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Effect of Low Back Pain on Ergonomic Risk Factors, Functional Disability, Pain Beliefs and Occupational Burnout Levels in Hairdressers

Kuaförlerde Bel Ağrısının Ergonomik Risk Faktörleri, Fonksiyonel Yetersizlik, Ağrı İnançları ve Mesleki Tükenmişlik Düzeylerine Etkisi

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ÖZ

Amaç: Bu çalışmanın amacı bel ağrısı olan ve olmayan kuaförler arasında ergonomik risk faktörlerini, fonksiyonel yetersizlik düzeyini, ağrı inançlarını, mesleki tükenmişlik düzeylerini karşılaştırmaktır.
Araçlar ve Yöntem: Seksen bir kuaförün çalışma postürü ve ekipman kullanım sıklığı ergonomik risk faktörleri açısından değerlendirildi. Fonksiyonel engellilik düzeyi için Oswestry Engellilik İndeksi ve Sırt Ağrısı Fonksiyonel Ölçeği kullanıldı. Ağrıya yönelik tutum ve davranışlar Sırt İnançlar Anketi ile, mesleki tükenmişlik düzeyi ise Tükenmişlik Ölçeği-Kısa Formu ile değerlendirildi.
Bulgular: Ağrısı olan grupta usta sayısı ve yaş diğerine göre daha yüksekti ($p<0.05$). Grupların ergonomik risk faktörleri incelendiğinde sadece asistan kullanımında farklılık vardı ($p<0.05$). Ağrı çeken bireylerin engellilik ve tükenmişlik düzeyleri daha yüksekti. Ağrısı olmayan bireylerin ağrıya yönelik davranışları daha karamsardı ($p<0.05$).
Sonuç: Yaş ve meslekte geçirilen süre arttıkça fonksiyonel yetersizlik ve mesleki tükenmişlik düzeyi de artmaktadır. Ağrısı olmayan kuaförlerin bel ağrısına yönelik davranışları daha karamsardır. Yüksek riskli meslek gruplarında kas-iskelet sistemi ağrılarının fiziksel streslerin yanı sıra psikolojik stresleri de ekleyerek bütünsel olarak incelenmesi daha değerli olacaktır.

Anahtar Kelimeler: ağrı; bel ağrısı; kuaför; meslek; tutum ve inançlar

ABSRACT

Purpose: The aim of this study was to compare ergonomic risk factors, functional disability level, pain beliefs, occupational burnout levels between hairdressers with and without low back pain.
Materials and Methods: The working posture and equipment usage frequency of 81 hairdressers were evaluated in terms of ergonomic risk factors. Oswestry Disability Index and Back Pain Functional Scale were analyzed for the level of functional disability. Attitudes and behaviors toward pain were assessed using the Back Beliefs Questionnaire, while occupational burnout levels were evaluated with the Burnout Scale-Short Form.
Results: The number of masters and age in the group with pain was higher than the other ($p<0.05$). When the ergonomic risk factors of the groups were examined, there was a difference only in the use of assistants ($p<0.05$). Individuals suffering from pain had higher levels of disability and burnout. The behaviors towards pain for individuals without pain were more pessimistic ($p<0.05$).
Conclusion: As age and years spent in the profession increase, levels of functional disability and occupational burnout also rise. Hairdressers without pain exhibit more pessimistic attitudes toward low back pain. In high-risk occupational groups, it would be more valuable to examine musculoskeletal pain holistically by considering both physical and psychological stressors.

Keywords: attitudes and beliefs; hairdresser; low back pain; occupational; pain

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INTRODUCTION

Low Back Pain (LBP) is one of the important occupational health problems. LBP has an economic burden and can result in disability.[1] It defined as pain, stiffness or muscle tension on the low back in which inferior margin of the 12th rib and inferior gluteal folds.[1] Most people experience at some point in their work or study life.[2] The different biomechanical factors (working posture, equipment usage etc) can make stess on musculoskeletal system and result in pain and disability.

