

# Effects of psychological factors on the clinical outcomes of fifth metacarpal neck fractures and relation to injury aetiology

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## ABSTRACT

**BACKGROUND:** Fifth metacarpal neck fracture injuries are common cases in emergency clinic patients. Trauma mechanism in these types of injuries to be different and appears intentional in some cases. Psychological factors play important roles in treatment and rehabilitation as well as in the aetiology of metacarpal neck fractures. However, no research has yet compared the clinical outcomes of patients with fifth metacarpal neck fractures caused by intentional injuries with those of patients with such fractures caused by unintentional injuries. Our goal is to investigate the relationships among the mechanism of injury, socioeconomic status, and clinical outcomes of patients with fifth metacarpal neck fractures.

**METHODS:** The study included 59 patients with fifth metacarpal neck fractures. The patients were separated into two groups. Group 1 consisted of patients with intentional injuries, and group 2 consisted of patients with unintentional injuries. Both groups were evaluated in terms of anger analysis, impulsivity and level of anxiety in relation to somatic findings VAS and QDASH. In addition, the relationship between anger, impulsivity and anxiety scores with socioeconomic status and educational level was assessed.

**RESULTS:** It was seen that the anger and impulsivity values of group 2 patients were lower than the group 1 and the decrease in group 2 was correlated with the VAS and Q-DASH values. Group 1 barrat impulsivity score 61,5 (42-78), anxiety score 64 (55-77), state anger score 20 (16-30) and group 2 barrat impulsivity score 61 (55-69), anxiety score 66 (58-72), anger score 19 (14-26) were found as mean values. Impulsivity score and anger score were found lower in group 2 in low educational level. The number of patients with low income was found to be high in both groups and impulsivity score and anger score were higher in group 1 and anxiety score was higher in group 2.

**CONCLUSION:** Sociodemographic factors and the etiology of intentional injuries could not be detected but psychological factors play roles in the clinical sequelae of intentional fifth metacarpal fractures, the effects thereof on hand function, and the pain course after treatment.

**Keywords:** Aetiology; emergency; fifth metacarp; intentional injuries; pain.

## INTRODUCTION

Hand injuries are common causes of visits to emergency

rooms or outpatient clinics. Upper-extremity fractures constitute 30–40% of all fractures, and 10% of hand fractures are metacarpal or phalangeal fractures, most commonly fifth

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metacarpal neck fractures.<sup>[1-3]</sup> Such fractures are caused by direct or indirect trauma. The common mechanisms of injury are falls, house accidents, and work accidents, but about 13% develop after punching hard surfaces.<sup>[4,5]</sup> Self-inflicted injuries are often observed in patients who abuse alcohol or drugs and who suffer from major depression or psychotic or personality disorders.<sup>[6]</sup> The trauma causing hand injury may have been intentional in the sense that the patient wished to harm him/herself or exhibit aggression toward another person. Some variables in hand injured individuals have somatic effect on the clinical process and outcomes. Although hand injuries are not life-threatening, they compromise daily activities and cause prolonged lost work days.<sup>[5,7,8]</sup>

Psychological factors play important roles in treatment and rehabilitation as well as in the aetiology of injury. Several studies have shown that severe anxiety, catastrophic thinking, pain, and exaggerated reactions are associated with persistent pain and disability after treatment. In this respect, it is suggested that intentional injuries treatment results may change depending on these factors.<sup>[9-13]</sup> However, no research has yet compared the clinical outcomes of patients with fifth metacarpal neck fractures caused by intentional injuries with those of patients with such fractures caused by unintentional injuries.

### Purpose of the Study

Aim of this study is to investigate the relationships among the mechanism of injury, socioeconomic status, and clinical outcomes of patients with fifth metacarpal neck fractures.

