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Prevalence of Occupational Health Problems among E-Commerce and Food Delivery Workers in Chennai: A Cross-Sectional Study

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ABSTRACT

Background: E-commerce and food delivery workers face occupational health risks due to irregular hours, poor posture, inadequate diet, and exposure to noise, heat, dust, and traffic pollution. **Objectives:** To identify health problems among e-commerce and food delivery workers and estimate their prevalence by age. **Methods:** A community-based cross-sectional study was conducted from March to July 2018 among 2553 male workers in Chennai, using a pretested semi-structured questionnaire via Google Forms. **Results:** Among participants (mean age 20.3 years), the most prevalent health problems were low backache (31%), headache (25%), and red eyes (21%). Older workers (41-50 years) reported higher rates of low backache. **Conclusions:** These workers experience significant musculoskeletal and ocular issues, necessitating occupational health interventions.

KEYWORDS: Occupational health, E-commerce, Food delivery, Low backache, Headache

INTRODUCTION

The rapid growth of e-commerce and food delivery services in India, driven by digital platforms and increasing consumer demand, has significantly expanded the gig economy, particularly in urban centers like Chennai. [1] Workers in this sector, often operating as independent contractors, face unique occupational challenges, including extended and irregular working hours, physical strain from prolonged motorcycle riding, poor ergonomic practices, and exposure to environmental stressors such as heat, dust, noise, and traffic-related pollution. [2, 3] These adverse conditions predispose them to wide range of health issues, including musculoskeletal disorders, ocular conditions, and stress-related ailments, which are frequently exacerbated by inadequate access to occupational health services and social security in the largely unorganized gig economy. [4, 5]

Despite the critical role of e-commerce and food delivery workers in sustaining India's digital economy, research on their occupational health remains limited, with much of the existing literature focusing on consumer behavior or platform performance rather than worker well-being. [6] Emerging evidence suggests a high prevalence of health problems, such as low back pain, headaches, and road traffic injuries, among these workers, because of repetitive physical tasks, unsafe commuting conditions, and insufficient rest. [7–9] Moreover, irregular meal timings and reliance on outside food, common in this workforce, may contribute to poor dietary quality and associated health risks. [10] This study aims to determine the prevalence of occupation-related health problems among e-commerce and food delivery workers in Chennai and to investigate variations across age groups, providing evidence to inform targeted occupational health interventions.

MATERIAL AND METHODS

Study Design and Setting: A community-based cross-sectional study under the department of Community Medicine, SRM Medical College, Chennai, Tamil Nadu, from March to July 2018. Data collection occurred near food outlets, apartments, and courier service centers.

Population and Sample: The study included male e-commerce and food delivery workers aged ≥18 years, with atleast ≥1 year of work experience. Participants were selected using a two-stage sampling method in Chengalpattu. Chengalpattu district is one of the districts under Chennai metropolitan area and covers a population of 25,56.423 according to the 2011 census. Among the 7 Taluks, three wards (Tambaram, Chengalpattu, Cheyyur) were chosen via simple random sampling, followed by con-

venience sampling of E-commerce workers near above mentioned locations from 10 AM–12 PM and 3 PM–7 PM daily over three months.

Inclusion Criteria: Workers with ≥1 year of experience willing to participate.

Exclusion Criteria: Individuals with recent musculoskeletal injuries, congenital deformities, neurological conditions unrelated to current work, or pre-existing medical conditions not linked to their present occupation.

Data Collection: A pretested, semi-structured questionnaire was administered via Google Forms, capturing sociodemographic data, health problems, height, and weight (for BMI).

Ethical clearance was obtained from the Institutional Ethical Committee, with informed consent ensuring confidentiality.

Data analysis: Data was analyzed using Microsoft Excel and Epi info version 7. Descriptive statistics are mentioned and tests of significance – the chi-square test was applied wherever required.

RESULTS

The study included 2553 male e-commerce and food delivery workers. the largest proportion of participants (43.1%, n=1101) were in the 18-30 age group, followed by 33.1% (n=844) in the 31-40 age group, and 23.8% (n=608) in the 41-50 age group. Educational attainment included 32% with graduation and 28% with intermediate education (Table 1).

Work experience as delivery personnel showed that 1012 (39.7%) had 3–5 years of experience, 984 (38.5%) had more than 5 years, and 557 (21.8%) had 1–3 years of experience. Regarding daily working hours, 1112 (43.5%) worked more than 8 hours, 982 (38.4%) worked less than 6 hours, and 459 (17.9%) worked for 7–8 hours. Breaks during work were reported by 1562 (61.1%) participants as more than five times daily, while 991 (38.8%) had fewer than three breaks (Table 1).

