

# Gender differences among people with lower limb amputation in Indian Population on the basis of Depression, Anxiety & Stress

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**Abstract- Aims and Objectives:** The present study compares the level of depression, anxiety and stress on the basis of gender differences in people with lower limb amputation in Indian population.

**Methodology:** A sample of 100 Lower Limb Amputee patients who were non-prosthetic users (n=100, n=50 Males, n=50 Females) was collected from rehabilitation unit of Indian Spinal Injuries Centre & Bhagwan Mahaveer Viklang Sahayata Samiti, New Delhi. In this study data was collected by convenient sampling technique. Depression, anxiety and stress were evaluated by Depression, Anxiety and Stress Scale - 21 Items (DASS-21). The scores of depression, anxiety and stress were evaluated to find out the gender differences among subjects with lower limb amputation.

**Results:** Data recorded was analyzed using SPSS data analysis software. An Independent t-test was used to compare the difference among both the genders with lower limb amputation in terms of depression, anxiety and stress. There was significant difference seen among the females with higher level of depression, anxiety and stress as compared to males with lower limb amputation.

**Conclusion:** It can be concluded that there was a gender difference in context of Depression, Anxiety and Stress in subjects with lower limb amputation among Indian population. The key findings of the study suggest that the females with lower limb amputation tend to have higher level of depression, anxiety and stress in comparison of males with lower limb amputation.

**Index Terms-** Lower limb amputation, gender difference, depression, anxiety, stress, DASS-21.

## I. INTRODUCTION

In India depression has always been a focus of research. Depression is a disorder of major public health importance in terms of prevalence and suffering, dysfunction, morbidity, and economic burden. According to the studies depression is more prevalent in women as compared to men<sup>1</sup>. Many studies have estimated the prevalence of depression in community samples, with prevalence rates ranging from 1.7 to 74 per thousand populations<sup>2,3</sup>.

It had been estimated that there are roughly 0.62 amputees in India per thousand populations. This translates to close to one million individuals with amputations in the country. The sources of emotional support are probably different from India than the Western world as the familial ties are stronger and provide close supervision and support. The prevalence of psychiatric disorders among amputees has been found to be in the range of 32%–84%. These rates are generally high as compared to population based psychiatric prevalence studies conducted in India<sup>4</sup>.

Therefore studying the impact of amputation on the level of depression, anxiety and stress between both the genders is important because recovery from amputation is a very hard journey. Thought of losing an anatomical part is a devastating to most people when it happens, amputation causes a threefold loss in terms of function, sensation and body image<sup>5</sup>. An amputation induces several limitations in performing professional, leisure and social activities. It disturbs the integrity of the human body and lowers the quality of life (QoL) due to reduced mobility, pain and physical integrity. Patients are affected psychologically and socially. Psychological issues range from depression, anxiety and to suicide in severe cases<sup>6</sup>.

Several factors may increase a woman's risk of depression. There is evidence to suggest that this depression gender gap may continue throughout the lifespan. According to the ([World Health Organization 2016](#)), depression accounts for fully 10 percent of the total non-fatal disease burden worldwide. Moreover, this burden falls disproportionately on girls and women. In one study, the global 12-month prevalence of major depressive disorder was 5.8% in females and 3.5% in males. The gender difference in depression – generally believed to be twice as many females experiencing major depression as males – represents a major health disparity. However, despite assertions that the gender difference in depression is among the most robust of findings in psychopathology research<sup>7</sup>.

The prevalence of depression in the amputee and the general population is estimated to be 28% and 3.6-10.6%, respectively. Depression is associated with higher levels of activity limitation, easily having vulnerable feelings, and poorer self-related health. Risk factors for depression among amputees include higher levels of pain as well as anxiety<sup>8</sup>.

Although amputation often serves as either a life-saving measure or a solution to a problem, it is usually experienced as a

traumatic loss by the patient. Anxiety, low self-esteem, body image issues, and loss of a sense of wholeness, social isolation, reduced sexual activity, and depression are frequently recorded problems of adjustment<sup>9</sup>.

