Awareness of Evidence Based Contact Lens Practice among Optometry Undergraduate Students. A Pilot Study

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ABSTRACT

Purpose: Evidence-based practice is one of the most crucial aspects in the field of optometry. The Purpose of this study is to access the basic awareness of evidence-based practice in optometry along with their integral implementation of evidence-based practice in contact lens subject.

Method: For that a Contact lens evidence-based practice awareness questionnaire was created with the method of focus group discussion with 11 specialists in contact lens and EBP. This questionnaire is implemented to 25 optometry students and accessed their awareness and skill in contact lens.

Result: Out of 25 students 92% were females and 8% were males. The overall reliability of the questionnaire is 0.912. Most of the students are coming under the categories of mild (20%) and intermediate (24%) level of knowledge in evidence-based practice. Even though 24% of the students marked in high level knowledge in EBP remaining 76% are not aware about the EBP practice.

Conclusion: Lack of knowledge in evidence-based practice will affect the students critical thinking ability, self-learning skill and clinical reasoning. So, implementation of evidence-based practice in the syllabus of optometry education in India is major change that needed.

Key Words: Evidence Based Practice, Contact Lens, Optometry, Eye Care

INTRODUCTION:

Evidence-based practice was introduced to make occupational practice in more systematic way. This concept was adopted into the medical field and since then it has come to be known by the term Evidence-based medicine. This term was introduced by Gordon Guyatt in 1991. Because he noticed some sort of unsystematic way of clinical practice in his clinical area thus, he followed this concept and got good patient outcome.(Smith and Rennie 2014) With this kind of practice, clinical decision making, critical thinking and self-learning can be brought higher level for medical professionals. Hence EBP can be define as using best available clinical evidence from validated resources for individual clinical expertise. If we want to bring the EBP concept, an efficient education system is needed to support the health professionals, then only we can bring various EBP strategies. European Union evidence-based medicine project, centre for evidence-based medicine in oxford, McMaster universities encourage and doing different sessions for implementing evidence-based practice in worldwide.(Lehane et al. 2019) When the Evidence-based medicine or EBP comes into education EBT i.e., Evidence-based teaching plays a crucial role in educational field. It has different strategies to implement in the curriculum. Optometry is a health care profession that deals with all kind of eye related diseases. A major problem of optometrist in India is lack of proper knowledge about evidence-based optometry practice.(Johnson and Thakur 2023) (De Souza et al. 2012) In globally evidence-based optometry significantly marked contribution in clinical professionals. Some of the countries such as in India EBP is still an unknown factor especially in educational field of optometry. Proper knowledge about the selection of right resources is very important for a healthcare student. In the field of optometry there are various departments that deals with eye and eye-related diseases. One of the major fields in it is the contact lens practice so awareness in evidence-based contact lens practice is very important in eye health professionals.(Zeri et al. 2023) In this

study the awareness is evaluated in students by using contact lens evidence-based practice awareness CLEBP -14 questionnaire which is created by senior most contact lens professionals in India by conducting a focus group discussion. This questionnaire is entirely depending on educational status of contact lens subject of optometry curriculum in India. Content validity and clinical wetting is done by experienced faculties in the field of optometry. This study evaluates basic EBP concepts, resources, application, clinical trials, research evaluation and challenges of EBP in contact lens education and practice in undergraduate students of optometry. Students, teachers and practitioners should be aware about this strategy of evidence-based contact lens but this study only targeting the students for filling the EBP gaps in the Indian curriculum of optometry. This pilot study has the potential to bring substantial change in the educational field of optometry in India. The latest developments in optometry education need to be put into practice here as well. The main objective of this study is to access the awareness of EBP among the undergraduate optometry students and study hypothesizes that the level of awareness of Evidence-based practice (EBP) among optometry students is low. For this a survey study was done among the undergraduates.

METHODOLOGY

The ethical clearance of the prospective study was given by the institutional ethical committee of Chitkara university (Approval no: EC/NEW/INST/2023/531/210). For the development of the contact lens evidence-based practice awareness CLEBP-14 questionnaire a focus group discussion is conducted with 11 senior contact lens educators and clinician's specialised and clinical wetting was done with the help of 2 contact lens practitioners with doctorate degree in optometry field. The questionnaire contains 14 questions divided into three sections. Section A covers awareness and practices related to evidence-based practice (EBP), including curriculum and practice habit. Section B focuses on the application and implementation on EBP, emphasizing awareness, analysis, implementation and training in EBP with contact lens practice. Section C consists of multiple-choice questions addressing specific practices and challenges associated with EBP in contact lens practice. The sample size is calculated by using Yamane's formula [n=N/1+(N x e2)]. It is cea sampling formula used for calculating sample size of research methodology. Here; d is set as 7 (clinically significant difference) Substituting in the formula;

