Araştırma Makalesi – Original Article

Investigation of Musculoskeletal System Disorders of Healthcare Personnel in Ankara Province*

Ankara İli Sağlık Personelinin Kas İskelet Sistemi Problemlerinin Araştırılması

İlker Solmaz[i], Aydan Orscelik[ii], Gökhan Büyüklüoğlu[iii]

[i] Assist. Prof., Health Sciences University Gulhane Training and Research Hospital Traditional Complementary Medicine Center
https://orcid.org/0000-0002-1959-8159

[ii] Assoc. Prof., Health Sciences University Gulhane Medical Faculty Department of Sports Medicine
https://orcid.org/0000-0002-8610-8869

[iii] MD., Health Sciences University Gulhane Training and Research Hospital Department of Sports Medicine
https://orcid.org/0000-0002-4139-9690

ABSTRACT

Background: Musculoskeletal system disorders are the most important and frequent cause of work-related health issues. Chronic pain due to musculoskeletal disorders can give rise to disability, anxiety, depression, and sleep disturbances resulting in poor quality of life. These problems are frequently encountered in many business areas, especially in the field of healthcare. This study aimed to investigate the location and severity of musculoskeletal disorders of healthcare personnel working in the province of Ankara and how these problems relate to their lifestyle.

Methods: An online questionnaire was applied to healthcare personnel working in the province of Ankara between November and December 2020. The questionnaire consisted of 14 questions about general information and 11 additional SF-36 questions.

Results: A total of 285 participants were evaluated. Physical functioning (PF) and role physical (RP) parameters of those who had been in the same position for less than eight years were significantly higher compared to those who had been in the same position for more than eight years. There was a statistically significant increase in PF and social function parameters with the increase in educational status. Male gender PF, RP, role emotional, and pain parameters were significantly higher than female gender.

Conclusion: This study revealed that the age, gender, education level, number of personnel in the institution where they work, total working time, and working in the same position for many years affect the quality of life in healthcare personnel. In addition, the location and frequency of musculoskeletal pain of healthcare personnel were revealed.

Keywords: Healthcare personnel, Quality of life scale, Pain

ÖZ

Amaç: İş kaynaklı hastalıkların en önemli sebebi olarak kas iskelet sistemi problemleri gösterilmektedir. Kronik ağrı düşük yaşam kalitesi ile sonuçlanan engellilik, anksiyete, depresyon ve uyku bozukluklarına sebep olabilmektedir. Bu durum pek çok iş kolunda olduğu gibi sağlık personellerinde de görülmektedir. Bu anket çalışması ile Ankara ilinde çalışmakta olan sağlık personellerinin kas iskelet sistemi problemli bölgeleri, düzeyi ve bunların yaşam şekliyle ilişkisinin araştırılması hedeflenmiştir.

Gereç ve Yöntem: Ankara ilinde bulunan tüm hastanelerde çalışmakta olan tüm sağlık personellerine online bir anket Kasım ve Aralık 2020 tarihleri arasında uygulanmıştır. Anket formu, genel bilgilerin olduğu 14 soru ve ek olarak 11 SF-36 sorusundan oluşturulmuştur.

Bulgular: Toplam 285 katılımcı değerlendirildi. Sekiz yıldan kısa süredir aynı konumda olanların (n=157) fiziksel fonksiyon (FF) ve fiziksel rol güçlüğü (FRG) parametreleri (75.0±23.0, 64.0±42.9, sırasıyla) sekiz yıldan uzun olanlara (61.1±27.6, 56.6±46.3, sırasıyla) kıyasla istatistiksel olarak anlamlı yüksek bulunmuştur. Eğitim durumunun artmasıyla FF ve sosyal işlev parametrelerinde istatistiksel anlamlı artış görülmüştür (p=0.002, p=0.029, sırasıyla). Cinsiyetler arasında erkek cinsiyet FF, FRG, emosyonel rol güçlüğü ve ağrı parametrelerinde (78.0±21.8, 80.0±35.2, 68.4±42.2, 74.9±16.7, sırasıyla) kadın cinsiyete kıyasla (64.1±26.9, 51.0±45.6, 52.9±45.2, 61.4±24.2, sırasıyla) istatistiksel olarak anlamlı yüksek sonuçlanmıştır.

