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ASSOCIATION BETWEEN HAND/WRIST PAIN AND KINESIOPHOBIA IN FEMALE BEAUTY PROFESSIONALS

A Cross-Sectional Study

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Abstract : *Women who work in beauty parlours repeat the same hand and wrist movements for hours, keep instruments in a prolonged grip and hold the upper limb in awkward positions, all of which make hand and wrist pain likely. Ongoing pain may in turn produce kinesiophobia, a disproportionate fear that movement will cause pain or re-injury, which encourages avoidance and loss of function. Little is known about how the two are linked in parlour workers. This cross-sectional correlational study set out to find whether hand/wrist pain and kinesiophobia are associated in female beauty professionals. Fifty women aged 30 years or older, with more than two years of parlour experience and work-related wrist and/or hand pain, were enrolled by convenience sampling after ethical approval and informed consent. Fear of movement was scored on the Tampa Scale of Kinesiophobia (TSK-17), and wrist/hand pain with its effect on daily tasks on the Patient Rated Wrist/Hand Evaluation (PRWHE-15). Analysis used frequencies, percentages, the Chi-square test and Spearman's rank correlation, with significance set at $p < 0.05$. Kinesiophobia was high in 34 women (68%), moderate in 14 (28%) and low in 2 (4%). PRWHE scores were moderate in 29 women (58%), mild in 16 (32%) and severe in 5 (10%), and all five in the severe group had high kinesiophobia. The pain and kinesiophobia categories were associated ($\chi^2 = 21.06$, $df = 4$, $p < 0.001$), and TSK and PRWHE scores correlated positively and moderately ($r_s = 0.457$, $p = 0.001$). Fear of movement was widespread in this group and increased as pain scores rose; because the study is cross-sectional, it demonstrates association rather than causation. Screening for kinesiophobia, together with ergonomic guidance and patient education, deserves consideration in the physiotherapy care of these workers.*

IndexTerms *- Kinesiophobia, hand/wrist pain, beauty professionals, Tampa Scale of Kinesiophobia, PRWHE, work-related musculoskeletal disorders.*

Introduction

Work-related musculoskeletal disorders (WMSDs) are among the most frequent occupational health complaints in jobs built on repetitive manual tasks and long periods of static posture [1]. Women employed in beauty services form a highly exposed group: cutting and styling hair, waxing, threading, facial work and similar procedures call for constant hand and wrist movement, sustained gripping of tools, awkward arm positions and long hours of standing [1]. The resulting mechanical load on the upper limb, chiefly the hand and wrist, can lead to pain and reduced function [1].

Studies of salon and cosmetology staff describe a heavy musculoskeletal burden across the neck, shoulder, elbow and wrist/hand, with repetitive motion, vibrating equipment and awkward working positions leaving the hand and wrist especially vulnerable [2]. Everyday tasks frequently hold the wrist in ulnar deviation, flexion or extension and the forearm in supination [3]. In cosmetologists, hand and wrist pain stands out as a main complaint, associated with persistent symptoms, medical consultations and lower work efficiency [2]. Women also appear more at risk than men, perhaps owing to differences in ergonomic exposure, workload and biology, and research in hairdressers has found higher odds of wrist and hand pain among women [4].

Physical load alone does not explain the problem, since psychological factors shape both how severe pain becomes and how long it lasts. Kinesiophobia is one such factor: an excessive, irrational fear of movement or physical activity based on the belief that it will bring pain or re-injury [5]. It typically leads people to avoid or limit movement and can markedly lower quality of life and functional capacity [5]. According to the fear-avoidance model, a person in pain begins avoiding movement, which reduces activity, causes muscle deconditioning and disability, and ultimately sustains chronic pain [6], [7]. Kinesiophobia has been reported in about 50–70% of people with chronic musculoskeletal conditions and tends to worsen rehabilitation outcomes [6].

Although psychological contributors to pain receive growing attention, few studies have looked at how hand/wrist pain relates to kinesiophobia in beauty professionals, particularly women in developing countries where ergonomic awareness and preventive practice remain limited [6]. Clarifying this link would deepen understanding of the physical and psychological contributors to occupational disability and could inform physiotherapy programmes that combine ergonomic correction, pain management and reduction of fear-avoidance.

