ORIGINAL RESEARCH ARTICLE

Work Related Musculoskeletal Disorder and Stress among Online Delivery Personnel in Chennai -A Cross-Sectional Study

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DOI: 10.55489/njcm.170220265940

ABSTRACT

Background: Delivery personnel frequently work long hours under time pressure and irregular schedules, increasing their vulnerability to work-related musculoskeletal disorders (WRMSDs) and workplace stress. This study evaluated the frequency and determinants of WRMSDs and occupational stress among delivery personnel in Chennai.

Methods: A cross-sectional study was carried out with 200 delivery workers who were selected using snowball sampling. Structured interviews were used to gather information. WRMSDs were assessed using the Nordic Musculoskeletal Questionnaire and workplace stress using the Workplace Stress Scale (score >20 indicating high stress). Logistic regression and chi-square tests were analysed.

Results: WRMSDs were reported by 54% of participants, predominantly involving the lower back and workplace stress was identified in 46%. Significant predictors of workplace stress included full-time employment (AOR: 3.88; 95%CI: 1.66-9.05), working >8 hours/day (AOR: 3.52; 95%CI: 1.41-8.76), and sleeping <6 hours (AOR: 3.99; 95%CI: 2.04-7.79). WRMSDs were associated with low-income (AOR: 2.86; 95%CI: 1.16-7.05), inadequate sleep (AOR: 7.29; 95%CI: 3.57-14.88), and <2 years of experience (AOR: 0.46 95%CI: 0.22-0.96).

Conclusion: Delivery personnel face considerable WRMSDs and workplace stress, influenced mainly by long work hours and inadequate rest.

Keywords: WRMSDs, Stress, Gig-workers, Ergonomics, Chennai

ARTICLE INFO

Financial Support: None declared

Conflict of Interest: The authors have declared that no conflict of interest exists.

Received: 28-08-2025, **Accepted**: 01-01-2026, **Published**: 01-02-2026

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How to cite this article: Devadharshini S, Lavanya M, Logaraj M, Anantharaman VV, Hussain A. Work Related Musculoskeletal Disorder and Stress among Online Delivery Personnel in Chennai -A Cross-Sectional Study. Natl J Community Med 2026;17(2):101-108. DOI: 10.55489/njcm.170220265940

www.njcmindia.com | pISSN: 0976-3325 | eISSN: 2229-6816 | Published by Medsci Publications

INTRODUCTION

The gig economy represents a labour market in which workers perform short-term, platform-mediated tasks as independent contractors. Demand for digitally coordinated services especially food and parcel delivery expanded rapidly during and after the COVID-19 pandemic.[1] Major platforms such as Swiggy, Zomato, Zepto, and Blinkit operate through mobile applications that require delivery personnel to transport meals and household items under strict time-bound and performance-driven systems.[2] This growth has been fuelled by shifting consumer preferences, technological advancements, and increasing reliance on third-party delivery networks. Global estimates further show a sharp rise in digital meal-delivery revenues, reflecting the expanding scale and workload of delivery workers.[3]

The nature of platform-based delivery work, characterised by prolonged riding hours, repetitive movements, time pressure, and constrained postures, places delivery personnel at heightened risk of work-related musculoskeletal disorders. Work-related musculoskeletal disorders (WRMSDs) refer to discomfort or functional impairments involving muscles, tendons, nerves, joints, and supporting structures.[4] They commonly occur in occupations characterized by repetitive movements, prolonged riding or sitting, awkward postures, vibration exposure, and inadequate rest.[4] Globally, WRMSDs are recognised as a major occupational health concern due to their association with disability, reduced work capacity, absenteeism, and productivity loss.[4]

In addition to these physical health risks, workplace stress has emerged as a prominent challenge in gig-based work. High time pressure, limited job control, fluctuating income, and customer rating systems contribute significantly to psychological strain.[5] Prolonged exposure to these pressures adversely affects physical and mental well-being, and stress may coexist with musculoskeletal symptoms, increasing pain perception and reducing coping capacity.[5]

