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# Proactive contact lens prescribing – Which approach is more effective?

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## 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 +1.50DS and +6.00DS, 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:

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### 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 ± 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 ± SD age 23.98 ± 5.12 years; 65.83% female) were therefore enrolled in the study: 60 in Group 1 with CPR (mean ± SD age 23.93 ± 4.73 years; 58.33% female) and 60 in Group 2 with the EASE approach (mean ± SD age 24.02 ± 5.52; 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.

**Table 1**
Baseline characteristics.

| Characteristics | Overall (n = 120) | Group | |
|---|---|---|---|
| | | CPR (n = 60) | EASE (n = 60) |
| Age[a] (years) | 23.98 ± 5.12 | 23.93 ± 4.73 | 24.02 ± 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 ± SD.

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.