Need of the Study

Cutting, threading, waxing, styling and similar work exposes female beauty professionals to sustained awkward postures, repetition and forceful use of the hands, which raises the likelihood of hand and wrist pain. Pain that persists may give rise to kinesiophobia, which restricts work performance and encourages avoidance and long-term disability. Yet the connection between hand/wrist pain and kinesiophobia has seldom been studied in this group, particularly among women in the informal sector. Knowing how the two relate is important for early identification, prevention, ergonomic intervention and physiotherapy management, and this study was undertaken to supply that evidence.

Aim and Objectives

Aim: To determine whether kinesiophobia is associated with wrist/hand pain in female beauty professionals who experience wrist and hand pain.

Objectives:

1) To assess wrist/hand pain using the Patient Rated Wrist/Hand Evaluation (PRWHE).
2) To assess kinesiophobia using the Tampa Scale of Kinesiophobia (TSK) in female beauty professionals.
3) To find out whether higher pain levels go together with higher kinesiophobia.

Hypothesis: The alternative hypothesis (H_1) was that kinesiophobia and wrist/hand pain are significantly associated in female beauty professionals; the null hypothesis (H_0) was that they are not.

Review of Literature

Lodhi et al. [3] surveyed beauty service workers on work-related musculoskeletal pain, obtaining 345 completed questionnaires (86.5%) from 400 distributed. Almost all respondents had some work-related musculoskeletal pain, with hand and wrist pain reported by up to 40.6%, and pain was significantly linked to age, work experience and gender. The authors concluded that a large proportion of beauty service professionals are susceptible to WMSDs that impair their ability to work.

Tsigonia et al. [2] conducted a cross-sectional study of 95 female and 7 male cosmetologists (response rate 90%; mean age 38 years; mean length of employment 16 years) to see how physical, psychosocial and individual factors relate to complaints of the low back, neck, shoulder, hand/wrist and knee. Complaints of the hand/wrist and low back were the ones most often followed by self-reported consequences, and the authors suggested that effective interventions should pair ergonomic improvements with organisational measures.

Villalobos-García et al. [5] examined kinesiophobia and upper-limb function in 64 patients (40 women, 24 men) whose wrist or hand injury had required immobilisation. TSK scores correlated positively and significantly with QuickDASH scores ($r = 0.848$, $p < 0.001$); however, multivariate regression suggested that kinesiophobia may contribute to upper-limb dysfunction rather than significantly predict it.

Materials and Methods

Study design and participants

A cross-sectional correlational study was carried out in beauty parlours. Participants were recruited by convenience sampling, giving a final sample of 50 female beauty professionals. Approval was obtained from the Institutional Ethics Committee, and written informed consent was taken from every participant before data collection.

Inclusion criteria: women aged 30 years or above; working as a beautician or make-up artist in a beauty parlour for more than two years; and wrist and/or hand pain related to occupational activities.

Exclusion criteria: any congenital disorder; and a previous history of surgery or accidental trauma.

Materials and outcome measures

The materials used were a consent form, a demographic and occupational data sheet, the TSK-17, the PRWHE-15, and pen and paper. The data sheet recorded age, years of work, working hours per day and number of rest breaks.

Tampa Scale of Kinesiophobia (TSK-17): a 17-item questionnaire that measures fear of movement, with statements on fearing injury from exercise and believing that pain always signals bodily harm. Each item is scored from 1 (strongly disagree) to 4 (strongly agree), so totals range from 17 to 68 and higher totals indicate greater fear of movement. Totals of 17–34, 35–41 and 42–68 were classed as low, moderate and high kinesiophobia, respectively. Reliability is reported as good ($r = 0.78$) with acceptable internal consistency (Cronbach's $\alpha = 0.80$).

Patient Rated Wrist/Hand Evaluation (PRWHE-15): a questionnaire that measures wrist and hand pain and the resulting difficulty with everyday activities after wrist or hand conditions [8], [9]. The pain subscale has 5 items (0–50); the function subscale covers 6 specific and 4 usual activities, and its sum is halved (0–50), so pain and function carry equal weight in a total of 0–100, where higher scores mean greater disability. Totals were grouped as minimal (0–20), mild (21–40), moderate (41–60), severe (61–80) and very severe (81–100). Validity (Cronbach's α 0.90–0.95) and reliability (0.88–0.96) are reported to be good.

Procedure

After clearance from the Institutional Ethics Committee, women working in beauty parlours were approached and those fulfilling the criteria were selected. The aims and objectives were explained to them and written informed consent was obtained. Age, years of work, daily working hours and number of rest breaks were noted, after which the TSK-17 and PRWHE-15 were administered. The data were then recorded, analysed and interpreted.