$$N=\frac{3.84\times0.61\,(1-0.61\,)^{\,2}}{0.07^{2}}$$

= 0.913536/0.0049

= 186.43

The minimum sample size required is set as 187

Simple random sampling is the sampling method used to collect the data from optometry students. A minimum value of 12% of this sample is selected for the pilot study. So a minimum sample size of 25 is set as the required sample size for this pilot study. The data is collected from the optometry graduate students of 3rd year and excluded the 1st year, 2nd year and 4th year students. The questionnaire was shared with the students with the help of form app through mails and the data collected were analysed using IBM SPSS version 20.0. Data with categorical variables expressed as frequencies and percentages. the questionnaire was available in three languages, English, Hindi and Malayali because the study was conducted in AKG Co-operative institute of health sciences, Kannur, Kerala -670622. The reliability of the questionnaire was accessed using Cronbach's alpha and inter-item correlations. Spearman rank correlation was computed to examine the relationships between scores in each section. Levine's test and Tukey HSD/Tukey Kramer were employed to test the statistical significance of variance and perform pairwise comparisons. A p value of 0.05 is considered as statistically significant. The pilot sample of 25 students is collected from AKG Co-operative institute of health sciences, Kerala after getting the NOC from the head with a reference number of AKGCIHS/NOC/34/21

RESULTS

25 optometry students assessed the contact lens evidence-based practice awareness using questionnaire. There are three sections in the questionnaire. The mean age of the students was 21.08 ± 0.7 years. Among 25 students, 92% were females and 8% were males. The average total score was 21.48 ± 9.27. The overall reliability of the questionnaire was 0.912 mean excellent reliability.

Table 1. Distribution of section A, section B and section C items statistics in mean, St. Deviation, Cronbach's Alpha, Inter-item Correlation, Frequency

Sl. No.	Section A	Mean	Std. Deviation	Cronbach's Alpha	Inter-Item Correlations
1	Do you know the concept of EBP?	0.56	0.51	0.847	0.378

Sl. No.	Section A	Mean	Std. Dev		
2	Do you have EBP in the curriculum?	0.48	0.51		
3	Do you ever practice EBP?	0.48	0.51		
4	Do you know about evidence-based practice in contact lens?	0.60	0.50		
i	If 1, are you familiar with the steps involved in evidence-based practice related to contact lenses	0.36	0.49		
ii	Do you think EBP can mould your k0wledge of contact lenses	0.80	0.41		
5	Do you have access to internet during your classroom sessions?	0.60	0.50		
6	Do you have sessions on statistics in your curriculum?	0.44	0.51		
7	Do you get time to discuss latest research on-going on the subject of contact lens?	0.36	0.49		

Sl. No.	Section B	Mean	Std. Deviation	Cronbach's Alpha	Inter-Item Correlations
8	How well are you at analysing case studies in the subject of contact lens?	2.60	0.76	0.907	0.715
9	How well are you at implementing case studies in your contact lens practice?	2.36	0.81		
10	How much you are trained for selecting proper resources in clinical decision making of contact lens?	2.40	0.96		
11	How often do you discuss current research articles on the subject of contact lens in classrooms ?	2.16	0.85		

Sl. No.	Section C	Multiple choice			
12	Have you ever know or practiced the mentioned options?	Frequency			
	Experts advice	2			
	Clinical Trials and Studies	12			
	Practice Guidelines	11			
	Systematic Reviews	1			
	None of them	6			
13	What factors do you consider when evaluating the research articles in contact lenses?	Frequency			
	Data Analysis	3			
	Limitation of the study	5			
	Relevance of the study	18			
	Study Design, Sample Size and Selection	4			
	Scope of the study	15			
	None of them	2			
14	What are the challenges you think while incorporating research studies in contact lens practice?	Frequency			
	Complexity of research	5			
	Lack of interest	2			

Lack of training	16
Insufficient resources	9
Time consuming	7
None of them	4

From the above table 1 we can see in section 'A' the internal consistency, as measured by Cronbach's Alpha, is 0.847, indicating good reliability. Here Inter-Item Correlations was 0.378, means the scores on one item increase, scores on the other item tend to increase as well. This indicates a positive association or relationship between the items. The internal consistency of section B, as measured by Cronbach's Alpha, is 0.907, indicating excellent reliability. Here Inter-Item Correlations was 0.715, means the scores on one item increase, scores on the other item tend to increase as well. This indicates a positive association or relationship between the items and good internal consistency. Among the total students, 2 students sought expert advice, 12 students possessed knowledge or practical experience in clinical trials and studies, 11 students engaged in the practical application of guidelines, and 1 student had familiarity with systematic reviews. Within the entire student body, 3 students took data analysis into account when assessing research articles related to contact lenses, 5 students focused on the limitations of the study, 18 students emphasized the relevance of the study, and 4 students examined the study design, sample size, and selection. Additionally, 15 students weighed the scope of the study when evaluating research articles in the field of contact lenses. Within the entire student population, 5 students perceived the complexity of research as a challenge when integrating research studies into contact lens practice, 2 students identified a lack of interest as an obstacle, 16 students attributed challenges to a lack of training, 9 students cited insufficient resources, and 7 students highlighted time constraints as hurdles in incorporating research studies into contact lens practice. illustrates the inter section comparison between section A and B(P=0.0001), A and C(P=0.004), B and C(P is <0.001) can be observed.

