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Original Article

Impact of Pharmacists' Intervention in Treatment Outcome after Cataract Surgery

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ABSTRACT

Background: Medication knowledge and adherence in post-cataract surgery patients is crucial for optimal recovery. **Objectives:** To compare the effectiveness of verbal counselling, clinic-based pictogram demonstration and take-home pictogram education on medication knowledge and adherence in post-cataract surgery patients. **Materials and Methods:** A randomised, parallel-group, controlled trial was conducted in 150 cataract surgery patients. They were equally enrolled in three different experimental groups; EG1 (verbal counselling only), EG2 (verbal+clinic pictograms) and EG3 (verbal+take home pictograms). Knowledge assessment was done by administering 14-item questionnaire at baseline, Day 5 and Day 28. Medication adherence was assessed by bottle weight technique on Day 2 and Day 28. *t*-test 1 (Day 5), and Post-test 2 (Day 28). Two-way ANOVA with Bonferroni *post hoc* comparisons was used and effect sizes were reported as partial eta squared (η^2) and Cohen's d. **Results:** EG3 demonstrated superior knowledge at Post-test 1 (40.36±2.03) and Post-test 2 (39.64±2.03) versus EG1 (32.56±2.93:32.08±2.93) and EG2 (32.78±2.73:32.30±2.73). Two-way ANOVA showed significant main effects of group ($F=271.16$, $p<0.001$, $\eta^2=0.23$) and time ($F=539.52$, $p<0.001$, $\eta^2=0.46$), with a significant interaction ($F=73.44$, $p<0.001$, $\eta^2=0.12$). EG3 had the lowest bottle weight at Day 28 (6.00 g vs. EG1: 7.74 g and EG2: 7.16 g), with significant pairwise difference which were confirmed by *post hoc* analysis (EG1 vs. EG3: Cohen's d= 1.24; EG2 vs. EG3: Cohen's d=0.86; both <0.05; EG1 vs. EG22: Cohen's d=0.42; $p>0.05$). **Conclusion:** This study suggests that for patients that undergo Cataract surgery, pictogram-based counselling significantly improves the medication knowledge and adherence compared to verbal counselling and clinic-based pictogram demonstration. The outcome suggests the continuous accessibility of pictograms rather than pictogram alone, gives better results. In low literacy population, take-home pictograms serve as a memory aid to adhere to complex medication regimens. These findings support the importance of pharmacist delivered counselling and take-home pictograms as an essential component in healthcare settings.

Keywords: Cataract, Literacy, Medication Adherence, Patient Education, Pharmaceutical Care, Pictogram.

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INTRODUCTION

Cataract is one of the most common causes of visual impairment and blindness worldwide, affecting millions of people annually. For majority of those impacted, the path to restore vision ends in operating room, where cataract surgery is the only treatment that has been shown to be effective in reversing this loss (World Health Organisation, 2023; Lee *et al.*, 2025). After surgery there are chances of developing complications like persistent inflammation, ocular hypertension (also known as elevated intraocular pressure), cystoid macular oedema (a condition where retina at the back of the eye is swollen), retinal detachment and endophthalmitis (Moshirfar *et al.*, 2023). Therefore, to prevent such complications topical ophthalmic medication like antibiotics, corticosteroids, non-steroidal anti- inflammatory drugs and artificial tears/mucin, secretagogues are prescribed (Mukit *et al.*, 2024; Nouraeinejad, 2023). Follow up of topical eye drops therapy protocols following cataract surgery is a big challenge (Matossian, 2021). Following a post –operative eye drop regimen is much more difficult than it may seem, as some studies report non- compliance with eye drops are around 40% (Sarkar *et al.*, 2021; Vandenbroeck *et al.*, 2011) which mainly occurs due to complex treatment regimens, little or no experience and poor techniques for instilling eye drops, poor hand-eyes co-ordinations and manual dexterity, reduced vision, aging, poor cognition, lack of proper hand hygiene, financial burden and lack of patient education (Nouraeinejad, 2023; Matossian, 2021; Devireddy *et al.*, 2025). Also, complicated postoperative treatment includes a combination of drugs with different dosage regimens which continue to increase non-compliance (Matossian, 2021). Non-compliance can significantly increase

