

## Original Research Article

# Prevalence of psychiatric illnesses after major limb amputation and early recognition and treatment in economically lower income group patients

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**Received:** 28 April 2018

**Revised:** 18 September 2018

**Accepted:** 20 September 2018

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### ABSTRACT

**Background:** There is high prevalence of psychiatric illness after major limb amputation and need for early recognition and treatment should be the goal but often is overlooked. Psychological support by the treating physician and the surgeon can help in adaptation to the disability but unfortunately is often overlooked.

**Methods:** A total of 120 patients were screened for psychiatric disorder using HADS criteria Anxiety was found to be in 38 (32%) patients and depression was found to be in 27 (23%) (Table 1) (Figure 1) 55 patients had no psychiatric illness. Psychiatric illness either depression or anxiety was found to be in 65 patients.

**Results:** In our state which is a zone of conflict between two countries prevalence of anxiety was 32% and depressive symptoms were 23%, respectively. Causative factors associated with high prevalence of psychological symptoms included unmarried young females, lower socioeconomic status, single earning member, lack of social support, unemployment, traumatic amputation. These findings were confirmed by a significant reduction of anxiety and depression scores in patients who received social support, patients with amputation due to disease, and patients with above the knee amputation.

**Conclusions:** Our study showed higher prevalence of psychological symptoms in association with lower socioeconomic status, single earning member, lack of social support, unemployment, traumatic amputation vs amputation secondary to chronic disease. Extensive rehabilitation with the use of an interdisciplinary team approach is one of the most successful ways to return the amputee to the work place. Surgeons should give proper attention to the psychological state of amputees. Because of high prevalence of psychiatric illness after major limb amputation. It is suggested that psychiatric evaluation and adequate rehabilitation should form a part of treatment.

**Keywords:** Amputation, Depression, Anxiety, Post traumatic stress disorder, HADS

### INTRODUCTION

Quality of life after amputation is a broad term without exact definition. It depends on a number of factors: support from friends and relatives, ability to work and interest in one's occupations, accommodation appropriate to expectations and, of course, health and disabilities

whether congenital or recently acquired disorder. The emotional disorder after amputation is often overlooked.<sup>1,2</sup>

Patients undergoing amputation as a result of traumatic injury or fire arm injury may experience posttraumatic stress disorder. Amputation is a very stressful for the

amputee as well as to the family and its psychological aspect is often overlooked by surgeons. Psychological support should be provided to the patient as well as to the family.<sup>2</sup>

Psychological support by the treating physician and the surgeon can help in adaptation to the disability. Psychological aspects following amputation varies in different patients and is not addressed properly. There is little data available on psychiatric illnesses following amputation in our Kashmir valley which is a conflict zone between two countries with high incidence of amputation secondary to fire arm injuries.<sup>3</sup>

Amputation of a limb affects almost all aspects of an individual's life. Amputees in addition to their physical disability suffer from myriads of psychological as well as psychosocial problems. There is little attention given on the psychological state of the individual unless he or she presents with severe behavioral abnormalities. Early recognition and treatment of psychological morbidity seem to be important in preventing long-term disabilities in an amputee.<sup>3,4</sup>

From the time of surgery until return to normal life in the community, the majority of amputees are always in dilemma and fear. The amputee is most often saddened because of lost limb and concerned about disfigured body image and is thought to go through different stages as a part of their grieving process, that is, denial, anger, bargaining, depression and acceptance. This often resembles the way in which people usually respond to the death of a loved one or when being diagnosed with a life threatening illness.<sup>5,6</sup>

We conducted our study to identify and address psychiatric disturbance in our patients following amputation. There is little research in this field available hence protocol varies in different hospitals /institutions. Importance of this cannot be underestimated.

The aim of early psychological intervention with amputees is their reintegration in the social roles, the same can be achieved by targeting the areas of concerns. Psychological intervention with amputees requires structured and specified areas of intervention.<sup>7</sup>

In view of the above present study was planned to address psychological distress and propose a protocol of psychological intervention needed among amputees.

The aims and objectives of our study were to study psychiatric reactions to amputation early recognition and treatment and to provide multi specialty approach to amputee in form of combination of occupational therapy, physical therapy, rehabilitation, and psychological support generally promote a sense of well being and return the patient to as near as possible to pre-amputation state.

## METHODS

This study was prospective case control series which was conducted in Sub District Hospital Kreeri Baramullah and New city hospital Srinagar after getting approval from ethical committees of both the hospitals.

We conducted our study following amputation of lower or upper limb in SDH Kreeri and New City Hospital conducted between January 2015 to December 2017.

Patients were enrolled from both from inpatient and outpatient department of orthopaedics. 60 patients with limb amputations were assessed using HADS (hospital anxiety and depression score)

The study was approved by the ethical committee of both the hospitals. The participants were fully made to understand nature of this study and written informed consent was taken from every subject who took part in our study.

### *Inclusion criteria*

Inclusion criteria were patients willing to be part of study; patients with major lower limb or upper limb amputation.

