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Assessing the Prevalence of Elbow Pain in Salon Workers: A Cross-Sectional Study in Johar Town, Lahore, Punjab, Pakistan

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ABSTRACT

Elbow pain (EP) is a major health risk among salon workers. Salon workers confront a more significant number of occupational issues. Due to the overuse of muscles, work-related EP is common in occupational workers, especially salon workers. This study aims to raise public awareness about issues such as EP caused by overuse of elbow muscles, protect workers from dangerous health concerns, and determine the prevalence of EP in salon workers of Lahore. A cross-sectional study design was used to conduct this study in Lahore. The study population included male and female salon workers aged 18 to 45 years. Non-probability purposive sampling was used. A sample size of 78 female and 76 male salon workers was calculated. Patient Elbow Questionnaire and visual analogue scale were used in this study. Data was collected from different areas of Johar town, Lahore, Punjab, Pakistan. Data was analysed using SPSS (Statistical Package for Social Sciences) Version 21 for Windows 10. The prevalence of EP in salon workers of Lahore was 71.4%. Out of 154 workers, (28.6%) workers have no pain. Most of the workers have mild pain, which is (37.0%); workers with (32.0%) have moderate pain, and only (1.9%) have severe pain. There was a high prevalence (71.4%) of EP in salon workers., 50.6% in females and 49.3% in males. The average intensity of pain was moderate.

Keywords: Elbow pain; Salon workers; Muscles; Mild pain; Worker; Lahore; Pakistan; Motion; Prevalence; Musculoskeletal.

1. Introduction

Salon workers are a rapidly expanding group of professionals, particularly in Pakistan (Kamran., 2022). Salon staff usually includes hair colouring activities, haircuts, hair extensions, and more, which can be done alone or in combination. Traditional barbershops, women's hair salons, and modern salons have different setups (Jarnagin., 2020). The frequency of work-related EP is high in occupational work, especially in salon workers (Kozak et al., 2019). Micro tears in elbow muscles cause pain and inflammation. Salon workers are also at risk of upper-limb difficulties due to supporting weight or tools while keeping arms away from the body, which causes acute pain in the elbow and other regions such as the shoulder, lower back, and neck, among other body parts (Mishra & Sarkar, 2021). The shoulder, elbow, wrist, and hand form a linked system in the upper extremity that operates as a forearm fulcrum, enabling forceful gripping and delicate hand and wrist motions. In order to have a fully functioning upper extremity, the elbow is crucial (Mayer et al., 2021).

Elbow dysfunction can cause severe handicaps, restricting everyday activities, work-related duties, and leisure activities (Lucado et al., 2022). Salon workers frequently experience musculoskeletal discomfort, pain, or injury, which leads to decreased job performance and productivity, more time away from work, and even early retirement (Chebet., 2022). Salon employees used their non-dominant hands while cutting or blow-drying, combing, holding hair with their fingers, and waving/curly hair. Salon workers dealing with long hair require more effort and potentially faster hand movement than those dealing with short hair. Every day, hairdressers spend 29% of their time cutting hair, 17% painting their hair, 10% drying their hair, and 8% washing their hair. With their hands,

hairdressers typically apply more force, and velocity is the other major cause of EP in saloon workers (Mishra & Sarkar, 2021). Tendons and nerves stretch and compress as bodily components are moved to the limits of their range of motion. If you hold on for too long, you will likely have EP. Holding the neck and shoulders in a fixed position is another factor that contributes to EP (Nelson & Kokkonen, 2020).

Rest, analgesia, and steroid injections are used to relieve pain. Rehabilitative activities and physiotherapy improve muscular strength (91% effective), while bracing (band across muscle body) lowers stress in 52 weeks. Corticosteroid injections can help with symptom alleviation in the short term, but they are linked to worse long-term consequences. Tendinopathies are treated with botulinum toxin and platelet-rich plasma by encouraging patients to take a short break from work to restore function by promoting relaxation. Follow-up should be customised to the patient's needs, with a review every 2-4 weeks (Javed et al., 2015).