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the chances for developing the post-surgery complications (Devireddy *et al*., 2025). Lack of knowledge and poor health literacy are two of the factors associated with patient specific barriers and when either is lacking, the risk of non-compliance rises sharply (Kvarnstrom *et al*., 2021). According to 2011 census, the literacy rate of Gandhinagar, where this study was conducted was 84.2%. Also, India had nearly 2.5 crores household which did not have even one literate member. In 9.6 crore household, nearly four times the number of households had zero literate members, with four people who could read and write with understanding in any one language (Devina, S.2014, December). Person's level of health literacy is an important factor associated with medication knowledge, medication adherence, health outcomes and facing medication errors (Bozkurt *et al*., 2025) yet in India 90% of the people lack health literacy (Mathias *et al*., 2023). Low levels of health literacy in India influence by educational, cultural, linguistic and socioeconomic factors which reduce people's capacity to understand the information related to medicines, therefore specific education and communication methods are necessary to enhance health outcomes (Mathias *et al*., 2023). Also, 40-80% of medical information provided by healthcare practitioners is forgotten immediately (Kessels, 2003). Consequently, delivering correct health information is a challenge as a significant portion of population is unable to read and understand even these simple sentences in their own regional language. Communication with patients and educating them can enhance medication adherence significantly. These can be achieved through counselling provided by various healthcare professionals and pharmacists are one of them. They are involved in handling prescriptions and they are in close contact with patient prior to the use of drug, they can considerably enhance patient adherence (Merks *et al*., 2021). Pharmacists provide personalised counselling and advice patients on how to follow the medication regimen, side effects of medicines and role of adherence in management of disease which enable them to become an active participant in their health management (Brait, 2024). The ways by which pharmacists can make these impactful is by incorporating different methods for enhancing knowledge and medication adherence, such as use of pictograms, videos and multimedia images, these visual aids helps the patient to understand and remember due to improved cognition and pictorials superiority effect, which boots memory because it can activate visual and auditory learning system (Mdanda *et al*., 2021; Kripalani *et al*., 2007). Among these, pictograms are emerged as the most promising. Defined as visual symbols that convey concepts through simplified images (Gutierrez *et al*., 2022). They have begun to gain popularity among pharmacists, in addition to physicians, to reduce communication barriers especially in patients with low literacy levels (Saramunee *et al*., 2025). When used in patient counselling, pictogram improve medication comprehence and appropriate drug use among patients with low health literacy, potentially reducing medication dosing error. Additionally, because they are culturally neutral, they are universally understandable despite language barrier. High quality research is required to support the regular use of pictogram-based materials in daily practice. Even though there is a high availability of literature on pictogram design, comprehensiveness and validation, however a little information is available regarding their application in community pharmacy settings (Merks *et al*., 2021). The current study aimed to close this gap by investigating whether pharmacist-delivered pictogram-based education could significantly enhance medication knowledge and adherence in patients recovering from cataract surgery.

METHODOLOGY

This research was planned as a randomized, parallel-group intervention study to determine the effect of intervention by a pharmacist to the patients of postoperative cataract surgery. The research took place in six-month period (between October 2022 and March 2023). Prior to initiation, the study protocol was prepared and submitted to the K.B. Independent Ethics Committee (KBICE), K.B.I.P.E.R., and ethical approval was obtained (Protocol number: KBIEC/2022-23/PD5Y/07). The study site for the data collection were Soham eye hospital, Sector 22, Gandhinagar, Gujarat-382022 (Site 1) and Yashdeep eye hospital, Sector 7, Gandhinagar, Gujarat-380013 (Site 2). The proposed sample size was selected as 150 patients based on literature review and statistical calculation. Out of 150 patients enrolled in the study, 53 were from Site 1 and 97 were from Site2. The subjects were allocated using blocked randomisation sequence into three equal groups (n=50 each). The randomisation was performed manually by Principal investigators.

Form 1: Data Collection form.

Data Collection Form	
Site	
Date:	Form no.:
Patient demographics	
Name:	Contact no.:
Age:	Gender:
Address:	
Education:	
Patient's History	
Medical History	
Medication History	
Current Medical Condition	
Current medication	
Allergies	
Medication Prescribed	

Eligibility Criteria

The study population included, the patient who underwent cataract surgery, uneducated participants of age above 18 years of old of any gender and patients who gave their consent to participate in this study, The study excluded any participants who had any co-morbidities inducing cataract, participants who were on any other ophthalmic medications and participants who had any current ophthalmic conditions.