Table 2. Comparison of Variability between three sections of scores

Score	Mean ±SD	CV	F value	p value	Pairs	p value
Section A	4.68±2.97	63.5%	29.17	<0.001	Section A-B	0.0001
Section B	14.28±5.84	40.6%			Section A-C	0.004
Section C	2.52±0.96	38.1%			Section B-C	<0.001

Scatterplot of Section A vs Section B, Section A vs Section C, Section
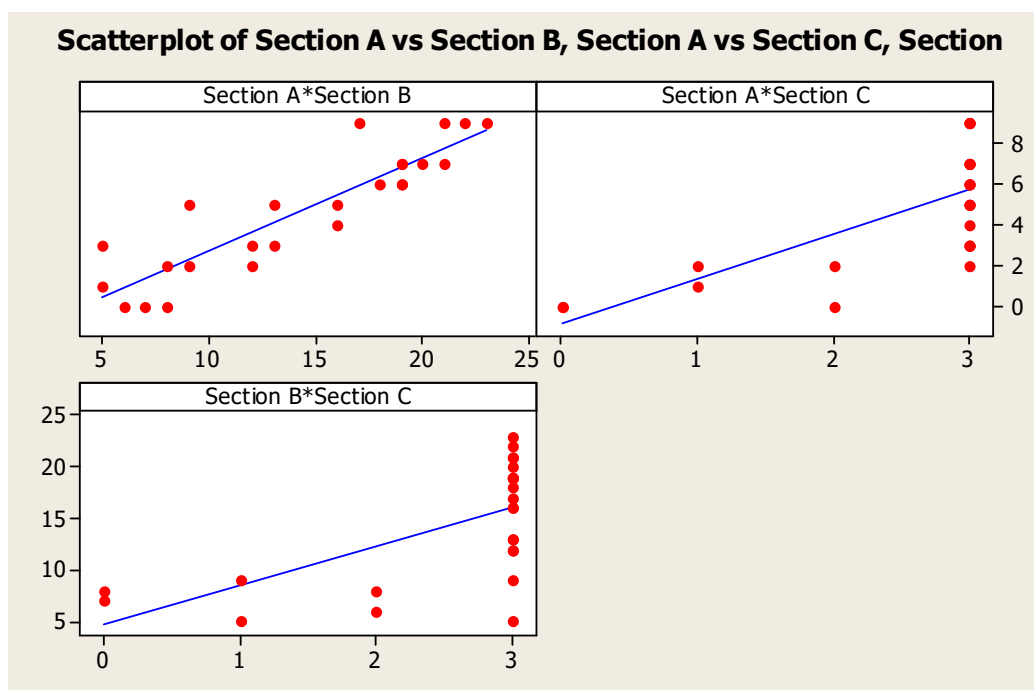
Figure 1 illustrate Scatter plot of comparison of section A of awareness and practices with section B of application, implementation and training of EBP, section B with section C of multiple-choice questions addressing specific practices and challenges associated with EBP in contact lens practice, section A with section C in the questionnaire, section B with section C

In table 2 the overall p values of section wise comparison is <0.001. The standard deviations of scores on different sections were 2.97, 5.84 and 0.96 respectively. The observed effect size f is large (0.9). That indicates that the magnitude of the difference between the averages is large. There was statistically significant variance between three sections. The η^2 equals 0.45. It means that the group explains 44.8% of the variance from the average. Score classification the total score was derived by summing the scores from three sections, and the results were categorized into five percentiles: ≤10th percentile indicating "No EBP", 10-25th percentile denoting "Mild EBP", 25-50th percentile representing "Intermediate EBP", 50-75th percentile reflecting "High EBP", and >75th percentile signifying "Very High EBP". Figure 1 illustrates the levels of awareness of evidence-based practice (EBP) among the participants in the study.
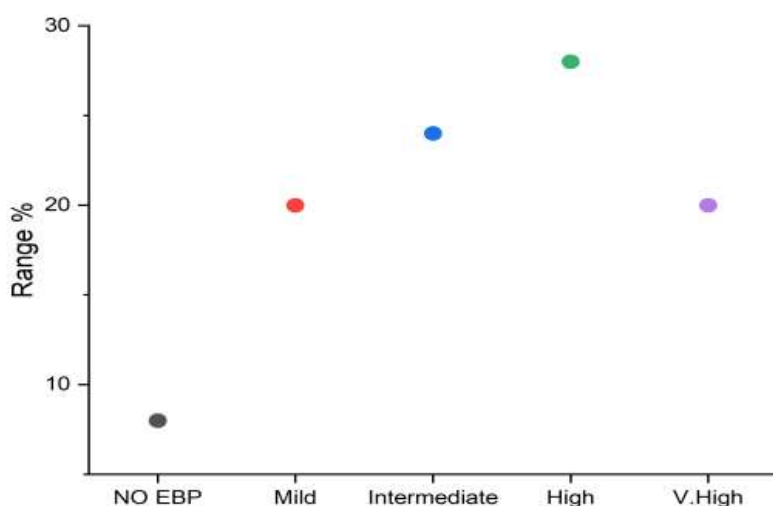

