

# QUALITY OF LIFE IN PEOPLE WITH CORRECTED AND UNCORRECTED HIGH REFRACTIVE ERRORS

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## ABSTRACT

**PURPOSE:** This study was conducted to evaluate the impact of corrected and uncorrected high refractive errors (URE) on quality of life (QOL).

**METHODS:** This descriptive cross sectional method involved self-designed Performa to evaluate the difference between quality of life in people with corrected and uncorrected refractive errors. Questionnaire was distributed among 140 participants out of which 70 were corrected and 70 were uncorrected.

**RESULTS:** This study showed that there was significant difference in QOL in people with corrected and URE regarding financial, social, emotional and vision related tasks. Out of 140 participants (39.3%) were male and (60.7%) were female, 50% were corrected while 50% had uncorrected high refractive error. A self-rated questionnaire was distributed in which a cut off points to represent three level of quality of life was specified. Score of 0-50 represents "poor quality of life" 51-70 "moderate quality of life" and 71-100 "good quality of life". With URE 59 participants represents poor quality of life and 11 represents moderate quality of life while with correction 32 participants represents moderate quality of life and 38 represents good quality of life ( $p$ -value<0.01).

**CONCLUSION:** People with uncorrected high refractive error experiences a lot of difficulties in their lives so this study concluded that quality of life is comparatively better in people with corrected high refractive error.

**KEYWORDS:** Uncorrected high refractive error, Quality of life, Myopia, Hyperopia, Astigmatism.

## INTRODUCTION

Blurring of vision due to defocused light on retina is known as refractive error.<sup>1</sup> There is 4 types of refractive errors such as Myopia, hyperopia, astigmatism and presbyopia. Myopia also known as nearsightedness, occurs due to increase length eyeball so light is focused in front of the retina causing blurring of distant objects.<sup>2</sup> High hyperopia is common refractive error often found where axial length of eyeball is less than 21mm results in blurring of vision, Asthenopia, strabismus amblyopia and also primary angle closure glaucoma.<sup>3</sup> In astigmatism, light rays don't focus at single point in the eye.<sup>4</sup> Presbyopia is an age-related disorder in which crystalline lens of

becomes hard so there is difficulty in focusing near objects.<sup>5</sup>

There are several factors which leads to refractive error like eye ball grows too long or too short, there is a change in shape of cornea and aging of lens. There are many options available to treat each type of refractive error.

1. Spectacle correction. Refractive error can simply be corrected with glasses.
2. Contact lenses. Refractive error can also be corrected with contact lenses by directly placing on the surface of eyes.

3. Surgery. There are several type of surgeries to correct refractive errors.

There are several factors due to which these refractive errors remain uncorrected, such as: lack of awareness about refractive error, illiteracy, so they don't pay much attention to their health issues specially vision related, other main factor is cost of corrective lenses, refractive services not available in remote areas. There may be other reasons which restrict them to visit hospital. There are some other factors such as: people worried about their cosmetic appearance as in high powered prescriptions glasses eyes look so prominent causing bull's eye effect which is cosmetic blemish<sup>6</sup> and for contact lens users it is difficult to find suitable contact lenses, increase level of care in handling contact lens.

Visual acuity of less than 6/12 in the better eye with an improvement of at least 0.2 log MAR after refraction is known as uncorrected refractive error.<sup>7</sup> Commonest cause of visual impairment and blindness is URE.<sup>8,9</sup> URE has been prioritized by World Health Organization in its vision 2020 program.<sup>10</sup> The prevalence of URE is 10.2%.<sup>11</sup> If these refractive errors remain uncorrected or improperly corrected then they can have negative impacts on vision related as well as health related quality of life.

URE have negative impacts on education, employment, mobility, independence, health, social relationships and also psychological aspects. QOL is severely impaired by uncorrected refractive error.<sup>12</sup> URE can cause immediate as well as long term consequences in both children and adult. On a normal school day, almost all academic-related tasks are conducted at near so clear and comfortable near vision is necessary to perform all their educational tasks. It is predicted that good vision (visual acuity, accommodation and binocular vision function) plays an important role in academic-related performance.<sup>13</sup> If there is high URE then academic performance of person is

severely affected.

