



Contents lists available at ScienceDirect

Contact Lens and Anterior Eye

journal homepage: www.elsevier.com/locate/clae

Proactive contact lens prescribing – Which approach is more effective?

Nilesh Thite^a, Lakshmi Shinde^b, Prasad Sawant^c, Ajay Shinde^b, Manisha Ghai^d, Meena Kharat^e, Nilesh Chavan^f, Rushit Patel^g, Gauri Kunjeer Patel^{h,*}^a Director of Educational Programs, International Association of Contact Lens Educators, India^b Shinde Eye Care Centre, India^c Sawant Optometry Clinic, India^d Rite Sight, India^e Dr. Gogate's Eye Clinic, India^f Janata Opticians, Optometry and Contact Lens Clinic, India^g Nagar Chasmaghar, India^h Nagar Eyecare, India

1. Introduction

India has a huge population of 1.34 billion with a median age of 27 years [1]. According to the summary of Indian contact lens market reported in 2010, the main target population for contact lens (CL) wear (i.e. people based in towns with over 500,000 population, age group 12–55 years and requiring vision correction) was estimated to be 18 million. CL penetration was estimated at 5.3% of the target population, increasing to 8–9% in the eight largest cities of India [2]. These data illustrate the immense potential for CL wear in India.

Contact lenses (CLs) have evolved significantly in terms of materials, designs, wear modality, care products and systems [3]. However, this development does not seem to have proportionally translated into growth of CL market in India. According to the latest estimate by CL industry, from a target group of 28 million potential CL wearers, only 1.6 million actually wear CL, which translates into CL penetration of approximately 5.7%. This is not remarkably different from the 2010 report on Indian CL market. Several factors may be responsible for this limited uptake of CLs among people needing vision correction.

According to a study based on the perspective of eye care practitioners, increased chair time for practitioners and lack of information among consumers were the most common barriers to recommendation of CLs in India [4]. Jones et al., in the mid-90s, highlighted the importance of proactive CL recommendation and counselling by practitioners in increasing the number of patients fitted with CLs [5]. Atkins et al., in the Enhancing the Approach to Eyewear Selection (EASE) study, also showed higher uptake of CLs in a test group where CLs were introduced in a 'low key' manner as an aid to spectacle selection [6]. Nonetheless, there is evidence that CLs are discussed with fewer than half of potential wearers (48%) during a routine eye examination, and surprisingly only 27% of discussions are initiated by the optometrist [7].

In the current study we evaluated the impact of optometrists'

proactivity on the prescribing of CLs. The objectives of this study were:

- To determine the conversion ratio of CL recommendation to successful CL trial in spectacle wearers after proactive recommendation.
- To determine the conversion ratio of CL trial to CL prescribing.
- To compare two methods of recommendation: conventional proactive recommendation (CPR) and the EASE approach.

2. Method

Six CL practitioners, four males and two females from various locations of India participated in this prospective, randomized, controlled, multi-centre study. Two out of the six practices were in Mumbai and one each in Pune, Delhi, Bangalore and Ahmedabad. All of these were stand-alone practices managed by qualified optometrists. To maintain similar standards among practitioners, only those who were Fellows of the International Association of Contact Lens Educators (FIACLE) were enrolled to take part. The Ethical Committee of the Lions NAB Eye Hospital, Miraj, India, approved the protocol for the study.

For the purposes of this study, subjects were required to be habitual spectacle wearers with no previous history of CL wear and no contraindication for contact lens fitting. Subjects recruited were aged from 18 to 35 years. We considered narrowing the focus to high potential non-presbyopic target group as the awareness and practice of multifocal CLs in India is at a primitive level. Also, the ready availability of multifocal CL trials in practice is questionable [8]. The inclusion criteria for refractive correction were a spherical refraction with power in any meridian between -1.50DS and -10.00DS , or between $+1.50\text{DS}$ and $+6.00\text{DS}$, with a maximum cylinder power of -1.50DC and with cylindrical correction no more than half the spherical power in the better eye. Subjects satisfying these criteria were randomly assigned to two groups based on the following approaches to CL recommendation:

* Corresponding author at: 28, Shreenath Park Society, Umiya Vijay Lane, Satellite, Ahmedabad-380015, Gujarat, India.
E-mail address: vision@masterclassoptometry.com (G.K. Patel).

