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# Examination of Musculoskeletal Dysfunction in Patients with Dyssynergic Defecation

## *Dissinerjik Defekasyonlu Hastalarda Kas-İskelet Disfonksiyonunun Değerlendirilmesi*

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***ABSTRACT***

***Aim:*** *Literature reports relationship between genitourinary system diseases and musculoskeletal dysfunction, this is not investigated in dyssynergic defecation. This study aimed to examine musculoskeletal disorders in dyssynergic defecation.*

***Material and Method:*** *Twenty-five individuals with dyssynergic defecation and twenty-five healthy controls were included. Participants were evaluated for lumbar-hip region symmetry and were applied Pittsburgh Sleep Quality Index, Beck Depression Inventory, Patient Assessment of Constipation Quality of Life Questionnaire, Female Sexual Function Index, International Index of Erectile Function. Posterior Pelvic Pain Provocation Test, Gaenslen's Test, Trendelenburg Test, FABER test, Piriformis Test were employed to evaluate pelvis and hip pain.*

***Results:*** *Dyssynergic defecation group had lower scores in sleep quality, depression and quality of life evaluations ($p<0.05$). Men with dyssynergic defecation had more sexual dysfunctions then controls ($p<0.05$). No difference was found between groups in lumbar region symmetry. Prevalence of asymmetry in hip flexion, abduction, internal and external rotation was higher in dyssynergic defecation group ($p<0.05$). Pain provocation tests, except Trendelenburg test, were more positive in dyssynergic defecation group ($p<0.05$).*

***Conclusion:*** *Musculoskeletal dysfunction is common in dyssynergic defecation and dyssynergic defecation also effects sleep quality, quality of life, depression, and sexual functions. Our study suggests that management of dyssynergic defecation requires multidisciplinary approach.*

***Keywords****: Dyssynergic defecation, Pelvic floor, Musculoskeletal system, Pain, Sexual dysfunction*

***ÖZET***

***Amaç:*** *Literatürde genitoüriner sistem hastalıkları ile kas-iskelet sistemi disfonksiyonu arasında ilişki olduğu bildirilmektedir; ancak bu durum dissinerjik defekasyonda araştırılmamıştır. Bu çalışma dissinerjik defekasyonda kas-iskelet sistemi disfonksiyonunu incelemeyi amaçlamıştır.*

***Gereç ve Yöntem****: Çalışmaya 25 dissinerjik defekasyonlu ve 25 sağlıklı birey dahil edildi. Katılımcılar lomber ve kalça bölgesi simetrisi açısından değerlendirildi ve katılımcılara Pittsburgh Uyku Kalitesi İndeksi, Beck Depresyon Envanteri, Konstipasyon Yaşam Kalitesi Anketi Hasta Değerlendirmesi, Kadın Cinsel Fonksiyon İndeksi, Uluslararası Erektil Fonksiyon İndeksi uygulandı. Pelvis ve kalça ağrısını değerlendirmek üzere Posterior Pelvik Ağrı Provokasyon Testi, Gaenslen Testi, Trendelenburg Testi, FABER Testi, Piriformis Testi de kullanıldı.*

***Bulgular:*** *Dissinerjik defekasyon grubunda uyku kalitesi, depresyon ve yaşam kalitesi skorları daha düşüktü ($p<0.05$). Dissinerjik defekasyonlu erkeklerde cinsel disfonksiyon kontrol grubunda göre daha fazlaydı ($p<0.05$). Lomber bölge simetrisinin değerlendirilmesinde gruplar arasında anlamlı fark yoktu ($p>0.05$). Kalça fleksiyon, abdüksiyon, internal ve eksternal rotasyon hareketlerindeki asimetri oranı kontrol grubuna kıyasla dissinerjik defekasyon grubunda daha yüksekti ($p<0.05$). Trendelenburg testi harici ağrı provokasyon testleri dissinerjik defekasyon grubunda daha yüksek oranda pozitifti ($p<0.05$).*

