

# Health Related Quality of Life Assessment in Strabismus Patients Using AS-20 Questionnaire at a Tertiary Care Hospital

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## ABSTRACT

**Background:** Strabismus or misalignment of eyes, can have ocular, cosmetic as well as psychological effects on a patient's health. Psychologically strabismus can be a reason for constant depression and feeling left out in a society. Management of strabismus keeping in mind its impact on mental health can help decrease the burden of mental stress in a community due to this ocular condition. **Objective:** This study was designed to assess the psychosocial impact of strabismus on daily life. **Study Design:** Cross-sectional study. **Settings:** Ophthalmology Department, Gujranwala Medical College/ Teaching Hospital. **Duration:** October 2020 to March 2021. **Methods:** Adult Strabismus (AS)-20 questionnaire was designed on google forms. Adult patients with no H/O squint surgery giving consent were interviewed. Mean AS-20 scores (Overall, gender wise, marital status wise and psycho-social/ functional sub-scale scores mean) were calculated and analyzed.  $p < 0.05$  was taken to be statistically significant. **Results:** Total 35 patients were included. 14 (40%) were male while 21 (60%) were female. 20 (57.14%) were un-married while 15(42.85%) were married. Overall mean AS-20 score was  $57.06 \pm 21.78$ . Mean AS-20 score for males was  $60.80 \pm 26.16$  which was greater than females  $52.73 \pm 18.77$ . Mean AS-20 scores for married and un-married individuals were  $57.50 \pm 24.39$  and  $54.81 \pm 20.64$  respectively. Comparison of gender wise and marital status wise mean AS-20 score was of no statistical significance. **Conclusion:** Overall mean AS-20 score of strabismus patients was (57.06) which was considerably less as compared to AS-20 score for normal individuals i.e. (95). We recommend that ophthalmologists should consider the psychological impact on daily life while managing strabismus patients.

**Keywords (MeSH):** Adult, Strabismus, Psychological side effects, Quality of Life.

## INTRODUCTION

Strabismus or squint refers to an ocular condition in which the eyes are not aligned and point in different directions. It affects more than 4% of the population.<sup>1</sup> Strabismus can be classified by different classification systems. American Association for Pediatric Ophthalmology and Strabismus classifies strabismus broadly according to the direction of eye misalignment (esotropia, exotropia, hypertropia, hypotropia). Strabismus can also be classified as latent (phoria) or manifest (tropia) and acquired or congenital.<sup>2</sup> Esotropia is

more common in pediatric age group, while in adults exotropia is encountered more commonly.<sup>3</sup>

Strabismus in adults can also be associated with systemic medical illnesses including compressive CNS lesions, thyroid ophthalmology and vasculopathy.<sup>4</sup> Trauma can also cause an intermittent squint in adults.<sup>4</sup> Examination of strabismus include a range of tests including Hirschberg's test, Brucker's test, cover tests, alternate cover test, alternating prism cover test (APTC), Krimsky prism cover test, video goggles, gaze trackers, synoptophore and anterior segment OCT.<sup>5</sup>

Effects of strabismus on personal health can be categorized in three assemblies i.e., ocular, cosmetic and psychosocial. Ocular effects include impaired vision in non-dominant eye, diplopia and dry eye syndrome.<sup>6</sup> Cosmetic effects include abnormal appearance of eyes due to misalignment. The main effect, strabismus has on a person's personality build-up, is the psychosocial one.<sup>7</sup> Such psychological issues include depression,<sup>8</sup> social embarrassment, lack of confidence to face other persons, decreased participation in social gatherings, poor performance in professional life, marriage problems for females and the list goes on.

A number of patients with strabismus are encountered in ophthalmology practice every day. Majority of them seek treatment for cosmetic purpose. Most of these patients are in middle of a depressive and anxiety circle due to social standards.<sup>9</sup> Acquired strabismus in adults have more adverse psychological effects than the congenital strabismus and it is also accompanied by comorbidities.<sup>10</sup>

This study was designed to note the psychosocial aspect of strabismus on daily life and to evaluate the burden of mental stress in community due to this ocular condition. The quality of a good clinician is not only to overcome somatic aspect of a disease, but also to address its mental and psychological impact on a patient's personality.<sup>11</sup> Furthermore, this study can also help us decrease the pool of depressive patients, if strabismus is one of the causes of depression.

