



Original Article

Prevalence of Musculoskeletal Pain among Chefs Working in Restaurants of Sialkot

Zarafshan Nazar^{1*}, Sabahat Shakeel¹, Armeeza Naseer¹ and Rabia Razzaq¹¹Imran Idrees Institute of Rehabilitation Sciences, Sialkot, Pakistan

ARTICLE INFO

Key Words:

Nordic Musculoskeletal Questionnaire, Musculoskeletal Discomfort, Numeric Pain Rating Scale

How to Cite:

Nazar, Z., Shakeel, S., Naseer, A., & Razzaq, R. (2023). Prevalence of Musculoskeletal Pain among Chefs Working in Restaurants of Sialkot : Prevalence of Musculoskeletal Pain . Pakistan Journal of Health Sciences, 4(12). <https://doi.org/10.54393/pjhs.v4i12.1164>

*Corresponding Author:

Zarafshan Nazar
 Imran Idrees Institute of Rehabilitation Sciences,
 Sialkot
zarafshan.nazar@icloud.com

Received Date: 4th November, 2023Acceptance Date: 24th December, 2023Published Date: 31st December, 2023

ABSTRACT

Musculoskeletal pain is a pain coming from the structures such as bones, muscles, joints, tendons, and ligaments, clearly becoming more and more common. In addition to having a detrimental effect on a person's life quality, MSK pain's high healthcare expenses and concomitant loss of productivity have placed a heavy financial burden on societies. **Objective:** To find the prevalence of musculoskeletal pain among the chefs working in restaurants in Sialkot. **Methods:** The cross-sectional/observational survey study was conducted for 4 months and convenient sampling technique was used on chefs working in restaurants of Sialkot. **Results:** This study assessed prevalence and level of pain among chefs of different restaurants in Sialkot. This study included 178 participants with age range varied from 25 to 50 years. 61.2% of participants aged 25-29 years. 63.5% of participants were among those having 8 to 10 working hours. 24.7% of the participants had weight ranging from 55 to 59 kg. 58.4% of participants had mild pain. Duration of job of most of participants (40.4%) was 2 to 6 years. Most participants (20.8%) were having trouble in ankle/feet, (16.3%) had trouble in knees and lower back. **Conclusions:** We found that muscle and skeletal pain in chefs working in different restaurants of Sialkot most probably in ankles/feet, knees and low back. The pain was found to be mild on Numeric Pain Rating Scale (NPRS) mostly in male chefs of middle age with ideal weight.

INTRODUCTION

Musculoskeletal pain is described as pain coming from muscular or skeletal structures like bones, muscles, joints, tendons, and ligaments, clearly becoming more and more common. In addition to having a detrimental effect on a person's life quality in relation to health and operative status, MSK pain's high healthcare expenses and concomitant loss of productivity have placed a heavy financial burden on societies [1]. There were 1.71 billion persons affected globally by MSK pain-related disorders, which were one of the major causes of disability [2]. Both patients and doctors struggle with the hard condition of musculoskeletal pain. No. of their age, gender, or economic standing, many adults have gone through one or more

bouts of musculoskeletal pain at some point in their lives. About 47% of the population overall was impacted. Doctor's consultation was necessary for between 39 and 45 percent of those due to ongoing issues. Musculoskeletal discomfort that was not properly controlled can significantly influence socioeconomic conditions and negatively impact quality of life [3]. In restaurants and other establishments where food served, the chefs had the command of the kitchen. A chef must be knowledgeable in the production, processing, and preparation of food. In addition, chefs required to work in variety of shifts, including early mornings. Even on weekends and holiday weekends in the late evenings. Long-standing hours,