***Sonuç:*** *Kas-iskelet sistemi disfonksiyonu dissinerjik defekasyonda yaygındır ve dissinerjik defekasyon uyku kalitesini, yaşam kalitesini, depresyonu ve cinsel işlevleri olumsuz etkilemektedir. Çalışmamız dissinerjik defekasyon tedavisinin multidisipliner bir yaklaşım gerektirdiğini göstermektedir.*

***Anahtar kelimeler:*** *Dissinerjik defekasyon, Pelvik taban, Kas-iskelet sistemi, Ağrı, Cinsel disfonksiyon*

## INTRODUCTION

Constipation is a gastrointestinal disorder that causes symptoms such as straining, hard stools, and abdominal discomfort. It is recognized as the most common syndrome among gastrointestinal disorder. Constipation can be classified into two main types: primary and secondary. Primary constipation is examined under four headings as slow colonic transit, obstructed defecation syndrome, the coexistence of slow colonic transit and obstructed defecation syndrome, and constipation with irritable bowel syndrome. Secondary constipation, on the other hand, is examined under two headings as constipation due to peripheral neurogenic causes and constipation seen without a neurogenic factor (Anaraki, 2017; Pannemans, Masuy, & Tack, 2020).

Primary constipation arises due to improper use of pelvic floor muscles or anatomical abnormalities. Obstructed defecation syndrome (ODS) accounts for one-third of all constipation-related disorders. It is characterized by excessive straining, feeling of incomplete defecation, and difficult and painful defecation and is defined as narrowing of the fecal outflow tract due to involuntary pelvic floor contractions or posterior compartment pelvic organ prolapse (Liu, 2011; Pannemans, Masuy, & Tack, 2020;). Dyssynergic defecation, which is a subtype of ODS is characterized with paradoxical contraction of external anal sphincter or puborectalis muscles (Liu, 2011).

It is stated that gastrointestinal and urogynecological disorders may cause pelvic pain. Pelvic pain emerges with pain in the lower abdomen, waist, and hips, mainly in the pelvis region. Chronic pelvic pain, on the other hand, is defined as pelvic pain that lasts longer than 3-6 months and is continuous or shows attacks. Chronic pelvic pain affects 25% of women and 10-16% of men. Due to the complex relationship between body systems, the etiology cannot be established in 61% of patients with chronic pelvic pain (Neville, 2012; Mieritz, 2016).

It has been reported in the literature that patients experiencing chronic pelvic pain have dysfunctions in the musculoskeletal system. The literature considers musculoskeletal dysfunctions as both cause and effect in chronic pelvic pain syndrome (Neville, 2012; Sanses, 2016). It has been reported that individuals experiencing chronic pelvic pain also have depression and deterioration in social roles, their quality of life decreases due to these factors, and that they also have worse sleep quality (Dunlap, Yu, Fisch, & Nolan, 1998; Neville, 2012; Gyang, Hartman, & Lamvu, 2013;).

Overactive pelvic floor muscles are defined by The Pelvic Floor Clinical Assessment Group of the International Continence Society as muscles which do not relax, or even contract, when relaxation is needed (Messelink, 2005). This definition suggests that patients with dyssynergic defecation have overactive pelvic floor muscles. Because of the close connections between the projections of the pelvic floor muscles in the brainstem, visceral pressure or pain in this area can induce the activity of the whole pelvic floor muscles and this can may explain why patients with dyssynergic defecation experience sexual dysfunction (Van Lunsen & Ramamers, 2002). No study examining sexual function in patients with dyssynergic defecation has been found in the literature.

Chronic pelvic pain is frequently seen in patients with endometriosis and painful bladder syndrome. In studies conducted with these patients, musculoskeletal dysfunctions were reported as 51%. The most common musculoskeletal problem is lumbar and pelvic region problems (Mieritz, 2016; Sanses, 2016). However, there is no study in the literature examining musculoskeletal disorders in patients with dyssynergic defecation. This study was conducted to examine musculoskeletal disorders in patients with dyssynergic defecation and compare the results with a control group of individuals without constipation.

