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ASSOCIATION BETWEEN VISUAL STATUS OF REMAINING EYE, EMOTIONAL WELL-BEING AND SOCIAL FUNCTIONS IN A SAMPLE OF ANOPHTHALMIC PATIENTS IN MALAYSIA – A PILOT STUDY

NUR AMALINA ABDUL KHALID, BARIAH MOHD-ALI*, MOHD NORHAFIZUN MOHD SAMAN, MOHD 'IZZUDDIN HAIROL, NUR ADIBAH YAHAYA AND BASHIRAH ISHAK

Optometry and Vision Science Program, Research Centre for Community Health (REACH), Faculty of Health Science, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.

**Corresponding author: bariah@ukm.edu.my*
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Abstract: This study aims to investigate the relationship between the visual status of the remaining eye, emotional well-being and social functions in anophthalmic patients using a validated questionnaire. Anophthalmic patients aged 18 years and above who visited the optometry clinic in Universiti Kebangsaan Malaysia, Kuala Lumpur, for prosthetic eye fitting participated in this study. Refraction and visual acuity (VA) of the remaining eye were examined using subjective refraction and the Snellen chart, accordingly. The National Eye Institute's 25-item Visual Functions Questionnaire (NEI VFQ-25) was used to determine the emotional well-being and social functions of the patients. The results were analysed using the Pearson chi-square model. A total of 23 patients participated in this study, with 52.2% of them being emmetrope, 30.4% myope and 17.4% hyperope. Their mean VA was 6/6. The mean score of NEI VFQ-25 was 67.8 ± 2.8 (score ranged: 47.5 to 93.5). The analysis revealed significant reduction in NEI VFQ-25 score for all patients [95% CI: 64.22 to 74.44, p = 0.04]. However, there is no significant association between VA of the remaining eye and the NEI VFQ-25 score (p=0.24). This study concludes that the emotional well-being and social functions of the anophthalmic patients is low, but the score is not associated with the visual status of the remaining eye.

Keywords: visual status, emotional well-being, social functions, anophthalmic patients.

Introduction

Anophthalmia is the absence of the eyes, generally an acquired condition and unilaterally. This condition may be congenital, too. It can be an acquired condition due to eye enucleation treatment (Wang *et al.*, 2020) and a patient with the condition is referred to as an anophthalmic patient. The eye enucleation treatment is a surgical removal of the eyeball, involving the separation of all connections between the globe and orbit. The reasons for eye enucleation are diverse and depend on the patients' condition, including ocular-related trauma, ocular tumours, surgically treated or untreated ocular diseases, infections or inflammations, and others (Cheng *et al.*, 2008; Erogul, 2017). According to Cheng *et al*. (2008), trauma (62.5%) was the most common reason for eye enucleation, followed by tumours (28.5%), surgically treated or untreated ocular disorders (5.7%) and infectious or inflammatory diseases (1.7%).

The loss of an eye has a negative influence on a person's psychological well-being (McBain *et al*., 2014). The disfigurement due to the loss of an eye can cause significant physical and emotional problems. According to Pine *et al*. *(*2011), patients with disfigured eyes often report a feeling of self-consciousness about their appearance and problems relating to functional deficits. Earlier studies reported that some factors have an impact on the quality of life among anophthalmic patients, including socio-demographic characteristics, age group, financial status, level of education and others (Wang *et al*., 2020). According to Erogul *et al*. (2017), the anophthalmic condition significantly reduces the quality of life, perceived stress and self-rated health. Some anophthalmic patients,

due to sight loss, may face some complications, such as physical, cosmetic and also serious psychological problems. Earlier studies have observed that prosthetic eye wearers with poor psychological well-being were more affected by psychological variables than clinical or demographic factors. According to Ye *et al.* (2015), higher levels of anxiety and depression were associated with poorer vision-related quality of life and greater level of appearance concerns.

In Malaysia, psychological and ophthalmic services for anophthalmic patients are often neglected, possibly due to lack of awareness. To our knowledge, there is no report on the level of emotional well-being among anophthalmic patients in Malaysia. Understanding the psychological impact of losing an eye is important so that specific services and programmes can be recommended and implemented by the relevant ministries to provide support and improve the quality of life of anophthalmic patients. Thus, this study aims to investigate the emotional well-being and social functions of a sample of anophthalmic patients and their relationship with the visual status of patients' remaining eye.

