

Assessment of Anxiety and Depression in Patients Who Underwent Amputation

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Abstract: Limb loss is one of the most physically and psychologically devastating events, evokes many negative impacts (e.g. depression, anxiety). So in our study we tried assessing the anxiety and depression experienced by patients who underwent amputation getting discharged from hospital using HADS. Through this attempt we came to know that age and gender of the patient and level amputation had significant correlation with total HADS score. As prevalence of amputation and emotional disturbances resulting from it are increasing in India, we want to throw a light on it through our cross-sectional study.

Keywords: Amputation, HADS.

INTRODUCTION

Amputation is defined as —the surgical or spontaneous partial or complete removal of a limb or projecting body part covered by skin [1]. Limb loss is one of the most physically and psychologically devastating events that can happen to a person [2]. Losing a limb evokes many of the same emotions that accompany bereavement [3,4]. Negative impacts of amputation (e.g. depression, anxiety) have formed the central focus of most of the research[5]. There is little consensus regarding the prevalence of clinically significant emotional distress following limb amputation, either in the short or longer term [6]

According to World Health Organization, India has the highest number of road accidents in the world and it can be postulated that traumatic road accidents would be a significant cause of lower limb amputation [7].

AIM AND OBJECTIVES

To assess anxiety and depression in patients who underwent amputation at the time of discharge from the hospital

METHODOLOGY

- Cross-sectional study done to assess anxiety and depression in post amputated patients at Osmania general hospital, Osmania medical college, Hyderabad. First 80 patients who underwent amputation at OGH from the starting of study were considered.

TOOLS

- A semi-structured proforma
- Informed consent in Telugu, Hindi, Urdu and English.
- Hospital anxiety and depression scale (HADS: 28). 14 item scales - intended as a brief screening instrument for both anxiety and depression in non-psychiatric populations [8].

Items are answered on a four-point Likert scale (range 0 to 3). The anxiety and depression subscales each comprise 7 items that are summed to give subscale scores ranging from 0 to 21, with higher scores indicating greater levels of anxiety and depression[9] - raw scores of between 8 and 10 identify 'mild' cases, 11-14 'moderate' cases and 15 or greater 'severe' cases[10].

CRITERIA FOR PATIENT

Inclusion criteria

Case of major limb amputation
Aged 18 years -60 years

Exclusion criteria

Not able to give consent
Patients of age <18yrs and >60yrs
Patients with mental illness

PROCEDURE

Patients who underwent amputation in Osmania general hospital and have given consent were considered. After taking informed consent, details of intake preform, HADS are administered at the time of discharge from the hospital. The findings were tabulated and analysed using Microsoft excel and SSPS.

STATISTICAL ANALYSIS

- Descriptive statistics depicting number – frequency, averages -means median and dispersion – standard deviation, standard error, quartiles.
- Tests of comparison for continuous variables – independent student’s t – test and ANOVA
- Tests of association include Pearson’s product moment correlation test and Spearman’s rank correlation test.

RESULTS

A total sample of 80 amputated patients was taken for this study. Out of which, 68 were male (85%), 12 were females (15%). Maximum of them belonged to 26-35yr (30%) followed by 18-25yrs(22.5%).There is equal distribution of Upper Lower socio economic class and lower middle class group amounting to 40%.Married(67.5%) people were more than unmarried(26.3%).Based on the Occupational status of

people, Unskilled group(28.7%)were more effected after semiskilled group (33.8%). The Urban group were 76.3% and rural group 23.8% of total. (TABLE—1)

People with Left sided limb amputated were 42.5%, Right limb amputation were 46.3% and bilateral limb amputation consisted of 11.3%.Based on level of amputation most people have undergone below knee amputation (57.5%) followed by above knee amputation (27.5%).most amputations were done after trauma followed by vascular causes(TABLE—2)

HADS

A comparison of means of different Age groups between and within the groups was statistically significant (p<0.01) means of marital status groups were statistically significant (p<0.006) employment status (p<0.001), gender of patient (p<0.000), level of amputation (p<0.017) (TABLE—3). **Correlation** (TABLE—4)

Pearson correlation test is performed for age with HADS TOTAL showed significant negative correlation (p=0.016) Spearman’s correlation test is performed for gender, Socio Economic status, marital status, Level of amputation with HADS total showed significant correlation (p<0.05)

