

Evaluation of the Depression Status of Syrian Refugee Amputees Living in Turkey

Türkiye’de Yaşayan Suriyeli Mülteci Amputelerin Depresyon Durumunun Değerlendirilmesi

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ABSTRACT Objective: To investigate the depression status of Syrian refugee amputees living in Turkey using the Beck Depression Inventory-II (BDI-II). **Material and Methods:** The study was conducted in 93 (82 male, 11 female) Syrian refugee amputees with an average age of 35.22±13.56 years. Socio-demographic and descriptive data of the participants such as cause/level of amputation, duration of prosthesis uses, marital status, education level, job status, and phantom pain were also collected. Participants were asked to complete the self-report BDI-II. Kruskal Wallis Test was used for multiple comparisons, Independent t test and Mann-Whitney U Test was used for binary comparisons. **Results:** It was observed that 67.7% of the patients had a Beck Depression Inventory Score (BDIS) indicating minimal depression, 25.8% had mild-moderate depression, and 6.5% had severe depression. The mean BDIS of the female amputees was found to be statistically higher than that of the male amputees (p:0.039). When the etiology of amputation was compared, it was observed that the diabetes/chronic disease group had a significantly higher average BDIS than that of the others (p:0.045). **Conclusion:** Patients, though as refugee, live in Turkey in relatively better conditions and have been receiving adequate medical support, both of which may be mitigating factors reducing the psychological pressure. Factors such as the large and inclusive Syrian family structure and solidarity among refugees are also considered to be effective in reducing their BDIS.

Keywords: Amputee; Beck; depression; refugee

ÖZET Amaç: Bu çalışmanın amacı Türkiye’de yaşayan Suriyeli mülteci amputelerin depresyon durumlarını Beck Depresyon Ölçeği-II (BDÖ-II) kullanılarak araştırmaktır. **Gereç ve Yöntemler:** Çalışma yaş ortalaması olan 35,22±13,56 yıl olan 93 (82 erkek, 11 kadın) Suriyeli mülteci ampute üzerinde gerçekleştirildi. Olguların sosyo-demografik özellikleri ve amputasyon sebebi/seviyesi, protez kullanım süresi, medeni durum, eğitim seviyesi, iş durumu ve fantom ağrısı gibi tanımlayıcı bilgileri alındı. Olguların BDÖ-II’yi doldurmaları istendi. Çoklu karşılaştırmalar için Kruskal Wallis Test, ikili karşılaştırmalar için Bağımsız t test Mann-Whitney U Test kullanıldı. **Bulgular:** Hastaların %67,7’sinin minimal, %25,8’inin hafif-orta, %6,5’inin ise şiddetli seviyede depresyonu gösteren Beck Depresyon Puanına (BDP) sahip olduğu görüldü. Kadın amputelerin BDP ortalaması erkek amputelerden istatistiksel olarak anlamlı düzeyde yüksek bulundu (p:0,039). Amputasyon etyolojisi açısından karşılaştırıldığında, diyabet/kronik hastalık grubunun diğerlerinden anlamlı düzeyde yüksek ortalamaya sahip olduğu görüldü (p:0,045). **Sonuç:** Türkiye’de, mülteci olarak da olsa, göreceli olarak iyi şartlar altında yaşamaları ve yeterli tıbbi destek alabilmeleri, hastalar üzerindeki psikolojik baskıyı azaltıcı unsurlardır. Geniş ve kapsayıcı Suriye aile yapısı, mülteci dayanışması gibi unsurların olguların BDP’lerini azaltmada etkin olduğu düşünülmektedir.

Anahtar Kelimeler: Ampute; Beck; depresyon; mülteci

Amputation affects the life multifunctionally, psychologically and socially.¹ In addition, it is also known to cause a series of emotional, perceptual, and psychological reactions mainly by altering the body

image.² It is accepted that more than half of the amputees develop psychological disorders in the medium and long term after amputation.³ Although rehabilitation practices after amputation mostly focus

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on eliminating physical deficiencies, restored functionality will also contribute to the psychological and social rehabilitation of the amputee.⁴

In Arabic-speaking countries, although the incidence of diabetes-related amputation and road traffic accidents remain the highest, the number of war-induced amputees has been increasing.⁵⁻⁸ Highly destructive weapons used in war zones lead to amputations as well as serious soft-tissue injuries, multiple fractures, nerve-artery injuries, and traumatic brain injuries.^{9,10} Therefore, those who are amputated due to war conditions constitute a unique population and are highly expected to be psychologically affected.^{3,9,11-13} In war conditions, secondary amputations are caused by several reasons such as accident while fleeing and not being able to reach health services sufficiently and in time.¹⁴ In addition, war is a calamity changing the living conditions of the civilians and has adverse psychological effects on them. In particular, civilians forced to leave their homes and live as refugees in other countries are exposed to severe consequences of a war. So, it is important to investigate how amputation level, cause and other descriptive variables are effective in their psychological status in refugee amputees. The aim of the present study was to investigate the depression status of Syrian refugee amputees living in Turkey.