continual hunching forward, repetitive movements of upper limbs, lifting of large objects, and awkward postures that characterize a chef's employment. These include holding a wok, cutting vegetables, and grabbing kitchen implements. All of those were need for vigorous effort over the entire body. The majority of those duties were called for fixed positions and repetitive motions, which put a chef at risk for acquiring musculoskeletal pain [4]. Chefs could be susceptible to variety of injuries, pains, accidents and discomfort that can result from falls, slips and other mishaps. According to studies, cooks were more likely than ordinary person to experience mental strain such as stress, anxiety, mental pressure and chronic pain. Most cooks unconsciously acquired uncomfortable postures while working throughout the day. Ergonomic and safety issues, psychological variables, and environmental factors all played a role in injury prevention and chef safety. Workplace ergonomics and safety considerations, such as postures used, injuries resulting from them, MSDs etc.; psychological considerations, such as stress levels, ideal work capacity, workplace bullying, and job satisfaction; and environmental considerations, such as ventilation, temperature, humidity, and lighting, among others [5, 6]. Chefs typically worked full-time hours in a profession that were quite fast-paced. Automation didn't take the role of human labor in that professional working operations, which still heavily rely on it. Chefs' workplace musculoskeletal diseases were linked to a number of workplace hazard variables, a personal, physical exertion also included (posture-driven movement). Chefs used non- ergonomic workstations to conduct repetitive upper arm movements with varying speeds and forces. Bakers' uncomfortable postures in the shoulder area were known to be one of the leading occupational risk factors for the onset of musculoskeletal problems [7]. Some researches show that workers in the catering business, particularly those working in the kitchen, did not have workers who were in a normal ergonomic working environment, which includes the temperature, lighting, and place where they were doing their work [8]. The majority of morbidities in the working population were caused by musculoskeletal issues. Musculoskeletal problems were thought to be responsible for 40% of all workplace injury and disease expenditures worldwide. several different vocational groupings, such as workers in factories, chefs, food and meat manufacturers, clerks, data processors, and workers of bakery, musculoskeletal discomfort has been reported as widespread in the literature. It has been proven that the physical characteristics of the job had an effect with regards to the frequency of muscle and skeletal discomfort. Musculoskeletal pain has been positively connected with a quick pace of work, a demanding physical

exertion, frequent and strong manual labor, extended phases of uncomfortable positions, and full body tremors. Over the past two decades, research on the relationship involving psychological and social factors and the prevalence and the extent of muscle and skeletal pain has exploded, revealing these connections in a range of occupational settings [9]. Musculoskeletal pain, a major issue in many professions and industries, but a chef had a heavy workload and hence, more likely to develop musculoskeletal diseases in several different parts of the body because of the demanding tasks they must perform while standing for long periods of time and using both their upper and lower extremities. Because they spend so much time cooking and accomplishing other tasks in a restaurant without getting enough rest. Thus, it was assumed that chefs' repetitive, violent movements related to their jobs caused musculoskeletal pain. The study's goal was to assess how frequently cooks experience musculoskeletal pain and which body area receives these complaints the most frequently [10]. The most common deformity in Japan who provided school meal services is recorded to be finger deformation. With regard to finger deformity, 5719 chefs had a 47.35% prevalence rate. According to a study by Tan and Balaraman, there were 5835 participants, or 72.2% of cooks, who reported having back discomfort as one of their most typical muscle and skeletal issues [11]. The gap of our study was that there are few researches available related to musculoskeletal pain among restaurant chefs all over the world but there is no research present specifically related to the chefs of Sialkot. So, our studies focused on chef population of Sialkot. The reasons to select this topic were that it is our topic of interest as restaurant chefs are among the most important population of society now-a- days because there is no obvious study that focused on chefs of Sialkot, to add new knowledge for practitioners and to recommend improved working environmental conditions.

METHODS

The cross-sectional/observational study design was used. Duration of study was 4 months after approval of synopsis on 20 January 2023 from institutional review committee of Imran Idrees Institute of Rehabilitation Sciences, Sialkot, Pakistan. The sample size was calculated by using the formula: $n = (Z^2 \times P \times (1 - P)) / e^2$ Where; $-Z =$ value from standard normal distribution corresponding to desired confidence level ($Z = 1.96$ for 95% CI), $-P$ is expected true proportion, $-e$ is desired precision (half desired CI with). Therefore, our calculated sample size was 232 by estimated proportion (0.185), desired precision of estimate (0.05), confidence level (0.95) and estimated population size (200) [12]. Convenient sampling technique was used. The target population was the Chefs working in restaurants