Table—1: Sociodemographic PROFILE

Sociodemographic PROFILE		PERCENTAGE
Gender	Male	85%
	Female	15%
Age	18-25yrs	22.50%
	26-35yrs	30%
	36-45yrs	18.80%
	46-55yrs	17.50%
	56-65yrs	11.30%
Socioeconomic status	Lower	7.50%
	Upper Lower	40%
	Lower Middle	40%
	Upper Middle	12.50%
MARITAL STATUS	Unmarried	26.30%
	Married	67.50%
	Divorced/widowed	6.20%
Occupation	Unemployed	20%
	Unskilled	28.70%
	Semiskilled	33.80%
	Skilled	11.30%
	clerk/ owner	6.30%
Domicile	Urban	76.30%
	Rural	23.80%

Table –2: Amputation related factors

Level of amputation	
BELOW ELBOW	5.0
ABOVE ELBOW	3.8
BELOW KNEE	57.5
ABOVE KNEE	27.5
BOTH	6.3
Side of limb	
BILATERAL	11.3
LEFT	42.5
RIGHT	46.3
Aetiology	
INFECTED	3.8
TRAUMATIC	77.5
VASCULAR	18.8

Table –3: The variation of HADS total between and within the groups

		Sum of Squares	Mean Square	F ratio	Probability
AGE	Between Groups	37.895	2.526	1.645	.087
	Within Groups	98.305	1.536		
	Total	136.200			
SOCIOECONOMICSTATUS	Between Groups	12.340	.823	1.343	.204
	Within Groups	39.210	.613		
	Total	51.550			
MARITALSTATUS	Between Groups	6.145	.410	1.574	.107
	Within Groups	16.655	.260		
	Total	22.800			
OCUPATION	Between Groups	26.501	1.767	1.543	.117
	Within Groups	73.299	1.145		
	Total	99.800			
DOMICILE	Between Groups	2.618	.175	.941	.525
	Within Groups	11.869	.185		
	Total	14.488			
GENDER	Between Groups	5.022	.335	3.282	.000
	Within Groups	6.528	.102		
	Total	11.550			
LEVEL OF AMPUTATION	Between Groups	21.224	1.415	2.643	.004
	Within Groups	34.264	.535		
	Total	55.488			

Table –4: Correlation of Sociodemographic variables and amputation factors with HADS total scores

	Correlation coefficient
Age (pearson correlation)	-.269
Gender (spearman's rho)	.422
Socioeconomic status (spearman's rho)	.261
Marital status (spearman's rho)	-.315
Occupation (spearman's rho)	-.189
Domicile (spearman's rho)	-.150
Diagnosis (spearman's rho)	-.175
Limb (spearman's rho)	.155
Side of limb (spearman's rho)	.105
Level of amputation (spearman's rho)	.428

DISCUSSION:

In the present study younger age group (18-25) scored higher values on anxiety and depression on HADS score 34.11 indicating anxiety symptoms and depressive symptoms are more common in them, which is consistent with study done by Singh *et al.* [11-13]. There was no association with gender, living in isolation, vascular cause for amputation. [12]. In study done by Laura Coffey Younger age was significantly associated with the experience of greater negative affect and depressive symptoms [14-18]. Some authors contend that older adults may not react as strongly to the impact of amputation, as they view changes in mobility and independence as normative for their age [14, 19]. Dunn found that people who had positive meaning in their amputation reported lower levels of depression. Those who were younger when their amputation occurred reported higher levels of depression. Moreover, regarding physical factors, Dunn found that younger amputees were significantly more at risk of developing depression than older amputees on account of activity restriction. More specifically, older individuals may accept the activity restriction more readily and younger individuals may experience more appearance anxiety. In addition, perhaps older adults were less depressed because they have had time to deal with the amputation and find adequate resources whereas if the amputation occurs when one is younger, it could be more challenging to cope [18]. Age at time of amputation was found to be significantly and inversely related to depression, such that the younger the person was at the time of amputation the more likely s/he was to be depressed compared to a person who was older at the initial time of amputation [20]. In his review of anxiety in older adults, Lindsay concluded that the prevalence of anxiety decreased in elderly (age 65+)