MATERIAL AND METHODS

This is a cross-sectional and multicenter study. Syrian refugee amputees who amputated due to different causes, living in various regions in Turkey and had received prosthesis services from prosthetic-orthotic centers operating in İstanbul, Sanliurfa, and Reyhanli managed by Alliance of International Doctors were evaluated in the study. Syrian refugee amputees living in camps were excluded from the study. Eleven female (39.09±17.60 years) and 82 male (34.70±12.98 years) amputees with perception and mental competence to understand and answer Arabic questions were included in the study. The sample size was calculated by using Power and Sample Size Program (Version 3.1.2) based on a previous study and determined as 27 (90% power and $\alpha=0.05$ Type I error probability).¹⁵

In addition to demographic characteristics of the amputees, other data such as cause/level of amputation, duration of prosthesis uses, marital status, education level, job status and phantom pain were also collected.

The amputees were asked to complete Beck Depression Inventory-II (BDI-II). The BDI was developed by Aaron T. Beck in 1961 to determine the intensity and severity of depression symptoms.¹⁶ It can be used in age groups of 13 years and over and in normal individuals as well as in those diagnosed with depression. The scale comprises 21 self-report items. A Likert scale with 4 alternatives scored between 0 and 3 is used in each item. The patient is asked to choose the statement that best describes how he/she felt during the last week, including the day of the survey.¹⁷ Depression levels according to the total score obtained from the answers of all questions are defined as minimal (0-13), mild (14-19), moderate (20-28) and severe (29-63).¹⁸

The validity study of the Arabic version of the inventory was conducted by Ghareeb.¹⁹ Permission was obtained from Ghareeb for its use in the present study. It was ensured that the recommended conditions were fulfilled.

Approval for the study was obtained from Ethics Committee of Non-interventional Clinical Research of Faculty of Medicine, Marmara University (09.2019.002), and the study group was informed about the purpose and content of the study. The study was conducted in accordance with the principles of the Declaration of Helsinki.

STATISTICAL ANALYSIS

In this study, the significance level was determined as $p \leq 0.05$ for all evaluations. Statistical analyses were performed using IBM SPSS Statistics for Windows (Version 21.0, Armonk, NY: IBM Corp.). Descriptive statistical techniques were used to describe the groups. Kruskal Wallis Test was used for multiple comparisons. Independent t test and Mann-Whitney U Test were used for binary comparisons.

RESULTS

The mean age of the amputees was 35.22±13.60 years (female:39.09±17.60 years; male:34.70±12.98

years) and the mean amputation duration was 5.58 ± 6.10 years (male 5.85 ± 6.36 ; female: 3.54 ± 3.29 years). The mean Beck Depression Inventory Score (BDIS) of all amputees was 10.05 ± 11.59 . Socio-demographic and amputation-related characteristics of the amputees are shown in [Table 1](#).

The difference between male and female subjects in terms of BDIS was found to be statistically significant ($p:0.039$). No significant difference was found in terms of BDIS between sub-groups formed in terms of marital status, employment status, duration of prosthesis use, education levels, amputation levels and phantom sensation ([Table 1](#)) ($p>0.05$).

Majority of the patients (67.7%) had minimal depression. Only 6.5% of the patients had severe depression and 25.8% had mild-moderate depression ([Table 2](#)). Although multiple comparisons of amputation subtypes could not be performed due to numerical insufficiency, it was not found statistically significant difference in the comparison of TTA and TFA/KD groups which have the numerical majority ($p:0.187$).

In terms of the etiology of amputation, the mean BDIS of the diabetes/chronic disease group was significantly higher than those of the other groups ([Table 3](#)) ($p:0.045$).

DISCUSSION

Results of studies regarding the incidence of depression following amputation vary. The use of different scales in the assessment of depression and the absence of a standard scoring system in studies using the BDI-II result in limitations in determining the presence of depression and comparing its severity.