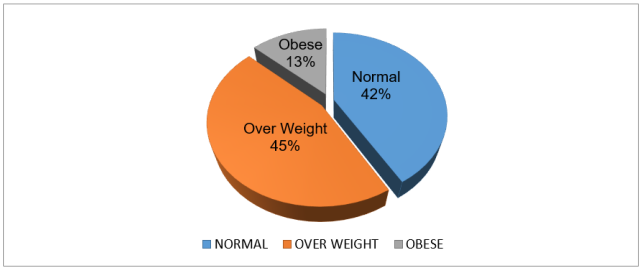

Figure 1: Distribution of body mass index (BMI) among E-commerce and Food Delivery Workers (n = 2553)

Figure 1 illustrates the classification of Body Mass Index (BMI) among the study participants, based on the

Demographic Variables	Category	No. (%)
Age (years)	18–30	1101 (43.1)
	31–40	844 (33.1)
	41–50	608 (23.8)
Education	Illiterate	51 (2.0)
	Primary school	357 (14.0)
	High school	613 (24.0)
	Intermediate	715 (28.0)
	Graduate and above	817 (32.0)
Work Experience as E-commerce / Food Delivery	1–3 years	557 (21.8)
	3–5 years	1012 (39.7)
	>5 years	984 (38.5)
Lunch / Meal Timings	Regular (12–1 PM)	1226 (48.0)
	Irregular	1327 (51.9)
Food Preferences	Home food/Lunch box	820 (32.1)
	Outside food	1120 (43.8)
	Undelivered parcel food	613 (24.0)
Breaks During Work (15–20 min each)	<3	991 (38.8)
	>5	1562 (61.1)
Duration of Working Hours Per Day	<6 hours	982 (38.4)
	7–8 hours	459 (17.9)
	>8 hours	1112 (43.5)

Table 1: Sociodemographic and Occupational Characteristics of E-commerce and Food Delivery Workers (n = 2553)

WHO/Asia-Pacific cut-off values. [11] Among the total population, 45% were classified as overweight, followed by 42% with normal BMI, and 13% were found to be obese.

Occupational Health Problems	No. (%)
Low backache	791 (31.0)
Headache	638 (25.0)
Red eyes	536 (21.0)
Heat-related illness	332 (13.0)
Accidents	230 (9.0)
Others (Respiratory infections, Dust allergy, Asthma)	26 (1.0)
Total	2553 (100)

Table 2: Distribution of Major Occupational Health Problems Among E-commerce and Food Delivery Workers (n = 2553)

Table 2 presents the distribution of major occupational health complaints among 2553 e-commerce and food delivery workers. Each participant reported more than one health issue; however, only the most significant complaint per individual was documented for analytical clarity. The most frequently reported problem was low backache (31%), followed by headache (25%), red eyes (21%), and heat-related illness (13%). Additionally, accidents were reported by 9% of the workers, while other issues such as respiratory infections, dust allergy, and asthma were noted in 1% of the participants.

A higher prevalence of low backache was observed in the younger age group (18–30 years), whereas accidents were more frequently reported among older workers (41–50 years). Headaches and red eyes showed a fairly uniform distribution across age groups. The data suggest that age-specific occupational exposures and physical strain may contribute to the variability in health complaints (Table 3).

Occupational Health Problems	18–30 years No. (%)	31–40 years No. (%)	41–50 years No. (%)	Total No. (%)
Low back ache	403 (36.6)	269 (31.9)	119 (19.6)	791 (31)
Heat related illness	190 (17.3)	93 (11.0)	49 (8.1)	332 (13)
Headache	249 (22.6)	229 (27.1)	160 (26.3)	638 (25)
Red eyes	225 (20.4)	171 (20.3)	140 (23.0)	536 (21)
Accidents	30 (2.7)	69 (8.2)	131 (21.6)	230 (9)
Others*	4 (0.4)	13 (1.5)	9 (1.5)	26 (1)
Total	1101 (100)	844 (100)	608 (100)	2553 (100)

*Others (Respiratory infections, Dust allergy, Asthma)

Table 3: Prevalence of health problems in relation to their age among the study participants

DISCUSSION

In the present study, the mean age of study participants was 20.3 years, with the majority of participants (43%) in the 18-30 years age group, consistent with the findings of Nasreen et al. [12], where 44% of participants belonged to the same age group. Educationally, the majority of the participants were graduates (32%) and had intermediate-level education (28%). This contrasts with the study by Nasreen et al. [12], where a greater proportion of participants had completed secondary (17%) and intermediate education (19%).