groups. Our data revealed that the longer the time since amputation, the lesser is the prevalence of psychological abnormalities which is evident for either anxiety or depression. In their review of psychological adjustments to amputation, Horgan *et al.* [14, 21] concluded that although depression and anxiety appear to be relatively high up to 2 years post amputation, they decline thereafter to levels comparable to those in the general population. A recent study showed rapid resolution of depressive and anxiety symptoms in individuals with lower limb amputation after a period of inpatient rehabilitation [22]. Hadwamdeh's *et al.* 2008 study showed that the longer the time since the initial amputation, the less likely participants were to report depression or anxiety [23].

Females showed high scores on HADS total compared to males. Anxiety was found more in females than males than depression. Most studies have found no difference in psychosocial outcome between men and women [24-26]. The data from our study revealed that females suffered from more reactive depression and anxiety symptoms than males [23, 40]. A number of studies have reported that women are more likely to experience depression, and to perform more poorly on a measure that includes an assessment of emotional adaptability. Washington found that women exhibit higher rates of depression [20] (9.5%) compared to males (5.8%). Hawamdeh *et al.*'s study also revealed that females suffered from more reactive depression and anxiety symptoms than males [23].

People whose amputation followed by trauma showed higher scores of HADS Anxiety and depression were found slightly higher among this group though not significant statistically. They were poorly adjusted in

comparison to people amputated due to other causes. In accordance with our results [27], Fisher and Hanspal and Livneh and colleagues suggested that young adults with traumatic amputation may be at higher risk of major depression compared with individuals with disease-related amputations [28, 29]. Other studies examining the relationship between cause of amputation and psychosocial outcome have found no effect of amputation on psychiatric symptoms [30], anxiety [30, 31] and depressive symptoms [21,25].

There is ambiguity with some studies showing significance with Disease related[32-34],and others showing with Trauma related[35,23] amputations.The average intensity of amputation-related pain experienced has been related to poorer psychosocial outcomes in previous research on individuals with amputations[36,37] and although higher average pain intensity was associated with greater negative affect as well as poorer physical QoL and social adjustment at Time, it did not emerge as an independent predictor in the hierarchical regression analyses[33]. In Atherton study, there was no significant impact of cause of amputation on levels of distress [38].

According to Engstrom and colleagues, the amputee's current family reactions can have a powerful effect on adjustment. A study found that increased social isolation and lower levels of perceived social support are associated with higher levels of depressive symptomatology [39]. Particularly helpful in the adjustment of the adult amputee is the presence of a supportive partner at all times maintaining the amputee's self-esteem [3].

Above elbow amputated group showed higher scores of HADS compared to those with amputation of both limbs above and below knee at the same time. Within the various levels of amputation, significant variation was found HADS (F=3.238, P=0.017). In a study by ziad et.al showed that BK amputees had higher levels of depression compared with AK amputees. According to Weinstein, AK amputations have not been found to be associated with increased levels of anxiety, social discomfort, general psychiatric symptoms [30, 31] depression. Most notably, O'Toole *et al.* found that the relationship between amputation level and psychological outcome showed that individuals with below knee (BK) amputation were more likely to be depressed than those with AK amputations [40]. It was suggested that because individuals with BK amputations are less severely disabled in terms of functioning than those with AK amputations, they may be in a better position to compare their functional abilities with their premorbid abilities and, as a result, be more sensitive to the differences between themselves and able-bodied individuals [40]. In atherten et.al study level of amputation did not have a significant impact on

Anxiety, Depression[38] This was expected as there is a large body of literature which indicates that there is no significant relationship between level of amputation and psychosocial distress[17,39,40].

Unemployed people showed higher scores of HADS. Within the groups of occupation, significant variation was found in HADS with F= 5.581 and P=0.001 within socioeconomic status, only HADSD showed significant variance (0.028).

Unmarried people have shown higher scores of HADS total. Higher rates of anxiety and depression was found among unmarried people as compared to married people HADS Total showed significant variation with F value 5.50 and significance 0.006.

Limitations of this study

- Study done at the time of discharge from the hospital. This is very early to study psychopathology.
- Cross sectional study.