### MATERIALS AND METHODS

We examined 107 patients with fifth metacarpal neck fractures treated between January 2014 and January 2016. All patients were treated via closed reduction and cast splinting. Patients with intra-articular fractures, comminuted fractures, open fractures, and/or tendon injuries and those who missed outpatient appointments and/or did not comply with treatment instructions were excluded. Finally, 59 patients with intentional or unintentionally fifth metacarp neck fracture were included in the study.

All patients provided written informed consent for study participation. The study was approved by local ethic committee. The patients were separated into two groups. Group 1 consisted of patients with intentional injuries, and group 2 consisted of patients with unintentional injuries.

Psychological evaluations were performed by physicians using the Spielberg State-Trait Anger Scale (SSTAS), the State-Trait Anxiety Scale (STAI), and the Barratt Impulsiveness Scale (BIS-11).<sup>[14-16]</sup> Sociodemographic variables were also evaluated. The final clinical outcomes were assessed using a Visual Analog Scale (VAS) for pain and the work and sports/performing arts modules of the Disabilities of the Arm, Shoulder, and Hand (Q-DASH) questionnaire.

Patients were seen in the outpatient clinic or contacted by telephone (Fig. 1).

### Psychological Evaluation Scales

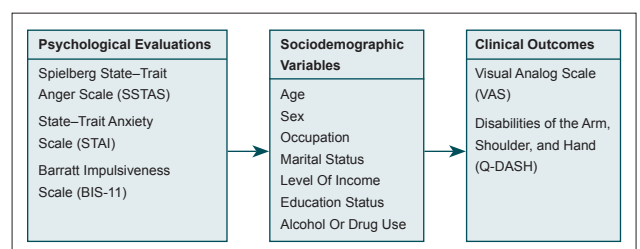
The SSTAS, which is appropriate for both adolescents and adults, is a 34-item self-report measure that evaluates state anger (SSTAS-SA), trait anger (SSTAS-TA), anger inside (SSTAS-AI), anger outside (SSTAS-AO), and anger control (SSTAS-AC) using various subscales. The 10 primary questions evaluate trait anger, and the remaining 24 address the characteristics of anger (anger inside, anger outside, and anger control). High scores on the trait anger subscale reflect greater anger; high scores on the anger control subscale reflect more anger control; high scores on the anger-outside subscale reflect that anger tends to be directed outward; and high scores on the anger-inside subscale reflect that anger tends to be directed inward.

The STAI features two different scales, one measuring state anxiety (form 1) and the other measuring trait anxiety (form 2); each includes 20 items. In this study, we used the Turkish translations of the original X forms of the STAI (STAI TX-1 and 2). The state anxiety scale explores how an individual feels at certain times and in specific situations, whereas the trait anxiety scale determines how that person feels in the absence of any particular situation or set of circumstances. All study participants completed the STAI TX-1 questionnaire to assess state anxiety and the STAI TX-2 questionnaire to assess trait anxiety. The responsible researcher marked statements that best corresponded to the answers given by the participants in terms of the level of anxiety. After the questionnaire was administered, the scores were manually summed to calculate individual STAI scores. The validity and reliability of the Turkish form of the STAI were confirmed by Oner and Le Compte.<sup>[17]</sup>

The BIS-11, which is a widely used measure of impulsiveness, includes 30 items addressing six first-order factors (attention, motor behaviour self-control, cognitive complexity, perseverance, and cognitive instability/impulsiveness) and three second-order factors (attentional, motor, and non-planning impulsiveness).