International studies illustrate this burden clearly; for example, research from China reported anxiety in 46% and depression in 18.4% of food delivery drivers, with poor sleep and limited communication identified as major determinants.[6] Studies from Eastern Peninsular Malaysia have recorded a high prevalence of work-related musculoskeletal disorders (74.9%),[7,8] highlighting the substantial physical strain associated with delivery work. Consistent with this interaction between psychosocial stress and physical strain, an Indian cross-sectional analytical study among food delivery personnel in Gujarat reported musculoskeletal symptoms in 37% of workers, most commonly affecting the lower back (49%) and neck (45.5%), alongside a high prevalence of moderate workplace stress (88.4%).[9] Regional findings from Tamil Nadu further indicate considerable mental-health concerns, including anxiety, depression, and burnout among delivery riders.[10]

Despite the rapid expansion of India's platform-based delivery workforce, limited research has explored the combined burden of workplace stress and WRMSDs, particularly in major urban centres such as Chennai. Understanding these associations is essential for informing ergonomic improvements and developing targeted occupational-health strategies for gig-economy workers.

The study was conducted to assess the prevalence of Work-Related Musculoskeletal Disorders (WRMSDs) and workplace stress among delivery personnel, and to identify associated sociodemographic and occupational factors.

METHODOLOGY

Study Design and Setting: A community-based cross-sectional study was conducted among online delivery personnel working with platforms such as Swiggy, Zomato, Zepto, and Blinkit etc in Chennai. Data collection was carried out between January-March 2025.

Study Population: Participants were online delivery workers aged ≥18 years who had been in the occupation for a minimum of one year. Individuals with known surgical, neurological, or chronic musculoskeletal conditions, and those unwilling to participate, were excluded.

Sample Size: Based on a reported 37% prevalence of musculoskeletal problems by Makwana V et al.[9], the sample size was determined by the formula $n = Z^2pq/l$. The estimated sample size was 193, rounded to 200 individuals, with a 95% confidence level (Z = 1.96), p = 37%, allowed error l = 7.2%, and a 10% non-response rate. A precision of 7.2% was chosen to achieve a feasible sample size within the available time frame and field constraints while maintaining an acceptable margin of error.

Sampling Technique: Participants were recruited through snowball sampling**.**

Seed Participants: Ten seed participants were purposively selected from restaurant clusters and delivery hubs; each could refer up to 5 colleagues until n=200 was reached. Eligibility was confirmed based on visible occupational indicators such as delivery uniforms, insulated delivery bags, or waiting at designated pickup locations.

Recruitment Locations and Timing: Participants were recruited from various accessible areas in Chennai, including restaurant clusters, delivery hubs, residential zones and college surroundings. Recruitment was conducted during periods when delivery personnel were most likely to be available.

Data Collection Tool and Procedure: The Nordic Musculoskeletal Questionnaire (NMQ) is a well-

established tool used internationally to assess musculoskeletal symptoms across nine body regions. As it is a standardized and widely used tool developed by Kuorinka J et al.[11], no pilot testing was performed. A WRMSD case was defined as pain or discomfort in any region during the past 12 months.

The American Institute of Stress and The Marlin Company created the Workplace Stress Scale (WSS)[5], is a standardized 8-item instrument used widely for assessing stress. As the tool was used in its original form without modification, no pilot testing was required. Scores >20 was categorized as high stress and ≤20 as no/low stress.

IBM SPSS v27.0 was used for analysis after the responses were input into Microsoft Excel.

Study Variables: Outcome variables were workplace stress and musculoskeletal disorders. Independent variables included age, education, income, type of work, working hours per day, sleep duration, distance travelled per day and work experience.