Hairdressing is one of the high-risk occupations for musculoskeletal disorders and pain. Numerous studies conducted in different countries show the prevalence of musculoskeletal diseases and musculoskeletal pain in hairdressers.[3,4] Some studies shown that these musculoskeletal disorders are mainly located in the lumbar, upper limbs and cervical spine.[5,6] The job includes repetitive movements, unsuitable postures for long periods. Hairdressers work in a standing position, hold hair dryer at stable position and they work with challenging tools for musculoskeletal systems.[7] Many factors, such as performing repetitive tasks in an unsupported sitting position, using vibrating devices, and wrapping the hairdressing machine around the neck for practicality, place hairdressing in the high-risk occupational group .[8]

It is known that they experience pain of high prevalence and severity in low back pain. Continuity of cumulative stresses due to work makes LBP chronic in hairdressers. Chronic pain causes disability in patients in the long term. For this reason, studies investigating the LBP of hairdressers generally focus on the functions of low back in daily life activities.[3] LBP was associated with ergonomic factors, and the impact of ergonomic training provided to hairdressers on lumbar functions was evaluated.[5] Although these studies evaluate lumbar functions, they may be insufficient to understand the psychometric properties of pain, which is a subjective sensation. Even if the lumbar region, which is constantly exposed to stress, does not ache at the moment, no studies have been found about the behavior and attitude of hairdressers towards LBP, which may cause pain in the future or who share the same environment with their colleagues suffering from LBP. We think that hairdressers who are exposed to biomechanical stress may also be exposed to psychological stress related to LBP. In addition, when all of these factors are considered as a whole, they can also affect the level of occupational burnout.

In the light of all this, addressing the biomechanical and psychological factors affecting the LBP of hairdressers as a whole will illuminate the vocational rehabilitation processes. Including a control group of hairdressers without pain in the study could provide valuable data on their behaviors and attitudes, potentially addressing a gap in the literature. This study aimed to compare ergonomic risk factors, functional disability levels, LBP beliefs, and occupational burnout levels between hairdressers with and without LBP.

MATERIALS and METHODS

The study was planned as randomized controlled. The study was approved by Gaziantep Islamic Science and Technology University Non-Interventional Clinical Research Ethics Committee (dated 02.05.2023 and numbered 220.24.11) and was conducted in accordance with the Declaration of Helsinki. Informed consent has been obtained from all individuals included in this study, and the participants were informed in detail about the study face to face. The data were collected online via google forms. To reduce bias, the statistician in the study was blind.

The inclusion criteria were (a) working as a hairdresser, (b) ability to read and write, (c) volunteering to participate in the research. The exclusion criteria were (a) having psychological disorders, (b) with a body mass index of 30 kg/m and above, (c) pregnant. Of the 90 hairdressers who volunteered for the study, 4 were excluded from the study due to pregnancy. 2 individuals were not included in the study because BMI was high and 3 individuals were using psychiatric drugs. In total, 81 hairdressers completed all the evaluations. Individuals were divided into two groups according to the question "Have you had LBP problem in the last 1 year: individuals without back pain (oLBP) and individuals with low back pain (wLBP).

Demographic characteristics such as age, gender, gender, and work information (working position at the work, hairdresser type) were recorded for all individuals.

In the study, checklists prepared by the European Agency for Occupational Health and Safety (EU-OSHA) and used in risk assessment for hairdressers and protection from bad working posture were used in the evaluation of ergonomic risk factors.[9,10] These checklists are risk assessment forms that help identify potential hazards and precautions in the workplace. It is the first step of risk assessment. It does not cover all risks in the workplace; Depending on the sector, some items may be added or removed.[11] In our study, only questions related to working posture were used. The frequency assessment was asked to the participants in the form of a 5-point Likert type. Item scores range from 0 to 5, (0 indicates never; 5 indicates always). The higher scores indicate the higher the risk factor for LBP, except for "usage of adjustable chair".[10]

Oswestry Disability Index (ODI) and functional low back pain scale were used to evaluate the level of functional disability related to LBP of the participants. ODI is validated in Turkish, and is structured in 10 sections corresponding to different activities of daily living.[12] The items question the severity of pain, self-care, lifting-carrying, walking, sitting, standing, sleep, degree of change in pain, travel and social life. Item scores range from 0 to 5. The scores in the selected option in each question are summed up and the percentage of disability is calculated by dividing the total by the maximum possible score. The higher scores indicate worse disability level.[5]