Data analysis

Demographic details and the distribution of TSK and PRWHE scores were summarised as frequencies and percentages. The Chi-square test was used to test the association between kinesiophobia and wrist/hand pain categories, and Spearman's rank correlation to examine the relationship between TSK and PRWHE scores. A p-value below 0.05 was considered statistically significant.

Results

A total of 50 female beauty professionals with work-related wrist and hand pain participated in the study. The results are presented in Tables 1 to 5 and Figures 1 to 8.

Table 1: Socio-demographic characteristics of the participants (n = 50)

Parameter	Category	No. of cases	Percentage (%)
Age (years)	30–35	21	42
	36–40	14	28
	41–45	11	22
	46 and above	4	8
Years of working	4–8	21	42
	9–13	19	38
	14 and above	10	20
Hours of work per day	6–8	31	62
	9–12	19	38
Number of rest breaks	1	3	6
	2	26	52
	3	21	42

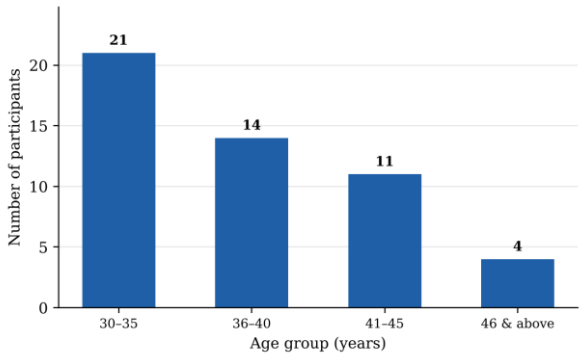

Figure 1: distribution of participants by age group

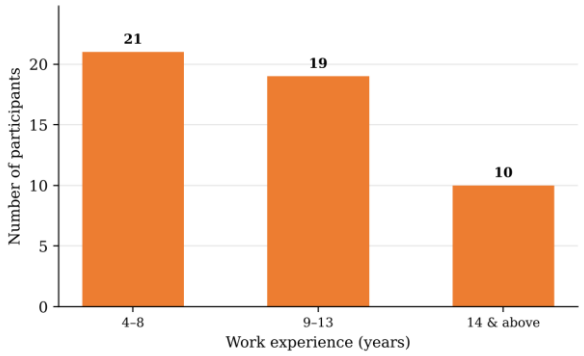

Figure 2: distribution of participants by years of work experience

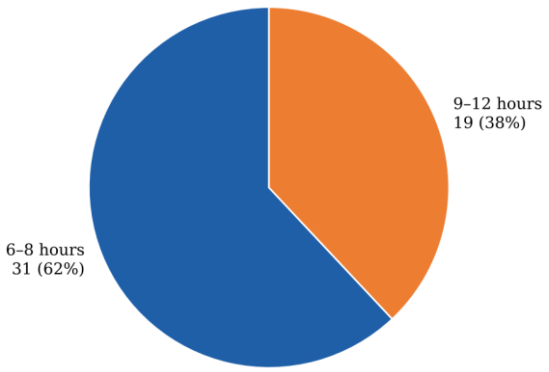

Figure 3: distribution of participants by daily working hours

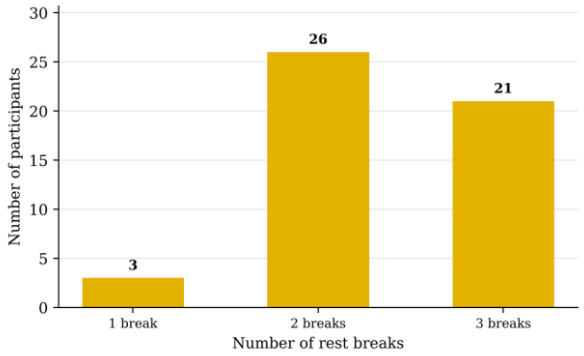

Figure 4: distribution of participants by number of rest breaks

Most participants (42%) were aged 30–35 years, 42% had 4–8 years of work experience and 62% worked 6–8 hours per day. Two rest breaks per day was the commonest pattern (52%).