### *Exclusion criteria*

Exclusion criteria were patients not willing to be part of study; patients with pre-existing psychiatric disorder before amputation; patients known to have congenital amputations; patients known to take drugs prior to study that may cause anxiety or depression.

Mean duration at inclusion in the study was 3 weeks after amputation.

A properly designed proforma was filled as per details furnished by patients included in the study up. Patients were evaluated for prosthesis and monitored regularly in follow-up.

The levels of depression and anxiety symptoms after lower limb amputation were assessed using a simple screening test, the Hospital Anxiety and Depression Scale (HADS), which has good sensitivity and specificity when used for formal psychiatric assessment and diagnosis. HADS is a validated scale for screening for symptoms of anxiety and depression and avoids confounding emotional symptoms with those of physical illness.<sup>8,9</sup>

Patients were asked several questions to assess depression and questions to assess anxiety.

“Depression” was calculated as per questions such in HADS criteria: “interest level present and past?” “Do you laugh as readily?” “Feeling cheerfulness present /past?” “Feeling level of optimism in present and past?” “Anxiety”

level was assessed by questions such as: “Do you feel tense or wound up?” “Present and past level of worry at home and work place?” “Do you have panic attacks?” “Do you feel something awful is about to happen?”

Each question was answered on a four point (0–3) response category so the possible scores ranged from 0–21 for both anxiety and for depression. A score of 8 and above in either subscale was considered to be a case of psychological disturbance while scores of 0–7 were considered normal (Zigmond and Snaith 1983).<sup>9</sup>

Specially designed proforma was filled and all patients with amputations were interviewed during the evaluation for prosthesis and monitored regularly in follow-up.

*Reassurance:* Amputation can be very stressful for the amputee as well as family and friends. There is often a great deal of a free-floating anxiety about the unknown, what the future holds. Psychological support with entire gamut of coping mechanisms should be provided in a phased manner. Verbal and nonverbal assurance by the treating physician and the staff can help in adaptation to the disability.<sup>9,10</sup>

**Statistical analysis**

Statistical analysis in our study was done by a statistician all the data was entered in SPSS 14 and analyzed. Variables were analyzed and correlations were made by using the mean, average, and Pearson’s Chi C square/fishers exact test. The statistical significance was set to be at p<0.05.

**RESULTS**

The prevalence of anxiety was 32% and depressive symptoms were 23%, respectively. Causative factors associated with high prevalence of psychological symptoms included unmarried young females, lower socioeconomic status, single earning member, lack of social support, unemployment, traumatic amputation,. These findings were confirmed by a significant reduction of anxiety and depression scores in patients who received social support, patients with amputation due to disease, and patients with amputation above the knee.

Follow-up of all patients in the study showed positive impact of treatment received with the improvement in HADS score as well.<sup>9</sup>

**Table 1: Prevalence of anxiety and depression.**

Total no of patients screened	Normal patients	Anxiety	Depression
120	55	38	27

A total of 120 patients were screened for psychiatric disorder using HADS criteria anxiety was found to be in

38 (32%) patients and depression was found to be in 27 (23%).

55 patients had no psychiatric illness. Psychiatric illness either depression or anxiety was found to be in 65 patients. 5 patients were lost to follow-up hence were later excluded. 60 amputees were followed up till completion of study or till patients were cured which ever was earlier (Table 1).

**Table 2: Sex distributions of patients in our study.**

Total	Male	Female
60	42	18

Majority of patients in our study were males forming 70% of total patients (Table 2).

Comparing depression scores showed a significant decrease in the score of patients who received social support compared with those without support and in patients with amputation due to disease compared with those with amputation due to trauma with p values equal (0.03 and 0.04 respectively).

A total of 120 patients were screened for psychiatric disorder using HADS criteria, anxiety was found to be 38 (32%) patients and depression was found to be 27 (23%) (Table 3).

**Table 3 prevalence of anxiety and depression**

Total screened patients	Anxiety	Depression
120	38 (32%)	27 (23%)

**Table 4 Mean age of patients in study group.**

Mean age (years)	Males	Females
	39	45

Mean age in our study among males was 38 and mean age in females was 47 (Table 4).



**Figure 1 (a and b): A case of 60 year old male underwent below knee amputation on left side.**



Age range in males was 16 to 65 and age range in females was 39 to 70 years.

A patient 60 year old male underwent below knee amputation on left side secondary to road traffic accident. Post operatively patient developed PTSD and was successfully managed as per the protocol. Patient was ambulated with below knee prosthesis (Figure 1).

**Table 5: Etiology of amputation.**

Etiology of amputation	Male	Female
RTA	18	9
Firearm injury	14	4
PVD	8	5
Electric burn	2	

45% of total amputations in our study were due to RTA followed by 30% firearm injuries and 21% peripheral vascular diseases (Table 5).

**Table 6: Type of amputation.**

Amputation	Male	Female
Below knee	34	14
Above knee	6	4
Shoulder disarticulation	1	
Combined below knee amputation with forefoot amputation	1	
Total	42	18

48 patients in our study group had amputation below the knee and 10 had above the knee amputation. One case was of shoulder disarticulation, one case of combined below knee and forefoot amputation and one case of shoulder disarticulation (Table 6).