Material and Methods

This is a cross-sectional designed study involving patients who visited the Universiti Kebangsaan Malaysia (UKM) Optometry Clinic for the fitting of custom-made ocular prosthesis from November 2021 to January 2022. This study was approved by the UKM research ethics committee (UKM/FSK/800-2/27/9 JEP-2021-985) and followed the tenets of the Declaration of Helsinki. The nature of the research procedures was explained to the participants and written consent was obtained prior to data collection.

The inclusion criteria was patients 18 years old and above, without any intellectual disabilities, systemic illness or ocular diseases. Selected patients were examined for their refractive status and visual acuity (VA) of the remaining eye using subjective refraction and the Snellen chart accordingly.

The emotional well-being and social functions of the patients were evaluated using the National Eye Institute's 25-item Visual Function Questionnaire (NEI VFQ-25). The questionnaire was developed by the National Eye Institute, the United States, to measure self-reported vision targeted health status that are most important for persons with chronic eye diseases. It is the most widely used questionnaire for vision-related quality of life (Mangione *et al*., 2001). The survey measures the influence of visual disability and visual symptoms on generic health domains, such as emotional well-being and social functioning, in addition to task-related domains associated with daily visual functioning. It contains 25 questions and has been used in many countries and translated into several languages, including Italian, French, Arabic, Turkish, Chinese, Japanese and Bahasa Malaysia (Nickels *et al*., 2017). The questionnaire was administered in an interviewer format by a qualified optometrist and it took approximately 10 minutes to complete. The score was calculated following the format and guidelines provided by the National Eye Institute (http://www.rand.org/health/surveys_tools/vfq.html) and a higher score indicates better quality of life.

All data were analysed using the IBM SPSS statistical package version 25.0 (IBM Corp, Armonk, New York, USA). Descriptive statistics were used to describe the demographic data and the chi-square test was used to analyse the association between VA and the NEI VFQ-25 score. The significance value (P-value) was considered statistically not significant if the value is more than 0.05.

Results

A total of 23 anophthalmic patients who underwent ocular prosthesis fitting from November 2021 to January 2022 participated in this study. The mean age of participants was 47.48 ± 17.76 years (range 18 to 79 years), with 65.2% being males and 34.8% females. The majority of the participants were married (73.9%) and 26.1% of them were single/

divorced. Around 43.5% of them resided in urban areas and 56.5% from rural areas. With regards to enucleated eyes, 43.5% of them had their right eye enucleated, while the remaining 56.5% had their left eye enucleated. The most prevalent reason for enucleation reported was trauma (47.8%), followed by eye malignancy (30.4%) and eye diseases (21.8%). The demographics of the study participants is presented in Table 1.

The distance VA of the remaining eye of the participants are summarised in Table 2. The majority of the participants (86.9%) of the participants have a VA of 6/6.

The refraction status of the remaining eye is summarised in Table 4. The majority of the anophthalmic patients were emmetropes (52.2%), followed by myopes (30.4%) and hyperopes (17.4%).

Table 1: Demographics of the study participants

Characteristics	Number of participants, n (%)
Gender	
Male	15 (65.2)
Female	8 (34.8)
Marital Status	
Single, Divorced	6 (43.5)
Married	17 (73.9)
Residence	
Urban	10 (43.5)
Rural	13 (56.5)
Eye Enucleated	
Right eye	10 (43.5)
Left eye	13 (56.5)
Reasons for Eye Enucleation	
Trauma	11 (47.8)
Eye Malignancy	7 (30.4)
Eye Disease	5 (21.8)

Table 2: Distance visual acuity of the remaining eye of the participants

Visual acuity (Snellen Chart)	Right Eye n (%)	Left Eye n (%)
6/6	10 (43.5)	10 (43.5)
6/7.5	0 (0.0)	0 (0.0)
6/9	1 (4.3)	1 (4.3)
6/12	1 (4.3)	0 (0.0)
6/15	0 (0.0)	0 (0.0)
6/18	0 (0.0)	0 (0.0)