Statistical Analysis: For categorical variables, descriptive statistics were employed. The relationships between independent variables and the results were evaluated using the Chi-square test. Crude odds ratios (OR) with 95% confidence intervals were calculated using univariate logistic regression. Adjusted odds ratios (AOR) were obtained by entering variables with $p < 0.20$ in univariate analysis into multivariable binary logistic regression using the ENTER method. Statistical significance was defined as a p-value of less than 0.05. The Hosmer-Lemeshow goodness-of-fit test was used to assess the model's suitability. Tolerance and variance inflation factor (VIF) values were used to evaluate multicollinearity. No missing data were found; therefore, complete-case analysis was used.

Ethical Considerations: The Institutional Ethics Committee (SRMIEC-ST0924-1751) granted ethical approval. All participants gave their verbal informed permission before being enrolled. Confidentiality and anonymity were maintained throughout the study.

RESULTS

Table 1 lists the characteristics of the 200 delivery personnel who took part in the study. The majority of participants (82.0%) were in the 26-44 age range, more than half had diploma education (54.0%), and a majority earned ₹15,000-24,999 monthly (64.5%). Full-time work (61.5%), working more than 8 hours per day (55.5%), and sleeping less than 6 hours per night (60.5%) were common among participants, and 69.5% travelled ≥100 km/day. About 68.0% had ≥2 years of work experience.

The prevalence of workplace stress was 92 (46%), and musculoskeletal disorders (MSDs) were reported by 108 (54%).

The association between participant characteristics and workplace stress is shown in Table 2. Income, working hours, sleep duration, and distance travelled were significantly associated with workplace stress. Age, education, type of work, and work experience were not significantly associated with stress.

Binary logistic regression results for workplace stress are provided in Table 3. After adjustment, full-time work, working >8 hours/day, and sleeping <6 hours remained significant predictors of workplace stress. Income and distance were not significant in the adjusted model. Model fit was adequate, as indicated by the Hosmer-Lemeshow test ($\chi^2 = 9.554$; $p = 0.215$), shown in Table 7.

The association between participant characteristics and musculoskeletal disorders (MSDs) is presented in Table 4. Age, income, working hours, sleep duration, distance travelled, and work experience were significantly associated with MSDs.

Adjusted logistic regression findings for MSDs are shown in Table 5. Age >35 years was protective. Income <₹25,000, sleep <6 hours, and work experience <2 years were significant predictors of MSDs. Model fit was satisfactory as per the Hosmer-Lemeshow statistic ($\chi^2 = 10.368$; $p = 0.240$), shown in Table 7.

Table 1: Study participants' sociodemographic distribution (n = 200)

Variables	Participants (%)
Age (yrs)	
18-25 yrs	31 (15.5)
26-44 yrs	164 (82)
45-55 yrs	5 (2.5)
Education	
Primary	10 (5)
Middle	31 (15.5)
Higher secondary	29 (14.5)
Diploma	108 (54)
Graduate	22 (11)
Income (Annual per capita)	
7000-14999 INR	16 (8)
15000-24999 INR	129 (64.5)
25000-34999 INR	43 (21.5)
35000-45000 INR	12 (6)
Type of work	
Part time	77 (38.5)
Full time	123 (61.5)
Working hours	
≤8 hrs	89 (44.5)
>8 hrs	111 (55.5)
Sleep	
≥6 hrs	79 (39.5)
<6 hrs	121 (60.5)
Distance	
<100 km	61 (30.5)
≥100 km	139 (69.5)
Work experience	
≥2 yrs	136 (68)
<2 yrs	64 (32)