<https://doi.org/10.1016/j.clae.2018.01.001>

Received 3 November 2017; Received in revised form 23 December 2017; Accepted 8 January 2018
1367-0484/ © 2018 British Contact Lens Association. Published by Elsevier Ltd. All rights reserved.

2.1. Group 1–Conventional proactive recommendation (CPR)

In this group, practitioners recommended CLs as an option for vision correction after discussing the features and benefits. Subjects were then encouraged to undergo an in-clinic diagnostic trial.

2.2. Group 2–EASE approach

For subjects in this group, CLs were intentionally presented in a ‘low key’ manner meaning subjects were offered lenses as an aid to spectacle selection rather than as a long-term option for vision correction.

In both the groups, case history was recorded and slit-lamp examination of the ocular surface under white light performed, followed by objective and subjective refraction. The power of CL to be applied was calculated using best vision sphere and vertex distance correction. Practitioners then applied a pair of soft CLs of this spherical power from their in-practice inventories. The lenses were hydrogel or silicone hydrogel lenses of daily, biweekly or monthly replacement schedules. As the trial was planned for a short duration, these factors were not expected to play a major role in gauging the CL experience. Contact lens fit was evaluated using a standard soft CL fitting assessment protocol (coverage, centration, movement, lens lag, push-up test) and success or otherwise of lens fitting was recorded.

With Group 1 subjects, details of CLs such as the options available, suitability, advantages relating to their profession & hobby and any queries relating to CLs were discussed. However, subjects in Group 2 proceeded to their normal spectacle selection and dispensing without such discussion.

CLs were removed by the practitioner at the end of the trial (Group 1) or conclusion of spectacle selection (Group 2) and a slit-lamp examination with fluorescein and cobalt blue light was conducted to assess the health of the ocular surface. No lenses were provided for further home trial. A questionnaire featuring a series of 5-point Likert scale questions was administered to report their opinions of CLs and the overall experience. Demographic information was also collected. Informed consent was obtained from the subjects to confirm that some aspects of their clinical examination and CL experience might be presented at conferences or in clinical papers. Any conversions from CL trial to prescribing, where the subjects purchased their CLs, over the next 3 months was documented in both groups.

2.3. Statistical analysis

Data were analyzed using R software version 3.4.1. All categorical data were summarized using frequency and percentages. Age of the subjects was summarized as mean \pm SD. The conversion rate of EASE approach and CPR was compared and tested using the Chi-square test. Comparison of age based on purchase of CLs was made using independent sample T-test. Comparison between characteristics of CLs purchased within the two groups and response to the questionnaire was by Chi-square and Fisher’s exact test based on the expected count rule. P-value was considered significant at the 5% level for all comparisons.

3. Results

During the 2-month enrolment period, 167 subjects satisfying the inclusion criteria were offered a CL trial or to have CLs applied to their eyes before selecting their eyewear. Of these, 47 (28%) subjects (25 in Group 1 and 22 in Group 2) refused the offer. There was a statistically significant difference in the rate of rejection among male and female practitioners, female practitioners having a very low rejection rate ($p = 0.0001$).

A total of 120 subjects (mean \pm SD age 23.98 \pm 5.12 years; 65.83% female) were therefore enrolled in the study: 60 in Group 1 with CPR (mean \pm SD age 23.93 \pm 4.73 years; 58.33% female) and 60 in Group 2 with the EASE approach (mean \pm SD age 24.02 \pm 5.52;

Table 1
Baseline characteristics.

Characteristics	Overall (n = 120)	Group	
		CPR (n = 60)	EASE (n = 60)
Age ^a (years)	23.98 \pm 5.12	23.93 \pm 4.73	24.02 \pm 5.52
Gender			
Male	41(34.17%)	25(41.67%)	16(26.67%)
Female	79(65.83%)	35(58.33%)	44(73.33%)
Occupation			
Student	57(47.5%)	26(43.33%)	31(51.67%)
Working	63(52.5%)	34(56.67%)	29(48.33%)
CL power (DS)			
Up to -3	59(50.43%)	29(50%)	30(50.85%)
-3.01 to -6	42(35.9%)	20(34.48%)	22(37.29%)
> -6	16(13.68%)	9(15.52%)	7(11.86%)
Fit assessment			
Acceptable	113(94.17%)	57(95%)	56(93.33%)
Not acceptable	7(5.83%)	3(5%)	4(6.67%)

^a Mean \pm SD.