Materials

Data collection included: (1) Data collection form, (2) a self-designed 14- item questionnaire in English and Gujarati which was pilot tested on 15 patients (Cronbach's α= 0.78, CVI=0.86, tests-retest r= 0.82, $p<0.001$) and administered at pre-test, Post-test 1 and Post –test 2, (3) the WHO hand hygiene pictogram and (4) a self-made eye drop instillation and dosing schedule pictogram prepared for each site.

Methods

Patients in all the groups received education on Day 1 about hand hygiene (12-steps WHO protocol) (Suppl Figure 1) (World Health Organisation, 2009), eye drop instillation technique (5-step pictogram) (Suppl Figure 2), medication indication, dosing frequency and adherence importance specific for each group.

Patients were recruited from two clinic sites in Gandhinagar. Written consent was taken from each participant and baseline data was collected. A14- item pre-test was administered before educational intervention. Then patients were randomised into EG1, EG2 and EG3 (50 per group) (Suppl Figures 3-5). Site1 used Prednisolone (four-times daily tapering to once daily over 28 days) and Site2 used Moxifloxacin-Dexamethasone (hourly for 3 days, tapering over 4 weeks) (Suppl Figures 6-9).

EG1 received verbal education only, EG2 received verbal education plus pictograms shown in the clinic. EG3 received the same as EG2 but additionally took the pictogram at home for future reference. All the three groups were administered with Post-test 1 on Day 5 and Post-test 2 on Day 28 and eye-drop bottle was weighted on Day 2 and Day 28 to assess adherence. Adherence was calculated using the formula; Adherence (%) = [(Initial weight- final weight)/ Expected weight consumed] × 100, using a standardize drop volume of 0.05 mL.

RESULTS

Statistical analyses were performed using SPSS and Microsoft excel 2019 MSO (Version 2301 build 16.0.16026.20002). Two-way ANOVA was applied and effect sizes were reported as partial eta squared and Cohen's d.

A total of 166 patients were approached for the study, of which 12 refused to participate and 4 withdrew during the study period, resulting in a final sample of 150 patients enrolled across two study sites (Table 1). The patients were equally distributed among three experimental groups that is, EG1 (n=50, EG2 (n=50) and EG3 (n=50). There was balanced gender distribution of 25 males and 25 females in each experimental group (Table 2). The age distribution revealed that the majority of participants (51.33%, n=77) were in the 61-70 years age group, followed by 51-60 years (23.33%, n=35), and 71-80 years (14.67%, n=22). Only 0.67% (n=1) of participant was in the 30-40 years age group (Table 3). In terms of education level, 39.33% (n=59) were illiterate, 32% (n=48) had primary school education, 14.67 (n=22) had middle school education and 14% (n=21) had high school education (Table 4). The Pearson Chi-square test demonstrated no significant association between education level and experimental group assignment (χ^2=7.14, d_f=6, p=0.30), confirming successful randomization (Table 5).

The mean knowledge scores across all the three groups at baseline (pre-test) were comparable: EG1 (27.90±1.24; 95% CI:27.56-28.24), EG2 (28.02±1.40; 95% CI:27.63-28.41), and EG3 (27.80±1.33; 95% CI:27.43-28.17), indicating no significant differences between groups before intervention (Table 6). This baseline standard deviations (ranging from 1.24 to 1.40) confirmed successful randomization and homogeneity of variance across the groups. Following the educational interventions, all three groups demonstrated improvements in knowledge scores. At Post-test 1 (Day 5), the mean scores were: EG1 (32.56±2.93; 95% CI:31.75-33.37), EG2 (32.78±2.73; 95% CI: 32.02-33.54) and EG3 (40.36±2.03; 95% CI:39.80-40.92). At Post-test 2 (Day 28), the scores were: EG1 (32.08±2.93; 95% CI:31.27-32.89), EG2 (32.30±2.73; 95% CI:31.54-33.06) and EG3 (39.64±2.03; 95% CI:39.08-40.20) (Table 6). Notably, EG3 not only achieved higher mean scores but also demonstrated lower variability (SD=2.03) Compared to EG1 (SD=2.93) and EG2 (2.73), suggesting more consistent knowledge retention among participants who received take-home pictograms.