## METHODS

This was cross-sectional study conducted at Department of Ophthalmology, Gujranwala Medical College/Teaching Hospital, Gujranwala Pakistan. The duration of the study was six months from October 2020 to March 2021. Total 35 patients were included in this study by using consecutive sampling technique.

Patients of adult age group (above 18) having manifest squint and having cosmetic concerns related to ocular misalignment were included in this study. Patients of pediatric age group (accommodative or infantile esotropia), post-operative patients of squint surgery or not giving consent were excluded from this study.

Psychosocial assessment of strabismus patients can be done using various questionnaires and scales as stated by health-related quality of life index (HRQoL). Various standardized questionnaires have been designed for this purpose including Amblyopia Treatment Index (ATI), Amblyopia and Strabismus Questionnaire (A&SQ), Adult Strabismus Questionnaire (AS-20) and the Intermittent Exotropia Questionnaire (IXTQ). (12) Adult Strabismus-20 questionnaire is, by far, more responsive for psychosocial assessment of strabismus patients. (13)

(14) AS-20 is a 20-item patient-derived and strabismus-specific tool made to assess health-related quality of life (HRQoL) in adults with strabismus. (15) AS20 is self-administrative and has a strict focus on strabismus only. The answers are recorded on 5-point (never=100, rarely=75, sometimes=50, often=25 and always=0) likert type scale. AS-20 score can range from 0 (worst AS-20 score) to 100 (best AS-20 score). 0 score reflect worst HRQoL while 100 score reflect best HRQoL.

The questionnaire for this study was designed on google forms. Questionnaire had first 5 items about participant demographics (consent, age, gender, marital status and type of squint). It was then followed by 20 questions of AS-20 sequentially (in English). Participants were interviewed by a doctor who also filled out the online form using the google form link on mobile phone to record responses of the patient. The patients with good literacy rate and understanding of English were given the form link for self-administrative response. The data was transferred to SPSS from google spread sheets. Frequencies were calculated for categorical variables (age, gender, marital status, type of squint). Mean  $\pm$  S.D was calculated for numeric data.  $p < 0.05$  was taken to be statistically significant.

## RESULTS

Total 35 patients who presented to us during study period were included in this study. Demographic details of the study population are given in Table I.

**Table 1: Demographics of study population**

Variables	Frequencies	
Age	18-27	19 (54.28%)
	28-37	12 (34.28%)
	38-47	0
	48-57	4 (11.42%)
	Total	35 (100%)
Gender	Male	14 (40%)
	Female	21 (60%)
	Total	35 (100%)
Marital Status	Single	20 (57.14%)
	Married	15 (42.85%)
	Total	35 (100%)
Type of Squint	Congenital	20 (57.14%)
	Acquired	15 (42.85%)
	Total	35 (100%)

The overall mean AS-20 score was  $57.06 \pm 21.78$ . Mean AS-20 score for males was  $60.80 \pm 26.16$  which was greater than females  $52.73 \pm 18.77$ . Mean AS-20 scores for married and un-married individuals were  $57.50 \pm 24.39$  and  $54.81 \pm 20.64$  respectively. This difference was of no statistical significance on independent sample t-test (Table 2).

**Table 2: Gender and Marital status wise mean AS-20 scores and their comparison**

Variables		AS-20 score Mean $\pm$ S.D	P-value*
Gender	Male	60.80 $\pm$ 26.16	0.295
	Female	52.73 $\pm$ 18.77	
Marital Status	Married	57.50 $\pm$ 24.39	0.727
	Unmarried	54.81 $\pm$ 20.64	

First ten questions (item no 1-10) of AS-20 questionnaire reflect the psychosocial score and next ten questions (item no 10-20) reflect the functional score. In our study overall mean psychosocial subscale score was  $46.13 \pm 13.19$  and functional subscale score was  $67.99 \pm 23.71$ . Marital status and gender wise individual mean psychosocial and functional subscale scores are shown in table 3 & 4 respectively.