## MATERIALS AND METHODS

### Research Type

This is a case-control study.

### Place and Time

This study was conducted between November 2021 and March 2022 at a private Physical Therapy and Medical Center.

### Study Population and Sample

The sample size was calculated on the G-Power 3.1 software package (Universitat Dusseldorf, Germany) (Faul, Erdfelder, Lang, & Butcher, 2007). A review of the literature indicated that there was no study on the comparison of the prevalence of musculoskeletal dysfunction in individuals with dyssynergic defecation with healthy controls. Therefore, the sample size was determined based on a study on the comparison of

musculoskeletal dysfunction in individuals with pelvic floor problems with healthy controls (Sedighimehr, Manshadi, Shokouhi, & Baghban, 2018). In the study, the prevalence of musculoskeletal dysfunction evaluated using Gaenslen's Test was reported as 62% in individuals with pelvic floor problems and 17% in controls. In our study, predicting that there would be similar rates in individuals with and without dyssynergic defecation, the sample size was calculated as 25 patients in each group, based on a confidence level of 95% and a power of 80%.

The study consisted of 25 patients who were aged 20-55 years and were diagnosed with dyssynergic defecation by a specialist physician and 25 healthy volunteers. Rome IV criteria were used to confirm that volunteer participants did not have constipation. Considering that involuntary pelvic floor muscle contractions associated with dyssynergic defecation would cause musculoskeletal dysfunction in neighboring regions, patients with chronic constipation who were classified as dyssynergic defecation were included in the case group. Exclusion criteria for the case group included having been diagnosed with a rheumatic, orthopedic, or neurological disease, receiving cancer treatment, being pregnant, or having received pelvic floor physiotherapy previously. The inclusion criterion for the healthy control group included not having any diagnosed rheumatic, orthopedic, or neurological disease. Individuals who agreed to participate in the study first read and then approved the informed consent form.

**Data Collection Tools**

All participants were evaluated for lumbar and hip symmetry and were applied sacroiliac joint and hip pain provocation tests and sleep quality, depression, quality of life, and sexual function scales. Rome IV criteria were used to confirm that healthy volunteers did not experience constipation.

***Rome IV Criteria for Functional Constipation:*** Patients who do not fulfill the criteria for Irritable Bowel Syndrome and who consume opiates are excluded from a diagnosis of functional constipation. The symptoms of functional constipation must include two or more of the following: (1) Straining more than 25% of defecations, (2) Lumpy or hard stools more than 25% of defecations, (3) Sensation of incomplete evacuation more than 25% of defecations, (4) Sensation of anorectal obstruction/blockage more than 25% of defecations, (5) Manual maneuvers to facilitate more than 25% of defecations, (6) Fewer than three spontaneous bowel movements per week. Symptoms must have started at least 6 months before diagnosis and criteria must fulfilled in the last 3 months (Pannemans, Masuy, & Tack, 2020).

***Lumbar Region and Hip Region Symmetry***: Lumbar flexion, lateral flexion, and rotation movements were evaluated bilaterally while the patient was standing. Hip flexion, extension, abduction, adduction, internal rotation, and external rotation movements were evaluated in the supine position. The test was considered positive if there was an asymmetry between the two sides (Van Dillen, 1998).

***Posterior Pelvic Pain Provocation Test***: This test was used to distinguish between pelvic girdle pain and low back pain. In the supine position, the hip was flexed to 90 degrees with the knee bent. One hand was placed under the sacrum to maintain a stable position, and downward pressure was applied along the femur with the other hand. The test was considered positive when the applied pressure caused sacroiliac joint pain. A positive test indicates pelvic girdle pain (Cook, 2007).