It was observed in the present study that the patients had low BDIS. The severity of depression in previous studies in which amputees were evaluated with BDI-II has been observed as 12.7-23.2% moderate and 7.3-10.1% severe.²⁰⁻²² The rate of extremely severe depression was reported as 8.2%.²⁰ In this study, only 6.5% of the patients had severe depression and 8% had moderate depression, indicating that the Syrian refugee amputees were partially in a good condition based on BDIS.

THE RELATIONSHIP BETWEEN GENDER AND DEPRESSION

Although there are many studies indicating that gender is not a determining factor regarding depression scores in amputees, there are also studies suggesting that adaptation to amputation in women is lower and depression levels are higher compared to men.^{20,22-26} Impaired body image, which is a factor for depression and poor quality of life, affect women more.^{20,27,28} Being a woman is among the first three factors causing high psychological symptoms that may occur due to changes in body image.²⁰ The significantly higher level of depression in female amputees in the present study supports this outcome. In the evaluation of female amputees, the existence of war/refugee conditions should also be taken into account.

The mean BDIS of the male subjects in this study was lower than the average depression score (18 ± 10) obtained in a study conducted by Ikram et al. In the same study, in which a different classification of BDI-II scoring was used, the rate of severe depression in male subjects (19%) was much higher than that of the male subjects in the present study.²⁹

THE RELATIONSHIP BETWEEN MARITAL STATUS AND DEPRESSION

The strong impact of family support on adaptation to amputation is accepted. In addition to studies reporting that marital status or living alone is not effective in determining depression score, there also studies reporting that the BDIS is higher in unmarried men.^{24,25,29,30} Hawamdeh et al. reported that the average BDIS of single amputees was higher, although no statistical difference was observed.²³ In the present study, depression scores of the married and single subjects were similar. Although the effect of marital status on BDIS was not seen in male amputees, single female amputees had higher BDIS (albeit statistically insignificant), which might be due to the increased concern of not being able to find a spouse in Syria due to loss of limb, where intergender relationships are primarily marriage-based.

THE RELATIONSHIP BETWEEN THE DURATION SINCE AMPUTATION AND DEPRESSION

Horgan and Lachlan reported that the shock phase following amputation was accompanied by highly

TABLE 1: Socio-demographic and amputation-related characteristics of the amputees.

	Beck Score		p	Male		Female	
	n (%)	Mean±SD		n	Mean±SD	n	Mean±SD
Gender							
Female	11 (11.8)	22.64±19.84	0.039*				
Male	82 (88.2)	8.37±8.93					
Marital Status							
Married	66 (71)	9.47±10.81	0.451*	60	8.56±9.27	6	18.50±19.90
Single	27 (29)	11.48±13.44		22	7.81±8.08	5	27.60±20.80
Duration of Prosthesis Uses							
Less than one year	33 (35.5)	10.42±9.66	0.180**	28	10.17±9.32	5	11.80±12.57
1-5 years	50 (53.8)	8.74±11.64		46	7.06±8.56	4	28.00±24.01
More than 5 years	10 (10.8)	15.4±16.21		8	9.50±9.51	2	39.00±18.38
Education							
Illiterate	9 (9.7)	14.33±20.88	0.947**				
Elementary	22 (23.7)	11.00±12.90					
Secondary	33 (35.5)	10.24±11.30					
Highschool	19 (20.4)	7.21±6.99					
Undergraduate/Graduate	10 (10.8)	8.90±6.52					
Etiology							
Car /Work Accident (for post-hoc see table 3)	12 (12.9)	5.83±9.40	0.042**	11	4.00±7.28	1	26±0
War	69 (74.2)	9.29±10.43		62	8.09±8.21	7	19.85±20.04
Diabetes/Chronic Disease	12 (12.9)	18.67±16.10		9	15.55±11.86	3	28.00±26.22
Occupation							
Unemployed	68 (73.1)	9.44±12.62	0.267**				
Student	7 (7.5)	10.85±9.28					
Self-employed	15 (16.1)	12.53±8.27					
Other	3 (3.2)	9.67±6.80					
Phantom Pain							
Yes	18 (19.4)	11.28±11.82	0.621*				
No	75 (80.6)	9.76±11.60					
Neuropathic Pain/Sensitivity							
Yes	22 (23.7)	8.86±6.32	0.446*				
No	71 (76.3)	10.42±12.81					
Amputation Level							
Upper	7 (7.5)	3.57±5.02	0.186**				
Lower	77 (82.8)	11.05±12.18					
Multiple	9 (9.7)	6.56±7.58					
Amputation Type							
Chopart/Foot/Ankle	6 (6.5)	3.83±4.30					
Transtibial	31 (33.3)	9.06±11.26					
KD/TF	38 (40.99)	12.97±12.74					
Hip Disarticulation	2 (2.2)	27±16.97					
Hand/Wrist Articulation	2 (2.2)	8.00±8.48					
Trans Radio-Ulnar	4 (4.3)	2.25±2.62					
ED/TH	1 (1.1)	0±0					
Multiple	9 (9.7)	6.55±7.58					