Table 2: Kinesiophobia (TSK-17) in female beauty parlour workers (n = 50)

TSK score (category)	No. of cases	Percentage (%)
17–34 (low)	2	4
35–41 (moderate)	14	28
42–68 (high)	34	68
Total	50	100

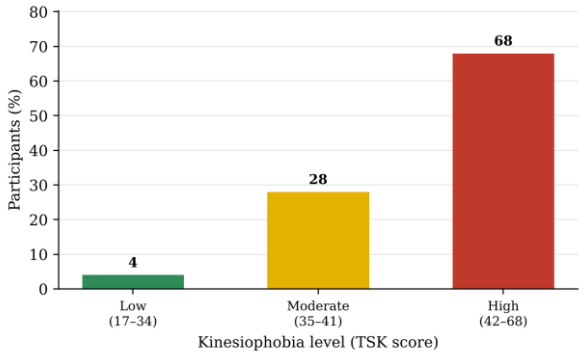

Figure 5: levels of kinesiophobia among participants (%)

High kinesiophobia was present in 34 participants (68%), moderate in 14 (28%) and low in 2 (4%).

Table 3: Wrist/hand pain (PRWHE-15) in female beauty parlour workers (n = 50)

PRWHE score (category)	No. of cases	Percentage (%)
0–20 (minimal)	0	0
21–40 (mild)	16	32
41–60 (moderate)	29	58
61–80 (severe)	5	10
81–100 (very severe)	0	0
Total	50	100

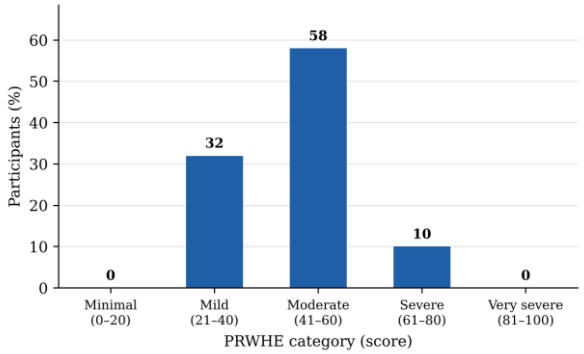

Figure 6: distribution of participants by PRWHE category (%)

No participant fell in the minimal or very severe PRWHE range; 16 (32%) scored in the mild range, 29 (58%) in the moderate range and 5 (10%) in the severe range.

Table 4: Association between wrist/hand pain and kinesiophobia (n = 50)

Wrist/hand pain (PRWHE)	Kinesiophobia (TSK)			Total
	Low (17–34)	Moderate (35–41)	High (42–68)	
Mild (21–40)	1	11	4	16
Moderate (41–60)	1	3	25	29
Severe (61–80)	0	0	5	5
Total	2	14	34	50

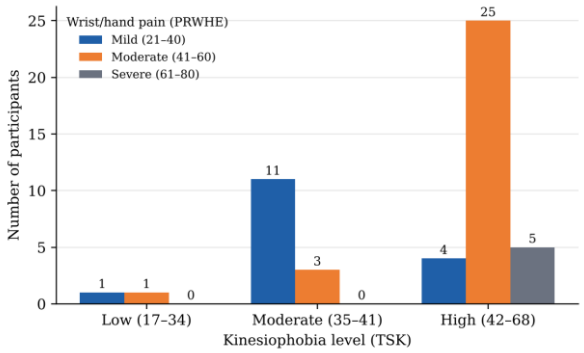

Figure 7: association between wrist/hand pain categories and kinesiophobia levels

Of the 29 participants with moderate wrist/hand pain, 25 had high, 3 moderate and 1 low kinesiophobia, and all 5 with severe pain had high kinesiophobia. The Chi-square test showed an association between the kinesiophobia and pain categories ($\chi^2 = 21.06$, df = 4, $p < 0.001$). Because most expected cell counts were below 5, this result should be interpreted with caution.

Table 5: Correlation between kinesiophobia and wrist/hand pain (n = 50)

Variables correlated	r_s value	p value
TSK score and PRWHE score	0.457	0.001

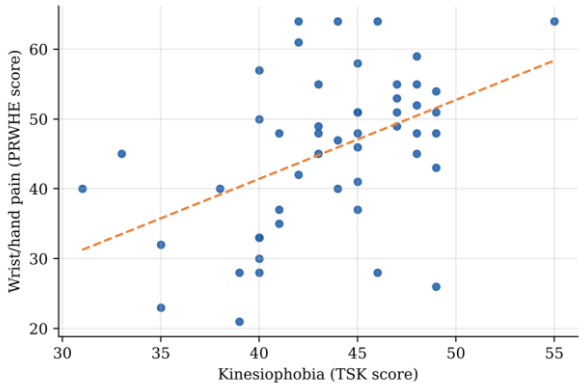

Figure 8: scatter plot of TSK scores against PRWHE scores

Spearman's correlation showed a moderate, positive and statistically significant relationship between TSK and PRWHE scores ($r_s = 0.457$, $p = 0.001$), meaning that participants with greater fear of movement tended to report more wrist/hand problems. As p was below 0.05, the null hypothesis was rejected and the alternative hypothesis accepted.

