

Mental health status of the keratoconus patients visually corrected with contact lens compared to spectacles

Abstract

Aim of the Study: To analyse the mental health status and psychological well being of the keratoconus patients using rigid contact lenses compared to spectacle corrected ones. The objective is to study if the correcting vision with contact lenses impacts the mental health status of the patients suffering from keratoconus.

Methodology: In the month of January to April, 2015 a cross sectional study was conducted in Ahoja eye hospital, Gurgaon, Haryana, India and Rajan eye care hospital, Tnagar, Chennai, Tamilnadu, India. Thirty two keratoconus patients were enrolled for the study and subjects were asked to the mental health status questionnaire MHI 38 with informed consent. Fifteen were habitual contact lens wearers and seventeen non contact lens wearers who volunteered to participate this study. Study included those contact lens users who wore lenses all waking hours and had been wearing them for atleast one year. All the questions were score coded for entering the data in Microsoft Excel sheet. The status of mental health was based on eight indicises which provided information on mental well being.

Results: 17 males and 15 females participated in this study. The mean age of the participant was 28.03 ± 5.56 (range 20-39 years). The mean score of keratoconus patients of non contact lens wearer and contact lens wearer in Anxiety was 32.84 ± 2.99 & 18.79 ± 3.67 , Depression 13.34 ± 4.08 & 7.71 ± 2.19 , Loss of behavioural / Emotion Control 30.29 ± 2.22 & 22.77 ± 6.70 , General Positive Affect 49.00 ± 3.86 & 29.73 ± 4.48 , Emotion Ties 10.17 ± 1.44 & 5.28 ± 1.71 , Life Satisfaction 3.44 ± 0.96 & 4.94 ± 0.73 , Psychological Distress 81.28 ± 4.48 & 53.15 ± 9.62 , Psychological Well Being 41.15 ± 4.75 & 69.08 ± 5.26 , Mental Health Index 119.81 ± 5.53 & 185.82 ± 11.03 respectively. Our results show that P value is <0.05 is statistically significant in all subscales and on the global scale variable of MHI 38. It suggests those who wear contact lenses have significantly better life satisfaction and Mental Health. Proper contact lens option as vision correction in Keratoconus patients improves the mental health status and are more positive in attitude compared to non users. A successful contact lens fit influences the mental health status compared to those who do not opt to wear it.

Conclusion: Eye care practitioners should motivate and proactively advise contact lenses to patients with Keratoconus as they will have better life satisfaction and psychological well being.

Keywords: psychological well being, keratoconus patients, mental health status

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Introduction

Keratoconus is a progressive disease of the cornea that usually begins at puberty and progressively causes reduction of quantity and quality of visual acuity and ocular discomfort and poor Visual acuity when corrected with spectacles or ill fitting contact lenses. Gradual reduction in quantity and quality of visual acuity in these young adults who have so far lead an active life style can lead to mental stress. Contact lenses play a vital role in restoration of visual function. The patient visiting an ophthalmologist is commonly recommended surgical procedure options like interstromal rings, cross linking and penetrating keratoplasty. Quality of life despite satisfactory results on visual outcome measures obtained after PK remains impaired.¹ Most of these patients have to still wear contact lenses after such treatments. Non availability of good rigid contact lens fitters is one reason reason of letting patient continue with spectacles which provide just manageable quality and quantity of vision.

Only a few studies have so far been conducted to estimate the incidence and prevalence of the condition, and, although the incidence

varies somewhat from to country to country, a 1986 population-based study in the US indicated that approximately 5 in 10,000 people have Keratoconus. Similarly, a study in Central India indicated prevalence as 0.0003%-2.3.² Keratoconus is caused by a combination of genetic and environmental factors. The exact contribution of each to the aetiology is as yet unknown. Keratoconus affects both genders, although it is unclear whether significant differences between males and females exist.³⁻⁵ As the prevalence of keratoconus is low, many public health policy makers view the disease as a minor concern when contrasted with eye diseases such as glaucoma and age-related macular degeneration.^{1, 5} However the concerns are severe because this disorder has onset only in young adults and disability sets in age that effects their education and career. The progression of disorder further leads to poor unided visual acuity and stress to the patient.