***Gaenslen's Test:*** Gaenslen's test was used to detect sacroiliac dysfunction. In the supine position, the patient hung over the edge of the bed with the hip in maximum hyperextension on one side, and the other hip and knee were passively flexed. Pain in the sacroiliac joint on the side hanging from the bed indicated a positive test (Vleeming, 2008).

***Trendelenburg Sign***: This test was employed to test the function of the symphysis pubis. The patient was asked to stand on one leg. Pain in the symphysis pubis showed a positive test (Roussel, 2007).

***FABER Test***: This test evaluates dysfunction in the hip and pelvic joints. In the supine position, the hip was placed in flexion, abduction, and external rotation position and placed on the knee on the other side, and downward pressure was applied over the knee. Pain during movement showed a positive test (Cook, 2007).

***Piriformis Test***: In the side lying position, the upper extremity of the patient was flexed, and the foot was placed behind the lower extremity, with the foot behind the knee. The patient was asked to abduct the hip while the foot of the upper extremity was fixed on the bed, and opposite-

direction resistance was applied. The test was considered positive when resistance applied resulted in pain. A positive test indicates a spasm of the piriformis muscle (Cook, 2007).

***Pittsburgh Sleep Quality Scale***: The scale consists of 24 questions. The first 18 are answered by the subject evaluated, and the last 6 are answered by the person with whom the subject lives. The score of the scale includes the first 18 questions. Each item is scored between 0 and 3 points. Total score ranges between 0 and 21, and scores over 5 indicate poor sleep quality (Buysse, 1989; Ağargün, 1997).

***Beck Depression Inventory***: This inventory is used to evaluate the symptoms of depression in the last week. It consists of 21 items in total, each item is scored between 0 and 3. Higher test scores indicate greater depression severity (Beck & Beamesderfer, 1974; Ulusoy, Şahin, & Erkmen, 1998).

***The Patient Assessment of Constipation Quality of Life Questionnaire***: This questionnaire consists of 28 items, each scored from 1 to 5. The total score is between 28 and 140. High scores on the scale indicate poor quality of life (Marquis, 2005; Dedeli, 2007).

***Sexual Function Measurement:*** The sexual functions of male and female participants were evaluated using separate scales for each gender. Sexual function scales were compared between the case and control groups separately by gender. The Female Sexual Function Index was used to evaluate female sexual functions. The scale includes 19 questions which are scored between 0-5 and evaluates sexual functions in the last 4 weeks. High score indicates worse sexual function (Rosen, Brown, & Heiman, 2000; Aygin, 2005). The International Index of Erectile Function was used to evaluate male sexual functions. The scale consists of 5 questions in total to evaluate sexual functions in the last 6 months. Each question is scored between 1 and 5. High scores indicate that sexual function is less affected (Rosen, 1999; Akkuş, 2002).

### Ethical Consideration

The study was approved by a government university non-invasive clinical research ethics committee (Date:03.01.2021 and Approval Number: 2021/354) and complied with the Declaration of Helsinki.

### Data Analysis

Data were analyzed on the SPSS 21.0 statistical software package. Numerical variables were presented as mean and standard deviation values and nominal variables as percentages. Normal distribution was evaluated using the Kolmogorov-Smirnov test for numerical variables, and the Independent Samples t-test was used for intergroup comparisons. The Chi-square test was used to make the intergroup comparison of nominal variables. A $P<0.05$ value was considered statistically significant for all tests.

## RESULTS

Demographic characteristics and subjective complaints of the case and control groups are given in Table 1. Sleep quality and constipation-related quality of life were found to be significantly lower in individuals with dyssynergic defecation than in healthy controls ($p<0.05$). The depression rate in the study group was higher than in the control group ($p<0.05$). While there was no significant difference between female participants in terms of sexual functions, they were found to be significantly lower in male participants ($p<0.05$). The duration of dyssynergic defecation was 4,32 ± 2,13 years in the study group.