### Clinical Evaluation Somatic Data Scores

Sociodemographic information on all patients was collected



**Figure 1.** Patients evaluation diagram with psychological, sociodemographic variables and clinical outcome schemas.

SOCIO-DEMOGRAPHIC QUESTIONNAIRE	
AGE:	
SEX:	
OCCUPATION:	
MARITAL STATUS:	MARRIED                      SINGLE
EDUCATION LEVEL:	LOW EDUCATIONAL LEVEL (LESS THEN MIDDLE SCHOOL) HIGH EDUCATION LEVEL (LESS THEN UNIVERSITY) UNIVERSITY AND POSTGRADUATE LEVEL
LEVEL OF INCOME:	LOW (LOWER OR MINIMUM WAGE) MEDIUM (MONTHLY INCOME IS BETWEEN TWO AND FIVE TIMES RATHER WAGE) HIGH (MONTHLY INCOME IS OVER FIVE TIMES RATHER WAGE)
MECHANISM OF INJURY (HOW DID IT HAPPEN?)	
CAUSE OF TRAUMA (WHY DID YOU HIT?)	
DID YOU USE ANY DRUGS OR TAKE ALCOHOL BEFORE INJURY?	
IS THIS THE FIRST TIME YOU BROKE YOUR BONE?	
HAVE YOU EVER TAKEN ANY PSYCHIATRIC TREATMENT BEFORE?	
DO YOU THINK THAT YOU NEED A PSYCHIATRIC TREATMENT?	

Figure 2. Sociodemographic information scheme.

using a sociodemographic evaluation scheme (Fig. 2). Final clinical evaluations were performed in terms of the VAS and Q-DASH scores. Pain severity was assessed with a visual analogue scale (VAS). Patients rated the intensity of pain on a form “no pain” to “maximal, worst pain imaginable.” The VAS score is the pain level to the mark made by the patient.

The quick arm-shoulder-hand disability questionnaire (Q-DASH) is a questionnaire that measures physical function and symptoms in patients with upper extremity problems and Turkish validity and reliability were confirmed.<sup>[18–20]</sup>

### Statistical Analysis

Statistical analyses were performed using MedCalc Statistical Software version 12.7.7 (MedCalc Software bvba, Ostend, Belgium; <http://www.medcalc.org>; 2013). The normality of continuous variables was determined using the Shapiro–Wilk test. Descriptive statistics are presented as means and standard deviations for normally distributed variables and as medians (with minima–maxima) for non-normally distributed variables. Student’s t-test was used to compare normally distributed parameters. Non-parametric statistical methods were used to compare values with skewed distributions. The Mann–Whitney U-test was employed to compare non-normally distributed values. To compare several non-normally distributed values, the Kruskal–Wallis test was employed. The correlations between continuous and normally distributed parameters were determined by calculating Pearson correlation coefficients. The correlations between continuous and non-normally distributed parameters were analysed by calculating Spearman’s rho correlation coefficients. Statistical significance was associated with a two-sided p value less than 0.05.

## RESULTS

We enrolled 51 (86.4%) males and 8 (13.6%) females with a mean age of 26.6±9.6 (14–57) years; the mean follow-up time was 18±5 months. The demographic characteristics of the sample are presented in (Table 1).

The first group included 28 (47.5%) patients, and the second group included 31 (52.5%) patients. Fifty-six (94.9%) patients had experienced first fractures. No patient had any history of a psychiatric disorder, and no patient believed that he/she needed psychiatric assistance.

Both groups were evaluated in terms of anger analysis, impulsivity and level of anxiety in relation to somatic findings VAS and QDASH. It was seen that the anger and impulsivity values of group 2 patients were lower than the group 1 and the decrease in group 2 was correlated with the VAS and Q-DASH values. Anxiety score was higher in group 2 (Table 2).

Both groups anger subscores evaluated in terms of VAS and QDASH score correlation. Group 2 anger state p value less than 0.05 negative correlation -score decrease- between the SSTAS-AO and VAS scores. No any correlation between the anger state subscores and Q-DASH scores in both groups (Table 3). (Spearman correlation [p]=0.026).

Group 1 barrat impulsivity score 61,5 (42–78) and group 2 barrat impulsivity score 61 (55–69) were found as mean values. Medium-level negative spearman correlation p=0.034 between the BIS-II and VAS scores and the Q-DASH scores in Group 2. No negative correlation was observed between the VAS and Q-DASH scores in group 1 (Table 4).