Typical bending and twisting of the sagittal or lateral back (e.g., washing the hair in the sink), dry posture, and prolonged standing are required in salon work. Repetitive tasks have been observed in all customer-related tasks. Hairdressers spend 9-13 % of their total working time with arms above 60 degrees (Kozak et al., 2019).

Joint difficulties and musculoskeletal illnesses are caused by abnormal body positioning while working, repetitive movements, extended standing, and long working durations. Among salon workers are neck pain, lumber pain, shoulder joint pain, and complaints of discomfort in the shoulder, arm, wrist, foot pain, and foot injuries (Descatha et al., 2020).

This study aims to raise public awareness about issues such as EP caused by overuse of elbow muscles and protect workers from dangerous health concerns. This research also determines the prevalence of EP in salon workers in Lahore, Punjab, Pakistan.

1.1. Objectives of Study

(i) To educate the readers about elbow pain.

(ii) To raise public awareness about elbow pain.

(iii) To assess the prevalence of elbow pain in salon workers.

(iv) To discuss how working in salon can cause elbow pain.

2. Methodology

The research used a cross-sectional design that lasted 6 months, focusing on male and female salon workers in Johar Town, Lahore, Punjab, Pakistan. The sample size of 154 was determined using the formula provided by (Charan and Biswas, 2021). $Sample\ Size = \frac{\left(Z_{1-\frac{\alpha}{2}}\right)^2 p(1-p)}{d^2}$ with prevalence parameter (P) = 0.3, desired precision (d) = 0.05, and z-score for significance level (Za) = 0.05. The non-probability purposive sampling technique was employed, and inclusion criteria included individuals aged 18 to 45 years with extended working hours (4-14 hours) in any salon within Johar Town, Lahore, Punjab, Pakistan. The exclusion criteria were elbow surgery or trauma, pregnancy, systemic diseases, fractures, and prior chemotherapy or other cancer treatments. The

data collection instruments included the Patient Rated Elbow Evaluation and Visual Analogue Scale. Eligible participants were given a questionnaire and a consent form that specified the study's purpose, demographics, patient-rated elbow evaluation, and risk factors, with the data collected to be kept confidential. Statistical analysis was carried out using SPSS version 21, and the data was summarized using frequencies, means, standard deviations, and percentages.

3. Results

Elbow muscle's repeated motion, working hours, gender, marital status, and job experience cause elbow pain. Results suggested that 50.65% of female salon workers and 49.5% of male workers were involved, 50.00% were married, and 50.00% were unmarried. Approximately 79.22% of workers work 1 to 10, and 20.8% work 11 to 20 years in the salon. About 46.10% of salon workers work 4 to 9 hours, while 53.90% work 10 to 14 hours. Approximately 71.43% of salon workers presented with EP, 28.57% never had EP, and about 53.25% of salon workers suffered from mild pain. Figure 1 illustrates the histogram of age and shows the mean age of the salon workers (27.02 years) of 154 workers with a minimum age of 18 years and a maximum age of 45 years with a standard distribution curve. Figure 2 demonstrates the statistical analysis of all variables 2A shows a bar chart showing the frequency of workers doing household work with mild pain, 2B is a bar chart showing the frequency of workers lifting heavy objects having moderate pain, 2C is a bar chart of personal activities (dressing, washing) shows that maximum salon workers have mild pain that is 23.8 %, 2D bar chart shows maximum respondents have mild pain while recreational activities in salon, 2E bar chart showing the moderate pain during repeated elbow/hand movement.

Table 1 shows descriptive statistics of variables. The mean value of pain at rest was 2.34, with a standard deviation of 2.119, suggesting moderately variable low average pain levels among participants. Averaging 3.66 with a standard deviation of 2.170 reflected increased perception associated with repetitive elbow movements and a consistent response range. The lift condition had a mean pain rating of 4.49 (SD=2.385), indicating that the pain experience was more pronounced with a slightly wider variability.

