

# The Impact of Prosthetic Eye Shell on the Quality of Life of Anophthalmic Patients; Questionnaire Based

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## Abstract:-

### ➤ Aim:

The aim of this hospital-based study is to conduct a questionnaire among prosthetic eye wearers to assess their psychological feelings and level of satisfaction.

### ➤ Method:-

A questionnaire was constructed by a panel in the Department of Prosthodontics, Crown and Bridge, Government Dental College, Srinagar, Jammu and Kashmir. The questionnaire covered patient's demographics, psychometrics and prosthesis related care. The National Eye Institute Visual Functioning Questionnaire 25 (NEI VFQ 25) validated version 2000 and other prior studies were used as reference for the questionnaire architecture. This cross-sectional study included participants who reported to the department for the fabrication of prosthetic eye from a period of January 2022 to September 2022. Statistical software SPSS (version 20.0) and Microsoft Excel were used to carry out the statistical analysis of data.

### ➤ Results:-

About 30 individuals participated in the study. With 46.7% of the sample (n = 14) being male and 53.3% (n = 16) being female, the average age was determined to be 38.8 years. Following ocular prosthesis, anophthalmic patients show a significant shift in psychological sentiments. After the prosthesis-induced cosmetic alteration, participants were found to be more motivated and there has been a noticeable improvement in their psychological well-being. Discharge and watering were the most frequent prosthetic-related concerns after the prosthesis use. None of the prosthetic wearers underwent additional cosmetic surgery since they were content with the results in comparison to their earlier situation and were not interested in making any changes.

### ➤ Conclusion:-

It was found that using an eye prosthesis significantly reduces feelings of anxiety, insecurity, and inferiority complex and thus improves the quality of life

of anophthalmic patients in every aspect. Disorders of anxiety and depression appear to be underdiagnosed in those who use prosthetic eyes. Therefore, routine clinical therapy should include the use of standardized psychometric screening for these depression and anxiety disorders.

## I. INTRODUCTION

The eyes are typically the first characteristics of the face to catch our attention, and they play an important role in our daily life.<sup>1</sup> An individual's confidence is severely impacted by the loss of an eye or a malformed eye. The lack of ocular content can be due to congenital eye malformations eg anophthalmia/microphthalmia<sup>2</sup> or it can be acquired as a result of surgical excision, which is indicated in a variety of situations including trauma, malignancy, and blind painful eye.<sup>3,4</sup> The health of the other eye is impacted by the eye loss itself and other variables that may have a significant influence on quality of life and cause distress include possible discharge from the anophthalmic socket, symptoms of dry socket, decreased vision and changes to appearance.<sup>5,6</sup> The ocular prosthesis, commonly referred to as a "prosthetic eye" or "artificial eye," is an aid that fits into an anophthalmic socket and replaces a missing eye. The prosthetic eye restores esthetics, prevents deformation of the eyelids, safeguards the anophthalmic cavity, directs lacrimal flow and prevents its buildup in this cavity.<sup>7</sup> Moreover the prostheses are able to effectively influence interpersonal relations which results in a beneficial impact on quality of life of the patient and significant progress in psychosocial activities.<sup>8,9</sup> Custom-made eye prosthesis have a number of benefits, including improved mobility, more even pressure distribution (which lowers the risk of ulceration), improved fit, comfort adaptability and improved esthetics.<sup>10</sup> Aside from the emotional benefits, anophthalmic patients struggle with overall well-being, problems in seeking employment, maintaining their prosthesis, and issues related to monocular statuses such as impaired vision.<sup>11,12</sup> Lagophthalmos, watering, mucous discharge, and decreased prosthesis movement are the common complications experienced by wearers of ocular prosthetics.<sup>13,14</sup> Therefore, the goal of this hospital-based

study is to assess patients' psychological well-being and satisfaction using a questionnaire among individuals who wear prosthetic shells.