**Figure 2 (A and B): A cases of young boy with below knee amputation wearing prosthesis.**

A case of young boy with below knee amputation secondary to fire arm injury, developed depression post operatively. Patient was counseled as per protocol and below knee prosthesis was fitted and patient was mobilized again with smile on his face (Figure 2).



**Figure 3: A case of combined below knee amputation and forefoot amputation.**

Young male suffered electric burn resulting in severe damage to right leg and left foot. Patient was managed with below knee amputation on right side and forefoot amputation on left side. Post operatively patient developed depression and was managed as per protocol with satisfactory results. Patient was ambulated with the help of prosthesis after 3 months of surgery (Figure 3). Patient was also provided with a suitable job as he was sole bread earner for his family.



**Figure 4: Case of shoulder disarticulation.**

A right hand dominant 45 year old male sustained firearm injury resulting in severe injury to right upper limb and chest (Figure 4). Patient was managed with shoulder disarticulation and chest tube insertion. Postoperatively patient developed depression and was managed as per

protocol. Patient was also trained by our psychiatrist and orthotist regarding use of left hand. After successful treatment of 3 months patient was discharged from the hospital with cheerful smile.

Comparing anxiety scores as per HADS showed a significant decrease in the score between patients who received social support (mean  $4.2 \pm 3.5$ ) compared to those without support (mean  $6.1 \pm 4.5$ ) p value 0.003, patients with amputation due to chronic disease (mean  $3.8.0 \pm 4.0$ ) compared to those due to trauma (mean  $6.7 \pm 3.5$ ) p value 0.002, and in patients with above knee amputation (mean  $6.4 \pm 3.7$ ) compared to those with below knee amputation (mean  $4.7 \pm 2.8$ ) with p values 0.04.

On the other hand no significant difference was found between males versus females.

## DISCUSSION

The loss of the limb may cause distress to both the family members as well as the patient not because of loss of a body part but because of role limitation and the need for adjustment to the changed lifestyle options which will indirectly hamper the family. The individual undergoing amputation is always at the risk of developing depressive disorder due to multiple factors such as feelings of loss of body part, self-stigma associated with deformed body, and difficulty in coping up with the impairment also difficulty in earning lively hood because of difficulty in getting a suitable job.<sup>10,11</sup>

The distressing events leading to the amputation, especially if amputation is induced by road traffic accident or blast, may induce symptoms of posttraumatic stress disorder (PTSD).<sup>13</sup> Most patients who lose a limb as a result of traumatic or surgical procedures witness a myriad of complex psychological responses. Many people successfully use these responses to adjust to amputation. As many as 50% of all amputees require some sort of psychological intervention.<sup>13</sup>

In our study higher prevalence of psychiatric disturbance was found in patients with traumatic amputation as compared to amputation due to chronic disease which is consistent with literature available.

Researchers have noted high prevalence of depressive and anxiety symptoms following major limb amputation and early recognition and treatment should be the goal which is consistent with the findings in our study.<sup>12,13</sup>

Readjusting to life after amputation is associated with reports of depression, anxiety and disturbed body image.<sup>14</sup>

In our study higher prevalence of psychiatric disturbance was found in those patients who did not receive social support as compared to those who received social support. Also higher prevalence was of psychiatric illness was found in patients with above knee amputation than

below knee amputation the above findings are consistent with findings of Kohl, and Cansever and colleagues (2003), psychological reactions to amputation depend on a number of factors, which include level of amputation, lifelong patterns of coping with stress, value placed on the lost limb, and expectations from the rehabilitation program.<sup>14,15</sup>

Rehabilitation of post amputee patient needs multi-specialty approach laying emphasis on social adjustment of amputee patient, use of prosthesis, reemployment, and reintegration into the social roles, the author during rehabilitation programme noticed positive responses during interaction with amputee patients.<sup>16,17</sup>

Individuals affected by the traumatic loss of a limb are required to cope up with a redefined body shape as well as a new reality of coping up with stress. Stress if timely addressed will have a favorable results in follow-up. Higher prevalence of psychiatric disturbance was found in traumatic compared to amputation secondary to chronic disease. Associated with positive adjustment to limb loss include greater time since amputation, more social support, greater satisfaction with the prosthesis, active coping attempts, an optimistic personality, a lower level of amputation in the case of lower limbs, and lower levels of phantom limb pain and stump pain.<sup>18,19</sup>

## CONCLUSION

There is high prevalence of psychiatric illness after major limb amputation and need for early recognition and treatment should be the goal. Thus we recommend adequate psychiatric evaluation, follow up, and rehabilitation for all individuals with lower limb amputation, and especially for those with a high propensity for these disorders. The importance of social factors in psychological adjustment to amputation cannot be underestimated.

In conclusion it is suggested that psychiatric evaluation and adequate rehabilitation should form a part of the overall management of amputee.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

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**Cite this article as:** Ali Z, Khurshid L, Bhat T, Bhat AA, Vakil SM. Prevalence of psychiatric illnesses after major limb amputation and early recognition and treatment in economically lower income group patients. *Int J Res Orthop* 2018;4:892-7.