The two-way ANOVA revealed highly significant main effects for both experimental group (F=271.16, d_f=2, $p<0.0001$, η^2=0.12) (Table 8). The effect size (η^2) indicated that test time point accounted for 46% of the variance in knowledge scores, experimental group accounted for 23% and the interaction accounted for 12% (Table 7).

Pairwise comparisons between EG1 and EG2 showed no significant difference at any time point: Pre-test (difference= -0.12; 95% CI: -0.61-0.37, t=-0.486, p=0.1000), Post-test 1 (difference= -0.22; 95% CI: -0.70-0.27, t= -0.432, $p<0.1000$) and Post-test 2 (difference= -0.22; 95% CI: -0.70-0.27, t= -0.41, $p<0.1000$) (Table 8).

However, there were significant differences in comparison of EG3 with both EG1 and EG2. EG3 scored significantly higher than EG2 at Post-test 1 (difference= -7.58; 95% CI: -8.50- -6.66, t= -16.20,

p<0.0001) and Post-test 2 (difference= -7.34; 95% CI: -8.26- -6.43, t=15.69, p<0.0001) (Table 9). Similarly, EG3 outperformed EG1 at Post-test 1 (difference= -7.56; 95% CI: -8.50- -6.62, t= -15.28, p<0.0001) (Table 10). No significant differences were observed at baseline between any groups.

The two-way ANOVA for medication adherence (measured by bottle weight) across both sites combined revealed significant main effects for experimental group (F=16.62, d_f=2, p<0.001) and day (F=244.01, d_f=2, p<0.001), but the interaction effect was not significant (F=0.03, d_f=4, p>0.05) (Table 11).

The overall mean bottle weights showed a consistent decrease from initial measurement through Day 2 to Day 28 across all the groups. The group wise means weights were: EG1 (Initial: 14.25 g, Day 2: 13.55 g; 95% CI: 12.44-14.66, Day 28: 7.74 g; 95% CI: 6.64-8.84), EG2 (Initial: 13.78 g, Day 2: 13.09 g; 95% CI: 11.99-14.19, Day 28: 7.16 g; 95% CI:6.07-8.25), and EG3 (Initial; 12.35 g, Day 2: 11.76 g; 95% CI:10.67-12.85, Day 28: 6.00 g; 95% CI:4.91-7.09) (Table 12).

Post hoc comparisons revealed that at Day 2, EG1 differed significantly from EG3 (difference=1.79; 95% CI: 0.69-2.89, t=3.181, Cohen's d=0.675, p<0.050) and EG2 differed significantly from EG3 (difference=1.33; 95% CI: 0.24-2.42, t=2.39, Cohen's d=0.48, p<0.05), but EG1 and EG2 did not differ significantly (Table 13). At Day 28 both EG1 vs EG3 (difference=1.74, t=3.083; 95% CI: 0.63-2.84, Cohen's d=1.245, p<0.05) and EG2 vs EG3 (differences=1.15; 95% CI: 0.06-2.24, t=2.074, Cohen's d=0.864, p<0.05) showed significant differences, while EG1 and EG2 remained comparable.

The distribution of patients at Site 1 was EG1 (n=8), EG2 (n=11) and EG3 (n=19). The two-way ANOVA showed significant effects for experimental group (F=15.10, d_f=2, p<0.001), day (F=7089.80, d_f=2, p<0.001) and a significant interaction (F=13.52, d_f=4, p<0.001) (Table 14). The mean bottle weight at site1 decreased uniformly from initial weight of 9.250 g across all groups to: EG1 (Day 2:9.02 g, Day 28: 5.35 g), EG2 (Day 2:9.01 g, Day 28:5.23), and EG3 (Day 2:9.00 g, Day 28: 4.79 g) Table 15. At Day 2, no significant differences were found between any group pairs. However, at Day 28, all pairwise comparisons were significant: EG1 vs EG2 (difference=0.11; 95% CI:0.00-0.24, t=1.879, p<0.05), EG1 vs EG3 (difference=0.56; 95% CI:0.44-0.68, t=9.17, p<0.05) and EG2 and EG3 (difference=0.45; 95% CI:0.34-0.55, t=8.55, p<0.05) (Table 16).