While the commitment and recovery profile of the patients who have undergone traumatic limb amputation has increased significantly, little is known about the incidence of anxiety and depression<sup>10</sup>.

Taking into account the various challenges faced by people after amputation in India and particularly on the basis of gender differences, patients may suffer with depression, anxiety & associated stress, the prevalence may vary between both the genders.

Hence, the objective of this research is to compare & determine the prevalence of depression, anxiety & stress in Indian population among the lower limb amputees on the basis of gender.

## II. METHODOLOGY

This research study was conducted to examine to compare the components of depression, anxiety and stress among males and females with lower limb amputation in context of Indian Population. As depression, anxiety & associated stress plays a very important role especially in India & in today's scenario leading to serious mental ailments even turning out as suicide. Higher rates of depression, anxiety & stress can lead to a dissatisfactory and non-fulfilling life. Therefore there was a need to study the rate of depression, anxiety & stress in lower limb amputation because there are evidences that amputation is already traumatic itself & it can further lead to a depressing life full of anxiety and stress. There was need to study it on the basis of gender especially in Indian context.

About 100 lower limb amputees participated in the study in which 50 were males and 50 were females.

The data was collected from rehabilitation department Prosthetics & Orthotics unit from Indian Spinal Injuries Centre, New Delhi and Bhagwan Mahavir Viklang Sahayata Samiti, New Delhi. The data was collected by Non- Probability Convenient Sampling. The research design was survey study. The data was collected after taking consent from the subject and screening the inclusion criteria which included age- 18-60, Lower limb amputees including amputation from hip, knee, ankle & foot, non prosthetic user (first time visiting the rehabilitation set up for getting prosthesis). Exclusion criteria included already a prosthetic user, cognitively impaired.

Comparison between the level of depression, anxiety and stress among males and females with lower limb amputation was done using the Depression, Anxiety and Stress Scale (DASS-21).

After obtaining the scores for DASS-21 scale, the scores were evaluated and result was obtained.

## III. RESULTS

The data collected was obtained by following the standard protocol and scored and analyzed with the help of SPSS. The analyses involved Mean, Standard deviation, and T test. A total of 100 subjects in which 50 subjects was males and other 50 subjects

was females. The subjects were recruited for the study after checking and screening for the inclusion criteria.

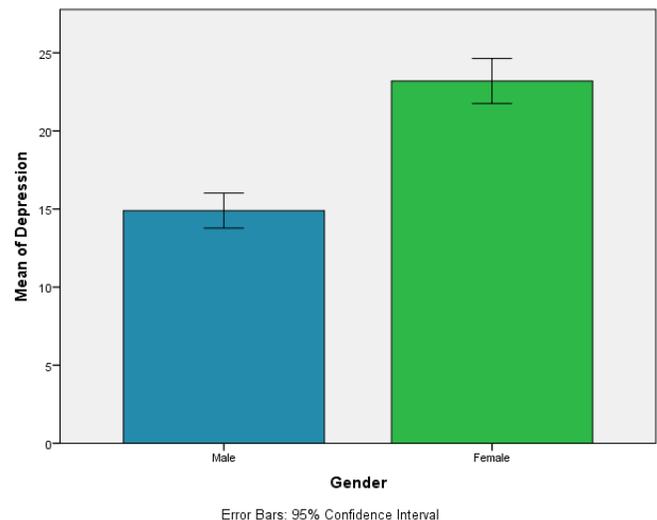
### DASS-21

#### Depression

To see the significant difference in mean of Depression among Male and Female, we applied independent sample t-test. Here, p-value is less than 0.05 shows that there is a significant difference in Depression among Male and Female. Moreover, the mean of Depression of Female is significantly greater than male.

Gender	N	Min	Max	Mean	Std. Deviation	Std. Error Mean	Mean Difference
Male	50	10	27	14.90	3.960	.560	-8.300
Female	50	12	32	23.20	5.063	.716	
Total	100	10	32	19.05	6.152	0.615	

The graph of mean of Depression gender wise is given below. Here error bars representing the 95% confidence interval of mean.