**Table 1. Comparison of Demographic Characteristics and Subjective Complaints Between the Groups**

| | DD Group (n=25) | Healthy Controls (n=25) | p |
|---|---|---|---|
| **Age (year)** | 37.28 ± 2.11 | 36.12 ± 1.67 | 0.669 |
| **Female (n)** | 13 (%52) | 15 (%60) | 0.569 |
| **BMI (kg/m$^2$)** | 24.17 ± 0.63 | 23.02 ± 0.55 | 0.179 |
| **PSQS** | 11.24 ± 0.83 | 5.6 ± 0.74 | <0.001 |
| **BDI** | 24.76 ± 2.09 | 10.24 ± 1.28 | <0.001 |
| **CQoL** | 112.36 ± 2.55 | 35.76 ± 1.97 | <0.001 |
| **FSFI** | 19.55 ± 2.7 | 17.69 ± 2.01 | 0.581 |
| **IEFI** | 15.33 ± 2.06 | 24.40 ± 1.07 | <0.001 |

*DD: Dyssynergic Defecation; BMI: Body Mass Index, PSQS: Pittsburgh Sleep Quality Scale, BDI: Beck Depression Inventory, CQoL The Patient Assessment of Constipation Quality of Life Questionnaire, FSFI: Female Sexual Function Index, IEFI: The International Index of Erectile Function*

The evaluation of the lumbar region yielded no significant difference between the two groups in terms of symmetry in movements in all directions (Table 2).

In the evaluation of the hip region in individuals with dyssynergic defecation, prevelance of asymmetry in hip flexion, hip abduction, and hip internal and external rotation movements was higher than in the control group ($p<0.05$) (Table 3).

All pain provocation tests, except for the Trendelenburg test, were significantly more positive in individuals with dyssynergic defecation than in the control group ($p<0.05$) (Table 4).

**Table 2. Comparison of the Lumbar Region Evaluation Between Groups**

| | DD Group (n=25) | Healthy Controls (n=25) | p |
|---|---|---|---|
| **Lumbal lateral flexion test (n)** | | | |
| **Right (+)** | 2 (%8) | 0 (%0) | 0.149 |
| **Left (+)** | 0 (%0) | 0 (%0) | |
| **Lumbal rotation test (n)** | | | |
| **Right (+)** | 3 (%12) | 0 (%0) | 0.074 |
| **Left (+)** | 2 (%8) | 0 (%0) | 0.149 |
| **Lumbal flexion test + (n)** | 3 (%12) | 1 (%4) | 0.297 |
| **Lumbal extantion test + (n)** | 0 (%0) | 0 (%0) | |

**Table 3. Comparison of the Hip Region Evaluation Between Groups**

| | DD Group (n=25) | Healthy Controls (n=25) | p | Relative Risk [95% CI]* |
|---|---|---|---|---|
| **Hip flexion (n)** | | | | |
| **Right (+)** | 7 (%28) | 1 (%4) | 0.021 | 7.00 [0.92-52.80] |
| **Left (+)** | 8 (%32) | 1 (%4) | 0.010 | 8.00 [1.07-59.32] |
| **Hip extanstion (n)** | | | | |
| **Right (+)** | 0 (%0) | 0 (%0) | | |
| **Left (+)** | 0 (%0) | 0 (%0) | | |
| **Hip abduction (n)** | | | | |
| **Right (+)** | 9 (5%36) | 3 (%12) | 0.088 | |
| **Left (+)** | 10 (%40) | 3 (%12) | 0.024 | 3.33 [1.03-10.68] |
| **Hip adduction (n)** | | | | |
| **Right (+)** | 0 (%0) | 1 (%4) | 0.312 | |
| **Left (+)** | 0 (%0) | 1 (%4) | 0.312 | |
| **Hip internal rotation (n)** | | | | |
| **Right (+)** | 12 (%48) | 4 (%16) | 0.015 | 3.00 [1.11-8.04] |
| **Left (+)** | 14 (%56) | 3 (%12) | 0.001 | 4.66 [1.52-14.25] |
| **Hip external rotation (n)** | | | | |
| **Right (+)** | 7 (%28) | 3 (%12) | 0.157 | |
| **Left (+)** | 10 (%40) | 3 (%12) | 0.024 | 3.33 [1.03-10.68] |