The distribution of patients at Site2 was EG1 (n=29), EG2 (n=27) and EG3 (n=18). The two-way ANOVA showed significant effects for experimental group (F=24.92, d_f=2, p<0.001), day (F=9788.88, d_f=2, p<0.001) and a significant interaction (F=13.52, d_f=4, p<0.001) (Table 17). The mean bottle weights at site 2 decreased from an initial 15,630g to: EG1 (Day 2:14.80 g, Day 28:8.40 g), EG2 (Day 2:14.75 g, Day 28:7.94 g) and EG3 (Day 2:14.67 g, Day 28:7.28 g) (Table 18). At Day 2, only EG1 vs EG3 showed a significant difference (difference=0.13; 95% CI:0.00-0.26, t=1.90, p<0.05). At

Table 1: Distribution of patients in the study

Patients	Frequency (n=150)
Number of patients approached	166
Number of patients refused to participate in the study	12
Number of patients withdrawn	4
Total number of patients enrolled in the study	150

Table 1 represents the enrolment of patients (166 approached, 12 refused and 4 withdrew making it total of 150 enrolled patients.

Table 2: Distribution of patients according to the gender.

Experimental Group	Gender	No of patients (n = 150)
EG1	Male	25
	Female	25
EG2	Male	25
	Female	25
EG3	Male	25
	Female	25

Table 2 shows the balanced distribution of gender among the three experimental groups.

Table 3: Distribution of patients according to the age group.

Age group (In years)	No of patients (n = 150)	Per cent (%)
30-40	1	0.67%
41-50	12	8%
51-60	35	23.33%
61-70	77	51.33%
71-80	22	14.67%
81-90	3	2%

Table 3 shows the age distribution of patients who took part in this study and suggests that population mainly consisted of geriatric patients.

Table 4: Distribution of patients according to the education level.

Education	Score	No of patients (n = 150)
Illiterate	1	59
Primary school	2	48
Middle school	3	22
High school	4	21

Table 4 presents the educational background of study participants which shows that 71.33% of participants were illiterate or had only primary education, thus highlighting the substantial need for literacy independent educational interventions.

Table 5: Test of independence between education and experimental groups

Test	Value	d_f	Significance
Pearson Chi-Square	7.14	6	0.31

Table 5 shows that there is no significant association between education level and group assignment (χ^2 = 7.14, d_f=6, p=0.31).

Table 6: Descriptive statistics: Mean scores ± SD across Groups and Tests.

Group	Pre-test (Mean±SD)	95% CI	Post-test 1 (Mean±SD)	95% CI	Post-test 2 (Mean±SD)	95% CI
EG1	27.90±1.24	27.56-28.24	32.56±2.93	31.75-33.37	32.08±2.93	31.27-32.89
EG2	28.02±1.40	27.63-28.41	32.78±2.73	32.02-33.54	32.30±2.73	31.54-33.06
EG3	27.80±1.33	27.43-28.17	40.36±2.03	39.80-40.92	39.64±2.03	39.08-40.20

Table 6 presents the comparable baseline scores and higher Post-test scores in EG3 at both Day 5 and Day 28.

Table 7: Two-Way ANOVA Summary Table.

Source of variation	SS	d_f	MS	F	*p*-value	Ƞ2
Experimental Group (A)	2495.95	2	1247.98	271.16	<0.0001	0.23
Test (B)	4966.03	2	2483.02	539.52	<0.0001	0.46
Experimental Group x Test (AxB)	1352.01	4	338.00	73.44	<0.0001	0.12
Error	2029.60	441	4.60	-	-	-
Total	10843.53	449	-	-	-	-

Table 7 presents the two-way ANOVA findings showing the effects of experimental group (F=271.16, d_f=2, p<0.0001), test time point (F=539.52, d_f=2, p<0.0001), and their interaction (F=73.44, d_f=4, p<0.0001) on knowledge scores.

Table 8: Pairwise Comparison between EG1 and EG2 for each Test.