Table 3: The refractive status of remaining eye of the participants

Refraction (DS)	n (%)
≤ -0.25 (Myope)	7 (30.4)
Plano	12 (52.2)
≥ +0.25 (Hyperope)	4 (17.4)

The mean NEI VFQ-25 score (emotional well-being and social functions) among the anophthalmic patients was 67.78 ± 2.76 (ranging from 47.5 to 93.46). The variance was 175.43. The analysis revealed significant low NEI VFQ-25 scores for all patients [95% CI: 64.22 to 74.44, $p = 0.04$] and there was no significant difference in scores between gender and marital status ($p>0.05$). The chi-square analysis showed no association between VA of the remaining eye, emotional well-being and social functions ($p=0.24$) among the anophthalmic patients.

Discussion

The loss of an eye is a major event that impacts a person's self-image and confidence. Facial disfigurement with partial or total vision loss may be a stigma for patients and relatives, which affects self-esteem and personal relationships due to difficulties in establishing emotional ties, new lifestyles, insecurities and rejections. These difficulties, if not managed appropriately, may lead to social, familial and psychiatric problems (Goiato *et al*., 2013; Hatamleh *et al*., 2017).

This study investigated the relationship between vision, emotional well-being and social functions among anophthalmic patients who visited the UKM Optometric Clinic from November 2021 to January 2022 using the NEI VFQ-25 questionnaire. To our knowledge, this is the first study that analysed the relationship between vision of the good eye and quality of life of anophthalmic patients in Malaysia. The ages of the participants of this study ranged between 18 and 79 years, with the majority of them (70%) are below 50 years old. The number of reasons for eye enucleation was higher in males, with trauma being the most prevalent reason, which may be due to the higher number of males in the Malaysian workforce (Jamilah, 2019) and their hazardous job-related activities. The main types of trauma included traffic and work accidents, and sharp object-perforating injuries. Similar trends were also reported in other populations globally (Koranj *et al*., 2020; Pine *et al*., 2011).

Previous studies have shown that losing an eye can negatively impact one's psychological well-being. Rasmussen *et al*. (2012) compared the quality of life of 159 anophthalmic patients and healthy subjects in Denmark using the SF-36 quality of life test and perceived stress scale (PSS) test. They found that anophthalmic patients had significantly lower quality of life scores and high PSS scores. When the results were compared between individuals under the age of 44 and above 45 years, both scores were found to be significantly higher in individuals below 44 years of age. Ahn *et al*. (2010) conducted a survey on health-related quality of life and the emotional status of anophthalmic patients in South Korea using the SF-36 questionnaire and they found that anophthalmic patients had lower health-related quality-of-life scores than healthy individuals. This finding was particularly evident in terms of the patients' own perceptions of their social relationships, which were negatively affected by their use of prosthetic eyes. The researchers stated that such perceptions reduced the patients' quality of life and heightened their anxiety and depression. The results of the present study demonstrated similar results with the NEI-VFQ25 questionnaire. A low score of vision-related quality of life was evident in almost all the anophthalmic patients, with no difference between gender and marital status. This indicates that psychosocial problems are evident among anophthalmic patients in Malaysia, which requires support from relevant

health professionals, close family members and friends.

Nevertheless, the present study did not find any relationship between the VA of the remaining eye and emotional well-being and social functions of anophthalmic patients. This is probably because all the participants have good vision of the remaining eye (6/12 or better) and that the number of participants was limited. All the anophthalmic patients in this study were fitted with customised prosthetic eyes, which improve their appearances. They were also prescribed glasses to improve vision in the remaining eye. These interventions allowed the patients to continue their daily living routine with some changes to their facial appearance. Korani *et al* (2020) investigated concerns regarding prosthetic eye wearers in India and found that the main initial concern was the health of the remaining eye, followed by a change in appearance. To help overcome the concerns, the prosthetic eye wearers were advised to wear glasses or protective eyewear. Glasses not only provide protection, but also camouflage the appearance of the prosthetic eye.

Study Limitations

Due to the movement control order (MCO) imposed by the government during the Covid-19 pandemic, we were unable to recruit a higher number of anophthalmic patients. The optometry clinic was closed for several weeks and patient appointments were rescheduled. Future studies need to recruit a higher number of participants to confirm our findings. Other concerns about prosthetic eye wear, such as watery eyes, and eye discharge and crusting were not evaluated in this study. These are concerns experienced by the majority of prosthetic eye wearers in Malaysia and should be evaluated in future studies.