73.33% female). Out of all the subjects who had CLs applied to their eyes, 113 (94.17%) had satisfactory fits (Group 1: 57 (95%), Group 2: 56 (93.33%)). The baseline characteristics of all the study subjects are summarized in Table 1.

Among the 120 subjects who had CLs applied to their eyes, 63 (53%) went on to purchase CLs within the following 3 months. Among those, 32% did so within 7 days of trial, 41% within 8–14 days of trial, 14% within 15–30 days and 13% within 1–3 months of trial. Monthly lenses (46%) were the most common choice of replacement schedule prescribed, followed by daily disposables (40%) and biweekly lenses (14%). With regards to supply of lenses, 41% were prescribed one-month supply, 38%; six months’ supply, 14%; 3-months’ supply and the remainder 6% were prescribed annual supply of lenses.

In the overall analysis, there was no statistically significant difference in buying tendency based on gender of the subject ($p = 0.570$), gender of the practitioner ($p = 0.698$), occupation i.e. students or working ($p = 0.284$), or age of subjects ($p = 0.603$).

Analysis between the two groups revealed that subjects approached by CPR showed a statistically significant higher conversion from trial to prescribing as compared to subjects in the EASE group ($p = 0.002$) (Table 2). Significantly more males from the CPR group (80%) prescribed to CLs as compared to the EASE group (19%) ($p = 0.0001$), while no such difference was found among females ($p = 0.301$). No significant difference was found between the prescribing characteristics of the two groups with regard to replacement schedule ($p = 0.601$), quantity of supply ($p = 0.541$) and time to purchase from the date of trial ($p = 0.815$).

3.1. Questionnaire analysis

Overall opinion about CL experience was positive among the study subjects as summarized in Table 3. Over 80% of the subjects agreed that vision was comfortable with the CLs, CL experience was better than anticipated and the process of CL trial was quicker and simpler than expected.

Table 2
CL conversion rate between two recommendation methods.

	Overall (n = 120)	Group		P-value ^a
		CPR (n = 60)	EASE (n = 60)	
Purchased	63(52.5%)	40(66.67%)	23(38.33%)	0.002
Not purchased	57(47.5%)	20(33.33%)	37(61.67%)	

^a Chi-Square test.

Table 3
Subject responses to 5-point Likert scale questionnaire* (n = 120).

Attributes	Strongly agree/ Agree	Neutral	Strongly disagree/ Disagree
Vision was comfortable with CLs	87%	10%	4%
CLs were more comfortable than expected	78%	16%	6%
Unaware of lenses	45%	31%	24%
I thought I would not be able to get the lenses in my eyes	49%	24%	27%
Would wear CLs in the future	75%	24%	2%
Be able to handle these CL	70%	18%	1%
Recommend friends to try CL	79%	20%	1%
Would have tried CLs before if suggested	61%	29%	11%
Would consider wearing CLs regularly	64%	26%	1%
Told previously that I am unsuitable for CLs	18%	30%	51%
Experience with CLs was better than anticipated	88%	9%	3%
CL trial process was quicker	86%	13%	1%
Process of CL trial was simpler	82%	17%	2%

* Options for all questions were on a 5-point Likert scale: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

Between the two groups, opinions about CL experience did not show any significant difference. However, a statistically significant co-relation was found between opinion about CL experience and propensity to purchase CL. The attributes that showed statistically significant correlation with conversion were: consideration to wear CLs in the future ($p < 0.0001$), consideration to wear CLs regularly ($p < 0.0001$), ability to handle CLs ($p < 0.0001$), recommending friends to try CLs ($p = 0.004$), willingness to try CLs if recommended before ($p = 0.021$), comfort with CLs ($p = 0.046$). Results are summarized in Figs. 1 and 2

4. Discussion

Previous studies have highlighted the importance of proactive recommendation in contact lens practice [4–7]. However, this is the first study of its kind in India to gauge the conversion from proactive recommendation into CL application and ultimately into prescribing. Our study differed from that of Atkins et al. [6] in that, in the present study, the EASE approach was compared to conventional proactive recommendation (CPR), rather than to no offer or discussion of CLs. Our aim was more specific to conversions from CL application to prescribing using different methods in contrast to EASE where the main purpose was to observe the impact of CL application on spectacle dispensing.