**Relative risk was only calculated if there is a significant difference between case and controls.*

**Table 4. Comparison of the Pain Provocation Tests Between Groups**

| | DD Group (n=25) | Healthy Controls (n=25) | p | Relative Risk [95% CI]* |
|---|---|---|---|---|
| **Posterior pelvic pain provocation test (n)** | | | | |
| **Right (+)** | 8 (%32) | 3 (%12) | 0.088 | |
| **Left (+)** | 15 (%60) | 0 (%0) | <0.001 | 31.00 [1.95-491.38] |
| **Gaenslen's test (n)** | | | | |
| **Right (+)** | 16 (%64) | 3 (%12) | <0.001 | 5.33 [1.77-16.04] |
| **Left (+)** | 22 (%88) | 3 (%12) | <0.001 | 7.33 [2.51-21.4] |
| **Trendelenburg test (n)** | | | | |
| **Right (+)** | 2 (%8) | 1 (%4) | 0.552 | |
| **Left (+)** | 2 (%8) | 1 (%4) | 0.552 | |
| **FABER test (n)** | | | | |
| **Right (+)** | 23 (%92) | 14 (%56) | 0.004 | 1.64 [1.13-2.36] |
| **Left (+)** | 24 (%96) | 14 (%56) | 0.001 | 1.71 [1.2-2.44] |
| **Pırıformıs test (n)** | | | | |
| **Right (+)** | 14 (%56) | 3 (%56) | 0.001 | 4.66 [1.52-14.25] |
| **Left (+)** | 23 (%92) | 1 (%4) | <0.001 | 23.00 [3.35-157.49] |

*Relative risk was only calculated if there is a significant difference between case and controls.

## DISCUSSION

In this study, in which we examined the effects of dyssynergic defecation on the musculoskeletal system, no significant differences were found between the two groups in the evaluation of the lumbar region. In the hip region evaluation, movements such as hip flexion, hip abduction, and hip internal and external rotation were more limited in individuals with dyssynergic defecation compared to healthy individuals. It was observed that the frequency of pain was higher in individuals with dyssynergic defecation in pain provocation tests. At the same time, sleep quality, depression, and quality of life were more adversely affected in individuals with dyssynergic defecation than in controls. While there was no significant difference between female participants in terms of sexual functions, it was determined that the sexual functions of male individuals with dyssynergic defecation were affected more than those of healthy males.

Body parts are mechanically connected, and a disorder in any part of the body causes a disorder in other parts. Dyssynergic defecation occurs due to involuntary pelvic floor contractions (Liu, 2011; Pannemans, Masuy, & Tack, 2020). A systematic review has demonstrated the relationship between dyssynergic defecation and pelvic floor muscle dysfunction (Andiya, 2015). It was reported that dysfunctions of this region could be seen in dyssynergic defecation due to the close relationship of the pelvic floor muscles with the abdominal, pelvis, hip, and spine muscles (Gyang, Hartman, & Lamvu, 2013). Although the relationship between low back pain and bowel dysfunctions has been demonstrated, there are no studies on the investigation of musculoskeletal dysfunction in other regions (Schepper, 2013; Harris-Hayyes, 2019). In this context, our study provides novel findings.