High uncorrected refractive error also affects health of a person as it causes asthenopic symptoms. Asthenopia (headache, watering, photophobia, redness etc.) is commonest complain among patients who have refractive error.<sup>14</sup>

Economic position of person is also affected due to URE as there are less job opportunities affecting their family income which eventually declines country's economy. As there is huge economic burden due to URE which is 202.000 million USD.<sup>15</sup> It also affects mobility which ultimately leads to loss of independent existence. Vision impairment is a risk factor for reduced mobility and independence. Psychological and social relationships also affected by high refractive error as person cannot see gestures of other person while talking and also unable to participate easily in functions\events so he or she prefers to be in isolation which decreases their confidence level.

The aim of study is to evaluate the impact of corrected and URE and to compare the QOL in people who are using any correction with those who are not using any correction for refractive error.

#### MATERIALS AND METHODS

A descriptive cross sectional study was conducted among people who were having corrected or uncorrected high refractive errors. Data was collected by self-rated questionnaire. For sampling non probability convenient sampling was used. A total of 140 patients presented to Mayo hospital Eye OPD were examined out of which 70 were corrected and 70 were uncorrected. The respondents were asked 21 questions to which they had to pick one choice out of 5 given choices. Each choice was given marks from 1-5. In the end sum aggregate of all questions was calculated for each individual. Based on scores obtained the individual was termed as having poor (score 0-50),

moderate (score 51-70) or good (score 71-105) quality of life. Frequencies and percentages of different variables were calculated. Presentation of data was done by making tables. All data was entered and analyzed using statistical package for social sciences (SPSS version 25).

**RESULTS**

In this study there were 140 participants out of which (39.3%) were male (60.7%) were female. 50% were corrected while 50% had uncorrected refractive error. Individuals with corrected refractive errors had ocular discomfort while reading, difficulty in performing daily activities, doing manual activities, reading an article in newspaper, reading textbook at an arm length, watching television, recognizing faces from distance, reading sign boards, recognizing gestures, travelling alone, finding jobs, feel less inclined to meet people, preferred to be in isolation and felt useless or burden to others respectively (table 1).

Individuals with uncorrected high refractive error had ocular discomfort while reading, difficulty in performing daily activities, doing manual activities, reading an article in newspaper, reading textbook at an arm length, watching television, recognizing faces from distance, reading sign boards, recognizing gestures, travelling alone, finding jobs, feel less inclined to meet people, preferred to be in isolation and felt useless or burden to others (table 1).

Score of 0-50 represents “poor quality of life” 51-70 “moderate quality of life” and 71-100 “good quality of life”. With URE 59 participants represents poor quality of life and 11 represents moderate quality of life while with correction 32 participants represents moderate quality of life and 38 represents good quality of life (table 2).

**Table - 1: Questionnaire Distributed in Participants**

Questions	N=70 Each	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	P-value
Ocular discomfort while reading	Un corrected	16(22.9%)	54(77.1%)	0	0	0	<0.01
	Corrected	0	17(24.3%)	0	53(75.7%)	0	
Difficulty in performing daily activities	Un corrected	27(38.6%)	38(54.3%)	0	5(7.1%)	0	<0.01
	Corrected	0	1(1.4%)	0	69(98.6%)	0	
Difficulty in reading an article in newspaper	Un corrected	30(42.9%)	37(52.9%)	0	3(4.3%)	0	<0.01
	Corrected	0	19(27.1%)	0	51(72.9%)	0	
Difficulty in reading textbook at an arm length	Un corrected	38(54.3%)	29(41.4%)	0	3(4.3%)	0	<0.01
	Corrected	0	21(30.0%)	0	49(70.0%)	0	
Difficulty in watching television	Un corrected	38(54.3%)	30(42.9%)	0	2(2.9%)	0	<0.01
	Corrected	0	10(14.3%)	0	60(85.7%)	0	
Difficulty in recognizing faces from distance	Un corrected	8(11.4%)	50(71.4%)	0	10(14.3%)	2(2.9%)	<0.01
	Corrected	0	0	0	64(91.4%)	6(8.6%)	
Difficulty in reading sign boards	Un corrected	17(24.3%)	46(65.7%)	2(2.9%)	4(5.7%)	1(1.4%)	<0.01
	Corrected	0	9(12.9%)	0	61(87.1%)	0	
Difficulty in recognizing gestures	Un corrected	11(15.7%)	50(71.4%)	0	8(11.4%)	1(1.4%)	<0.01
	Corrected	0	0	0	70(100%)	0	
Feel safe while travelling independently	Un corrected	0	22(31.4%)	0	48(68.6%)	0	<0.01
	Corrected	0	66(94.3%)	0	4(5.7%)	0	
Difficulty in finding jobs	Un corrected	15(21.4%)	30(42.9%)	20(28.6%)	5(7.1%)	0(0.0%)	<0.01
	Corrected	0	0	35(50.0%)	35(50.0%)	0	
Feel less inclined to meet people	Un corrected	3(4.3%)	49(70.0%)	0	18(25.7%)	0	<0.01
	Corrected	0	5(7.1%)	0	65(92.9%)	0	
Prefer to be in isolation	Un corrected	3(4.3%)	46(65.7%)	0	21(30.0%)	0	<0.01
	Corrected	0	5(7.1%)	65(92.9%)	0	0	
Feel useless or burden to others	Un corrected	6(8.6%)	39(55.7%)	1(1.4%)	23(32.9%)	1(1.4%)	<0.01
	Corrected	0	0	70(100%)	0	0	
Difficulty in doing manual activities	Un corrected	33(47.1%)	26(37.1%)	6(8.6%)	5(7.1%)	0	<0.01
	Corrected	0	2(2.9%)	68(97.1%)	0	0	

