labourers, women, and lower-caste communities as groups facing compounded pandemic-era disadvantage across food security, mental health, and exposure to violence. Although the present sample was predominantly male (77.0%), consistent with the gendered composition of construction-site employment, these findings caution against interpreting the psychosocial and welfare-access results reported here as uniform across the workforce; future research disaggregating findings by gender and caste in greater depth would strengthen this evidence base.

Methodologically, the univariate intercept tests do not assess associations between predictors and outcomes; a fully specified GLM incorporating fixed factors is recommended for future analyses seeking to test specific predictive relationships among these variables. Similarly, the welfare-scheme awareness item's high non-response rate (105 of 200 respondents) should be treated as a data limitation rather than as evidence that awareness was even lower than the reported 88.4%; high non-response on this item is itself consistent with unfamiliarity with the schemes in question and should be interpreted cautiously rather than as a substantive finding. The purposive, cross-sectional design and retrospective self-reporting also limit interpretation. Recall bias and selection bias may affect the findings, and temporal ordering among employment, migration, and psychosocial experiences cannot be established. Without baseline measurements, longitudinal follow-up, or an appropriate comparison group, the study cannot separate pandemic-related effects from pre-existing vulnerabilities or other concurrent influences. Associations should therefore not be interpreted as causal relationships.

CONCLUSION

Migrant construction workers in NOIDA and Ghaziabad reported disruption to employment, income, mobility, and psychosocial wellbeing during the COVID-19 pandemic, with support reported primarily through informal, contractor-mediated channels rather than formal government assistance, which reached fewer than one in a hundred respondents. Welfare-scheme awareness was negligible, psychological support was entirely absent, and

substance use was widely reported, although its role as a coping response was not established. These findings underscore the need for portable, residence-independent welfare entitlements, worksite-accessible healthcare and psychosocial support services integrated into existing construction-labour welfare schemes, and simplified registration pathways that do not depend on local documentation. Strengthening direct institutional engagement with construction workers - rather than relying on contractor goodwill as a de facto welfare mechanism - may help address the reported support gaps, although the effectiveness of such measures was not evaluated in this study. As an exploratory study confined to two NCR districts and a purposive sample, the findings are not statistically generalisable beyond the study sites; the findings describe reported experiences and associations rather than causal pandemic effects. Future research using probability sampling, baseline and longitudinal measurements, appropriate comparison groups, and a fully specified multivariate design across additional construction-labour destinations would strengthen the evidence base for policy action.

FUNDING, ACKNOWLEDGEMENT AND CONFLICT OF INTEREST

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgement: The authors thank the migrant construction workers in NOIDA and Ghaziabad who participated in this study.

Conflicts of Interest: The authors declare no conflict of interest.

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