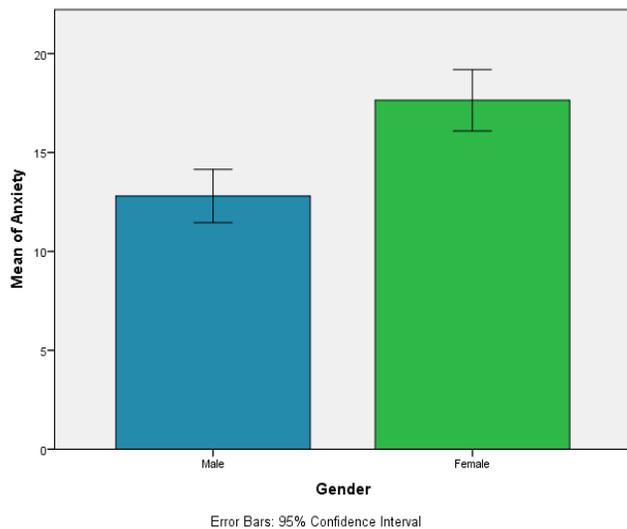


### Anxiety

To see the significant difference in mean of Anxiety among Male and Female, we applied independent sample t-test. Here, p-value is less than 0.05 shows that there is a significant difference in Anxiety among Male and Female. Moreover, the mean of Anxiety of Female is significantly greater than male.

Gender	N	Min	Max	Mean	Std. Deviation	Std. Error Mean	Mean Difference
Male	50	8	30	12.80	4.747	.671	-4.840
Female	50	8	34	17.64	5.461	.772	
Total	100	8	34	15.22	5.642	0.564	

The graph of mean of Anxiety gender wise is given below. Here error bars representing the 95% confidence interval of mean.

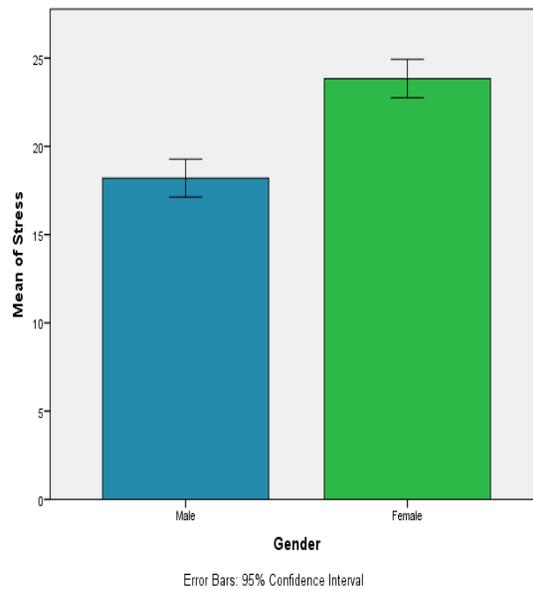


**Stress**

To see the significant difference in mean of Stress among Male and Female, we applied independent sample t-test. Here, p-value is less than 0.05 shows that there is a significant difference in Stress among Male and Female. Moreover, the mean of Anxiety of Female is significantly greater than male.

Gender	N	Min	Max	Mean	Std. Deviation	Std. Error Mean	Mean Difference
Male	50	8	28	18.20	3.774	.534	-5.640
Female	50	16	32	23.84	3.830	.542	
Total	100	8	32	21.02	4.727	0.473	

The graph of mean of Stress gender wise is given below. Here error bars representing the 95% confidence interval of mean.



**IV. DISCUSSION**

The loss of a limb is undoubtedly a devastating experience and several studies have shown that anxiety and depression symptoms are a common reaction after a lower limb amputation<sup>11</sup>. Symptoms of anxiety and depression are often interwoven, imposing comparable risks and intensifying poor medical outcomes<sup>12</sup>. The loss of a limb is certainly a traumatic event in patients already amputated, and several studies have shown that symptoms of anxiety and depression are a frequent response<sup>13</sup>.