**Table 3: The mean AS-20 score of psycho-social and function subscale between married and unmarried**

Psycho-Social Subscale Score				Functional Subscale Score			
Item No	Married (n=15)	Unmarried (n=20)	Total	Item No	Married (n=15)	Unmarried (n=20)	Total
1	43.33	37.50	40.00	11	86.67	88.75	87.83
2	45.00	36.25	40.00	12	81.67	86.25	84.28
3	38.33	31.25	34.28	13	78.33	78.75	78.56
4	40.00	36.25	37.83	14	85.00	90.00	87.83
5	63.33	68.75	66.42	15	66.67	75.00	71.42
6	31.67	18.75	24.28	16	75.00	82.50	79.28
7	56.67	61.25	59.28	17	33.33	27.50	30.00
8	48.33	45.00	46.42	18	31.67	11.25	20.00
9	60.00	57.50	58.56	19	73.33	67.50	70.00
10	50.00	57.50	54.28	20	61.67	77.50	70.71
Mean $\pm$ SD	47.66 $\pm$ 10.06	45.00 $\pm$ 15.73	46.13 $\pm$ 13.19	Mean $\pm$ SD	67.33 $\pm$ 19.91	68.50 $\pm$ 27.02	67.99 $\pm$ 23.71

**Table 4: The mean AS-20 score of psycho-social and function subscale between Male and Female**

Psycho-Social Subscale Score				Functional Subscale Score			
Item No	Male (n=14)	Female (n=21)	Total	Item No	Male (n=14)	Female (n=21)	Total
1	51.79	32.14	40.00	11	92.86	84.52	87.83
2	51.79	32.14	40.00	12	87.50	82.14	84.28
3	41.07	29.76	34.28	13	78.57	78.57	78.56
4	44.64	33.33	37.83	14	91.07	85.71	87.83
5	75.00	60.71	66.42	15	83.93	63.10	71.42
6	32.14	19.05	24.28	16	82.14	77.38	79.28
7	62.50	57.14	59.28	17	41.07	22.62	30.00
8	48.21	45.24	46.42	18	23.21	17.86	20.00
9	69.64	51.19	58.56	19	85.71	59.52	70.00
10	50.00	57.14	54.28	20	78.57	65.48	70.71
Mean $\pm$ SD	52.68 $\pm$ 13.04	41.78 $\pm$ 14.33	46.13 $\pm$ 13.19	Mean $\pm$ SD	74.46 $\pm$ 23.17	63.69 $\pm$ 24.66	67.99 $\pm$ 23.71

## DISCUSSION

Median AS-20 score for normal individuals without strabismus is 95 (range 85-100).<sup>16</sup> Mean AS-20 score  $\pm$  S.D of adult patients with strabismus in our study was  $57.06 \pm 21.78$  which is more than 30 points less than normal individuals. This reflects the level of mental stress and poor psychological impact of strabismus on a person's quality of life. A study from India concluded mean AS-20 score of 61.62. (16) Another study conducted in Nepal concluded a score of 68.75 in its selected population.<sup>17</sup>

Comparison between male and female suggests that females have more worst AS-20 score as compared to males. This is also noted in a study conducted by Glasman *et al.*<sup>18</sup> They demonstrated that there was a considerable improvement in AS-20 score following surgical correction of strabismus in their patients, which reflects improved quality of life post-operatively.<sup>18</sup> Because of stress related to marital issues, there is a belief that effect of strabismus on QoL is worse in un-married persons as compared to married. However, our study

shows that the mean AS-20 score not differ much between married and un-married persons.

The questionnaire (AS-20) used in our study is self-administrative and designed for adult patients. There are various questionnaires designed to measure the effect of strabismus and they vary from one age group to other. For pediatric age group, Amblyopia treatment index (ATI) is applied to compare the use of patching with that of atropine as treatments for amblyopia in childhood. Another questionnaire which can be used is intermittent exotropia questionnaire (IXTQ). Both ATI and IXTQ are administered by parent or guardian. Thus, these questionnaires are not self-administrative.<sup>19</sup>

## CONCLUSION

Overall mean AS-20 score of strabismus patients was (57.06) which was considerably less as compared to AS-20 score for normal individuals i.e. (95). We recommend that ophthalmologists should consider the psychological impact on daily life while managing strabismus patients.

## LIMITATIONS

Limitations of this study include relatively small sample and cross-sectional study design. This study was designed for only pre-operative patients of strabismus. All the patients who had cosmetic concern about ocular misalignment were included. Also the patients are not categorized into the type of squint based on direction of deviation. Individual AS-20 score for each type of squint (on the basis of direction of deviation) were not analyzed.

## SUGGESTIONS / RECOMMENDATIONS

Authors recommend multi-center study with large sample size and longitudinal study design to evaluate the effect of surgical correction of strabismus and post-operative AS-20 score.

## CONFLICT OF INTEREST / DISCLOSURE

There is no conflict of interest.

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