**Table 1.** Demographic characteristics of the samples

	Group 1		Group 2	
	n	%	n	%
Gender				
Male	27	45	24	40
Female	1	1.6	7	11
Marital status				
Single, divorced or widow	19	32	15	25
Married	9	15	16	27
Educational status				
Nil or primary	10	16	6	10
Secondary	13	22	20	33
University and postgraduate level	5	8.4	5	8.4
Level of Income				
Low (min. wage)	7	11	8	13
Middle*	21	35	22	37
High**	0	0	1	1.6

**Table 2.** Associations of anger analysis, impulsivity and level of anxiety in relation to VAS and QDASH scores

	Group 1	Group 2
	Mean±SD Median (min–max)	Mean±SD Median (min–max)
STAI TX-1	68.4±6.2 69.5 (53–79)	70.3±2.9 70 (64–76)
STAI TX-2	58.7±7.9 59 (39–74)	61.8±3.6 62 (56–70)
Average Anxiety Score	63.7±5.6 64 (55–77)	65.7±3.1 66 (58–72)
Barratt Impulsiveness Score	61.8±8.8 61.5 (42–78)	61.6±3.8 61 (55–69)
SSTAS-Trait Anger	20.3±7.0 18 (10–40)	19.4±3.9 20 (10–26)
SSTAS-State Anger	20.8±3.6 20 (16–30)	19.2±2.6 19 (14–26)
SSTAS-Anger Inside	13.7±2.9 14 (8–19)	14.1±2.4 14 (10–18)
SSTAS-Anger Outside	13.9±3.8 14 (9–23)	13.1±2.1 13 (9–16)
SSTAS-Anger Control	21.6±5.6 21.5 (12–32)	19.2±4.1 20 (12–32)
VAS	4.7±1.4 5 (2–7)	2.7±1.0 3 (1–5)
Q-DASH	10.6±3.3 11 (5–18)	6.9±1.6 7 (4–10)

VAS: Visual Analog Scale; Q-DASH: Quick arm-shoulder-hand disability questionnaire; SSTAS: Spielberg State–Trait Anger Scale; STAI: State–Trait Anxiety Scale; SD: Standard deviation.

Group 1 mean anxiety score 64 (55–77); group 2 mean anxiety score 66 (58–72) and moderate statistical correlation between anxiety subscores and VAS score in group 2 (Spearman correlation,  $p=0.002$ ). In group 2, both anxiety subscores were found higher than group 1 and moderately significant correlations among the Q-DASH, state anxiety, and trait anxiety subscores. (Pearson correlation  $p$  value  $<0.05$ ) Group 1 had higher VAS scores. (Mann–Whitney U-test  $p<0.001$ ; Table 5).

The educational level compared with both groups it was observed that low educational level patients impulsivity [group 1=64.1±5.6 and group 2=60.5±3.5] and anger values [Group 1=24±4.8 and group 2=18.8±5.3] in group 1 were higher than in group 2 though University and postgraduate education level patients anxiety value [Group 1=58.6±1.7 and group 2=66.2±3.5] higher group 2 than group 1. The University and postgraduate education level the STAI score in Group 1 ( $p<0.05$ ).

**Table 3.** Association of anger subscores with VAS and Q-DASH scores

r; p		VAS	Q-DASH
Group 1	(SSTAS-SA)	-0.185; 0.347	-0.185; 0.345
	(SSTAS-TA)	-0.136; 0.491	-0.254; 0.193
	(SSTAS-AI)	-0.125; 0.526	-0.198; 0.313
	(SSTAS-AO)	-0.242; 0.215	-0.301; 0.119
	(SSTAS-AC)	0.020; 0.919	0.079; 0.690
Group 2	(SSTAS-SA)	0.000; 0.998	-0.182; 0.328
	(SSTAS-TA)	-0.399; 0.026	-0.319; 0.081
	(SSTAS-AI)	-0.042; 0.821	-0.136; 0.466
	(SSTAS-AO)	-0.010; 0.959	-0.153; 0.410
	(SSTAS-AC)	-0.441; 0.013	-0.213; 0.250

VAS: Visual Analog Scale; Q-DASH: Quick arm-shoulder-hand disability questionnaire; SSTAS: Spielberg State–Trait Anger Scale; SA: State anger; TA: Trait anger; AI: Anger inside; AO: Anger outside; AC: Anger control.

