



## Original Article

# Association between depression score and visual acuity in low vision patients.

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**BACKGROUND:** Low vision is a growing problem in the world. Congenital and acquired diseases play a major role in it. Age related diseases like age related macular degeneration, diabetic retinopathy, retinal detachment and congenital diseases like albinism, nystagmus, and retinitis pigmentosa cause low vision. Low vision persons face difficulty in health related and vision related quality of life. This study aims to screen out low vision patients for depression in order to provide effective treatment considering psychological effects of low vision.

**OBJECTIVE:** To study impact of low vision on health and quality of life of patient and to assess relationship between social support and depression among people with visual impairment.

**PATIENTS AND METHODS:** Patients were selected from Low Vision Clinic of Mayo Hospital Lahore. Total 30 patients were selected in age group 15 years to 60 years. Visual functions were assessed and Beck Depression Inventory (BDI) scale was used to rule out depression. BDI is a standard tool of screening for scoring depression. The higher the score the greater is depression.

**RESULTS:** After analyzing data, it was concluded that people having defective visual functions scored high on BDI Scale. Visual acuity and depression level are highly associated with each other.

**CONCLUSION:** The Low Vision patients with depression have poor visual function. However, we cannot relate depression to visual function defects as it is a bidirectional process. Interventions to diagnose and treat depression should be made to improve the quality of life of low vision patients.



## INTRODUCTION:

The number of blind people is increasing globally and it is estimated that currently there are 45 million blind people in world. Some people are not completely blind but have reduced ability to see as the refractive ability of eye is reduced. Such condition is called refractive error. Refractive errors can be corrected. However, in some conditions irreversible visual loss occurs. We categorize irreversible visual loss into blindness and low vision depending about the severity of defect. It has been estimated that the number of people with low vision is about three times the number of people who are blind.<sup>1</sup>

It is of significant value that most people with low vision (best-corrected visual acuity less than 6/18) can use their residual vision i.e. they have functional low vision. Functional low vision refers to the person's ability to use his remaining vision.<sup>2</sup> Low vision can be due to different diseases in the optical media of the eye including cornea, aqueous humour, lens, vitreous, retina, and/ or visual system of eye. Such conditions causing low vision ultimately leads to physical and mental disability or psychological issues.<sup>3</sup>

Very different psychological effects may happen after visual loss. Low vision is associated with negative outcomes such as limitation in daily activities, physical dysfunction, and depressive symptoms. Psychological implication of low vision includes denial, anger, fear, grief, depression, withdrawal and low self-esteem.<sup>4</sup> Low vision is known to be associated with depression. Depression is a serious condition which can be caused by different reasons and affect both physical and mental condition. It can be described by unusual behavior, low mood, lost interest in daily activities, change in appetite and sleep. In severe stage of depression person start thinking about death. Depression associated with Low vision is known to be associated with idea of suicide. Old people with low vision have high prevalence of depression.<sup>5</sup>

There are numerous causes of depression. Ongoing physical disability, sudden shocking news, any traumatic incident like death of closed one, break up in relation, unemployment and many other conditions can cause depression.<sup>6</sup> Depression is common in people with visual impairment. It further affects the independent functioning of persons. In low vision clinics, optometrist improves the refractive status of patients by optical devices and teaches independent functioning by the use of non-optical low vision devices. However, psychological aspects of treatment such as depression often remains undetected.<sup>7</sup>

Many patients with low vision need psychological support but are not receiving it due to lack of awareness and inadequate low vision services. The association between visual function loss and depression is very complex. Both depression and visual disability affect each other in a bidirectional relationship. It is reported that people with low vision often feel

lonely, sad, having low self-esteem, inferior, lethargic, unsatisfied, and consider life as burden. These symptoms indicate depressive disorder.<sup>8</sup>

Low vision has multiple deteriorating effects on the life of persons. It has been linked with severe physical disability. Visual disability makes the person handicapped. It leads to social avoidance and a feeling of being useless and inferior to others (inferiority complex).<sup>9</sup> Functional disability in low vision patient is highly associated with demographic factors such as education and economic status. It is very challenging situation and persons with low vision may face difficulty in maintaining their social and economic life.<sup>10</sup>

Treatment of low vision is also a multi-dimensional process. It includes refractive, medical, surgical, psychological, social, educational and allied health services. A number of rehabilitation professionals provide services to low vision persons. It is estimated that provision of low vision services increases the functional vision of patient.<sup>11</sup>

All eye care professional and low vision direct care providers are taught to counsel patients and their families during their adaptation to vision loss, to rule out depression, and, how to advise patients to cope with depression through rehabilitation process.<sup>12</sup>