There are studies in the literature on the examination of musculoskeletal dysfunction in individuals with chronic pelvic pain. These studies have shown that individuals with chronic pelvic pain have more dysfunction in the hip, sacroiliac joint, posture, and pelvic floor muscles than healthy individuals (Neville, 2012; Sedighimehr, Manshadi, Shokouhi, & Baghban, 2018; Elbesh, 2022). There is limited research into the examination of the effects of specific diseases that cause chronic pelvic pain on the musculoskeletal system. In one study, the musculoskeletal system of patients diagnosed with endometriosis was examined, and it was reported that musculoskeletal dysfunction was 51%. Especially sacroiliac joint dysfunction was found to be common (Neville, 2012). Our study yielded results similar to those of this study. The results of our study showed that hip and sacroiliac joint dysfunctions were common in individuals with dyssynergic defecation, but there was no dysfunction in the lumbar region. In the treatment of chronic pelvic pain, it is recommended to evaluate patients' musculoskeletal system functions before medical or surgical treatment is planned and treat the detected disorders before medical and surgical treatment is initiated. It is

thought that the result of treatment in patients who are planned to be treated in this way may be more effective and that even surgical intervention may not be needed (Sanses, 2016). Similarly, it can be thought that treatment of hip and sacroiliac joint dysfunctions in individuals with dyssynergic defecation may be useful in terms of constipation status.

When the results of hip and sacroiliac joint provocation tests were examined, it was seen that the rates of positive tests were higher on the left side of the cases. Considering the anatomical location of the bowels, it is known that the rectum has a close relationship with the left hip and sacroiliac joint (Marecik, Park, & Prasad, 2017). Since individuals with dyssynergic defecation cannot fully evacuate, it can be thought that there will be more pressure in this region than on the right side. Higher results on the hip and sacroiliac joint provocation tests on the left side might have been due to these reasons. On the other hand, only the Trendelenburg test among the provocation tests did not produce a difference between the case and control groups. The Trendelenburg test tests for dysfunction of the symphysis pubis. In the literature, it is generally thought that disorders in structures located in the anterior compartment, such as the bladder and uterus, are associated with symphysis pubis dysfunction (Biasi, Di Sabatino, Ghizzani, & Galeazzi, 2014). The fact that the rectum is located in the posterior compartment may explain why the Trendelenburg test was not positive in patients with dyssynergic defecation.

Studies have not been able to reach a decisive result about whether musculoskeletal system dysfunction causes problems in visceral organs or whether visceral problems cause musculoskeletal dysfunction. This mutual interaction has been explained by two mechanisms. It has been suggested that compensation may develop also in other regions to balance the muscular imbalance that occurs in musculoskeletal dysfunctions. In addition, it is thought that the malalignment in the body could affect the location of the organs, causing circulatory disorders in the organs and following dysfunctions. The other mechanism is that the disorder in the visceral organs may cause musculoskeletal disorders by affecting the circulation of neighboring regions (Mieritz, 2016). Therefore, we hypothesized that the frequency of musculoskeletal dysfunction may be higher in individuals with dyssynergic defecation than in healthy individuals. According to the results of our study, sacroiliac and hip joint dysfunctions were more common in these patients, which supported our initial hypothesis.

In our study, sexual functions were evaluated separately for the male and female genders. While there was no difference between female participants in terms of sexual function, it was found to be significantly lower in male participants with dyssynergic defecation. Lack of a difference between women with dyssynergic defecation and those without constipation may be explained by the fact that sexual dysfunction is already common in women regardless of diseases (Çayan, 2004; Kılıç, 2019). Studies have reported that advanced age, low education level, presence of chronic diseases, multiple births, and sociodemographic status are risk factors for sexual dysfunction (Hsu, Lin & Kao, 2015; Oztora, Nayir, Caylan, & Dagdeviren, 2016; Kılıç, 2019). However, interestingly, constipation is not among the chronic diseases questioned in sexual dysfunction screenings. Our study indicated that while dyssynergic defecation did not cause an increase in the risk of sexual dysfunction in women, it caused an increased risk in men, and we think our study contributes to the literature in this respect. In studies examining the relationship between bowel problems and sexual dysfunction in the literature, it has been reported that Irritable Bowel Syndrome causes 2.12 times more organic erectile dysfunction and 2.38 times more psychogenic erectile dysfunction in men (Hsu, Lin, & Kao, 2015). In one study, it was reported that erectile dysfunction was 60.5% in men with constipation and 48.3% in those without constipation (Gwee, 2012). Our results are also consistent with these findings in the literature. In light of our findings, we may say that it is important to evaluate sexual functions in individuals with constipation problems, especially in men.