**Table 4.** Associations of Barratt Impulsiveness Scale scores with VAS and Q-DASH scores

r; p		VAS	Q-DASH
Group 1	Barratt Impulsiveness	-0.163; 0.407	-0.083; 0.673
Group 2	Barratt Impulsiveness	-0.381; 0.034	-0.305; 0.095

VAS: Visual Analog Scale; Q-DASH: Quick arm-shoulder-hand disability questionnaire.

**Table 5.** Associations of anxiety and VAS and Q-DASH scores

r; p		VAS	Q-DASH
Group 1	STAI TX-1	-0.135; 0.494	-0.131; 0.507
	STAI TX-2	0.009; 0.962	-0.064; 0.747
	Average anxiety score	-0.002; 0.992	-0.107; 0.589
Group 2	STAI TX-1	-0.292; 0.111	-0.384; 0.033
	STAI TX-2	-0.525; 0.002	-0.467; 0.008
	Average anxiety score	-0.347; 0.056	-0.329; 0.071

VAS: Visual Analog Scale; Q-DASH: Quick arm-shoulder-hand disability questionnaire. STAI: State–Trait Anxiety Scale.

Post hoc comparisons revealed significant difference between those whose formal education ended with high school and those who had attended university (Mann–Whitney U-test;  $p<0.016$  after Bonferroni correction). SSTAS scores according to educational level in Group 1 had significant difference (Kruskal–Wallis  $p<0.05$ ). Specifically, low education was associated with increased impulsivity scores and higher scores on all subscales of the SSTAS scale (Table 6).

**Table 6.** Distribution of education level over Anxiety, Impulsiveness and Angre score

		High Education Level	Low Education Level	Univ. Post-Graduate Level	p
		Mean±SD Median (min-max)	Mean±SD Median (min-max)	Mean±SD Median (min-max)	
Group 1	Average Anxiety Score	64.2±6.4; 64 (55-77)	65.5±4.4; 67 (57-71)	58.6±1.7; 59 (56-60)	0.050
	Barratt Impulsiveness Score	60.8±10.8; 61 (42-78)	64.1±5.6; 63 (56-74)	60±9.1; 60 (49-70)	0.532
	SSTAS-State Anger	18.8±7.9; 17 (10-40)	24±4.8; 24.5 (16-31)	16.8±6.4; 15 (10-27)	0.037
Group 2	Average Anxiety Score	66.3±2.7; 66 (63-72)	63.3±3.7; 63.5 (58-68)	66.2±3.5; 68 (61-68)	0.200
	Barratt Impulsiveness Score	61.5±3.9; 61 (55-69)	60.5±3.5; 61.5 (55-64)	63.5±3.3; 62.5 (61-68)	0.473
	SSTAS-State Anger	19.6±3.9; 20 (10-26)	18.8±5.3; 18 (12-26)	19.5±1.9; 19 (18-22)	0.846

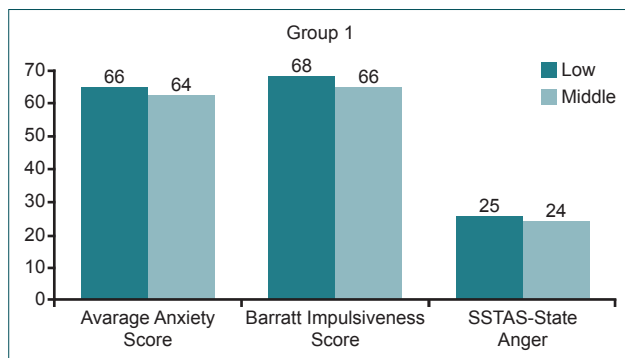
SSTAS: Spielberg State-Trait Anger Scale;

Gender studies have not been evaluated because the number of intentional patients is low in the female orientation.