of Sialkot. Inclusion Criteria included Age (25-50 years), Experience of 2 years or more, working hours \geq 8hrs per day [10]. Exclusion Criteria included previous trauma (for 12 months), surgery to the site of pain (for 12 months), chef helpers or kitchen aid workers. A consent form was given to the participants, officially signed by the Institutional Authority. The population was assessed by visiting the restaurants in Sialkot, along with Informed consent. Nordic Musculoskeletal Questionnaire and NPRS (Numeric Pain Rating Scale) were used. Convenient Sampling Technique was applied. Data were collected from Heritage, KFC, McDonald's, Hardees, Ginyaki, Jak's Cafe, Frangoz Cafe, Mazzeo, BBQ Tonight, Mei Kong, Silver Spoon, Tuscany Courtyard, Grandiose, Retro, Al-Shahbaz Restaurant, Kitchen Garden, Green-Apple Restaurant, Shinwari BBQ, Grill n Thrill, Allah Malik, Butt Karahi, China Citi, Citi Top, Taboosh, Royal Cuisine, Grace Family Restaurant, Continental Lounge, Desi Khabay, Flame and Grill, Colina Dine-in, Pizza Max, Rowdy's Café, Papa Johns, Torando, HFC, Yemek Café, Al-Hadi Mandi, Pizza Planet, Yorkshire, Boissons Café, Snafos, Imtiaz Bakings, Burger Lab, Second Cup, Coffee Beans, Shehzad Tikka, and Javson Hotel. The cross-sectional survey study design with convenient sampling technique was used. Nordic Musculoskeletal discomfort Questionnaire and Numeric pain rating scale (NPRS) were used to determine prevalence of pain and its severity among the restaurant chefs of Sialkot. Data were collected by visiting different restaurants in Sialkot after the approval from higher authorities. Because these were the standard techniques/ questionnaires used worldwide to evaluate the prevalence of pain in specific region involved and to assess the level of pain. Nordic musculoskeletal questionnaire is well validated tool and has reliability of 0.945 [13] and NPRS has reliability of 0.991 regarding low back pain [14] and has reliability of 0.81 in patients with neck pain [15]. Data were analyzed using SPSS-version-22.0 (statistical package for social sciences) and data were presented in the form of frequency charts, graphs, tables etc. No statistical test was applied; just descriptive studies with frequency tables were calculated. Institutional Review Board Letter with Reference No: IIIIRS/PRI/IRB-607 was issued on 20 January 2023 after the approval of synopsis.

RESULTS

This study assessed prevalence and level of pain among chefs of different restaurants in Sialkot. Sample size was 232 from which 54 were dropped out This study included 178 participants with age range varied from 25 to 50 years. Most of the participants aged 25-29 years (61.2%) and few were of age 41-45 years (2.2%). Males accounted for (85.4%) of the participants while females accounted for (14.6%). Most participants (52.8%) were married, participants

accounted unmarried were (47.2%). (63.5%) of participants were among those having 8 to 10 working hours and least (4.5%) had working hours from 14 to 16 hours. (59.6%) of participants had height ranging from 5.6 to 6 feet and least of them (10.7%) had height ranging from 6.1 to 6.5. (24.7%) of the participants had weight ranging from 55 to 59 kg and (1.1%) had weight of 100 to 104 kg. (58.4%) of participants had mild pain and (7.3%) had severe pain. Duration of job of most of participants (40.4%) was 2 to 6 years and duration for least of them (0.6%) was 22 to 26 years. Most participants (20.8%) were having trouble in ankle/feet, (16.3%) had trouble in knees, (16.3%) had trouble in lower back, (12.9%) had trouble in hips/thighs, (10.7%) had trouble in shoulder, (9.0%) had trouble in elbows, (7.9%) had trouble in wrists/hands, (6.2%) had trouble in upper back, (5.6%) had trouble in neck. Many restaurants were closed at the time of data collection and few of the participants did not meet the inclusion criteria which has restricted our sample size out of 232 participants only 178 were included. Out of 178 participants, most of them (N=141) had no pain in ankles/feet (like aches, pain, general discomfort/difficulties or numbness) from the past 12 months and some (N=37) had pain in ankles/feet (like aches, pain, general discomfort/difficulties or numbness) from the past 12 months (table 1).