**Table - 2: The quality of life in people with corrected and uncorrected high refractive error.**

Score	Uncorrected	Corrected	P-value
Poor (0-50)	59	0	<0.01
Moderate (51-70)	11	32	
Good (71-105)	0	38	

## DISCUSSION

Irefractive error or ametropia is defined as inability of the eye to correctly focus the light rays on the retina from infinity.<sup>16</sup> symptoms of refractive error are reduction in visual acuity, asthenopic symptoms (blurring, watering, headache etc.). Apart from discomfort asthenia also affect near vision related tasks like reading, writing, watching television etc.<sup>14</sup> In my study (64.3%) who were having URE experienced headache while reading book or watching television.

URE is the major cause of vision impairment (VI). It limits person's daily living activities, public interaction and also affects the health of person. World health organization predicted that people with URE will cause more disability-adjusted life years than AIDS and other systemic disorders.<sup>17</sup> Refractive errors have deleterious impact on QOL if remained uncorrected. In older people, slight decrease in vision has been associated with an increased risk of physical, social, and mental problems.

624.8 million People are visually impaired due to URE. Visual impairment due to URE can significantly reduce QOL. It affected education of person and also the economic position because they had difficulty in finding jobs.<sup>18</sup> Similar results obtained from my study that (24.9%) participants who had high uncorrected refractive error were having difficulty in finding jobs. Academic performance of person would be good if he or she don't any disorder related to vision. School going children with reduced vision were scoring low on class test as it was suggested that academic performance of child would be good, if child didn't have any ocular disorder. Conclusion of study was that the educational performance of child was severely affected if refractive error remained uncorrected.<sup>19</sup>

As mentioned above educational activities of person severely affected due to URE. As academia is related to near vision, if near vision of person

reduced person feels difficulty while reading/writing. According to my research (54.3%) felt difficulty in reading books at arm length and (52.9%) had problem in reading an article from newspaper due to URE. A survey was conducted in Timor-Leste to understand the impact on vision related quality of life (VS QOL) due to distance and near vision reduction. The survey showed that reduction in distance vision had comparatively greater effect on VS QOL than near vision reduction.<sup>20</sup>

According to this research participants who were not using any correction for refractive error were facing difficulty in distance and near vision related tasks. Results of this study were (54.3%) participants facing difficulty in watching television, (71.4%) did not recognize faces from distance and (65.7%) were having difficulty in reading sign boards. Near vision related activities were also affected. (71.4%) were having problem in recognizing gestures of others when talking to someone and (81.4%) reported that they bumped against other people in crowded areas. From these results it is concluded that QOL affected due to URE which reduces distance and near vision. URE also have negative impact on daily living activities. (54.3%) agreed that they felt difficulty in performing their daily living activities. (47.1%) had problem in doing manual activities so they became dependent on others. Independency of people also affected because (68.6%) did not feels safe while travelling alone. From these results it is concluded that (55.7%) felt useless or burden to others so they preferred to be in isolation rather than depending on anybody. People became less socially interactive due to URE because (71.4%) participants said that they cannot see the gestures of others while talking. (70.0%) did not prefer to meet friends/people.

Refractive error is also with have impact on person's ability to discriminate colors.<sup>21</sup> According to my research participants who have difficulty if recognizing colors due to URE were 34.3%.

## CONCLUSION

The quality of life is comparatively better in people with corrected than uncorrected high refractive error. People with uncorrected high refractive error experience a lot of difficulties in their lives. Highly reduced vision due to uncorrected refractive error is also associated with depression/anxiety.

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