The number of middle-income patients in both groups was high, and in these patients, impulsivity [group 1=66.4±5.8 and group 2=61.6±3.8] and anger levels were high [group 1=24.9±8.7 and group 2=20.05±3.0] and anxiety levels [group 1=63.05±5.2 and group 2=65.4±3.2] were found to be minimal among the groups (Fig. 3).

### DISCUSSION

Fifth metacarpal neck fracture is a common type of hand fracture, and it occurs primarily in young, active individuals.<sup>[2,21]</sup> Alcohol and drug abuse are very common in such patients.<sup>[4]</sup> In the present study, most patients were male, young, active workers, and middle school or high school graduates. Consistent with previous studies, patients in Group 1 were predominantly single males whose injuries were result of punching glass. The most common context of this behaviour was an argument or a fight, but no alcohol or drug abuse was observed in any patient. Fifty-five percent of patients diagnosed with fifth metacarpal neck fractures discontinued follow-up treatment after psychiatric evaluations were completed; the dropout rate was higher in Group 1.



**Figure 3.** Distribution of income situation over Anxiety, Impulsiveness and Angre score.

Pain and deformity were the major complaints of patients during follow-up visits. Chronic pain is pain that persists even when the biophysiological pathology is totally or partially resolved.<sup>[12,22]</sup> Recent studies support the use of a biopsychological approach (thereby supporting patients psychologically), finding that patients with upper extremity injuries did not receive adequate treatment.<sup>[23-25]</sup> Psychological factors were found to affect pain intensity and loss of range of motion in those with chronic pain. Predisposing factors were depression, various emotional conditions, extreme pain anxiety, and exaggeration caused by negative pain perception, and disturbing thoughts concerning the illness.<sup>[26-28]</sup> Sönmez et al. investigated 36 patients who developed hand injuries after punching glass and found that such patients were under greater psychological stress and had higher anger scores than the control group.<sup>[24]</sup> Another study showed that patients with boxer's fractures had higher anxiety levels, scored higher on anger subscales, and (mostly) exhibited maladaptive personality behaviours and anxiety symptoms; psychiatric evaluations should have been performed during the treatment of such patients.<sup>[29]</sup> We found a negative correlation between the VAS score (which measures chronic pain) and state anger and impulsiveness (which are related to intentional injuries) in Group 2. These were not related to the Q-DASH scores, which indicated that psychological factors affecting pain were less important. Pain was more significant in Group 1, but it was not associated with loss of range of motion.

Several studies have shown that higher anxiety levels are associated with chronic pain and loss of range of motion.<sup>[30-33]</sup> Ross et al. found that psychological stress and depression affected pain, but anxiety state did not affect either pain or range of motion in the early period of healing (28 days).<sup>[30]</sup> We suggest that biophysiological factors are primarily responsible for pain experienced in the first 28 days. Our analysis of the consistency of anxiety, as revealed by the VAS and Q-DASH, showed that that both trait anxiety and VAS scores were consistently (and negatively) significantly related to anxiety in Group 2. Also, we found statistically significant medium-level

negative correlations between the Q-DASH and the state and trait anxiety scores; thus, the level of anxiety affected both pain and the range of motion.

Although our patient numbers were reasonable, a larger sample size might have revealed more statistically significant differences. We had fewer patients with intentional than with unintentional injuries. Although we used a VAS and the Q-DASH to evaluate clinical outcomes, we did not compare the findings of physical examinations or the radiological results.