CONCLUSIONS AND SUMMARY

- Comparison of means of HADS score showed significant variance Age groups, socio economic class groups, marital status groups, employment status, domicile groups.
- The limb amputated and side of the limb amputated showed, non-significant correlation.
- Level of amputation showed significant positive correlation with anxiety and depression (Rho 0.428 and P 0.000)

REFERENCES

1. Kohler F, Cieza A, Stucki G, Geertzen J, Burger H, Dillon MP, Schiappacasse C, Esquenazi A, Kistenberg RS, Kostanjsek N. Developing Core Sets for persons following amputation based on the International Classification of Functioning, Disability and Health as a way to specify functioning. *Prosthetics and orthotics international*. 2009 Jun;33(2):117-29.
2. Gitter A, Bosker G. Upper and lower extremity prosthetics. *Physical medicine & rehabilitation: principles and practice* Philadelphia: Lippincott Williams & Wilkins. 2005:1326-55.
3. Parkes CM. Psycho-social transitions: comparison between reactions to loss of a limb and loss of a spouse. *The British Journal of Psychiatry*. 1975;127(3):204-10.
4. Parkes CM. Components of the reaction to loss of a limb, spouse or home. *Journal of Psychosomatic Research*. 1972;16(5):343-9.
5. Desmond D, Gallagher P, Henderson-Slater D, Chatfield R. Pain and psychosocial adjustment to

- lower limb amputation amongst prosthesis users. *Prosthet Orthot Int.* 2008;32(2):244-52.
6. Desmond DM, MacLachlan M. Affective distress and amputation-related pain among older men with long-term, traumatic limb amputations. *Journal of pain and symptom management.* 2006;31(4):362-8.
 7. Viswanathan V, Sivagami A, Rajasekar S. Diabetic foot: an Indian scenario. *Asian J Diabetol.* 2005;7(3):9-11.
 8. Herrmann C. International experiences with the Hospital Anxiety and Depression Scale-a review of validation data and clinical results. *Journal of psychosomatic research.* 1997;42(1):17-41.
 9. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta psychiatr scand.* 1983;67(6):361-70.
 10. Michopoulos I, Douzenis A, Kalkavoura C, Christodoulou C, Michalopoulou P, Kalemi G, Fineti K, Patapis P, Protopapas K, Lykouras L. Hospital Anxiety and Depression Scale (HADS): validation in a Greek general hospital sample. *Annals of general psychiatry.* 2008 Mar 6;7(1):4.
 11. Desmond DM, Shevlin M, MacLachlan M. Dimensional analysis of the coping strategy indicator in a sample of elderly veterans with acquired limb amputations. *Personality and Individual Differences.* 2006;40(2):249-59.
 12. Singh R, Ripley D, Pentland B, Todd I, Hunter J, Hutton L, Philip A. Depression and anxiety symptoms after lower limb amputation: the rise and fall. *Clinical rehabilitation.* 2009 Mar;23(3):281-6.
 13. Gunawardena NS, de Alwis Seneviratne R, Athauda T. Prosthetic outcome of unilateral lower limb amputee soldiers in two districts of Sri Lanka. *JPO: Journal of Prosthetics and Orthotics.* 2004;16(4):123-9.
 14. Horgan O, MacLachlan M. Psychosocial adjustment to lower-limb amputation: a review. *Disability and rehabilitation.* 2004;26(14-15):837-50.
 15. Phelps LF, Williams RM, Raichle KA, Turner AP, Ehde DM. The importance of cognitive processing to adjustment in the 1st year following amputation. *Rehabilitation Psychology.* 2008;53(1):28.
 16. Asano M, Rushton P, Miller WC, Deathe BA. Predictors of quality of life among individuals who have a lower limb amputation. *Prosthetics and orthotics international.* 2008;32(2):231-43.
 17. Williamson GM, Schulz R, Bridges MW, Behan AM. Social and psychological factors in adjustment to limb amputation. *Journal of Social Behavior & Personality.* 1994.
 18. Dunn DS. Well-being following amputation: Salutory effects of positive meaning, optimism, and control. *Rehabilitation Psychology.* 1996;41(4):285.
 19. Rybarczyk B, Nicholas J, Nyenhuis D. Coping with a leg amputation: Integrating research and clinical practice. *Rehabilitation Psychology.* 1997;42(3):241.
 20. Washington J. The Relations among Psychological and Demographic Factors in Individuals with Lower Limb Amputation. 2013.
 21. Rybarczyk BD, Nyenhuis DL, Nicholas JJ, Schulz R, Alioto RJ, Blair C. Social discomfort and depression in a sample of adults with leg amputations. *Archives of physical medicine and rehabilitation.* 1992;73(12):1169-73.
 22. Singh R, Hunter J, Philip A. The rapid resolution of depression and anxiety symptoms after lower limb amputation. *Clin Rehabil.* 2007;21(8):754-9.
 23. Hawamdeh ZM, Othman YS, Ibrahim AI. Assessment of anxiety and depression after lower limb amputation in Jordanian patients. *Neuropsychiatric Disease and Treatment.* 2008;4(3):627-33.
 24. Williamson GM. Restriction of normal activities among older adult amputees: The role of public self-consciousness. *Journal of Clinical Geropsychology.* 1995.
 25. Walters AS, Williamson GM. Sexual satisfaction predicts quality of life: a study of adult amputees. *Sexuality and Disability.* 1998;16(2):103-15.
 26. Bradway JK, Malone JM, Racy J, Leal J, Poole J. Psychological adaptation to amputation: an overview. *Orthotics and Prosthetics.* 1984;38(3):46-50.
 27. Fisher K, Hanspal R. Phantom pain, anxiety, depression, and their relation in consecutive patients with amputated limbs: case reports. *Bmj.* 1998;316(7135):903-4.
 28. Livneh H, Antonak RF, Gerhardt J. Psychosocial adaptation to amputation: the role of sociodemographic variables, disability-related factors and coping strategies. *International Journal of Rehabilitation Research.* 1999;22(1):21-32.
 29. Fisher K, Hanspal R. Body image and patients with amputations: does the prosthesis maintain the balance? *International Journal of Rehabilitation Research.* 1998;21(4):355-64.
 30. Shukla GD, Sahu SC, Tripathi RP, Gupta DK. A psychiatric study of amputees. *The British journal of psychiatry : the journal of mental science.* 1982;141:50-3.
 31. Weinstein CL. Assertiveness, anxiety, and interpersonal discomfort among amputees: implications for assertiveness training. *Arch Phys Med Rehabil.* 1985;66(10):687-9.
 32. Couture M, Caron CD, Desrosiers J. Leisure activities following a lower limb amputation. *Disability and rehabilitation.* 2010;32(1):57-64.
 33. Coffey L, O'Keeffe F, Gallagher P, Desmond D, Lombard-Vance R. Cognitive functioning in persons with lower limb amputations: a review. *Disability and rehabilitation.* 2012;34(23):1950-64.