Sonuç: Bu çalışma ile sağlık çalışanlarının yaş, cinsiyet, eğitim düzeyi, kurum personel sayısı, toplam çalışma süresi aynı konumda uzun yıllar çalışmanın yaşam kalitesini etkilediği saptanmıştır. Ayrıca sağlık personellerinin kas iskelet sistemi ağrısı olan bölgeleri ve ne sıklıkla hangi bölgelerin etkilendiği ortaya konulmuştur.

Anahtar kelimeler: Sağlık çalışanı, Yaşam kalitesi ölçeği, Ağrı

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Introduction

As a result of the rapid development in information and communication technologies, people's interest in and use of the internet has increased, and the area of use of the internet has expanded in the last quarter century. The acceleration in accessing information has changed people's daily lifestyles. The changing lifestyle has led to inactivity and various health problems. The most basic example is musculoskeletal pain, which is an inevitable result of trying to finish work quickly by staying in a fixed position for a long time, repeating the same movements constantly, and experiencing limited physical activity in daily life. Musculoskeletal disorders are the most important cause of work-related health issues.[1] Until now, many studies have shown the economic burden of drug use and loss of work days due to musculoskeletal pain.[1-4]

Chronic pain due to musculoskeletal disorders can cause disability, anxiety, depression, and sleep disorders resulting in low quality of life.[5,6] The prevalence of chronic pain in the adult population is estimated at about 20%. This condition is seen in healthcare personnel and many business areas.[6] Dentistry is the profession in which pain symptoms associated with work-related musculoskeletal injuries are most common.[7] A meta-analysis of 30 trials examined the prevalence of musculoskeletal disorders and pain in dentists. It has been determined that dentists' musculoskeletal disorders and pain are serious health problems and affect many body areas with a high prevalence.[8] In another study with 78 questions applied to 356 active dentists working in Serbia, the prevalence of musculoskeletal pain was 82.6%. Advanced age, female gender, chronic diseases, and long working hours were determined as risk factors. The most effective measure to prevent this situation was found to be regular physical activities.[7]

This survey study aimed to investigate the location and severity of musculoskeletal disorders of the healthcare personnel working in the province of Ankara.

Methods

An online survey was applied to healthcare personnel working in Ankara with the affiliates of the General Directorate of Public Hospitals between November and December 2020. An announcement was made to all Ankara province healthcare personnel via electronic information management systems, and they were asked to access the questionnaire via the link "http://anket.saglik.gov.tr/index.php/54546?lang=tr". The survey consisted of 14 general information questions consisting of where he/she works, the number of personnel of the institution where he/she works, his/her working time in the current position, total work experience, education level, gender, age, daily sports activity status, getting up from the computer regularly while working during the day, time spent at the computer daily, pain region or regions, previous physical therapy history. In addition, SF-36 consisting of 11 questions, was added to the questionnaire.

Ethics committee approval and Ministry of Health approval were received for the study (Ethics committee approval number: 2020-48, date: 23 June 2020). All participants started the survey questions by confirming the consent form.

SF-36 explanation and Turkish validity

It is a widely used questionnaire for assessing health-related quality of life. SF-36 provides both physical and mental evaluations of individuals. Eight scales are measured: physical functioning (PF), role physical (RP), bodily pain (Pain), general health perception (GHP), vitality (VT), social function (SF), role emotional (RE), and mental health (MH).[9] It also has Turkish validity and reliability.[10]

Statistical Analysis

SPSS version 23.0 package program was used in the analysis of the data. Data are presented as percent (%), frequency (n), and mean±standard deviation (minimum-maximum). Oneway Anova and T-test were used. The p-value was accepted as significant at the 0.05 level.