Back Pain Functional Scale (BPFS) evaluates how much patients' functions are affected by LBP. The scale is validated in Turkish.[13] These functions are; work, school, home activities, habits, bending forward, wearing shoes or socks, lifting an object from the ground, sleeping, sitting, standing, walking, climbing stairs and driving. For patients who do not drive, the last question can be answered by considering traveling. Each item has a score between 0 and 5. Scoring, (0); it is not possible to do the activity, (1); extremely difficult, (2); quite difficult, (3); moderately difficult, (4); somewhat difficult, (5); it is not difficult. The minimum score is 0 points, the maximum score is 60 points. The score of 60 indicates that any performance activity is not difficult.[14]

The Back Beliefs Questionnaire (BBQ) was used to evaluate the participant's expectations about negative conditions that may occur as a result of LBP, their approach to returning to work, and their attitudes and beliefs about recovery in this situation. The scale shows individuals' psychosocial factors related to chronic LBP. The scale was culturally adapted and validated in Turkish language.[15] It consists of 14 items. The items have a 5-point Likert Scale in the range of 'Strongly Disagree=1' and 'Strongly Agree=5'. The questionnaire consisting of 14 items is the participants against low back pain (Helplessness Criterion). The scoring includes the following items: 1, 2, 3, 6, 8, 10, 12, 13, and 14. The scores of the nine items are calculated by reversing; The total score is between 9-45 points. Low scores support participant's more maladaptive and pessimistic beliefs about low back pain.[15]

A 10-item Burnout Scale-Short Form (BS-SF) was used to measure the level of professional burnout. The Turkish adaptation, validity and reliability of the scale were made.[16] The scale is a seven-point Likert scale. The score obtained from the scale varies between 7 and 70. The high score on the scale indicates a high level of burnout.[16]

Statistical Analysis

G-power 3.1.9 package version (Heinrich Heine University, Germany) was used for power analysis. The minimum required sample size for each group was estimated as 12 according to ODI (a=0.05, 1-b=0.95).[17] SPSS 23.0 version (IBM; Armonk, NY, USA) version program was used to analyze the data. Descriptive statistics were summarized as mean±standard deviation. The Independent Sample t-test was used to compare the normally distributed data. The value of p<0.05 was considered as significant.

RESULTS

The demographic characteristics of individuals across the groups were similar, except for age. (Table 1). The mean

age was higher in the group with pain (p<0.05). The number of masters in the group with pain was higher than the other (p<0.05). When the ergonomic risk factors of the groups were examined, there was a difference only in the use of assistant (p<0.05) (Table 2). Functional disability levels, LBP beliefs, and occupational burnout levels significantly differed between hairdressers with and without LBP (Table 3). Individuals suffering from pain had higher levels of disability and burnout. The behavior and attitude towards LBP for individuals without pain were more pessimistic (p<0.05) (Table 3).

Table 1. Characteristics of individuals according to groups.

Characteristics	oLBP (n=31)	wLBP (n=50)	X^2 or t	p
Age	26.64±9.78	32.76±10.35	2.636	0.010[b]*
Gender			0.928	0.460[3a]
Female	8	18		
Male	23	32		
Education Level			1.147	0.766 [a]
Primary School	2	5		
Secondary School	8	9		
High School	17	27		
University	4	9		
Body Mass Index	24.00±4.19	25.18±3.41	1.384	0.170[b]
Working Position			9.645	0.008[a]*
Apprentice	8	3		
Journeyman	11	12		
Master	12	35		
Hairdresser Type			0.241	0.654[a]
Hairdresser for women	15	27		
Hairdresser for men	16	23		

*p<0.05 is statistically significant. oLBP: Individuals without low back pain, wLBP: Individuals with low back pain. X^2: coefficient of Chi-squared test, t: coefficient of Student's t-test
[a] Chi-squared test
[b] Student's t-test.