Mental health

Mental health is a state of emotional and psychological well-being in which an individual is able to use his or her cognitive and emotional capabilities, function in society, and meeting the ordinary demands of

everyday life.⁶⁻⁸ Mental health includes our emotional, psychological, and social well-being, behavioural / emotional Control, general positive effect, emotional ties and life satisfaction.^{4,6,9,10} It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices. Mental health is important at every stage of life; from childhood and adolescence through adulthood.

The mental health inventory (MHI 38)

MHI Is a psychological instrument or tool designed for use for physically ill patients to assess factors relevant to their mental health. The MHI 38 tool aid is used in the evaluation of mental health of Keratoconus patients and provides information relevant with quality of life satisfaction.¹¹⁻¹³

Some of the keywords which can be defined in mental health are.

Anxiety: Anxiety is an emotion characterized by an unpleasant state of inner turmoil, often accompanied by nervous behaviour, such as pacing back and forth, somatic complaints and rumination.⁶ It is the subjectively unpleasant feelings of dread over anticipated events, such as the feeling of imminent death.¹⁰

Depression: Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behaviour, feelings and sense of well-being.^{7,8}

Loss of behavioural/Emotional control: It means that emotions are so strong that you will lose control of yourself if you do not control them. For instance, if you are too afraid, you may start to shiver, tremble and sweat.^{7,8}

Positive effect: It is the ability to constructively analyze a situation where the desired results are not achieved; but still obtain positive feedback which assists our future progression.⁹⁻¹⁴

Emotional ties: Is a type of emotional bond that acts like an elastic band as it stretches and relaxes due to our emotional thoughts and behaviours toward one another.²²

Life satisfaction: It is the way a person evaluates his or her life and how he or she feels about where it is going in the future. It is a measure of well-being and may be assessed in terms of mood, satisfaction with relations with others and with achieved goals, self-concepts, and self-perceived ability to cope with daily life.¹⁵⁻¹⁹

Psychological distress: Mental illness refers to a specific set of medically defined conditions. A person in mental distress may exhibit some of the symptoms described in psychiatry, such as: anxiety, confused emotions, hallucination, rage, and depression and so on without actually being 'ill' in a medical sense.

Psychological well-being: Psychological well-being is referred in terms of the internal experience of the respondent and their own perception of their lives.^{18,17} The purpose of this study was to evaluate the mental health status related to visual function in the keratoconus patients with and without contact lenses.

Method

Consecutive patients with keratoconus attending Ahojja eye hospital, Gurgaon, Haryana, India & Rajan eye care hospital, Tnagar, Chennai, Tamilnadu, India during the month of January to April, 2016 were enrolled in this study . Fifteen successful contact lens wearers and 17 non contact lens wearers with confirmed keratoconus were enrolled in this study. Their age ranged from 20 to 40years. Satisfaction with contact lenses was self reported by patients and

successful wear was dependent upon the wearing hours, visual acuity or comfort. All waking hours wear with satisfactory functional vision and comfort were considered as successful contact lens users, Most of the enrolled patients were fit by senior optometrist with the best option of contact lens , both in terms of vision , comfort and health . The study included only those who self reported to be able to use lenses all day with satisfactory vision and no major discomfort issues. Ones with less than 8hours of contact lens wear and subnormal Visual acuity and discomfort were considered as unsuccessful contact lens users and were not included in the study. All participants provided written informed consent and the MHI 38 was used to compare the mental health status of the two groups. All the questions were scored and coded for entering the data in Microsoft Excel sheet. The Mental health index is segregated into: Six subscales – Anxiety, Depression, Loss of Behavioural / Emotional Control, General Positive Affect, Emotional Ties and Life Satisfaction; It includes two global scales - Psychological Distress and Psychological Well-being; and finally A global Mental Health Index score.

All of the 38 MHI items, except two, are scored on a six-point scale (range 1-6). Items 9 and 28 are the exception, each scored on a five-point scale (range 1-5). The pre-coded values of each item are shown on the copy of the instrument. Scoring is done relatively complicated by the fact that items making up the various subscales and global scales may be recoded (or reversed scored) differently depending on the underlying constructs being measured. Details of subscale and global scale scoring are based on the following source: Davies AR, Sherburne CD, Peterson JR and Ware JE (1998) *Scoring manual: Adult health status and patient satisfaction measures used in RAND's Health Insurance Experiment*. Santa Monica: RAND Corporation.