**II. METHOD**

A questionnaire was constructed by a panel in the Department of Prosthodontics, Crown and Bridge, Government Dental College, Srinagar, Jammu and Kashmir. The questionnaire covered patient's demographics, psychometrics and prosthesis related care. The National Eye Institute Visual Functioning Questionnaire 25 (NEI VFQ 25) validated version 2000<sup>15</sup> and other prior studies were used as reference for the questionnaire architecture. This cross-sectional study included participants who reported to the department for the fabrication of prosthetic eye or for follow up appointments from a period of January 2022 to December 2022. The participants of this study had to wear the prosthetic eye for a minimum of 3 months before the questionnaire session. Each subject received a thorough explanation of the study before their informed consent was received.

➤ *Psychological Parameters:*

• *Patient Health Questionnaire (PHQ):*

The patient health questionnaire (PHQ) is a self-administered, multipurpose tool for screening, diagnosing, monitoring and measuring the severity of depression. The PHQ-9 is a simple, valid, and reliable tool for evaluating depression. It rates each of the nine criteria from "0" (not at all) to "3." (nearly every day). When a person receives a PHQ-9 score of 5, 10, 15, or 20, they are categorized as having mild, moderate, or severe depression, accordingly.<sup>16</sup>

• *Social Appearance and Anxiety Scale (SAAS):*

The SAAS is a 16-item questionnaire that gauges people's anxiety about how they appear in general and about others' opinions of them. Participants are asked to score each item's relation to themselves on a Likert scale from 1 (not at all) to 5. (extremely). Higher scores suggest greater social anxiety. The total score goes from 16 to 80. High test-retest

reliability, divergent and good internal consistency have all been observed for the SAAS.<sup>17</sup>

For the inferiority complex and insecurity variables, a four-point Likert scale with a range of 0 (None) to 3 (Severe) was utilized. The severity increases with higher grading.

• *Prosthesis Related Care:*

Based on a study by Nicodemo and Ferreira<sup>18</sup>, an evaluation of prosthetic care was conducted. Grading for initial prosthesis adaptation ranges from 0 (good) to 3 (bad); a higher score denotes poor ocular prosthesis adaptability. Cleaning of prosthesis grading with soap or water, wearing full frame glasses 1 (Yes) or 2 (No); current prosthesis fit satisfied (1) or unsatisfied (2); nocturnal wear of ocular prosthesis based on 3-scale grading (1) Yes, (2) No, and (3) Sometimes, were used in the questionnaire.

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Statistical software SPSS (version 20.0) and Microsoft Excel were used to carry out the statistical analysis of data. Continuous variables were expressed as mean with standard deviation (SD). Wilcoxon signed rank test was done for psychological parameter and prosthesis related parameter.

**III. RESULTS**

➤ *Demographic Data:*

Mean ± SD age of the participants (n=30) was 37.4 ± 13.12 years. There were about 46.7% men (n = 14) and 53.3% women (n = 16). Furthermore, 40% (n = 12) were employed, 36.6% were not employed (n = 11), and 23.3% were students (n = 7). About 10% lived in urban areas (n = 3) and 90% lived in rural areas (n = 27). Concerning marital status, 36.6% (n = 11) were unmarried and 63.3% were married in this study (n = 27) The reasons for eye loss were found to be trauma (n=18), tumors and infections of eye(n=9), prior bullet injuries (n=2) and iatrogenic cause (n=1).

Table 1 Demographic Data

	n (%)
<b>Age</b>	37.4 ± 13.12
<b>Gender</b>	
Male	14 (46.7)
Female	16(53.3)
<b>Address</b>	
Urban	3(10)
Rural	27(90)
<b>Occupation</b>	
Employed	12(40)
Not employed	11(36.6)
Students	7(23.3)
<b>Educational Qualification</b>	
Student	7(23.3)
Primary education	15(50)

Graduate	8 (26.6)
<b>Current Marital Status</b>	
Unmarried	11(36.6)
Married	19(63.3)

➤ *Psychological Related Parameters:*

• *Patient Health Questionnaire (PHQ):*

PHQ-9 score revealed mild depression levels in 22 patients, moderately severe levels in 7 and severe depression levels in 1 patient. PHQ score improved in all patients after minimum of 3 months of prosthesis use.