Table 1: Pain in Ankles/Feet

Pain in ankles/Feet	Frequency (%)
Yes	37 (20.8)
No	141 (79.2)
Total	178 (100.0)

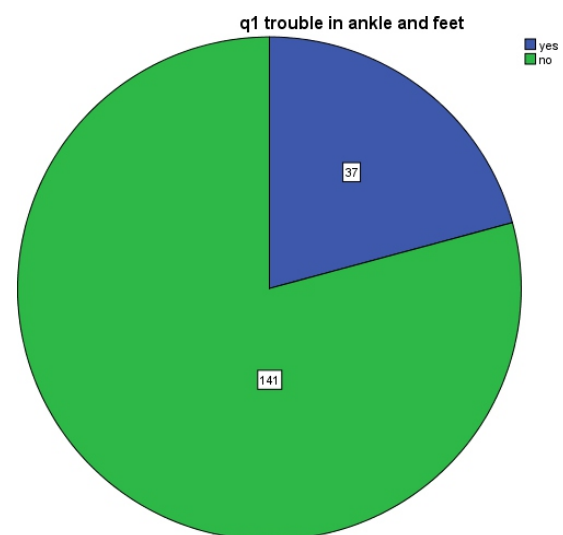


Figure 1: Pain in Ankles/Feet

Out of 178 participants, most of them (N=141, 79.2%) had no pain in ankles/ feet (like aches, pain, general discomfort/difficulties or numbness) from the past 12 months.

Out of 178 participants, most of them (N=149) had no pain in knees (like aches, pain, general discomforts, numbness) from the last 12 months and some (N=29) had pain in knees (like aches, pain, discomfort/difficulties, numbness) from the last 12 months (Table 2).

Table 2: Pain in Knees

Pain in Knees	Frequency (%)
Yes	29 (16.3)
No	149 (83.7)
Total	178 (100.0)

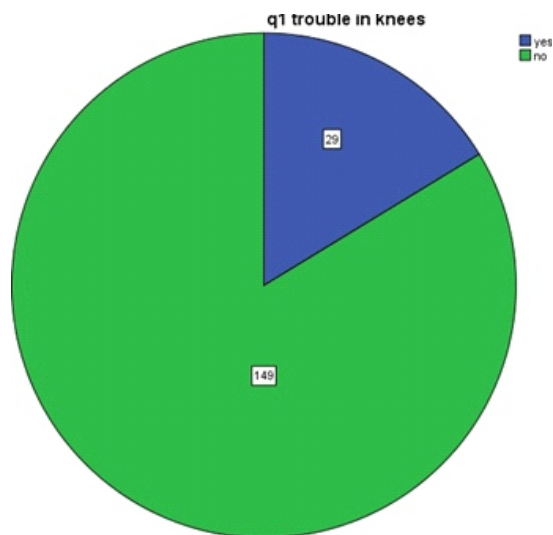


Figure 2: Pain in Knees

Out of 178 participants, most of them (N=149, 83.7%) had no pain related to knees (like aches, pain, discomfort or numbness) from the last 12 months.

Out of 178 participants, most of them (N=149) had no problem related to lower back (such as aches, pain, general discomfort, numbness) for 12 months and some (N=29) had pain in lower back (like aches, pain, difficulties, numbness) during the last 12 months (Table 3).