Intentional injuries may reveal an outward expression of anger and impulsive reactions to stimuli. We found no evidence that such attitudes were related to educational level. We found significant differences in trait anger and trait anxiety in Group I according to educational level. However, we did not find that educational level affected clinical outcome. A previous study found that patients with complex regional pain syndromes and those who underwent traumatic amputations were more likely than a control group to develop psychiatric disorders.<sup>[23,34]</sup> Psychiatric evaluation and support were suggested for such patients to improve their clinical outcomes and encourage them to accept treatment. We suggest that our study may guide future research along these lines.

## Conclusion

Psychological factors, such as anger, impulsiveness, and anxiety, play roles in the clinical sequelae of intentional fifth metacarpal fractures, the effects thereof on hand function, and the pain course after treatment.

Conflict of interest: None declared.

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## ORJİNAL ÇALIŞMA - ÖZET

### Psikolojik faktörlerin beşinci metacarpal boyun kırıklarının klinik sonuçları üzerine etkileri ve yaralanma etiyojisi ile ilişkisi

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**AMAÇ:** Acil kliniğe başvuran hastalar arasında 5. metakarp boyun kırığına bağlı yaralanmalar yaygındır. Travma mekanizması çeşitli tiplerde olabildiği gibi bazı durumlarda istemli yaralanmalar görülebilmektedir. 5. Metakarpal boyun kırık yaralanmaları etiyojije bağlı olarak tedavi ve rehabilitasyon aşamalarında psikolojik faktörlerin önemli rolü olabilmektedir. Bu aşamada istemli veya istemsiz olarak meydana gelen yaralanmalarının sonuçlarının karşılaştırıldığı bir araştırma yapılmamıştır. Bu çalışmada yaralanma mekanizmaları arasındaki sosyoekonomik düzey, eğitim seviyesi ve klinik sonuçlar arasındaki ilişkiyi incelemeyi amaçladık.

**GEREÇ VE YÖNTEM:** Metakarp boyun kırıklı 59 hastayı kapsamaktadır. Hastalar iki ayrı grup olarak değerlendirildi. Grup 1 istemli yaralanmalı hastalar ve grup 2 istemsiz yaralanmalı hastalar ile oluşturuldu. Her iki grup öfke analizi, dürtüsel düzey ve anksiyete düzeylerinin somatik bulgular VAS ve Q-DASH skorları ile olan ilişkisi açısından değerlendirildi. Ayrıca öfke, dürtüsellik ve anksiyete düzeylerinin sosyoekonomik ve eğitim seviyesi ile olan ilişkisi değerlendirildi.

**BULGULAR:** Grup 2 hastalarda öfke ve dürtüsellik değerleri grup 1'e göre daha düşük olduğu ve grup 2'deki bu düşük değerlerin VAS ve Q-DASH skorundaki düşüşle paralel olduğu görüldü. Grup 1 hastalarda barrat dürtüsellik skor 61.5 (42-78), anksiyete skor 64 (55-77), öfke skoru 20 (16-30) ve grup 2'de barrat dürtüsellik skor 61 (55-69), anksiyete skor 66 (58-72), öfke skoru 19 (14-26) ortalama değer olarak bulundu. Eğitim düzeyi düşük olan hastalarda dürtüsellik skor değerleri ve öfke skor değerleri grup 2'de düşük bulunmuştur. Düşük gelire sahip hasta sayısı her iki grupta yüksek olarak bulunmuş ve bu hastalarda dürtüsellik skor değeri, öfke skor değeri grup 1'de yüksek, anksiyete skor değeri grup 2'de yüksek olarak bulunmuştur.

**TARTIŞMA:** Sosyodemografik faktörlerin ve etiyojinin istemli yaralanma oluşmasında psikolojik faktörler açısından etkinliği saptanamamış, ancak istemli beşinci metakarp boyun kırıklarının klinik olarak el fonksiyonları üzerindeki etkileri ve tedavi sonrası ağrı seviyesinde etkili rol oynadığı görülmüştür.

**Anahtar sözcükler:** Acil; Ağrı; beşinci metakarp; etiyojisi; istemli yaralanma.

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