It was found that the highest average pain score was reported for 'Pain at its worst' with a mean of 4.76 and a standard deviation of 2.922, showing that the peak pain levels were not only severe but also significantly differed across individuals. In terms of frequency of pain, the mean score was 3.99, and the largest standard deviation was 3.199, indicating a high level of variability in pain occurrence. Less painful activities were using a telephone and buttoning a shirt, with a mean score of 1.66 and 1.71, respectively, with less variability. Activities like brushing hair, eating with utensils, and personal and home activities showed moderate mean pain levels with standard deviations reflecting varied experiences of the population in the study.

The data demonstrates the differential influence of pain on different kinds of physical activities, with some movements, such as lifting heavy objects and experiencing worst pain episodes, as especially problematic and the subtler activities, like holding a telephone, being less affected. These results highlight the importance of developing specific pain management approaches aimed at the intensity and frequency of pain, as well as its deleterious effects on normal functional activities.

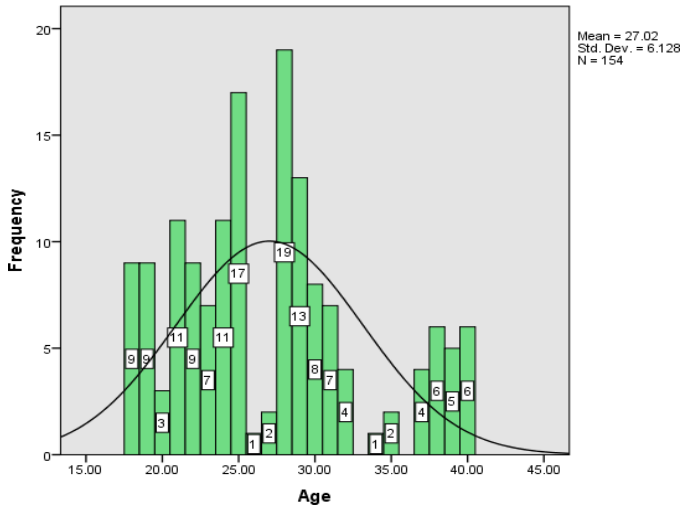

Figure 1. Histogram of age, the mean age of the salon workers is 27.02 of total 154 workers with minimum age 18 years and maximum age 45 years with normal distribution curve