In the literature, it is reported that individuals with gastrointestinal disorders have impairment in several aspects of their lives including depression, anxiety, sleep disorders, and health-related quality of life. (Belsey, Greenfield, Candy, & Geraint, 2010; Zhao, 2011; Hosseinzadeh, Poorsaadati, Radkani, & Forootan, 2011; Bouchoucha, 2021; Yamamoto, 2021). In our study, it was found that individuals with dyssynergic defecation had significantly worse depression, sleep quality, and quality of life than healthy individuals, in line with the literature. In a systematic review, it was reported that the quality of life was worse in individuals with constipation and that the main

reason for this included psychological and physical components (Belsey, Greenfield, Candy, & Geraint, 2010). In parallel with this study, another study reported that psychological disorders often accompanied the disease in individuals with gastrointestinal complaints. It was found that anxiety was common in individuals with chronic diarrhea and that depression was prevalent in individuals with chronic constipation. In addition, it was reported that there might be a two-way relationship between gastrointestinal problems and psychological disorders (Ballou, 2019).

Not surprisingly, the quality of life of individuals with dyssynergic defecation was also found to be significantly worse than that of healthy controls in our study. On the other hand, the prevalence of musculoskeletal disorders in these individuals was also found to be quite high in our study. It is known that musculoskeletal disorders are associated with poorer quality of life (Roux, 2005). Therefore, the deterioration in the quality of life of the patients may not be due to constipation alone, but rather musculoskeletal disorders or depression may also be contributing to this situation. Nonetheless, it should be assumed that the quality of life of individuals with dyssynergic defecation will be severely affected.

Serious sleep disorders in these patients are also reported in the literature. Depression, anxiety, and pain have been reported as causes of sleep disorders (Yamamoto, 2021). Similarly, in our study, the sleep quality of individuals with dyssynergic defecation was found to be significantly worse than that of healthy controls. Considering all these, it is obvious that dyssynergic defecation causes many different complaints. Therefore, the management of dyssynergic defecation requires a multidisciplinary approach.

### Limitations of the Research

We used clinical tests that are well recognized in the literature to evaluate musculoskeletal problems in our study; however, more precise information about these problems can be obtained with radiological imaging methods. Such approaches may help better explaining the mechanisms of musculoskeletal involvement in individuals with dyssynergic defecation.

## CONCLUSION

In conclusion, we found that musculoskeletal dysfunction is common in individuals with dyssynergic defecation. In addition, it was determined that sleep disorders, depression, quality of life, and sexual functions were negatively affected by dyssynergic defecation. Our study showed that the treatment of dyssynergic defecation requires a multidisciplinary approach. Manual therapy and exercise approaches that will be applied in addition to pelvic floor physiotherapy in patients with DD can make an additional contribution to the recovery of patients.

**Ethics Committe Approval**

Ethics committee approval was received for this study from the İzmir Bakırçay University Clinical Research Ethics Committee (Date: 03.11.2021, and Approval Number: 374).

**Author Contributions**

Idea/Concept: N.B., M.Z.; Design: N.B.; Supervision/Consulting: M.Z.; Analysis and/or Interpretation: M.Z.; Literature Search: N.B..; Writing the Article: N.B..; Critical Review: M.Z.

**Peer-review**

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**Conflict of Interest**

The authors have no conflict of interest to declare.

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