Fig 2. illustrate Awareness of EBP distribution in different categories of No awareness in EBP, Mild awareness of EBP, Intermediate awareness of EBP, High awareness of EBP, Very High awareness of EBP

In figure 2 data reveals that 20% of students exhibit "Very High" awareness, demonstrating a robust comprehension of EBP principles in the context of contact lenses. Additionally, 28% possess a "High level" of awareness, 24% demonstrate an "Intermediate" level, 20% exhibit a "Mild level," and 8% have "No awareness." This categorization method provides a comprehensive view of students' collective awareness, highlighting the diverse levels of preparedness and knowledge among study participants regarding Evidence-Based Practice (EBP) in the field of contact lenses. The results underscore the need for improvements in understanding and familiarity with EBP practices.

DISCUSSION:
A study conducted by Manjula *et, al.,* they accessed knowledge, attitude and practice of EBP among undergraduate and post graduate medical students in India.(R. et al. 2018) They also used a designed and structured questionnaire for the assessment. Most of the students had a positive attitude towards EBP but knowledge and skill still need improvement likewise in the present study majority of student's falls under average and below average categories of awareness in the subject of contact lens. In another study conducted by.*,* in nursing students on experiences of EBP education through face-to-face individual interviews and focus group discussion, in this present study showed the significant change of EBP awareness which corresponds with Shahzad *et,al.,* (Pashaeypoor et al. 2017) After implementing Rogers model of teaching strategy for nursing students it improved EBP learning among students. So, they concluded that a proper learning of

teaching strategy can improve the EBP learning and implementation. From this survey the same point can be figured out. Proper learning of EBP Based teaching is important for increasing the quality of students as well as teachers.

Awareness study done among health professional students and faculty regarding awareness and usage of EBP learning strategies by Felipa Piza *et,al.,* They accessed by using multicentre, international, online survey for assessment and they concluded that most of the students use ineffective study strategies and both students and faculties has wrong knowledge about evidence-based learning.(Rodrigues, M. A., Pavao, F., Lopes, J. I., Gomes and Arrobas, M., Moutinho-Pereira, J., Ruivo, S., Cabanas, J. E., Correia 2011). This study resembles the present study strategies of learning needed to be improved in the students. EBP based curriculum should have higher order thinking procedures in teaching content. Another study by Joanne Reid *et,al.,* on the title of "Enhancing utility and understanding of evidence-based practice through undergraduate nurse education" most of students have awareness about EBP also its in their curriculum.(Reid et al. 2017) Optometry students in present study have very little awareness when comparing with nursing students. In current study 8 %, 20% and 24% have no, mild and average awareness on EBP. After analysing all the other fields, awareness is said to be the same for all the students and practitioners in other fields, everyone has almost the same practice but in optometry its little less so when comes to optometry proper implementation of EBP is necessary, otherwise students' knowledge and quality of skills will decrease. The majority EBP related studies are from nursing field and other allied health areas but in optometry related EBP studies are very few in number especially in India.(OCULUS. 2020; Johnson and Thakur 2023). Based on a study which is done by Katherine *et.al.,* most of the optometry faculties, vision librarians and ophthalmologists in north American have interest for knowing about and enhancing the EBP knowledge and skills.(MacDonald et al. 2014) This study gives the attitude of faculties towards EBP. Most of the faculties will be interested if we give proper training. In case of patient management and decision making of contact lens subject the knowledge of EBP have a crucial role that's why in here contact lens subject is undertaken in the study.(Suttle et al. 2012; Suttle et al. 2015; Osuagwu et al. 2019) This study is an initial step of implementation of EBP in optometry curriculum of India.(Jalbert et al. 2014)

CONCLUSION

Present study concludes that the Awareness of EBP varies among the study participants. The majority falls into the no, mild, average, categories, which suggests that there may be room for improvement in increasing awareness and understanding of Evidence-Based Practice among the Optometry students.

DECLARATION OF INTEREST

No potential conflict of interest

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