Table 2. Comparison of working posture and equipment usage frequency between groups.

Variables	oLBP (n=31)	wLBP (n=50)	t	p
Working Hours per day (hours)	10.40±2.07	9.68±2.44	1.337	0.185
Working hours at stand upright position (hours)	7.64±2.10	7.51±1.98	0.291	0.772
Working hours at sitting position (hours)	3.95±2.84	3.84±3.58	0.147	0.884
Frequency of use of assistants	2.41±1.23	3.42±1.03	3.936	0.000*
Working Posture				
Service for children	3.90±1.19	3.50±1.12	1.528	0.130
Working at sitting position	2.54±1.43	2.44±1.05	0.364	0.717
Standing upright on feet for a long periods	4.25±0.96	4.25±0.88	0.038	0.970
Working in same position	4.51±0.62	4.12±0.88	2.164	0.034
Leaning sideways or bending over forwards	4.20±0.84	4.00±1.03	0.890	0.376
Lifting arms above the shoulders	4.03±1.04	3.92±0.98	0.486	0.628
Bending or twisting the wrists	4.03±1.11	3.89±0.98	0.566	0.573
Stretching out too much	2.19±1.13	2.32±1.28	0.449	0.654
Repeatedly movements	4.22±0.92	4.46±0.64	1.345	0.183
Equipment Usage				
Usage of adjustable chair	4.19±0.98	4.18±0.87	0.065	0.949
Usage of hair dryer away from trunk	4.00±1.29	3.86±1.22	0.489	0.626
Wrap the hair dryer around the neck	2.61±1.60	2.50±1.29	0.347	0.729
Usage of vibratory equipment	2.61±1.66	2.46±1.29	0.462	0.646
Wearing high-heeled shoes during work	2.25±1.65	2.06±1.28	0.604	0.548

*p<0.05 is statistically significant, Independent Sample t-test. oLBP: Individuals without low back pain, wLBP: Individuals with low back pain.

Table 3. Comparison of functional disability level, low back pain beliefs and occupational burnout levels between groups.

	oLBP (n=31)	wLBP (n=50)	t	p
ODI	4.50±10.12	21.22±14.45	6.109	0.000*
BPFS	50.58±15.52	34.98±15.80	4.348	0.000*
BBQ	37.32±10.36	45.82±11.60	3.334	0.001*
BL-SF	19.19±10.48	30.98±10.86	4.808	0.000*

*p<0.05 is statistically significant. oLBP: Individuals without low back pain, wLBP: Individuals with low back pain.
ODI: Oswestry Disability Index, BPFS: Back Pain Functional Scale, BBQ: Back Beliefs Questionnaire, BL-SF: Burnout Scale-Short Form

DISCUSSION

The major findings of our study, which compared ergonomic risk factors, functional disability levels, pain beliefs, and occupational burnout levels between hairdressers with and without LBP, revealed that hairdressers with pain performed worse across all parameters. Ergonomic risk factors were similar between the two groups, but the frequency of assistive device use was lower in the group with pain. Additionally, a difference in descriptive parameters, such as age and experience level, was found in favor of the group without pain. The fact that hairdressers with low back pain have worse pain beliefs and higher professional burnout levels may be explained by the years of professional experience and age of the individuals.

LBP has a direct impact on disability and quality of life. With pain, the movements of individuals are restricted and pain is learned along with movement. After a while, the movements are restricted and problems in functional movement begin to occur.[18] LBP in hairdressers who are exposed to occupational stresses tends to become chronic and results in functional disability.[19] Unchangeable work conditions such as constantly working in an unsuitable posture and long daily working periods increase the burden on the waist. In the literature, studies on LBP in hairdressers have explored the interrelationships between the outcome parameters we examined in our study.[5,8,10] Aweto et al. mentioned that uncomfortable positions during working hours impose stress on the lower vertebral structures.[20] Another study showed that mechanical loading could iniate disc degeneration.[21] Thus many studies reported that hairdressers might result in decreased job performance and early retirement this profession.[20, 22] Biomechanical factors are linked to psychosocial factors. Shenieder et al. determined that mental stress was high in hairdressers with LBP.[23] In our study, similar to the literature, the group with pain had lower functionality and higher occupational burnout.