A key finding of this study was that 45% of the participants were overweight, followed by 42% with normal BMI and 13% who were obese, as per the BMI classification. This finding contrasts with the study by Giacomini et al. [13], where the BMI among e-commerce workers ranged from 20.95 to 23.44. This discrepancy could be due to the varying urbanization, lifestyle factors, and work culture between the study populations.

In terms of occupational health problems, as shown in Table 2, the most prevalent complaints among the study population were low backache (31%), headache (25%), red eyes (21%), heat-related illnesses (13%), accidents (9%), and others, including respiratory infections, dust allergy, and asthma (1%). These findings align with previous studies. For example, Shinde & Jeswani reported that 69.06% of e-commerce delivery workers in Pune experienced low back pain, with other prevalent musculoskeletal disorders including shoulder pain (59.36%) and upper back pain (33.15%). [14] Similarly, a study by Pandit S et al. [15] in Jabalpur reported musculoskeletal discomfort due to overloading and ergonomic issues faced by delivery riders, which further emphasizes the need for ergonomic interventions to reduce health risks. Nasreen et.al. [12] found almost similar health problems. In another recent study by Benson et al. [16], musculoskeletal pain was found to be highly prevalent among app-based food delivery riders in Tamil Nadu, with over 80% reporting some form of pain, particularly in the lower back and shoulders due to prolonged riding hours and poor ergonomics of delivery vehicles. These studies highlight the physical strain experienced by delivery workers, particularly in urban Indian settings.

The studies by Vijayasankari et al. [3], Syah et al. [17] and Amaleshwari U et al. [18] also bring attention to road accidents, inadequate safety provisions, and long working hours among food and parcel delivery workers, calling for stronger policy reforms and legislative changes to improve working conditions. For example, in a study by Vijayasankari et al. [3] involving 173 food delivery workers in Southern Chennai, it was found that 32.4% (56 workers) had experienced road traffic accidents. The majority of those affected were in the 20–29 years age group. A significant risk factor identified was the use of mobile phones while driving, with 59.5% of participants admitting to this behavior. This is particularly relevant given the 9% of workers in the present study who reported accidents as a major health issue. However, in the present study the majority of those affected (21%) were in the 40–50 years age group.

Analysis of age-wise distribution of health problems (Table 3) revealed that among the 18–30 years group (n=1101), low backache (36.6%) and headache (22.6%) were most prevalent. In the 31–40 years group (n=844), the leading issues were headache (27.1%), low backache (31.9%), and red eyes (20.3%). Among participants aged 41–50 years (n=608), the most common complaints were accidents (21.6%), headache (26.3%), and red eyes (23%). These age-specific patterns highlight how occupational exposures may manifest differently across age groups. However, comparative data for age-wise health issue distribution is sparse in existing literature, limiting broader comparison. [7, 14–16] The differences in order and type of health problems may be attributed to variations in occupational environments, job demands, and geographic contexts. [13–18] These findings highlight the consistent burden of work-related health issues across various geographic settings and call for urgent occupational health interventions.

CONCLUSION

This study highlights the considerable burden of occupational health issues faced by e-commerce and food delivery workers, with low backache, headache, heat stress, accidents and ocular complaints such as red eyes emerging as frequently reported problems. The high prevalence of overweight and obesity further points toward an increasing risk of non-communicable diseases within this workforce. The presence of multiple, overlapping health complaints often varying with age and work-related exposures highlights the pressing need for comprehensive preventive strategies. These should include ergonomic training, regular health screenings, and the implementation of supportive workplace policies and regulatory frameworks aimed at safeguarding this vulnerable segment of the labor force. Future research should focus on longitudinal outcomes and assess the efficacy of targeted interventions to improve the occupational health outcomes in the evolving gig economy.

Limitations of the Study

This study has certain limitations: First, the cross-sectional design restricts causal inference between occupational exposures and reported health outcomes. Second, data collection relied primarily on self-reported information, which may be subject to recall bias and underreporting, particularly for sensitive issues like accidents or lifestyle-related health conditions. Third, the study included only male participants, limiting the generalizability of findings across gender. Additionally, the study focused on a specific geographic region, which may not fully represent the experiences of gig workers in other parts of India or globally. Lastly, only major health complaints were considered for analysis despite multiple health issues being reported, which may have led to underestimation of the full health burden. Future studies with a longitudinal design, objective clinical assessments, and a more diverse participant base are recommended to enhance the robustness and applicability of the findings.

DISCLOSURE

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Conflict of Interest: None Declared

Author Contribution: All the authors involved in study have contributed equally at all stages of work

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