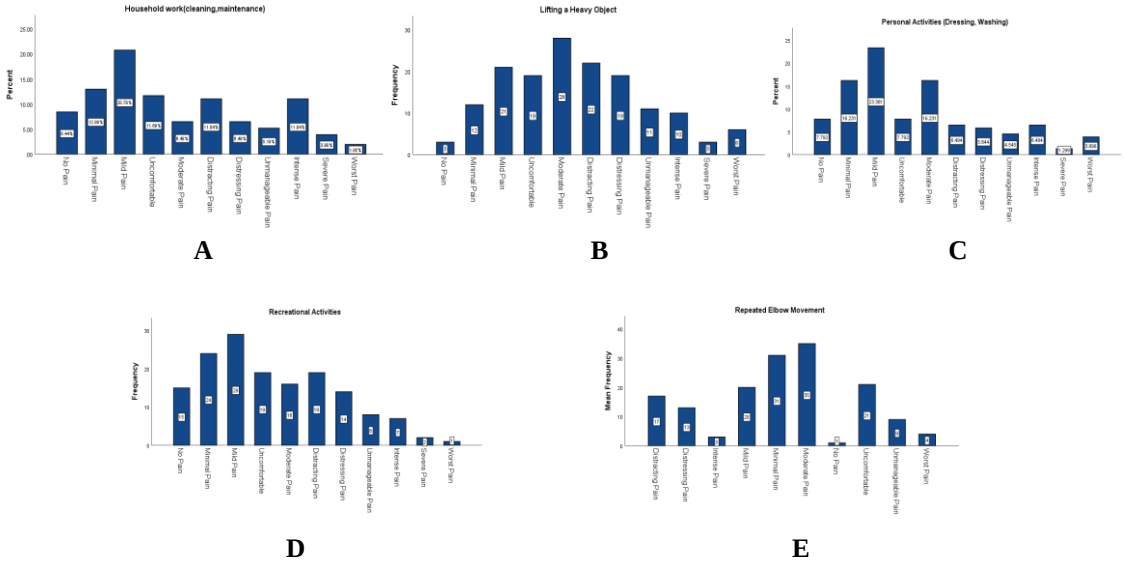

Figure 2. Statistical analysis of variables. (A) Bar chart showing the frequency of workers doing household works have mild pain, (B) Bar chart showing the frequency of workers lifted heavy object having moderate pain, (C) Bar Chart of Personal Activates (dressing, washing) shows that maximum salon workers have mild pain that is 23.8 %, (D) Bar Chart shows maximum Respondents have mild pain while recreational activities in salon, (E) Bar chart showing the moderate pain during repeated elbow/hand movement

Table 1. Descriptive statistics of variables

Variables	**Mean**	**Std. Deviation**
Pain at rest	2.34	2.119
Repeated elbow movement	3.66	2.170
Lifting a heavy object	4.49	2.385

Pain at its worst	4.76	2.922
How often do you have pain?	3.99	3.199
Comb my hair	2.76	1.865
Eat with a fork or spoon	2.62	1.614
Pull a heavy object	3.82	2.421
Use my arm to rise from chair	3.34	2.053
Carry a 101b.object with my arm at my side	3.81	2.287
Throw a small object such as tennis ball	2.25	2.459
Use a telephone	1.66	2.167
Do up buttons on the front of my shirt	1.71	2.025
Wash my opposite armpit	3.06	2.369
Tie my shoes	1.93	2.033
Turn a doorknob and open a door	2.29	2.096
Personal activities (dressing, washing)	3.53	2.650
Household work (cleaning, maintenance)	3.89	2.790
Work (everyday work)	4.19	2.567
Recreational Activities	3.39	2.396

4. Discussion

The cross-sectional study was conducted using a non-probability purposive sampling technique. A visual analogue scale was used to determine the severity of elbow pain in determining Elbow pain severity, and the Patient-Rated Elbow Evaluation (PREE) Questionnaire was used for day-to-day tasks. Data was collected by distributing PREE among 154 Johar town, Lahore salon workers. Informed consent was taken prior to the study. The prevalence of elbow pain was focused. Results showed that 71.4% of workers had elbow pain. Salon workers, out of a total of 154 workers, average 27 years, with a minimum age of 18 and a maximum age of 45.

The study conducted by Descatha et al. (2013) associated epicondylitis with occupational exposure. To fill this gap, an extensive longitudinal cohort study in the USA examined suspected physical exposures during three years among newly hired workers from different industries. In 1107 workers who initially had no elbow symptoms, baseline questionnaires were used to collect personal characteristics and self-reported physical work exposures. Epicondylitis (both lateral and medial) was diagnosed at 36 months through symptoms and physical examination. Forty-eight of 699 workers tested at follow-up developed epicondylitis (6.9%), with 34 cases of lateral epicondylitis (4.9%), 30 cases of medial epicondylitis (4.3%), and 16 with both. Adjusted logistic models showed

significant relationships between the self-reported wrist bending/twisting and forearm twisting/rotating/screwing motions with the occurrence of epicondylitis, which leads to our findings that newly hired workers with no previous symptoms like this developed epicondylitis due to the overuse of the muscles involved in the epicondylitis without proper positioning and posture to minimise the stress on the wrist.

Similar research was done by Khan et al. (2020) among the medical professionals in Lahore on work-related musculoskeletal discomfort. They collected data from 210 professionals (40 physicians, 30 surgeons, 335 dentists, 37 physios, 38 nurses, and 30 technologists). According to their findings, elbow pain affected 15% of doctors, 20% of surgeons, 31.4 % of dentists, 13.5% of physiotherapists, 2.6% of nurses, and 10% of technicians. These prevalence rates are all lower than what we found. Because they are health professionals, they know the need for excellent posture at work.

Another similar study on the prevalence of musculoskeletal discomfort among Saudi school teachers was carried out by Abdulmonem et al. (2014). In this survey, 486 female school instructors took part. The most typical complaint was pain in the wrist and elbows (5.6 % and 7.4 %, respectively). The prevalence is lower than our findings because people who work as teachers do not primarily utilise their elbows at work. The elbow pain was unrelated to their work.