In a study examining musculoskeletal problems in hairdressers, it was stated that the problems differ according to gender and age. It has also been shown that there is a linear relationship between musculoskeletal system problems and occupational burnout level with aging.[8] In our study, consistent with the literature, it was found that the mean age and years of work experience were higher in the group with pain. Professional experience increases with age, and cumulative traumas over time contribute to the development of pain.The fact that individuals continue in the same working conditions on a daily basis negatively affects both functional disability and professional burnout levels. In addition, problems in the musculoskeletal system may affect both the attitude to pain and occupational burnout.

In addition to biomechanical loads, individuals working in an occupation with a high incidence of LBP are also exposed to pain-related psychological burden.[24] Because although they are exposed to the same risk factors in the same environment, they see the pain of painful individuals in the same environment. Learning about functional disability caused by pain from time to time may have increased the awareness or fear of pain in hairdressers who do not experience low back pain. In this study, the pessimism of painless hairdressers in pain can be explained by the psychological reflection of pain. The frequency of use of assistant personnel, which is the only significant difference between the two groups in ergonomic risk factors, can also be explained by the request for help for functional disability. If this idea is correct, the young apprentice or journeyman who comes to help may have concerns about LBP in the later years of the profession, even if they are pain-free. Although the attitude behaviors of health care workers regarding LBP were frequently examined, there was no study investigating the attitude behavior towards LBP in hairdressers as far as we know. In hairdressers, the incidence of pain according to the musculoskeletal system, occupational burnout levels or ergonomic risk factors were investigated.[8,10,25,26] Kızkın et al. analyzed occupational burnout in hairdressers from a psychosocial perspective and associated burnout with musculoskeletal disorders in hairdressers.[25] In another study, it was mentioned that ergonomic risk factors frequently reoccur and cumulative traumas reoccur in hairdressers.[26] It has been shown that as age and professional experience increase in hairdressers, LBP becomes chronic, and the level of functional insufficiency and occupational burnout increase. The reason why individuals without pain are more pessimistic about low back pain may be due to the psychometric properties of pain.

There is a need for further studies investigating the concerns of young, journeymen and apprentices about LBP. In the investigation of musculoskeletal pain in hairdressers and other high-risk occupational groups, not only physical and biomechanical loads; Studies in which psychological factors are included will fill an important gap in the literature.

There were limitations for this study. The fact that a standardized scale was not used in the evaluation of ergonomic risks is an important limitation. One of the limitations of the study is to examine the psychometric properties only in terms of attitude and behavior. Supporting factors such as anxiety and stress caused by pain with qualitative data as well as concrete data would have been helpful in better understanding pain. If a group of age- and sex-matched individuals with LBP were included in the study, the effect of occupational risk factors on functional disability could be more clearly identified. In addition to the disability index, the inclusion of any kinesiophobia scale that investigates the fear-avoidance movement caused by chronic pain in the study could be confirmatory in the interpretation of the results.

In conclusion, hairdressers with and without LBP work in similar ergonomic conditions, with the exception of the use of assistant personnel. As age and time spent in the occupation increase, the levels of functional disability and occupational burnout also rise. Hairdressers without LBP tend to have more pessimistic attitudes and behaviors toward LBP. It would be valuable to examine musculoskeletal pain in high-risk occupational groups holistically, incorporating both psychological and physical stresses. Longitudinal studies are needed to better understand the development of musculoskeletal disorders in hairdressers.

Conflict of Interest

The authors declare that there is not any conflict of interest regarding the publication of this manuscript.

Ethics Committee Permission

The study was approved by Gaziantep Islamic Science and Technology University Non-Interventional Clinical Research Ethics Committee (dated 02.05.2023 and numbered 220.24.11)

Authors' Contributions

Concept/Design: TM. Data Collection and/or Processing: TM. Data analysis and interpretation: TM. Literature Search: TM. Drafting manuscript: TM. Critical revision of manuscript: TM.

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