Our study demonstrates that a majority of subjects (72%) with no

previous experience of CLs show willingness to try them when offered by the optometrist. These findings are lower than that of the EASE study (88%) [6]. This could be because awareness of CLs as a mode of vision correction is higher in Europe than in the Indian population. It is less likely to be a result of the method of approach in EASE as in the present study acceptance of applying CLs on the eye did not differ with the method of approach.

The percentage of candidates interested in trying CLs in this study was higher than that found by Jones et al. in 1995 (57%) [5], possibly because of the development of the CL market over the past two decades leading to increased awareness about CLs in general.

Proactive recommendation led to conversion of CL application into purchase in over half of all subjects (53%), which is comparable to the STAR Performers study [7]. In our study conversions were higher with the CPR method than with the EASE approach. This was particularly true for male subjects, possibly due to gender differences in motivation and ‘triggers’ to wearing CLs.

Interestingly, we also observed that once subjects agreed to opt for CLs, the method of recommendation did not determine their buying characteristics. No significant difference was found between the two groups with regard to supply, type or time of CL purchase. Women and men showed the same propensity to purchase, and students were no more or less likely to opt for CL than those in work.

It is evident that the Indian CL market is not as developed as in other Asian countries [2]. Of all the potential reasons, lack of correct information among patients, and lack of proactive recommendation or passing on information, seem to be the main factors [4]. In our study, tangible CL experience; irrespective of the method of approach, created an overall positive impression of CLs among the subjects. This was true even in subjects who did not eventually opt for CLs. This observation suggests that giving CL wearing experience has a direct and indirect influence. It could be a vital part of strategies devised to transmit information, change perceptions and dispel any myths about CLs.

The finding that 72% of all subjects accepted the offer to try CLs and 53% of those eventually opted for CLs as a mode of vision correction suggests an enormous potential for the Indian CL market if optometrists were to use proactive CL recommendation as a tool to attract new wearers. Our study revalidates the importance of proactive recommendation by optometrists shown in previous studies [5,6,7].

Over 70% of the subjects who purchased CLs did so within 2 weeks from the day of trial and 87% within a month. In our study, no reminder calls were made to any subjects after the initial trial was completed. Proactive recall system after CL trial may lead to more conversions from CL experience to prescribing, by facilitating the decision-making process of patients.

To maintain uniformity and basic practice standards, we enrolled experienced CL practitioners who were FIACLEs. This could be one

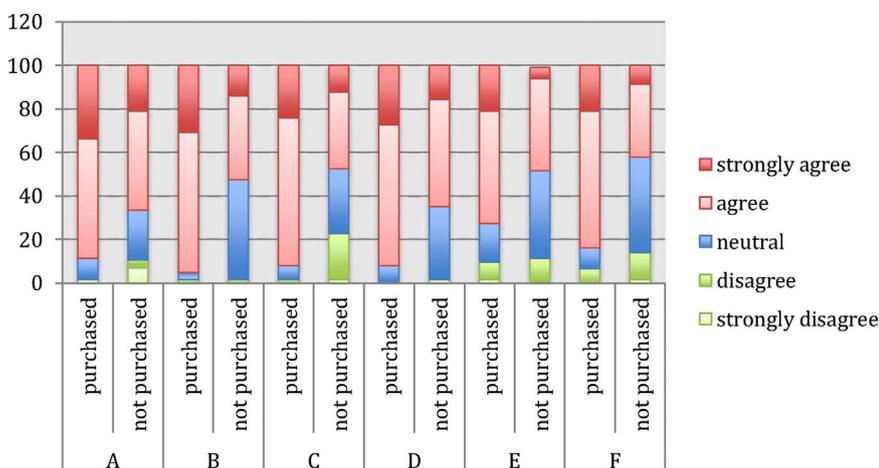


Fig. 1. Responses to questions that were significantly related to conversions (n = 120) ($p < 0.05$); A) more comfortable, B) wear CLs in the future, C) able to handle CLs, D) recommend friends to try, E) willingness to try CLs if recommended before, F) consider wearing CLs regularly.