Table 2: Association between sociodemographic variables and workplace stress

Variables	Workplace stress			Chi square	P- value
	High stress (n=92) (%)	No/low stress (n=108) (%)	Total (%)		
Age (yrs)					
≤35 yrs	70 (76.1)	81 (75)	151 (75.5)	0.32	0.859
>35 yrs	22 (23.9)	27 (25)	49 (24.5)		
Education					
college	61 (66.3)	69 (63.9)	130 (65)	0.127	0.721
School	31 (33.7)	39 (36.1)	70 (35)		
Income (Annual per capita)					
≥25000 INR	13 (14.1)	42 (38.9)	55 (27.5)	15.274	**<0.001***
<25000 INR	79 (85.9)	66 (61.1)	145 (72.5)		
Type of work					
Part time	31 (33.7)	46 (42.6)	77 (38.5)	1.661	0.197
Full time	61 (66.3)	62 (57.4)	123 (61.5)		
Working hours					
≤8 hrs	31 (33.7)	58 (53.7)	89 (44.5)	8.053	**0.005***
>8 hrs	61 (66.3)	50 (46.3)	111 (55.5)		
Sleep					
≥6 hrs	21 (22.8)	58 (53.7)	79 (39.5)	19.821	**<0.001***
<6 hrs	71 (77.2)	50 (46.3)	121 (60.5)		
Distance					
<100 km	20 (21.7)	41 (38)	61 (30.5)	6.169	**0.013***
≥100 km	72 (78.3)	67 (62)	139 (69.5)		
Work experience					
≥2 yrs	65 (70.7)	71 (65.7)	136 (68)	0.551	0.458
<2 yrs	27 (29.3)	37 (34.3)	64 (32)		

A p-value of <0.05 was considered statistically significant.

Table 3: Binary logistic regression analysis of factors associated with workplace stress

Variables	Crude odds ratio(95%CI)	P Value	Adjusted odds ratio (95% CI)	P value
Age >35 yrs	0.943 (0.493-1.801)	0.859	-	-
Education School	0.899(0.501-1.612)	0.721	-	-
Income <25000 INR	3.867(1.915-7.809)	<0.001*	2.114(0.879-5.087)	0.095
Work full time)	1.460(0.820-2.598)	0.197	3.879(1.662-9.050)	**0.002***
Working hours >8 hrs	2.283(1.285-4.054)	0.005*	3.515(1.410-8.763)	**0.007***
Sleep <6 hrs)	3.922(2.117-7.265)	<0.001*	3.987(2.041-7.788)	**<0.001***
Distance ≥100 km	2.203(1.174-4.135)	0.013	1.497(0.664-3.374)	0.331
Work experience <2yrs	0.797(0.438-1.452)	0.458	-	-

Reference categories: Age ≤35 years; Education = College; Income ≥25,000 INR; Type of work = Part-time; Working hours ≤8 hours/day; Sleep ≥6 hours/night; Distance <100 km/day; Work experience ≥2 years.
A p-value of <0.05 was considered statistically significant

The distribution of musculoskeletal symptoms by body region is detailed in Table 6. Low back symptoms were most frequently reported (40.5% in the past year and 29.5% in the last 7 days), followed by neck, elbow, and wrist/hand symptoms. A notable proportion reported symptoms lasting more than 30 days, particularly for the lower back (7%).

Model diagnostics and variable selection criteria used for logistic regression are summarised in Table 7. The Enter method was used to incorporate variables in multivariable models that had $p < 0.20$ in univariate analysis. No multicollinearity was detected (VIF range: 1.07-2.00), and there were no missing data, allowing complete-case analysis.

DISCUSSION

Workplace stress and musculoskeletal disorders (MSDs) are emerging as major occupational health concerns across various professions, particularly among physically active workers such as online delivery personnel. In the present study, more than half of the participants reported musculoskeletal complaints, and nearly half experienced workplace stress, highlighting the dual burden of physical and psychological strain in this occupational group.

In adjusted analyses, sleeping less than six hours per day remained the strongest factor associated with both workplace stress and musculoskeletal complaints. Inadequate sleep is known to increase pain sensitivity, limit physiological recovery, and contribute to fatigue. Full-time employment and prolonged working hours were also significantly associated with stress, reflecting the time pressure, incentive-based performance systems, and continuous workload typical of online delivery work.