The level of depression, anxiety and stress among subjects was assessed through DASS-21 scale. The result for depression among males subjects was the minimum score being 10 and maximum score was 27 with mean score 14.90. The mean score of DASS-21 for depression in case of males with standard deviation was  $14.90 \pm 3.960$ , standard error of 0.560. The result for depression among female subjects was the minimum score being 12 and maximum score was 32 with mean score 23.20. The mean score of DASS-21 for depression in case of females with standard deviation was  $23.20 \pm 5.063$ , standard error of 0.716.

The overall mean score of DASS-21 for depression with standard deviation was  $19.05 \pm 6.152$  with standard error 0.6152. The mean difference between both genders was -8.300.

This indicates the mean of depression of female is significantly greater than males.

The result for anxiety among males subjects was the minimum score being 8 and maximum score was 30 with mean score 12.80. The mean score of DASS-21 for anxiety in case of males with standard deviation was  $12.80 \pm 4.747$ , standard error of 0.671.

The result for anxiety among female subjects was the minimum score being 8 and maximum score was 34 with mean score 17.64. The mean score of DASS-21 for anxiety in case of females with standard deviation was  $17.64 \pm 5.461$ , standard error of 0.772.

The overall mean score of DASS-21 for anxiety with standard deviation was  $15.22 \pm 5.642$  with standard error 0.564. The mean difference between both genders was -4.840.

This indicates that there is significant difference in anxiety among males & females with mean of anxiety of females is significantly greater than males.

The result for stress among males subjects was the minimum score being 8 and maximum score was 28 with mean score 18.20. The mean score of DASS-21 for stress in case of males with standard deviation was  $18.20 \pm 3.774$ , standard error of 0.534.

The result for stress among female subjects was the minimum score being 16 and maximum score was 32 with mean score 23.84. The mean score of DASS-21 for stress in case of females with standard deviation was  $23.84 \pm 3.830$ , standard error of 0.542.

The overall mean score of DASS-21 for stress with standard deviation was  $21.02 \pm 4.727$  with standard error 0.473. The mean difference between both genders was -5.640.

This indicates that there is significant difference in stress among males & females with mean of anxiety of females is significantly greater than males.

The present studies shows females with lower limb amputation have higher level of depression, anxiety and stress as compared to males with lower limb amputation.

While depression is the leading cause of disability for both males and females, the burden of depression is 50% higher for females than males. In fact, depression is the leading cause of disease burden for women in both high-income and low- and middle-income countries<sup>14</sup> (WHO, 2008).

About twice as many women as men experience depression. Several factors may increase a woman's risk of depression. There is evidence to suggest that this depression gender gap may continue throughout the lifespan. According to the (World Health Organization 2016), depression accounts for fully 10 percent of the total non-fatal disease burden worldwide. Moreover, this burden falls disproportionately on girls and women. In one study, the global 12-month prevalence of major depressive disorder was 5.8% in females and 3.5% in males. The gender difference in depression – generally believed to be twice as many females experiencing major depression as males – represents a major health disparity. However, despite assertions that the gender difference in depression is among the most robust of findings in psychopathology research<sup>7</sup>.

## V. CONCLUSION

The result of the studies shows that there was a gender difference in context of Depression, anxiety and stress.

The key findings of the study suggest that females with lower limb amputation have higher levels of depression, anxiety and stress than males with lower limb amputation.

## VI. CLINICAL IMPLICATIONS

The findings of the study suggest that depression, anxiety and stress are a major problem post amputation which is significant among females. In India women are already underprivileged and post amputation they face more drastic difficulties in coping up as compared to their male counterparts leading to depression and anxiety in turn leading to increased stress level. Therefore it is important to identify the level of

depression & anxiety to resolve the problem thereby enhancing and upgrading their life post amputation.

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