Results

Three hundred thirty personnel participated in the survey. The results of 45 participants were removed because they could not be completed or viewed. A total of 285 participants were evaluated. A total of 12 hospitals in Ankara province participated; Keçiören 129 (45.2%), Yenimahalle 43 (15.0%), Sincan 42 (14.7%), Çankaya 33 (11.5%), Çubuk 11 (3.8%), Altındağ 7 (2.4%), Mamak 6 (2.1%), Beypazarı 4 (1.4%), Camlidere 4 (1.4%), Haymana 4 (1.4%), Etimesgut 3 (1.0%), Elmadağ 2 (0.7%), Gölbaşı 1 (0.3%), Şereflikochisar 1 (0.3%). SF-36 sub-parameters of the participants are shown in ***Table 1***.

Table 1. SF-36 sub-parameters of the participants

	Gender	N	Mean	Standard deviation
Physical functioning	Male	96	78.0	21.8
	Female	189	64.1	26.9
Role physical	Male	96	80.0	35.2
	Female	189	51.0	45.6
Role emotional	Male	96	68.4	42.2
	Female	189	52.9	45.2
Vitality	Male	96	53.5	19.7
	Female	189	41.4	20.4
Mental health	Male	96	57.0	10.5
	Female	189	57.9	10.9
Social function	Male	96	64.5	23.1
	Female	189	53.6	28.0
Bodily pain	Male	96	74.9	16.7
	Female	189	61.4	24.2
General health perception	Male	96	64.6	18.2
	Female	189	56.5	20.4

A statistically significant differences were found in terms of PF, vitality and pain parameters between those with 50 and less personnel in the institution and those without *(**Table 2**)*.

Table 2. The p values of the comparison of healthcare personnel working parameters and SF-36

	PF	RP	RE	VT	MH	SF	Pain	GHP
The number of personnel of the institution <50->50	0.001	0.427	0.450	<0.001	0.109	0.166	0.035	0.199
Working time in the current position <8->8	0.009	0.012	0.708	0.532	0.541	0.581	0.128	0.380
Total working experience <8->8	<0.001	0.009	0.885	0.126	0.972	0.021	0.012	0.122
Education level	0.002	0.091	0.729	0.280	0.739	0.029	0.058	0.619
Gender	0.002	<0.001	0.007	0.754	0.702	0.057	<0.001	0.080
Age <35->35	0.002	0.113	0.108	0.234	0.404	0.403	0.286	0.480
Daily sports activity status	0.006	0.001	0.615	0.548	0.998	0.114	0.115	0.179
Getting up from the computer regularly	0.321	0.635	0.652	0.216	0.188	0.826	0.707	0.796
Time spent at the computer daily	0.060	0.226	0.361	0.193	0.296	0.218	0.140	0.348

PF: Physical functioning; RP: Role physical; RE: Role emotional; VT: Vitality; MH: Mental health; SF: Social function; GHP: General health perception