Table 4: Association between sociodemographic variables and musculoskeletal disorder

Variables	Musculoskeletal disorder			Chi square	P- value
	Yes (%) (n=108)	No (%) (n=92)	Total (%)		
Age					
≤35 yrs	89 (82.4)	62 (67.4)	151 (75.5)	6.056	**0.014***
>35 yrs	19 (17.6)	30 (32.6)	49 (24.5)		
Education					
college	70 (64.8)	60 (65.2)	130 (65)	0.004	0.953
School	38 (35.2)	32 (34.8)	70 (35)		
Income (Annual per capita)					
≥25000 INR	16 (14.8)	39 (42.4)	55 (27.5)	18.949	**<0.001***
<25000 INR	92 (85.2)	53 (57.6)	145 (72.5)		
Type of work					
Part time	43 (39.8)	34 (37)	77 (38.5)	0.171	0.679
Full time	65 (60.2)	58 (63)	123 (61.5)		
Working hours					
≤8 hrs	38 (35.2)	51 (55.4)	89 (44.5)	8.248	**0.004***
>8 hrs	70 (64.8)	41 (44.6)	111 (55.5)		
Sleep					
≥6 hrs	23 (21.3)	56 (60.9)	79 (39.5)	32.556	**<0.001***
<6 hrs	85 (78.7)	36 (39.1)	121 (60.5)		
Distance					
<100 km	25 (23.1)	36 (39.1)	61 (30.5)	5.987	**0.014***
≥100 km	83 (76.9)	56 (60.9)	139 (69.5)		
Work experience					
≥2 yrs	83 (76.9)	53 (57.6)	136 (68)	8.454	**0.004***
<2 yrs	25 (23.1)	39 (42.4)	64 (32)		

A p-value of <0.05 was considered statistically significant.

Table 5: Binary logistic regression analysis of factors associated with musculoskeletal disorder

Variables	Crude odds ratio(95%CI)	P Value	Adjusted odds ratio (95% CI)	P value
Age >35 yrs	0.441(0.228-0.853)	0.014*	0.416(0.185-0.934)	0.033*
Education School	1.018(0.568-1.824)	0.953	-	-
Income <25000 INR	4.231(2.159-8.293)	<0.001*	2.864(1.163-7.055)	0.022*
Work full time)	0.886(0.500-1.571)	0.679	-	-
Working hours >8 hrs	2.291(1.296-4.052)	0.004*	1.323(0.608-2.880)	0.481
Sleep <6 hrs)	5.749(3.085-10.713)	<0.001*	7.291(3.572-14.881)	<0.001*
Distance ≥100 km	2.134(1.157-3.938)	0.014	1.314(0.560-3.083)	0.530
Work experience <2yrs	0.409(0.223-0.753)	0.004*	0.464(0.224-0.963)	0.039*

Reference categories: Age ≤35 years; Education = College; Income ≥25,000 INR; Type of work = Part-time; Working hours ≤8 hours/day; Sleep ≥6 hours/night; Distance <100 km/day; Work experience ≥2 years; A p-value of <0.05 was considered statistically significant.

Table 6: Distribution of Work-Related Musculoskeletal Symptoms by Body Region (n=200)

Affected Body Region	Functional limitation (12 months)	Symptoms In last 7 days	Duration of symptoms (%)			Accident related injury	Doctor consultation
			1-7 days	8-30 days	>30 days		
Neck	52(26.0%)	33(16.5%)	41(20.5%)	9(4.5%)	2 (1.0%)	0	2(1.0%)
Shoulder	16(8.0%)	7(3.5%)	10(5.0%)	4(2.0%)	2(1.0%)	1(0.5%)	0
Elbow	29(14.5%)	19(9.5%)	24(12%)	3(1.5%)	2(1.0%)	2(1.0%)	0
Wrist/hands	29(14.5%)	21(10.5%)	17(8.5%)	8(4.0%)	4(2.0%)	1(0.5%)	0
Upper back	21(10.5%)	15(7.5%)	8(4.0%)	10(5.0%)	3(1.5%)	0	1(0.5%)
Low back	81(40.5%)	59(29.5%)	14(7.0%)	16(8.0%)	51(25.5%)	0	7(3.5%)
Hips / thighs	18(9.0%)	2(1.0%)	3(1.5%)	12(6.0%)	3(1.5%)	0	1(0.5%)
Knees	25(12.5%)	5(2.5%)	9(4.5%)	8(4.0%)	8(4.0%)	1(0.5%)	0
Ankle /feet	23(11.5%)	12(6.0%)	22(11.0%)	0	1(0.5%)	5(2.5%)	0