34. Desmond DM, MacLachlan M. Coping strategies as predictors of psychosocial adaptation in a sample of elderly veterans with acquired lower limb amputations. *Social science & medicine* (1982). 2006;62(1):208-16.
35. Kratz AL, Williams RM, Turner AP, Raichle KA, Smith DG, Ehde D. To lump or to split? Comparing individuals with traumatic and nontraumatic limb loss in the first year after amputation. *Rehabilitation psychology*. 2010;55(2):126.
36. Whyte A, Carroll L. A preliminary examination of the relationship between employment, pain and disability in an amputee population. *Disability & Rehabilitation*. 2002;24(9):462-70.
37. Jensen MP, Ehde DM, Hoffman AJ, Patterson DR, Czerniecki JM, Robinson LR. Cognitions, coping and social environment predict adjustment to phantom limb pain. *Pain*. 2002;95(1):133-42.
38. Atherton RJ. *Psychological adjustment to lower limb amputation: Clinical Psychology*; 2002.
39. Rybarczyk B, Nyenhuis DL, Nicholas JJ, Cash SM, Kaiser J. Body image, perceived social stigma, and the prediction of psychosocial adjustment to leg amputation. *Rehabilitation psychology*. 1995;40(2):95.
40. O'Toole DM, Goldberg RT, Ryan B. Functional changes in vascular amputee patients: evaluation by Barthel Index, PULSES profile and ESCROW scale. *Arch Phys Med Rehabil*. 1985;66(8):508-11.