The participants were nurses (n=39, 13.7%), dentists (n=39, 13.7%), physicians (n=40, 14%), workers (n=35, 12.3%), assistants (n=19, 6.6%), paramedics and technicians(n=39, 11.8%), data preparation and control operator (n=15, 5.2%), health officer (n=13, 4.5%), research assistant (n=11, 3.8%), midwife (n=5, 1.7%), office staff (n=4, 1.4%), engineer (n=3, 1.0%), medical technologist (n=3, 1.0%), and a small number of other professions. The total duration and work experience of the participants in the same position were evaluated as above and below eight years. The PF and RP parameters of those who were in the same position for less than eight years (n=157) (75.0±23.0, 64.0±42.9, respectively) were found to be statistically significant compared to those who were longer than eight years (61.1±27.6, 56.6±46.3, respectively). Eighty-two individuals with less than eight years of work experience in terms of PF, RP, SF, and pain (79.5±19.6, 65.2±41.8, 61.1±23.7, 70.1±19.6, respectively) parameters compared to participants with less than eight years of experience (n=203) (64.5±27.2, 58.9±45.5, 55.7±28.0, 64.2±23.8, respectively) were found to be statistically significant. According to education level, the participants were 35 in high school, 33 with an associate degree, 115 in undergraduate, 67 in graduate and 35 in doctorate. Statistically significant increases were observed in PF and SF parameters with the increase in educational status (p=0.002, p=0.029, respectively). The number of females was 189, and the number of male was 96. Among the genders, the male gender compared to the female (64.1±26.9, 51.0±45.6, 52.9±45.2, 61.4±24.2) in PF, RP, RE and pain parameters (78.0±21.8, 80.0±35.2, 68.4±42.2, 74.9±16.7, respectively) were statistically significant. The majority of the participants, 57.8%, were 35 years or older. It was determined that under and over 35 years of age had a statistically significant difference according to physical function (76.6±21.9, 63.1±27.4, respectively) (p=0.002). Among the participants, there were 203 (71.2%) personnel who do not participate in daily physical activities and 82 personnel who do. No statistically significant results were found between those who engage in daily physical activities and those who do not. Only an exception was found for physical function and physical role difficulties (PF 78.2±22.0 who do sports, 65.0±26.7 who do not do sports, RP 72.5±41.6 who do sports, 55.9±44.9 who do not do sports, p=0.006, p=0.001). The number of participants who get up and move from the computer regularly while working during the day was 209 (73.3%), and 76 remained constant. There was no difference in all sub-parameters of the SF-36 test between participants who get up from the computer and move regularly and those who do not (p=0.321, p=0.635, p=0.652, p=0.216, p=0.188, p=0.826, p=0.707, p=0.796). It was determined that 145 people (50.8%) stayed in front of the computer for up to two hours, 65 (22.8%) between three and five hours, and 62 (21.7%) between 6-8 hours. Pain zones are shown in ***Figure 1***.

77.9% of those suffering from shoulder pain, 69.8% of neck, 67.5% of waist, 81.3% of elbow, 76.4% of wrist, 87.0% of hand, 88.7% of hip, 70.5% of knee, 77.1% of the ankle and 75.0% of those suffering from foot pain were female (p=0.002, p=0.103, p=0.635, p=0.016, p=0.015, p<0.001, p<0.001, p=0.170, p=0.013 and p=0.125, respectively). Seventy-six of the participants (26.7%) had previously received physical therapy.