KD/TF: Knee Disarticulation/Transfemoral; ED/TH:Elbow Disarticulation/Transhumeral; * Independent t test; ** Kruskal Wallis Test.

TABLE 2: BDIS by sub-group characteristics*.

		Minimal (0-13)	Mild (14-19)	Moderate (20-28)	Severe (29-63)
		n (%)	n (%)	n (%)	n (%)
Gender	Total	63 (67.7)	16 (17.2)	8 (8.6)	6 (6.5)
	Male	59 (72)	14 (17.1)	7 (8.5)	2 (2.4)
	Female	4 (36.4)	2 (18.2)	1 (9.1)	4 (36.4)
Etiology	Car/Work Accident	10 (83.3)	-	2 (16.7)	-
	War	49 (71)	12 (17.4)	5 (7.2)	3 (4.3)
	Diabetes/Chronic Disease	4 (33.3)	4 (33.3)	1 (8.3)	3 (25)
Marital Status	Married	45 (68.2)	12 (18.2)	5 (7.6)	4 (6.1)
	Single	18 (66.7)	4 (14.8)	3 (11.1)	2 (7.4)
Employment	Unemployed	48 (70.6)	11 (16.2)	3 (4.4)	6 (8.8)
	Employed	15 (60)	5 (20)	5 (20)	-
Upper/Lower/ Multiple	Upper	6 (85.7)	1 (14.3)	-	-
	Lower	49 (63.6)	15 (19.5)	7 (9.1)	6 (7.8)
	Multiple	8 (88.9)	-	1 (11.1)	-

*Frequency distribution; BDIS: Beck Depression Inventory Score.

severe depression.³¹ Depression, which may be observed following amputation, may decrease due to developed adaptation to amputation, increased functional capacity caused by prosthetic rehabilitation, and learning ways of problem coping methods.^{25,31} Although the BDIS is reported to decrease as the time elapses after amputation, there are studies advocating that depression will increase again within 2-3 years after amputation.^{25,29,30} Darnall et al. reported that depression began to increase partially after 10 years following amputation.³⁰ In another study, it was reported that BDIS, which was very high in the first 2 years, decreased between 10 and 20 years, and started to increase again after 20 years.³¹ However, there are also studies arguing that the duration after amputation is not related to depression.²²

Although there is no statistical difference, it is seen in the present study that BDIS, which is relatively high in the first year, falls between 1 and 5 years; however, it increases largely after 5 years. It is seen in women that the average score reached the level of severe depression.

THE RELATIONSHIP BETWEEN EDUCATIONAL STATUS- AND DEPRESSION

It is argued that as the level of education increases, the incidence of depression lowers, and the higher

TABLE 3: Post Hoc comparison by the etiology of amputation.

	War (p)*	Car /Work Accident (p)*
Diabetes/Chronic Disease	0.045	0.060
War		0.138

*Mann Whitney U Test.

level of education may buffer the risk of depressive symptoms.³⁰ According to Cansever et al. there is no relationship between education level and depression in traumatic amputees; however, it exists in disease-related amputees.³² Although the illiterate group had the highest mean BDIS in the present study, no statistically significant difference was found between education levels in terms of BDIS.