Table 3: Pain in Lower Back

Pain in Lower Back	Frequency (%)
Yes	29 (16.3)
No	149 (83.7)
Total	178 (100.0)

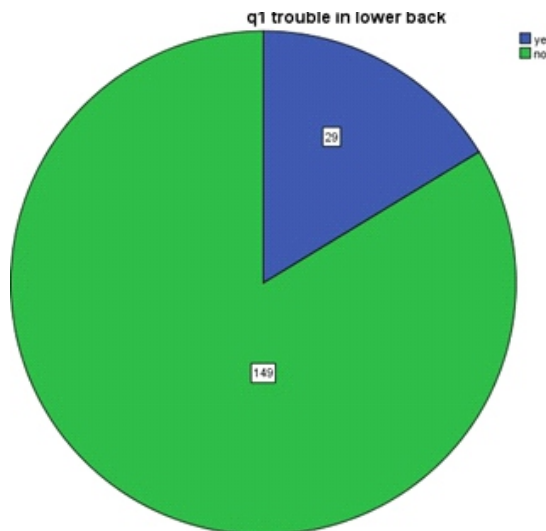


Figure 3: Pain in Lower Back

Out of 178 participants, most of them (N=149, 83.7%) had no pain in lower back (such as ache, pain, discomfort, numbness) during the last 12 months.

DISCUSSION

The musculoskeletal discomfort is linked to the mental well-being and the physical strain of lifting heavy objects, proving that these disorders are related to the stressors of the workplace [16]. An observational design of this study restricts the inferences that can be drawn about causality [17]. This study assessed prevalence and level of pain among chef of different restaurants in Sialkot. This study included 178 participants with age range varied from 25 to 50 years. Participants of age 25-29 years (61.2%) were most common and least common were age 41- 45 years (2.2%). Males accounted for (85.4%) of the participants while females accounted for (14.6%). Most participants (52.8%) were married, participants accounted unmarried were (47.2%). (63.5%) of participants were among those having 8 to 10 working hours and least (4.5%) had working hours from 14 to 16 hours. (59.6%) of participants had height ranging from 5.6 to 6 feet and least of them (10.7%) had height ranging from 6.1 to 6.5 participants (24.7%) had weight ranging from 55 to 59 kg and (1.1%) had weight of 100 to 104 kg. (58.4%) of participants had mild pain and (7.3%) had severe pain. Duration of job of most of participants (40.4%) was 2 to 6 years and duration for least of them (0.6%) was 22 to 26 years. Most participants (20.8%) were having trouble in ankle/feet, (16.3%) had trouble in knees, (16.3%) had trouble in lower back, (12.9%) had trouble in hips/thighs, (10.7%) had trouble in shoulder, (9.0%) had trouble in elbows, (7.9%) had trouble in wrists/hands, (6.2%) had trouble in upper back, (5.6%) had trouble in neck. When the findings of this study were compared with other studies, we found a difference and some similarities. This

study mainly focuses on the chef population of Sialkot. The age range of participants in this study varied from 25 to 50 years was similar to the findings of previous studies [18] whereas the age range of some of the studies was 30 to 45 years with working hours 6 to 10 per day [4] which was not similar to our study. The present study included working experience of more than 2 years which was also not similar to the previous study where the experience of 1-5 years was included [19]. Males accounted for (85.4%) of the participants while females accounted for (14.6%) while results of some of the previous studies showed females at a higher risk of developing pain related to muscles or skeleton [20]. The present study focuses on both male and female chefs working in restaurants which were not similar with previous studies which only included male individuals [9]. Some of the previous studies focused on musculoskeletal pain included both male and female individuals among prisoners [21]. This study showed that most of the participants had an ideal weight which was also not similar to previous studies where most of the participants were underweight [19]. This study concluded that most of the participants were having trouble in Ankle/feet which is similar to the previous study on posture and physical pain that was conducted in 2020 in India [11]. In this study, most of the participants also had trouble in knees and lower back which also is similar to the findings of previous studies conducted in Egypt [22], the twin cities of Pakistan [23]. Low back pain was also assessed in some of the previous study conducted in Taiwan [24] and Nepal [25] while in some of the previous studies most common pain assessed was neck and upper limb [26]. The study did not include participants who had experienced physical trauma, anatomical anomalies or other musculoskeletal issues which was also not included in previous studies [27]. Overall, this study shares several similarities with relevant previous studies. The validity and applicability of our findings are enhanced by these similarities.