Discussion

This study examined how hand/wrist pain relates to kinesiophobia in 50 female beauty parlour workers. Threading, waxing and hairstyling involve repeated hand and wrist movements over long hours, so workers who develop pain may come to fear that certain movements will aggravate it or cause injury.

The main finding was that 68% of participants had high kinesiophobia and 58% had moderate wrist/hand pain. The share with high fear of movement fits the 50–70% described for people with chronic musculoskeletal conditions [6]. Because every participant was selected for already having work-related wrist and/or hand pain, this selection could partly account for the high level of fear.

Earlier research has described the pain burden in this occupation: Lodhi et al. reported hand and wrist pain in up to 40.6% of beauty service employees [3], and Tsigonia et al. found that hand/wrist and low back complaints most often led to self-reported consequences in cosmetologists [2]. Neither study measured fear of movement. The present work adds the psychological dimension, showing that moderate and severe pain mostly coexisted with high kinesiophobia.

The pain and kinesiophobia categories were associated: 25 of the 29 participants with moderate pain and all 5 with severe pain had high kinesiophobia. TSK and PRWHE scores also correlated positively and moderately ($r_s = 0.457$, $p = 0.001$), which suggests that greater pain and disability accompany greater fear of movement in this group. Villalobos-García et al. likewise found a positive relationship between TSK and QuickDASH scores (r = 0.848) [5]. The coefficient here is lower, but the two studies differ in

population (patients after immobilisation for injury versus working women with occupational pain) and in outcome measures, so they cannot be compared directly. Those authors also observed that kinesiophobia may contribute to dysfunction without significantly predicting it [5], a reminder that a correlation does not show that fear causes disability.

The fear-avoidance model offers one plausible explanation [6], [7]: a worker whose job demands constant use of the hands may avoid movement, lose conditioning and become more disabled, with consequences for performance and income. The reverse is equally possible, namely that workers with more severe pain and disability become more fearful of movement. A cross-sectional design cannot determine the direction, so the findings should be read as an association.

Conclusion

Among 50 female beauty professionals with wrist and hand pain, 68% showed high kinesiophobia and 58% had moderate wrist/hand pain. Kinesiophobia was significantly associated with the wrist/hand pain categories, and TSK and PRWHE scores correlated positively and moderately ($r_s = 0.457$, $p = 0.001$), so women with higher pain scores tended to fear movement more. Because the design was cross-sectional, association has been established but not causation.

Clinical Implications

Screening for fear of movement: the TSK can help identify workers whose wrist/hand pain is accompanied by fear of movement or re-injury.

Comprehensive hand assessment: the PRWHE lets physiotherapists evaluate pain, hand function, daily activities and work performance together.

Fear-reducing rehabilitation: workers with high kinesiophobia may benefit from patient education, graded movement and activity modification alongside physical rehabilitation, where clinically indicated.

Ergonomic education: awareness of ergonomics, suitable working postures, regular breaks and ways to reduce repetitive strain should be promoted in beauty parlours.

Limitations of the Study

Small convenience sample: only 50 participants were recruited by convenience sampling, which limits generalisability.

Restricted population: the sample consisted of women aged 30 years or above with wrist/hand pain, so the findings may not apply to men, younger workers, other occupations or workers without pain.

Cross-sectional design: kinesiophobia and pain were assessed at a single time point, so the direction of the relationship cannot be determined.

Self-reported data: questionnaire responses may be affected by perception and reporting bias.

Small cell counts: several cross-tabulation cells held very few participants, which weakens the Chi-square result.

Uncontrolled variables: work experience, working hours, ergonomic practices and individual pain characteristics were not controlled.

Future Scope of the Study

Larger and more varied samples: studies including both sexes, different age groups and comparison groups from other occupations with repetitive hand use.

Longitudinal designs: to clarify the temporal relationship between pain and fear of movement.

Interventional studies: to test patient education, graded exercise, ergonomic advice and workplace modification for reducing fear of movement and improving hand function.

Acknowledgment

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