• *Social Appearance and Anxiety Scale (SAAS):*

76.6% of participants who were asked to remark on a statement regarding feeling at ease with how they appear to others gave one of three responses: somewhat, very much, or extremely. 73.3% of participants gave a somewhat, very much, or extremely answer when questioned about getting

nervous when it is evident that people are staring at them or seem to be identifying problems in their looks. 50% of participants who were asked if they ever get nervous having their photo taken gave one of three responses: slightly, very much, or extremely. Fewer participants were concerned with other statements in the appearance anxiety scale.

After using the ocular prosthesis, there has been a noticeable improvement in psychological well-being. The number of participants who showed severe inferiority complex and insecurity before the prosthesis were more and after the prosthesis there was improvement in these psychological parameters.

Table 2 Psychological Parameters

	<b>Before prosthesis n(%)</b>	<b>After prosthesis (after 2 months) n(%)</b>
<b>Depression (PHQ-9)</b>	<b>30(100)</b>	<b>23(76.6)</b>
No or minimal		7
Mild depression levels	22	19
Moderately severe depression levels	7	4
Severe depression levels	1	0
<b>Social appearance anxiety scale (SAAS)</b>		
Not at all		
Mild	3	12
Moderate	16	17
Severe	6	1
Extremely	5	0
<b>Insecurity (severe)</b>	11	6
<b>Inferiority complex</b>	13	7

• *Prosthetic Related Care:*

Despite the use of an ocular prosthesis, it was revealed that discharge and watering were significant. These complaints appear to be the main contributing cause. A statistical analysis revealed that other factors such as discomfort, eye pain, and burning sensation were not significant.

The majority of patients have never worn a prosthesis before. Regarding prosthesis adaption, at first, 36.3% (n = 11) of the participants felt well, 46.6% (n = 14) felt normal, 13.3% (n = 4) felt not good, and 3.33% (n = 1) felt bad.

Regarding the removal of prostheses, 56.6% (n = 17) did it daily and the rest did so weekly in this study. About 76.6% (n = 23) of the participants wore full frames, while 23.3% (n = 7) did not. Participants in this study were wearing customized prosthesis. In this study, 80% of participants (n = 24) were satisfied with the prosthesis' fit, while 20% (n = 6) were not. Concerning the fit of prosthesis in this study, 80% (n = 24) were satisfied and 20% (n = 6) were unsatisfied. About 56.6% of participants (n = 17) said they preferred tap water, and 43.3% (n = 13) said they cleaned the shell with mild soap.

Table 3 Prosthesis Related Parameters

<b>Use of prosthesis before</b>	
Yes	2(6.66%)
No	28(93.3%)
<b>Use of spectacles</b>	
Yes	23(76.6%)
No	7(23.3%)
<b>Retention of prosthesis</b>	
Satisfied	24(80%)
Unsatisfied	6(20%)
<b>Removal of prosthesis</b>	

Daily	17(56.6%)
Weekly	13(43.3%)
<b>Prosthesis cleaning method</b>	
Tap water	17(56.6%)
Soap water	13(43.3%)
<b>Comfort level</b>	
Satisfied	26(86.6%)
Unsatisfied	4(13.3%)
<b>Discharge</b>	
Yes	27(90%)
No	3(10%)
<b>Appearance related to normal eye</b>	
Satisfied	21(70%)
Moderately satisfied	8(26.6%)
Unsatisfied	1(3.33%)