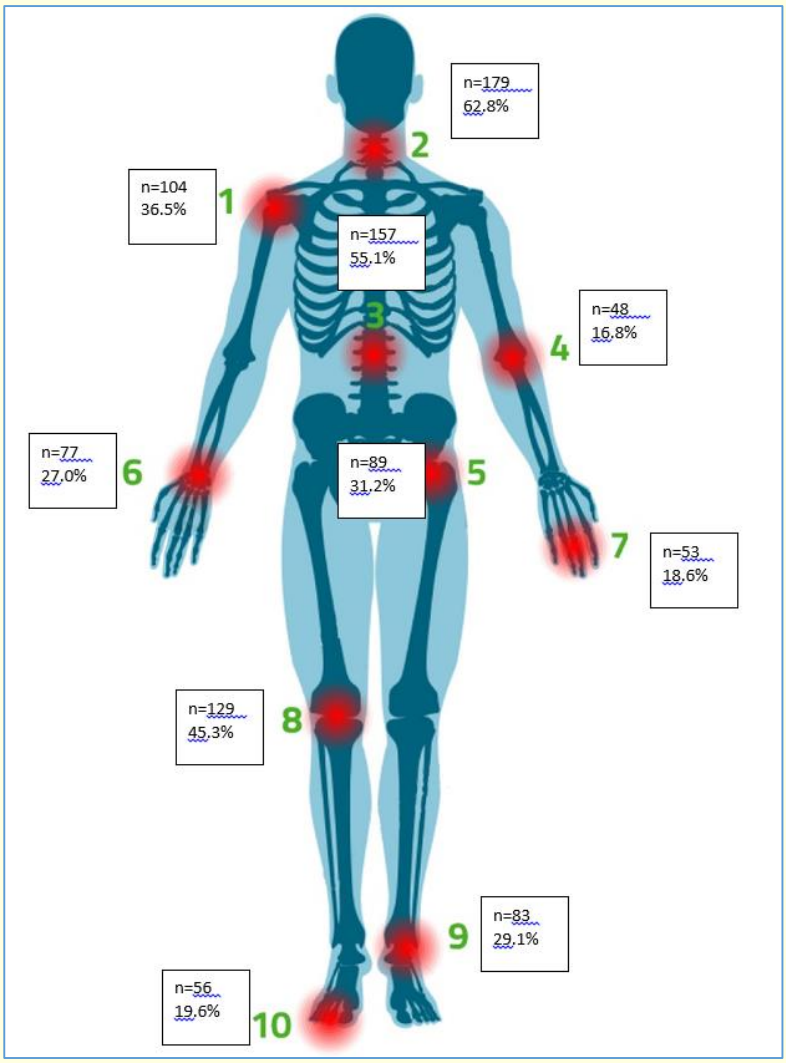

Figure 1. Pain zones and ratios

Discussion

With this survey study, the location of musculoskeletal problems, the severity of pain, and their relationship with the lifestyle of the healthcare personnel working in the public sector in Ankara were investigated. This study showed that healthcare personnel working in the public sector in Ankara had SF-36 quality of life scale scores below the norm values for Turkish society in terms of all sub-parameters. The number of personnel in the institution which was 50 or less created an advantage in terms of physical function and pain compared to institutions with more crowded personnel. Working in the same position for more than eight years negatively affected PF and RP parameters. Similarly, work experience of more than eight years affected PF, RP, SF, and pain parameters. In parallel with the increase in education level, there was an increase in PF and SF parameters. Among the genders, the male gender was significantly higher than the female gender in terms of PF, RP, RE, and pain parameters. Personnel under 35 years old were found to be advantageous over 35 years old in terms of PF parameters. The PF and RP parameters of those who do daily sports were better than those who do not. Interestingly, getting up from the computer at regular intervals and the time spent in front of the computer did not affect any SF-36 sub-parameters.

The ability to use physical, social, and mental status and bodily functions in a person's life is called quality of life in the field of health.[11] Quality of life is also expressed as the way an individual perceives his/her position in life. Therefore, it is associated with many conditions.[12] There may be many reasons behind the fact that

the SF-36 quality of life scale is found to be low in terms of all sub-parameters of the healthcare personnel of Ankara province working in the public sector compared to the Turkish society. The effect of the shift work program has been mentioned in previous publications.[12,13] This issue was not examined in our study. Studies examining the quality of life scores regarding gender have different results. While Avcı et al.'s study on physicians revealed that gender did not affect them, Aktaş et al.'s study on nurses found that quality of life scores was statistically significantly higher in males than in females. [11,14] Our study revealed that PF, RP and RE parameters were higher in the male gender. There are studies in the literature showing that there is a decrease in SF-36 sub-parameters with increasing age.[14–16] In the study by Akbolat et al., low RP scores were found above the age of 35 and under 25.[12] Our study found a decrease in the PF parameter over 35 years of age.