Table 7: Model Diagnostics and Model Building Strategy for Logistic Regression models

Component	Workplace Stress Model	Musculo Skeletal Disorder Model
Univariate Selection Criteria	Variables with p < 0.20 were selected for multivariable model	Variables with p <0.20 were selected for multivariable model
Variables Entered in Multivariable Model	Income, Type of work, Working hours, Sleep, Distance	Age, Income, Working hours, Sleep, Distance, Experience
Multivariable Method	Enter method	Enter method
Significant Predictors (Adjusted)	Type of work, Working hours, Sleep	Age, Income, Sleep, Experience
Hosmer-Lemeshow Test	$\chi^2 = 9.554$; p = 0.215	$\chi^2 = 10.368$; p = 0.240
Multicollinearity (VIF range)	1.07 - 2.00	1.07 - 2.00
Missing Data	None (0%)	None (0%)

Variables with p <0.05 in the multivariable model were considered statistically significant.

Biological and psychosocial mechanisms plausibly explain these findings. Poor sleep impairs muscle repair and heightens pain perception, increasing vulnerability to work-related musculoskeletal disorders. Prolonged load handling, awkward riding postures, and repetitive movements contribute to biomechanical strain, while psychosocial stressors such as low job control and performance pressure further amplify both stress and musculoskeletal symptoms. Similar associations between prolonged working hours, physical workload, inadequate recovery, and musculoskeletal complaints have been reported across other occupational settings, further supporting the biological plausibility of the observed findings.[12]

These findings underscore the need for platform companies to implement structured rest breaks, ergonomics training, safer riding and handling practices, and improved workload management. As gig work continues to expand rapidly, establishing minimum rest periods, ergonomic standards, and worker health-support measures is essential to reduce both physical and psychological strain.

Compared with the study by Makwana V et al.[9], which reported a 37% prevalence of MSDs among food delivery personnel, our study observed a higher prevalence (54%). Both studies identified the lower back as the most commonly affected site, although neck pain was more prevalent in their population. Similarly, Srinivasan R et al.[13] reported lower annual and weekly prevalence of low back and neck pain compared with our findings. Longer working hours were more common in our study and were significantly associated with both workplace stress and MSDs.

Shinde R et al[14] reported substantially higher MSD prevalence among delivery boys, particularly involving the lower back, shoulders, and upper back, attributed to continuous riding and heavy lifting. Mukherjee D et al[15] also documented higher body part discomfort scores and increased OWAS-based WRMSD risk due to prolonged work duration and repetitive load handling. In line with these findings, our study demonstrated a high burden of WRMSDs, with long working hours and inadequate sleep emerging as key predictors.

Thornsao C et al[16] reported high prevalence of back, neck, and shoulder discomfort among emergency medical workers, with lower stress levels compared to our study. Despite occupational differences, both studies demonstrated a strong association between MSDs and workplace stress. Similarly, Etana G et al[17] reported a high prevalence of WRMSDs associated with awkward postures, prolonged static work, and job stress, reinforcing the combined physical and psychosocial demands observed in our study.

Mishra S et al[18] reported a high prevalence of WRMSDs among hairdressers, particularly involving the lower back and upper back, attributed to prolonged standing and repetitive tasks. Kumar R et al[19], in a comparison of truck and bus drivers, identified more frequent neck, shoulder, and back pain among truck drivers, with prolonged driving hours and physical fatigue as key contributors. These findings mirror our results, suggesting common occupational risk pathways across diverse professions.