#### IV. DISCUSSION

The eyes are the most prominent feature of the face and their removal makes patients more vulnerable psychologically. Following surgery, prominent sentiments in patients include shame, embarrassment, a desire to hide, insecurity, and fear. According to Ahm, Lee, and Yoon (2010), eye removal has such terrible effects on the patients that some of them experience anthropophobia, or the fear of encountering unfamiliar persons or surroundings.<sup>19</sup> Additionally, increased feelings of loneliness and anxiety were evidenced by the way society responded to their loss. Younger age groups and working professionals in this study had greater depression rates. According to a research by Goiato et al.<sup>9</sup>, patients' interpersonal interactions were significantly impacted by their ocular prosthesis, which may have been linked to emotional shift and anthropophobia. Negative feelings about interpersonal interactions in patients lead to physical and mental stress, which leads to emotional instability<sup>20</sup>. It is crucial to note that anxiety poses a risk to one's health and, consequently to the quality of life, as anxious people are more likely to report poorer health conditions, pain, limitations on daily activities, problems with sleep, as well as a higher tendency to consume tobacco, alcohol, be sedentary, and gain weight. According to this study, after prosthesis use, depression and anxiety reduced. Female participants stated that the prosthesis supports women's marriages in a positive way. The quality of life for prosthetic shell wearers in this study has improved. This study showed that besides this physiological improvement, ocular prosthesis also caused an impact on emotional aspects since patients felt better with the prosthetic restoration due to improvement in appearance. A way to reduce the psychological impact caused by ocular loss is by shortening the interval between the surgery and rehabilitation.

Anophthalmic patients in public occupations expressed greater concern about their looks than patients in non-public occupations, according. After the insertion of the prosthesis, as the patient gets accustomed to the prosthesis, the concern about the retention and adaptability of the prosthesis decreases with time. Discharge and watering were the most

frequent prosthetic-related concerns, which seems to be consistent with earlier investigations.<sup>20</sup> The high percentage of participants who experienced discharge (90%), as well as the substantial amount of comments regarding the discharge issue by the participants, contributed to this outcome. If the prosthesis' surfaces and edges are abrasive, it may result in excessive watering and discharge. Therefore, patients should have a yearly examination of the prosthesis and, if necessary, polish the shell. None of the participants wanted a new fabrication of the prosthesis. Watering, crusting, and discharge were the participants' top current concern after the health of the remaining eye. Most participants used tap water and household soap to clean the prosthetic device. The use of rigid contact-lens cleaning solutions (avoiding those containing peroxides or alcohol) could be an acceptable recommendation.<sup>21</sup> They have the advantage of being manufactured under stringent quality controls, are supplied in sterile packaging and are available in a wide variety of alternatives, allowing for adjustment to almost any type of patient but, still it is not possible to establish the most appropriate cleaning regime, so further studies are clearly necessary to come to a conclusion.

None of the prosthetic wearers underwent additional cosmetic surgery since they were content with the results of their earlier situation and were not very interested in making any changes. The majority of the ophthalmology departments of government hospitals do not frequently perform custom prosthesis, they use stock shells only. The conventional shell is easily accessible, but a custom prosthesis calls some creativity. Making it easily cheap is necessary to raise awareness in rural regions. It often lasts a long time with proper maintenance; the cleaner it is, the longer it will last.

To aid in the patient's physical and psychological recovery and to increase social acceptance, the lost eye must be replaced as soon as feasible after recovery from an eye enucleation treatment. Consequently, a permanent ocular prosthesis is used in place of the conformer as soon as tissue healing is finished. In order to provide the patient with correct and efficient rehabilitation and follow-up treatment,

a multidisciplinary management and team approach is crucial.

## V. CONCLUSION

Disorders of anxiety and depression appear to be underdiagnosed in those who use prosthetic eyes. Therefore, routine clinical therapy should include the use of standardised psychometric screening for these depression and anxiety disorders.

The survey has given insight into issues that new anophthalmic patients and the medical professionals who treat them should be aware of. These discoveries encourage medical staff to be aware of the perceptual effects of monocular vision and help them to provide quality treatment to the new patients. This study showed that that the anophthalmic patient's initial fears lessen over time and this data can help the doctors in the psychological treatment of the new patients.

The fact that the primary concern of the participants throughout was the wellbeing of the remaining eye so routine clinical evaluation of their remaining eye at intervals suitable for each individual patient is important.

To lower the chances of socket infection, patients should be given instructions on how to care for and clean their prosthesis.

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