Educational status is considered an essential factor in the quality of life. As the level of education increases, the ability to improve and cope with the conditions improves.[14,17] In a master's thesis study examining the possible effects of physical activity level on the quality of life in healthcare personnel, it has been reported that educational status did not affect the quality of life.[18] In our study, there was an increase in PF and SF parameters in parallel with the increase in educational status. It has been shown that healthcare personnel's quality of life scores decrease as the total working time increases.[16] Similarly, our study determined that working in the same position for more than eight years decreased PF and RP scores, and work experience over eight years decreased PF, RP, SF, and pain scores. This situation justifies the saying of our ancestors that "there is comfort in the disfigured place".

Despite studies showing that physical activity and exercise reduce the symptoms of depression,[19,20] in our study, only positive increases in PF and RP parameters were found in those who engaged in daily sports activities. One reason may be that the time the study was conducted was the pandemic's beginning. Healthcare personnel may be generally affected by the atmosphere of fear created by an epidemic if they do not have enough information about treatment or if there is a shortage of supplies to protect themselves. Depending on these factors, depression and anxiety symptoms were observed at different levels in healthcare personnel.[21,22] Therefore, the expected result in mental health may not be achieved. Nevertheless, the fact that no difference was found in all sub-parameters of the SF-36 test between people who get up from the computer and move regularly and those who do not is interesting as it shows that this information suggested in practice may not be correct.

The most affected areas were the neck, low back, and knee respectively in our study. Generally, the idea is that back pain is the most common problem that causes disability and affects the quality of life in certain occupational groups like healthcare personnel.[23-25] It was shown that low back pain was present at a rate of 72.81% of 110 active healthcare personnel. These personnel was physiotherapists (24.5%), nurses (25%), midwives (22.7%) and paramedics (27%), and female ratio was 77%.[25] Moodley et al. reviewed that the prevalence of the occupational health disorders has a wide range; back: 22.2-91.0%, neck: 20-84.9%, and shoulder: 18.9-73.5%.[26] Kim et al. founded that the most common pain zones of the cleft surgeons and orthodontists were the neck (71.2%), shoulders (52.5%), and lower back (67.8%).[27] Similar to our study, most trials about pain areas and quality of life in healthcare personnel revealed that low back and neck pain was high. Dentists mainly were preferred as the working group in these studies. All the healthcare personnel were evaluated in our study. If only a more limited target population, such as dentists, nurses, or surgeons, could have changed the rates in pain areas. However, the spine is a whole without separating it as the neck or low back. Both in our study and other studies, the most affected area was the spine. In this case, spine protective exercises can effectively prevent pain and increase healthcare personnel' quality of life.

Another interesting knowledge of this study was only a quarter of them had previously received physical therapy, despite their lower quality of life than the population's average score and high pain areas rates. This may be because healthcare personnel know what to do but do not do it or because they don't know what to do at all. Healthcare personnel may be accustomed to low quality of life due to their intense working tempo, lack of sleep, and being able to work in all environments and conditions. Since they did not encounter serious problems, the conclusion that "they know but do not do" may be the more accurate choice.

Conclusion

In this study, it was determined that the age, gender, education level, number of personnel in the institution, and total working time of the healthcare personnel affect the quality of life. In addition, the locations of the musculoskeletal disorders of healthcare personnel and frequency were revealed. The most affected areas were the neck, low back, and knee. Therefore, the quality of life can be increased by arranging exercises for healthcare personnel in areas where the pain is most frequently experienced. Besides, the results of these exercises can be revealed in further studies.

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Ethical Approval

Health Sciences University Scientific Research Ethics Committee and Ministry of Health approval were received for the study (Ethics committee approval number: 2020-48, date: 23 June 2020). All participants started the survey questions by confirming the consent form.

Author Contributions

İlker Solmaz: Idea/conception, design, references and fundings, control/supervision

Aydan Orscelik: Data collection, data collection and/or processing, analysis and/or interpretation, drafting of the article, writing the article, literature review, critical revision of the article.

Gökhan Büyüklüoğlu: Data analysis and interpretation, critical revision of the article.

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