CONCLUSIONS

In conclusion, we found that there was incidence of muscle and skeletal pain in chefs working in different restaurants of Sialkot most probably in ankles/feet region, knees and low back. The pain was found to be mild on Numeric Pain Rating Scale (NPRS) mostly in male chefs of middle age with ideal weight. Chefs may develop musculoskeletal pain in ankles/feet due to their longstanding hours and performing different tasks at a time.

Authors Contribution

Conceptualization: ZN

Methodology: ZN, SS, AN

Formal analysis: ZN, RR, SS

Writing-review and editing: ZN, SS, AN, RR

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES

- [1] Khoja O, Silva Passadouro B, Mulvey M, Delis I, Astill S, Tan AL, et al. Clinical characteristics and mechanisms of musculoskeletal pain in long COVID. *Journal of Pain and Research*. 2022 Jun;1729-48. doi: 10.2147/JPR.S365026.
- [2] Cieza A, Causey K, Kamenov K, Hanson SW, Chatterji S, Vos T. Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*. 2020 Dec; 396(10267): 2006-17. doi: 10.1016/S0140-6736(20)32340-0.
- [3] El-Tallawy SN, Nalamasu R, Salem GI, LeQuang JAK, Pergolizzi JV, Christo PJ. Management of musculoskeletal pain: an update with emphasis on chronic musculoskeletal pain. *Pain and Therapy*. 2021 Jun; 10: 181-209. doi: 10.1007/s40122-021-00235-2.
- [4] Karelia BJ, Rathod D, Kumar A. Assessment of Posture Related Musculoskeletal Risk Levels in Restaurant Chefs using Rapid Entire Body Assessment (REBA). *International Journal of Health Sciences and Research*. 2021 May; 11(5): 333-9. doi: 10.52403/ijhsr.20210552.
- [5] Kohli N and Mehta M. Occupational Stress: A Case Study among Chefs and Kitchen Workers. *International Journal of Advances in Engineering and Management*. 2022 Mar; 4(3): 970-7.
- [6] Beheshti MH, Tajpuor A, Jari A, Samadi S, Borhani Jebeli M, Rahmanzadeh H. Evaluation of ergonomic risk factors for musculoskeletal disorders among kitchen workers. *Archives of Occupational Health*. 2018 Apr; 2(2): 128-35.
- [7] Afshari D, Dianat I, Joudaknia L, Nourollahi M. Long-term assessment of upper arm posture and motion and their association with discomfort perceived symptoms among bakery workers. *Research Square*. 2019 Jun; Preprint (version 1). doi: 10.21203/rs.2.10621/v1.
- [8] Prabhasanti D. Ergonomic Analysis of Musculoskeletal Problem and Fatigue among Catering Workers. *Journal of Innovation Research and Knowledge*. 2021 Aug; 1(3): 347-52.