THE RELATIONSHIP BETWEEN AMPUTATION ETIOLOGY AND DEPRESSION

Various results have been obtained in the studies investigating the relationship between amputation etiology and depression. There are studies reporting that the incidence of depression in amputees due to illness is higher than that of traumatic amputees, and also there are studies reporting that depression scores of traumatic amputees are higher than that of those who had amputation due to vascular causes.^{22,23,29,30,32} On the other hand, there are studies indicating that, in

terms of depression score, there is no difference between chronic disease and trauma, as etiologies of amputation.^{24,25}

Atic and Aydin found that BDIS of traumatic (23.48±4.6) and landmine victims (25.14±4.7) were close to each other and significantly lower than that of those who had amputation due to vascular causes (42.76±7.9).³³ Although their results are parallel to the findings of the present study, the BDIS of all groups in the study of Atic and Aydin are very high. The high mean age of the diabetic/chronic disease group in the present study, which is parallel to the high BDIS, requires attention as a secondary variable to the relationship between advanced age and depression. This may be resulting from the amputee's feeling of insufficiency due to the difficulties in daily living as well as in the adaptation to the prosthesis brought by increased age. It may also be due to war conditions and habitat change, which further affect the lifestyle of older people living as refugees.

THE RELATIONSHIP BETWEEN UNEMPLOYMENT AND DEPRESSION

Although the unemployment rate (38.9%) reported by Atic and Aydin in a study involving amputees with similar amputation etiologies was quite lower than that of the present study, their mean BDIS was very high.³³

As reported in many studies, such an outcome can be considered as an indication that employment status is not effective in increasing depression in amputees.^{22,23} However, there are also studies reporting that BDIS is very high in those who change job due to amputation.¹²

THE RELATIONSHIP BETWEEN PHANTOM PAIN AND DEPRESSION

Depression scores have been reported to be high in patients with different levels of phantom pain.^{30,34} In the present study, although the mean BDIS of the patients with phantom pain was found to be high, the difference was not statistically significant. This finding indicates that phantom pain in patients was not paid sufficient attention as a probable cause of a change in depression score.

THE RELATIONSHIP BETWEEN AMPUTATION LEVEL AND DEPRESSION

In lower extremity amputations, depression rate has been reported between 28.3% and 33% and the mean BDIS has been reported in the range of 13.16-15.15.^{18,28,30} In the present study, moderate and severe depression rates and the mean BDIS in lower extremity amputees were lower than those of the other studies.

Ikram et al. found that the BDIS of transtibial amputees was higher than that of the transfemoral amputees.²⁹ However, there are also studies reporting that depression scores of transtibial and transfemoral amputees are similar.^{18,23-25,29,35} In this study, it was found that BDIS of TTA and TFA/KD were similar. This result is consistent with the results of previous studies.

As a general rule, the more distal the amputation level, the better the gait and functional level. Mozumdar and Roy showed that lower limb amputees who are independent in daily life have lower BDIS.¹⁸ In the present study, the highest BDIS was seen in hip disarticulation amputees and it decreased as it moved distally, which agrees with that outcome.

In previous studies, depression score has been found to be high in upper extremity amputees.^{36,37} In the present study, on the contrary, lower extremity amputees had very high BDIS, although the difference was statistically insignificant. The limited number of patients with upper extremity amputations is the limitation of the present study. The low BDIS in patients with multiple amputations may indicate that the amputees participated in the present study, most of whom were in the first 5 years following amputation, were able to use coping mechanisms appropriately.

THE RELATIONSHIP BETWEEN SOCIAL SUPPORT AND DEPRESSION

It is accepted that social support and economic conditions are significantly associated with depression and depression decreases as social support increases.^{18,23,29,30,35} Similarly, perceived social discomfort and isolation are associated with depression.^{18,31} Free of fee supply of prosthesis has been reported to

increase the satisfaction of individuals.^{38,39} The fact that basic post-war needs of the patients of the present study in addition to their prosthesis needs were met, i.e. the advantage of social support has a positive effect on their BDIS. It is possible that factors such as the fact that they survived the war conditions can lead to a positive change in their BDIS.

The limitations of the present study are that it lacks a non-amputee refugee group for comparison purposes and that the sub-groups formed according to the amputation etiology, amputation levels, and amputee genders were not homogenous in terms of group size.

CONCLUSION

In conclusion, for amputees, whatever cause of amputation, surviving in war conditions, residing in relatively good conditions, and the access to adequate medical care are among the factors which reducing the pressure on the psychology of the amputees participated in the present study. The large and inclusive Syrian family structure and the desire for solidarity as a refugee may also be considered to have a positive effect on reducing depressive symptoms.^{40,41} After amputation, in male amputees,

psychological pressure stemming from the loss of work and income is expected. In this study, however, it is seen that their acceptance of the current situation is facilitated by the fact that their, as well as their families', basic needs are met, similar to non-amputee refugee men.

Ethical Approval

The study was approved by the Ethics Committee of Non-interventional Clinical Research of Faculty of Medicine, Marmara University (09.2019.002)

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

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