Conclusion

The loss of an eye has an impact on the emotional well-being and social functions of an individual and it is evident among anophthalmic patients in Malaysia. Continuous evaluation by healthcare professionals and care from close family members and relatives are important for patients' psychosocial recovery.

References

Ahn, J. M., Lee, S. Y., & Yoon, J. S. (2010). Health related quality of life and emotional status of anophthalmic patients in Korea. *American Journal of Ophthalmology*, *149*(2), 1005-1011.

Ariffin, J. (2019). Migration of women workers in Peninsular Malaysia: Impact and implications. In *Women in the Cities of Asia* (p. 213-226). Routledge.

Cheng, G. Y., Li, B., Li, L. Q., Gao, F., Ren, R. J., Xu, X. L., & Jonas, J. B. (2008). Review of 1375 enucleations in the Tong Ren Eye Centre, Beijing. *Eye*, *22*(11), 1404-1409.

Erogul, O., Ugurlu, S., & Erogul, L. E. (2017). Evaluation of quality of life of the anophthalmic patients. *Eurasian Journal of Medical Investigation*, *1*(2), 22-28.

Goaito, M. C., Goiato, D. M., dos Santos, L. C., Bannwart, A., Moreno, A. A., Pesqueira, M. F., & Haddad, E. G. (2013). Psychosocial impact on anophthalmic patients wearing ocular prosthesis. *International Journal of Oral and Maxillofacial Surgery*, *42*(1), 113-119.

Hatamleh, M. M., Alnazzawi, A. A., Abbariki, M., Alqudah, N., & Cook, A. (2017). Survey of ocular prosthetics rehabilitation in the United Kingdom, Part 2: Anophthalmic patients' satisfaction and acceptance. *Journal of Craniofacial Surgery*, *28*(5), 1297-1301.

Korani, H., Pine, K. R., Sood, M., & Vyas, A. (2021). Concerns regarding Indian prosthetic eye wearers. *Clinical and Experimental Optometry*, *104*(1), 85-89.

Mangione, C. M., Lee, P. P., Gutierrez, P. R., Spritzer, K., & Coleman, A. L. (2002). Development of the 25-item National Eye Institute visual function questionnaire. *Evidence-Based Eye Care*, *3*(1), 58-59.

McBain, H. B., Ezra, D. G., Rose, G. E., & Newman, S. P. (2014). Appearance Research Collaboration (ARC). The psychosocial impact of living with an ocular prosthesis. *Orbit*, *33*, 39-44.

Nickels, S., Schuster, A. K., Singer, S., Wild, P. S., Laubert-Reh, D., Schulz, A., Finger, R. P., Michal, M., Beutel, M. E., Munzel, T., Lackner, K. J., & Feiffer, N. (2017). The National Eye Institute 25-Item Visual Function Questionnaire (NEI VFQ-25) – Reference data from the German population-based Gutenberg Health Study (GHS). *Health Quality Life Outcomes*, *15*, 156-160.

Pine, K., Sloan, B., Stewart, J., & Jacobs, R. J. (2011). Concerns of anophthalmic patients wearing artificial eyes. *Clinical and Experimental Ophthalmology*, *39*(1), 47-52.

Rasmussen, M. L., Ekholm, O., Prause, J. U., & Toft, P. B. (2012). Quality of life of eye amputated patients. *Acta Ophthalmologica*, *90*, 435-440.

Song, J. S., Oh, J., & Baek, S. H. (2006). A survey of satisfaction in anophthalmic patients wearing ocular prosthesis. *Graefs Archives Clinical Experimental Ophthalmology*, *244*, 330-335.

Wang, K. J., Li, S. S., & Wang, H. Y. (2020). Psychological symptoms in anophthalmic patients wearing ocular prosthesis and related factors. *Medicine*, *25,* 1-5.

Ye, J., Lou, L., Jin, K., Xu, Y., Ye, X., Moss, T., & McBain, H. (2015). Vision-related quality of life and appearance concerns are associated with anxiety and depression after eye enucleation: A cross-sectional study. *PLoS ONE, 10*(8), 1-9.