- [9] Habib RR, El-Harakeh A, Hojeij S. Musculoskeletal pain among bakery workers in Lebanon: a national survey. *Cogent Engineering*. 2019 Jan; 6(1): 1608669. doi: 10.1080/23311916.2019.1608669.
- [10] Choudhary YQ and Idress MQ. Frequency of Musculoskeletal Pain Among Chefs Working in Restaurants of Lahore. *Journal Riphah College of Rehabilitation Sciences*. 2020 Dec; 8(2): 69-73. doi: 10.5455/JRCRS.2020080206.
- [11] Tan D, Balaraman T. Working Posture and Musculoskeletal Pain among Restaurant Chef. *Indian Journal of Physiotherapy and Occupational Therapy*, 2020 Jun; 14(02): 2254.
- [12] Sample Size Calculations. Epitools. [Last cited: 1st Dec, 2023]. Available at: <https://epitools.ausvet.com.au/samplesize>.
- [13] Chairani A. Validity and reliability test of the Nordic Musculoskeletal questionnaire with formal and informal sector workers; 7th International Conference on Public Health 2020; Sebelas Maret University; 2020. doi: 10.26911/the7thicph-FP.05.06.
- [14] Yao M, Xu BP, Li ZJ, Zhu S, Tian ZR, Li DH et al. A comparison between the low back pain scales for patients with lumbar disc herniation: validity, reliability, and responsiveness. *Health and Quality of Life Outcomes*. 2020 Dec; 18(1): 1-12. doi: 10.1186/s12955-020-01403-2.
- [15] Young IA, Dunning J, Butts R, Mourad F, Cleland JA. Reliability, construct validity, and responsiveness of the neck disability index and numeric pain rating scale in patients with mechanical neck pain without upper extremity symptoms. *Physiotherapy Theory and Practice*. 2019 Dec; 35(12): 1328-35. doi: 10.1080/09593985.2018.1471763.
- [16] Gawde NC. A study of musculoskeletal pain among hotel employees, India. *Journal of Ecophysiology and Occupational Health*. 2018 Jun; 18(1-2): 44-51. doi: 10.18311/jeoh/2018/20012.
- [17] Cerasa A, Fabbriatore C, Ferraro G, Pozzulo R, Martino I, Liuzza MT. Work-related stress among chefs: A predictive model of health complaints. *Frontiers in Public Health*. 2020 Mar; 8: 68. doi: 10.3389/fpubh.2020.00068.
- [18] Matloob M, Fatima T, Baig N, Khalid S, Irfan H, Hashim A et al. Association of Work-Related Risk Factors and Lateral Epicondylitis among Chefs in Lahore. *Pakistan Journal of Medical & Health Sciences*. 2022 Sep; 16(08): 220. doi: 10.53350/pjmhs22168220.
- [19] Lakshmi VV, Deepika J, Bindu ESH. Health problems of workers in bakery cum millet processing units. *The Pharma Innovation Journal*. 2021 Apr; 10(5): 1489-1496.
- [20] Park S, Lee J, Lee JH. Insufficient rest breaks at workplace and musculoskeletal disorders among Korean kitchen workers. *Safety and Health at Work*. 2021 Jun; 12(2): 225-9. doi: 10.1016/j.shaw.2021.01.012.
- [21] Afzal A, Zaheer G, Maqsood U, Arshad HS, Mahmood T. Frequency of musculoskeletal disorders among prisoners of Lahore, Pakistan. *Rawal Medical Journal*. 2020 Apr; 45(2): 388.
- [22] Iqbal MU, Ahmad N, Khan ZSU, Awan M, Zafar I, Safdar G et al. Prevalence of musculoskeletal disorders among chefs working in restaurants of twins cities of Pakistan. *Work*. 2023(Preprint): 1-7. doi: 10.3233/WOR-211321.
- [23] Abdelsalam A, Wassif GO, Eldin WS, Abdel-Hamid MA, Damaty SI. Frequency and risk factors of musculoskeletal disorders among kitchen workers. *Journal of the Egyptian Public Health Association*. 2023 Feb; 98(1): 3. doi: 10.1186/s42506-023-00128-6.
- [24] Chen YL, Zhong YT, Liou BN, Yang CC. Musculoskeletal disorders symptoms among Taiwanese bakery workers. *International Journal of Environmental Research and Public Health*. 2020 Apr; 17(8): 2960. doi: 10.3390/ijerph17082960
- [25] Shakya NR and Shrestha S. Prevalence of work-related musculoskeletal disorders among canteen staff of Kathmandu University. *Journal of Kathmandu Medical College*. 2018 May; 17(4): 162-7. doi: 10.3126/jkmc.v7i4.23318.
- [26] Sarwar S, Khalid S, Mahmood T, Jabeen H, Imran S. Frequency of neck and upper extremity musculoskeletal disorders in dentists. *Journal of Islamabad Medical & Dental College*. 2020 Sep; 9(3): 207-11. doi: 10.35787/jimdc.v9i3.404.
- [27] Afzal M, Zakauallah S, Memon SI, Nisar A, Touqeer H, Shabir H. Prevalence and risk factors of lateral epicondylitis among restaurant cooks at district Gujranwala: A cross-sectional study. *Rawal Medical Journal*. 2021 Jun; 46(2): 338.