Statistical analysis

The data were entered in Microsoft excel 2007© and the entries were crosschecked for correctness. All the data were coded and entry done in Excel sheet. The unpaired T test was used to investigate the statistical difference between Keratoconus Patients With or Without Contact Lens Wearers. A pvalue less than 0.05 was considered as statistically significant.

Results

Of the 32 Keratoconus subjects almost equal number of males (17) and females 15 participated in this study The mean age of the participant was 28.03± 5.56 (range 20-39 years). Demographic characteristics of the patients age, gender, education, and contact lens use was noted. There were 17 subjects who were non wearers of contact lenses & 15 were wearer of contact lenses. Details of the demographic data are shown in Table 1. In the Table 2, the dimension of the Anxiety mean score was 32.84 ± 2.99 of non contact lens for KC patients, whereas it was 18.79 ± 3.67 of the contact lens wearer of KC patients. It shows that non contact lens wearers have higher anxiety than the contact lens wearers of KC patients (Figure 1).

Similarly, the dimension of Depression means score was 13. 34 ± 4.08 of non contact lens for KC patients, whereas it was 7.71 ± 2.19 of the contact lens wearers of KC patients. It shows that non contact lens wearers have higher degree of depression than the contact lens wearers of KC patients.

Along the same lines, in the dimension of Loss of Behavioural / Emotion Control mean score was 30.29 ± 2.22 of non contact lens for KC patients, whereas it was 22.77 ± 6.70 of the contact lens wearer

of KC patients. It shows that non contact lens wearers have higher loss of behavioural / emotional control than the contact lens wearers of KC patients. Also the dimension of General Positive Affect mean score was 49.00 ± 3.86 of non contact lens for KC patients, whereas it was 29.73 ± 4.48 of the contact lens wearer of KC patients. It shows that non contact lens wearers have a more general positive affect than the contact lens wearers of KC patients. Similarly, in the dimension of Emotion Ties mean score was 10.17 ± 1.44 of non contact lens for KC patients, whereas it was 5.28 ± 1.71 of the contact lens wearer of KC patients. It shows that non contact lens wearers have higher emotional ties than the contact lens wearers of KC patients.

Table 1 Clinical and biochemical variables of individuals with overweight- obesity

	Numbers	Percentage
Gender		
Male	17	53%
Female	15	47%
Age (years)		
Mean + SD	28.03 +/-	5.56
Range	20 to 39	
Non Contact Lens Wearer		
Male	9	28%
Female	8	25%
Age (years)		
Mean + SD	30.88 +/-	5.21
Range	22 to 39	
Contact Lens Wearer		
Male	8	25%
Female	7	22%
Age (years)		
Mean + SD	24.77 +/-	4.05
Range	20 to 34	

SD: Standard Deviation; BMI: Body Mass Index; WC: Waist Circumference; AC: Abdominal Circumference; HC: Hip Circumference; RER: Respiratory Exchange Ratio; HR: Hear Rate.

Table 2 Mean Scale Scores OF MHI 38 of contact lens wearers and Non contact lens wearers groups

Description	Scores of Keratoconus Spectacle users		Score of Keratoconus Patients with Contact lenses	
	Mean	SD	Mean	SD
Anxiety	32.84	± 2.99	18.79	± 3.67
Depression	13.34	± 4.08	7.71	± 2.19
Loss of behavioural / Emotion Control	30.29	± 2.22	22.77	± 6.70
General Positive Affect	49	± 3.86	29.73	± 4.48
Emotion Ties	10.17	± 1.44	5.28	± 1.71
Life Satisfaction	3.44	± 0.96	4.94	± 0.73
Psychological Distress	81.28	± 4.48	53.15	± 9.62
Psychological Well Being	41.15	± 4.75	69.08	± 5.26
Mental Health Index	119.81	± 5.53	185.82	± 11.03

Along the same lines, in the dimension of the Life Satisfaction mean score was 3.44 ± 0.96 of non contact lens for KC patients, whereas it was 4.94 ± 0.73 of the contact lens wearer of KC patients. It shows that non contact lens wearers have lower life satisfaction than the contact lens wearers of KC patients. Also the dimension of Psychological Distress mean score was 81.28 ± 4.48 of non contact

lens for KC patients, whereas it was 53.15 ± 9.62 of the contact lens wearer of KC patients. It shows that non contact lens wearers have higher anxiety than the contact lens wearers of KC patients. Along the same lines in the dimension of Psychological Well Being mean score was 41.15 ± 4.75 of non contact lens for KC patients, whereas it was 69.08 ± 5.26 of the contact lens wearer of KC patients. It shows that non contact lens wearers have lower psychological well being than the contact lens wearers of KC patients.