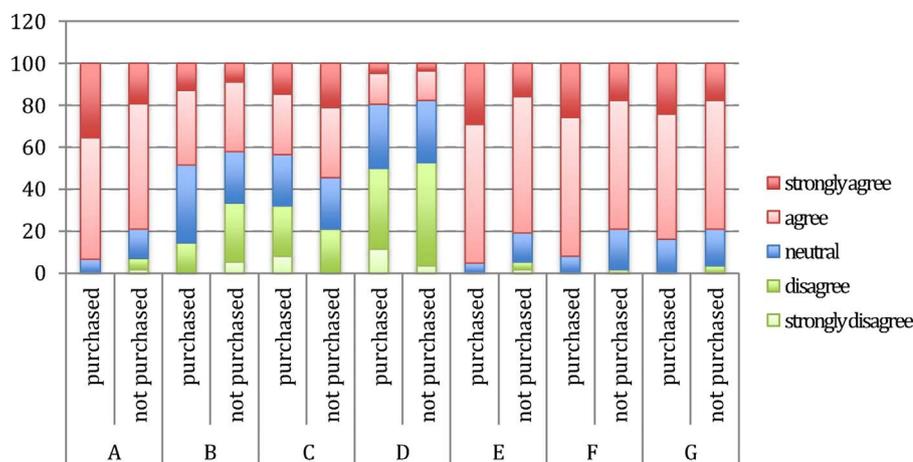


Fig. 2. Responses to questions that were insignificantly related to conversions ($n = 120$) ($p < 0.05$); A) vision was better, B) unaware of lenses, C) unable to get the lenses in my eyes, D) previously told unsuitable for CLs, E) experience better than anticipated, F) trial was quicker, G) trial was simpler.

reason for the high rate of conversions in this study. The outcome may vary in other types of practice and where practitioners are less experienced or not FIACLE, and thus may not be extrapolated to all optometric practices in India. Practice setting has been shown to influence contact lens fitting behavior in other countries [9].

5. Conclusions

Our study showed that, using a proactive approach, 72% subjects take up the offer of a CL wearing experience and 53% of those eventually opt for CL as a mode of vision correction. CPR shows a higher conversion rate from CL experience to prescribing than the EASE approach. Yet both approaches have similar influence on buying characteristics. The findings of this study can help the CL industry and practitioners develop strategies to boost CL penetration in India through proactive recommendation and tangible CL experience.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgement

We thank Alison Ewbank for reviewing the manuscript and John Michael for helping us with statistical analysis.

References

- [1] India Population – Worldometers, (2018) <http://www.worldometers.info/world-population/india-population/>.
- [2] Multi Sponsor Surveys international LLC: The 2010 study of the international CL market – India summary report.
- [3] N. Efron, P.B. Morgan, A decade of contact lens prescribing trends in the United Kingdom, *Contact Lens Anterior Eye* 29 (2006) 59–68.
- [4] N. Thite, S. Naroo, P.B. Morgan, L. Shinde, K. Jayanna, B. Boshart, Motivators and barriers for contact lens recommendation and wear, *Contact Lens Anterior Eye* 38 (2015) e41.
- [5] L. Jones, D. Jones, C. Langley, M. Houlford, Reactive or proactive contact lens fitting—does it make a difference? *J Br Contact Lens Assoc* 19 (1996) 41–43.
- [6] N.P. Atkins, S.L. Morgan, P.B. Morgan, Enhancing the approach to selecting eyewear (EASE): A multi-centre: practice-based study into the effect of applying CLs prior to spectacle dispensing, *Contact Lens Anterior Eye* 32 (2009) 103–107.
- [7] NOP Healthcare, STAR performers, *Optician* 212 (1996) 18–19.
- [8] N. Thite, et al., Barriers, motivators and enablers for dispensing multifocal contact lenses in Mumbai, India *J Optom* 8 (1) (2015) 56–61.
- [9] N. Efron, P.B. Morgan, Influence of practice setting on contact lens prescribing in the United Kingdom, *Contact Lens Anterior Eye* 38 (2015) 70–72.