Evidence synthesized by Joseph L et al.[20] demonstrates a strong causal relationship between WRMSDs and exposures such as whole-body vibration, awkward postures, manual material handling, lifting tasks, job stress, and high job demands. Moderate associations were also noted with uncomfortable seating and low job satisfaction. These findings strongly support the multifactorial occupational risks identified in the present study.

Panumasvivat J et al.[21] reported that neck, lower back, and shoulder pain were the most common WRMSDs among delivery riders, with symptoms worsening over time. Longer working hours, awkward postures, repetitive movements, and vehicle-related factors such as heavy delivery bags were significant contributors. These observations support our findings that prolonged physical strain is a key driver of WRMSDs in delivery work.

Useche SA et al[22] found that a substantial proportion of drivers experienced high job strain, primarily affecting mental health and road safety. In contrast, Wilson W et al[23] reported relatively low stress levels among healthcare workers. Compared to these groups, the higher prevalence of workplace stress observed in our study may be attributed to the unique characteristics of gig work, including prolonged working hours, inadequate rest, and limited organisational support.

Chandralekha K et al[24] reported a high annual prevalence of WMSDs using the Nordic Musculoskeletal Questionnaire, though clinically confirmed cases were fewer. Repetitive movements, prolonged abnormal postures, and working while ill were identified as key risk factors. In line with these findings, our study also observed a substantial burden of WRMSDs, suggesting sustained occupational strain irrespective of assessment method.

Chen CF[25] reported that job overload and time pressure significantly increased job stress among delivery riders, while self-efficacy had a protective effect. These findings support our observation that longer working hours and inadequate sleep were key predictors of workplace stress. Increased stress may also contribute to unsafe work practices, reinforcing the importance of workload regulation and stress-coping strategies.

STRENGTH AND LIMITATIONS

This study focuses on online delivery personnel, a rapidly growing and high-risk workforce that is often underrepresented in occupational health research, thereby addressing an important evidence gap. However, the study has certain limitations. The non-

probability technique of snowball sampling may have added selection bias and limited the findings' generalizability. The sampling strategy did not adhere to probabilistic selection, even though the sample size was determined using a method based on basic random sampling. Self-reported data, which is prone to memory and reporting bias, was used in the study. As the design was cross-sectional, causal relationships cannot be inferred, and reverse causation is possible, such as musculoskeletal disorders contributing to poor sleep. Furthermore, the study did not assess ergonomic load factors such as bag weight, seat design, or vibration exposure, which may influence MSD prevalence.

Conclusion

This study shows high prevalence of workplace stress and musculoskeletal disorders among online delivery personnel; these outcomes were significantly associated with long working hours, inadequate sleep, and work intensity. The findings highlight the interconnected nature of physical and psychosocial demands in gig-economy work and underscore the need for targeted preventive strategies. Strengthening ergonomic practices, regulating workload, and promoting adequate rest may help reduce both MSDs and stress among delivery workers**.** Longitudinal studies with ergonomic assessment are recommended.

Acknowledgement: The authors acknowledge the institution for providing administrative support during the conduct of the study and gratefully thank SRM Medical College Hospital and Research Centre, SRM Institute of Science and Technology (SRMIST), Kattankulathur, Chengalpattu, Tamil Nadu for financial support toward publication costs.

Individual Authors' Contributions: DS was involved in all stages of the study, including study conception, design, data collection, data analysis, and manuscript preparation. **LaM** contributed to study conception and design, data analysis, and manuscript preparation. **LoM** was involved in study conception and design and contributed to manuscript preparation. **AVV** contributed to study conception and manuscript preparation. **AH** was involved in study conception and design, data analysis, and manuscript preparation.

Availability of Data: The data that support the findings of this study are available from the corresponding author on request.

Declaration of Non-use of Generative AI Tools: This article was prepared without the use of generative AI tools for content creation, analysis, or data generation. All findings and interpretations are based solely on the authors' independent work and expertise.

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