Table 3 P value table

Description	Scores of Keratoconus Patients Spectacle users		Score of Keratoconus Patients with Contact lenses	
	Mean	SD	Mean	SD
Anxiety	32.84	± 2.99	18.79	± 3.67
Depression	13.34	± 4.08	7.71	± 2.19
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General Positive Affect	49	± 3.86	29.73	± 4.48
Emotion Ties	10.17	± 1.44	5.28	± 1.71
Life Satisfaction	3.44	± 0.96	4.94	± 0.73
Psychological Distress	81.28	± 4.48	53.15	± 9.62
Psychological Well Being	41.15	± 4.75	69.08	± 5.26
Mental Health Index	119.81	± 5.53	185.82	± 11.03

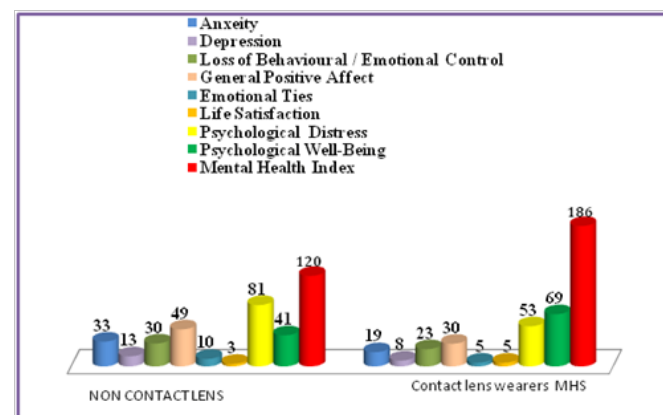


Figure 1 Keratoconus Participants Mental Health Status Scores Chart comparison visually contact lens corrected vs non contact lens corrected.

Similarly, in the dimension of Mental Health Index of 119.81 ± 5.53 of non contact lens for KC patients, whereas it was 185.82 ± 11.03 of contact lens wearer of KC patients. It shows that non contact lens wearers have lower mental health index than the contact lens wearers of KC patients. A look at the Table 2 shows that on the negative aspects of mental health like Anxiety, Depression, Loss of Behavioural / Emotional Control, General Positive Affect, Emotional Ties and Psychological distress these scores of contact lens wearers are lower while on the positive aspects like Life Satisfaction, Psychological Well Being and Mental Health Index, the same group scores higher. The above table shows the P value < 0.05 is clinically significant between contact lens wearer & non contact lens wearers of KC Patients. The difference evident and better in contact lens wearer group in the subscales of Anxiety, Depression, Loss of Behavioural / Emotional Control, General Life Satisfaction and on global scale of Psychological Distress, Psychological Well Being and Mental Health Index. However positive Affect and Emotional ties were significantly better in Non wearers group.

Discussion

The concept of mental health is a, “health-related quality of life,” described as “the extent to which one’s usual or expected physical, emotional, and social well-being are affected by a medical condition or its treatment.” MHI 38 has been proved to be a reasonable sensitive tool in assessing health-related quality of life. Uniquely, keratoconus is a progressive disease of the cornea which strikes people in early adult hood, when the person is in stage of peak education, earning or entering into marriage. This disease results in rapid changes in visual acuity and visual discomfort because the quality of best corrected vision with spectacles is usually not satisfactory. This results in a loss of quality of life which is not likely to be reflected in terms of clinical outcomes. Sight restoration of these cases is best managed with rigid gas-permeable contact lenses. Although surgical procedures like collagen cross linking or intacs are proactively done by the ophthalmologist to retard the progression but visual rehabilitation thereafter is still with the help of contact lenses.