The research conducted by Hassan and Bayomy (2015) showed that hairdressers were more likely to suffer from respiratory and musculoskeletal problems than office workers. Hairdressers and older ones, with higher BMI and more extended experience at work, had increased risks. Respiratory symptoms were mainly associated with bleaching, dyeing, and waving; the rates varied from 40% to 60%. Musculoskeletal pain was a prominent complaint; 45% had elbow pain, 40% had shoulder pain, and 35% had back pain. Back and knee chronic pain hit 25% and 20%, respectively and 30% of hairdressers went to see a doctor because of hand and wrist pain, whereas 35% took sick leave because of shoulder and back pain. The findings highlight the pressing need to implement interventions targeting occupational health hazards in the hairdressing industry. All above mentioned studies are indirectly related to our work elbow pain associated with factors including age, gender, marital status, and work experience. The demographic analysis showed a predominantly young workforce, with gender distribution being well-balanced and job tenure varying. Noteworthy, most workers worked for long hours, while over half worked 10 to 14 hours daily. Elbow pain in the hands of beauticians is relatively high, with 71.4% of the study population being affected.

5. Conclusion

In Conclusion, the research has given thorough details on the occurrence and intensity of elbow pain among salon workers in Johar Town, Lahore. Elbow pain has been associated with factors including age, gender, marital status, and work experience. The demographic analysis showed a predominantly young workforce, with gender distribution being well-balanced and job tenure varying. Noteworthy, most workers worked for long hours, while over half worked 10 to 14 hours daily. Elbow pain in the hands of beauticians is relatively high, with 71.4% of the study population being affected. Subsequent investigation uncovered that the severity of pain differed, with mild to moderate pain being the most frequent. All in all, 28.6% of workers had no pain, 37.0% had mild pain, 32.5% had moderate pain, and 1.9% had severe pain. The statistical analysis identified particular activities and tasks that

initiated more pain and thus reinforced the importance of particular interventions to relieve pain and improve occupational safety in the salon industry. These results emphasize the need for improving ergonomic behaviour and workplace status to minimise the risk of elbow pain and promote salon workers' health.

6. Limitations

Due to the cross-sectional design, it is difficult to make causal connections between EP and some demographic or occupational factors. Moreover, self-reported measures such as the Patient Rated Elbow Questionnaire and visual analogue scale are also not devoid of response bias and pain assessment inaccuracy. Furthermore, the study's use of a convenience sample from a particular locality may restrict the applicability of the findings to other populations or locations. In addition, the research did not explore some confounding variables such as comorbidities, personal habits, or ergonomic factors that are not work-related, which might affect EP prevalence. Finally, the exclusive concentration of the study on EP also reveals other musculoskeletal problems common among salon workers; thus, continuing the study will provide an overall understanding of occupational health problems experienced in this population.

7. Future Directions

Longitudinal studies are necessary to monitor shifts in EP prevalence over time and determine the impact of interventions introduced to deal away with it. Moreover, qualitative research can offer details on specific work tasks and ergonomic factors contributing to EP, facilitating the targeted interventions and ergonomic adjustments. Secondly, investigating the part that personal factors like ergonomic training, work distribution, and the utilisation of assistive devices have would help minimise EP prevalence in salon workers. Engagements of occupational health professionals and ergonomics specialists promote creating and implementing full workplace interventions customised to salon workers' needs. Finally, exploring the impact of EP on the quality of life, productivity, and job satisfaction of workers would help in developing comprehensive strategies to tackle EP and enhance the well-being of this occupational group.

Declarations

Source of Funding

This study has not received any funds from any organization.

Conflict of Interest

The authors declare that they have no conflict of interest.

Consent for Publication

The authors declare that they consented to the publication of this study.

Ethical Approval

Ethical Approval was obtained from the related Institute.

Informed Consent

All participants were informed before conducting the survey.

Authors' Contribution

All the authors took part in data collection, literature review, analysis, and manuscript writing.

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