Low vision rehabilitation services target is to achieve the goal to improve the lives of people with by improving ability to perform functions and other things including, such independent living, psychological and social life. Ophthalmologist should know all such aspects of treatment as people visit them to treat their low vision as first line of treatment.<sup>13</sup> By creating strong interactions among eye care professionals, low vision service providers and behavioral psychology may prevent depression, vision-specific distress and help in improving quality of life of patients.<sup>14</sup>

## PATIENTS AND METHODS:

This community based cross sectional study was conducted at College of Ophthalmology and Allied Vision Sciences (COAVS) Lahore from March to November 2016. Patients were selected from rural and urban areas of Gujranwala, Pakistan. 100 people from two rural areas, Sherkot & Pannah kot (including 50 males and 50 females), and 100 from urban area, main city Gujranwala (including 50 males and 50 females) in age group 16 years and above were included in the study.

Vision of all the subjects was checked using a distance Snellen's visual acuity chart. Individuals below 15 years and those who could not give history or where we were unable to perform examination were excluded from the study.

Before the start of research, the objectives and the process of research were explained to them in detail. They assured full cooperation in carrying out research and consented to be part of the study.

Retinoscopy and subjective refraction were done in the

individuals having visual acuity less than 6/12 in one or both eyes. Individuals having refractive errors were prescribed glasses. The data was recorded on the Performa, fed on the computer using the SPSS 13.0 software. The results were analyzed and tabulated using the same software.

### RESULTS:

After analyzing data, it was concluded that people having defective visual functions scored high on BDI Scale. BDI is a standard tool for scoring level of depression. Visual acuity and depression level are highly associated with each other as shown in tables 1 and 2

**Table 1:** Depression score and Visual acuity in Right eye

		Distance VA RE (VADRE)			Total
		.5-1	1.1-1.5	1.6-1.8	
BDI	no depression	1	0	0	1
	0-13	5	0	2	7
	14-19	5	1	1	7
	20-28	1	5	7	13
	29-63	1	0	2	3
<b>Total</b>		<b>13</b>	<b>6</b>	<b>12</b>	<b>31</b>

The BDI was compared between the visual acuity at distance in right eye.

Only one patient shows no depression with VA in the range of 0.5-1.

- Seven patients have BDI value from 0-13. Of these 5 had VA range between 0.5-1 and 2 had range between 1.6-1.8
- Seven patients have BDI value from 14-19. Of these 5 had VA range between 0.5-1, 1 patient had VA between 1.1-1.5 and 1 between 1.6-1.8
- Thirteen patients have BDI value from 20-28. Of these majority (n=7) had VA between 1.6-1.8, 5 had VA between 1.1-1.5, while only one patient had VA 0.5-1
- Three patients have BDI value from 29-63. Of these 1 had VA between 0.5-1 and 2 had VA between 1.6-1.8
- Chi Square test value was 14.602 with p value 0.006. This shows that there is strong association between degree of depression and decreased visual acuity in Right eye

**Table 2:** Depression score and Visual acuity in Left eye

		Distance VA LE (VADLE)			Total
		.5-1	1.1-1.5	1.6-1.8	
BDI	no depression	1	0	0	1
	0-13	5	2	0	7
	14-19	3	3	1	7
	20-28	1	8	4	13
	29-63	1	0	2	3
<b>Total</b>		<b>11</b>	<b>13</b>	<b>7</b>	<b>31</b>

The BDI was compared between the visual acuity at distance in left eye.

- Only one patient shows no depression with VA in the range of 0.5-1.
- Seven patients have BDI value from 0-13. Of these 5 had VA range between 0.5-1 and 2 had range between 1.6-1.8
- Seven patients have BDI value from 14-19. Of these 3 had VA range between 0.5-1, 3 patient had VA between 1.1-1.5 and 1 between 1.6-1.8
- Thirteen patients have BDI value from 20-28. Of these majority (n=8) had VA between 1.1-1.5, 4 had VA between 1.6-1.8, while only one patient had VA 0.5-1
- Three patients have BDI value from 29-63. Of these 1 had VA between 0.5-1 and 2 had VA between 1.6-1.8
- Chi Square test value was 13.994 with p value 0.001. This shows that there is strong association between degree of depression and decreased visual acuity in left eye as well

### CONCLUSION:

The Low Vision patients with depression have poor visual function. However, we cannot relate depression to visual function defects as it is a bidirectional process. Interventions to diagnose and treat depression were made to improve the quality of life of low vision patients.

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