The loss of visual function leads to a perceived impairment in the ability to perform social duties (Reflected in the Mental Health and Role Difficulties scores). This disability is not defined in terms of visual disability and hence not well understood by the eye care practitioners. Kymes¹⁴ also talk about the impact of keratoconus on a person’s mental health in his study where he found that patients of keratoconus with visual acuity worse than 20/40 (6/12) and corneal curvature steeper than 52 D are associated with lower scores on the Mental Health, Role Difficulties, and Dependency scales. Aydin Kurna, Sevda, et al. in 2014 found in their study that binocular entrance visual acuity worse than 20/40 was associated with lower Vision Related -Quality of Life (VR-QoF) scores on all scales except general health and ocular pain. A steep keratometric reading (average of both eyes) >52D was associated with lower scores on the mental health, role difficulty, driving, dependency, and ocular pain scales. Scores for Collaborative Longitudinal evaluation of keratoconus (CLEK) patients on all scales were between patients with category 3 and category 4 except general health, which was better than Age-related Macular Degeneration (AMD) patients, and ocular pain, which was worse than AMD patients. Keratoconus is associated with significantly impaired VR-QoL that continues to decline over time. CLEK patients were followed up for seven years and estimated modest decline in all scales except ocular pain and mental health. Lee et al in 2009 has also worked on similar lines and their results to reflect the same pattern. Similar studies also be done along lines of mental health in keratoconus patients.¹⁵⁻¹⁸

In the present study a comparison of the aspects of mental health was done on patients successfully using contact lenses and ones who did not. The results as given Table 3 indicate that patients who were using contact lenses score significantly better on mental health dimensions such as anxiety, depression, loss of behavioral / emotion control, general positive effect, emotional ties, life satisfaction, psychological distress, psychological well being, mental health index in Table 3. Our results suggest that wearing of contact lenses in keratoconus patients enhance their personality, makes them more comfortable with their own self, are more cheerful, more outgoing, and socially more interactive and in general possessing a more cheerful disposition, as the test scores MHI 38 indicated. Of the contact lens users most of them were still looking for alternatives to get rid of lenses or reduce the dependency on contact lenses. The group which was not using contact lenses was ones which have not been motivated to use lenses. Many of them have not been told much about them because the ophthalmological clinics do not have facilities to fit them. Fitting contact lens requires skills and a range

of fitting sets. These facilities are mostly available at the tertiary centers. Patients in small towns and poor awareness about the contact lens options by ophthalmologists lead to letting the patient continue with the spectacles. Funicular keratoconus is the worst, where the patient is made to continue with one eye vision.¹⁹⁻²² Many times the patients have been fitted with lenses and the bad experience of ill fitting lenses have led to the drop out. Many of the contact lens wearers were cases of advanced keratoconus using Rose K lenses whose unaided visual acuity was as much as visual impairment status. Marked advanced cases using contact lens were psychologically positive and had better life satisfaction. Subjects not wearing contact lenses showed psychological distress and were depressed and anxious personalities. The successful lens users were satisfied with the eye care treatment and obliged to the contact lens practitioner for restoring their vision compared to those who had invested a lot in consultations and procedures yet had not received the best possible solution. They have accepted the condition of the eye and are struggling to live with their visual status. This leads to loss of many functional and social back outs. If he is a student it affects their educational performance. They give up their dream careers. The working professionals plan to shift jobs and indecisive of the plans of their marriage.²³⁻³⁰ The fear of blindness and dependency in future is depressing. The family members and parents of such patients are also in similar negative state of mind. This means that the wearers of contact lenses have a more positive outlook towards life which may result in their being more successful in life owing to their higher mental health scores. Thus patients should be motivated and advised proper contact lenses in all stages of keratoconus. This means that they are having good control of their emotions, in-charge of their behavioral reactions to the situations and are able to think positively while moving forward in their lives.³¹⁻³⁵

Conclusion

Our results suggested those who are wearers of contact lenses have significantly better life satisfaction and better Mental Health. It concludes that if a well fitting right option contact lens is provided to the patients of Keratoconus the subject will have better life satisfaction and psychological well being. Eye care practitioners should motivate and proactively advise contact lenses to patients with such conditions rather than letting them with spectacles.

Recommendations

This study suggested that using contact lenses is definitely more successful in improving the Mental Health of the Keratoconus patients. Further research to analyse the mental health status of patients of keratoconus pre and post fitting and adaptation of contact lens will be confirmatory and suggestive of the changes in mental health index.

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Conflicts of interest

Author declares there are no conflicts of interest.

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