Test	EG1 Mean	EG2 Mean	Difference (95% CI)	*t*-value	*p*-value	Significance
Pre-test	27.90	28.02	-0.12 (-0.61-0.37)	-0.49	0.1000	Not significant
Post-test 1	32.56	32.78	-0.22 (-0.70-0.27)	-0.43	0.1000	Not significant
Post-test 2	32.08	32.30	-0.22 (-0.70-0.27)	-0.41	0.1000	Not significant

Table 8 shows no significant difference between EG1 and EG2 at any time point (all=0.10) which indicates that clinic-only pictogram demonstration adds no benefit over verbal education.

Table 9: Pairwise Comparison between EG2 and EG3 for each Test.

Test	EG2 Mean	EG3 Mean	Difference (95% CI)	*t*-value	*p*-value	Significance
Pre-test	28.02	27.80	0.22 (-0.70-0.27)	0.95	0.1000	Not significant
Post-test 1	32.78	40.36	-7.58 (-8.50- -6.66)	-16.20	0.0001	Significant
Post-test 2	32.30	39.64	-7.34 (-8.26- -6.43)	-15.69	0.0001	Significant

Table 9 shows superiority of EG3 over EG2 at Post-test 1 (difference =-7.58, 95% CI: -8.50- -6.66, t=-16.20, p<0.0001) and Post-test 2 (difference =-7.34, 95% CI: -8.26- -6.43, t=-15.69, p<0.0001).

Table 10: Pairwise Comparison between EG1 and EG3 for each Test.

Test	EG1 Mean	EG3 Mean	Difference (95% CI)	*t*-value	*p*-value	Significance
Pre-test	27.90	27.80	0.10 (-0.84-0.84)	0.41	0.1000	Not significant
Post-test 1	32.56	40.36	-7.80 (-8.74- -6.86)	-15.76	0.0001	Significant
Post-test 2	32.08	39.64	-7.56 (-8.50- -6.62)	-15.28	0.0001	Significant

Table 10 shows EG3 significantly outperformed EG1 at Post-test 1 (difference =-7.80, 95% CI: -8.74- -6.86, t=-15.76, p<0.0001) and at Post-test 2 (difference =-7.56, 95% CI: -8.50- -6.62, t=-15.28, p<0.0001).

Table 11: Two-way ANOVA table to assess the medication adherence between experimental groups.

Source of variation	SS	d_f	MS	F	*p*-value
Experimental Group	195.0860	2	97.54	16.62	<0.001
Day	2863.7835	2	1431.89	244.01	<0.001
Experimental group x Day	0.7771	4	0.19	0.03	>0.05
Error	1918.8837	327	5.87	-	-
Total	4978.5303	335	-	-	-

Table 11 presents two-way ANOVA findings for medication adherence across all the three sites. The experimental group effect was significant (F=16.62, d_f =2, p<0.001). The day effect was also highly significant (F=244.01, d_f =2, p<0.001). However, the group×Day interaction was not significant (F=0.03, d_f= 4, p>0.05).

Table 12: Group wise mean weight (in grams) of medication bottle on Day 5 and Day 28.

Group	Initial	Day 2 (95% CI)	Day 28 (95% CI)	Overall mean
EG1	14.2505	13.55 (12.44-14.66)	7.74 (6.64-8.84)	11.85
EG2	13.7832	13.09 (11.99-14.19)	7.16 (6.07-8.25)	11.34
EG3	12.3538	11.76 (10.67-12.85)	6.00 (4.91-7.09)	10.04
Overall Mean	13.4654	12.80	6.97	-

Table 12 shows EG3 had lowest bottle weight at Day 28 (6.00 g; 95% CI: 6.07-8.25) that indicates the highest medication consumption.

Table 13: *Post hoc* Pairwise comparisons between experimental groups at each time point.

Time Point	Comparison	Mean 1	Mean 2	Difference	95% CI	SE	*t*-statistics	Cohen's d	Significance
Day 2	EG1 vs EG2	13.55	13.09	0.46	-0.64-1.56	0.5632	0.81	0.18	Not Significant
Day 2	EG1 vs EG3	13.55	11.76	1.791	0.69-2.89	0.5632	3.18	0.67	Significant
Day 2	EG2 vs EG3	10.09	11.76	1.33	0.24-2.42	0.5557	2.40	0.48	Significant
Day 28	EG1 vs EG2	7.74	7.16	0.58	-0.52-1.68	0.5632	1.03	0.42	Not Significant
Day 28	EG1 vs EG3	7.74	6.00	1.74	0.63-2.84	0.5632	3.08	1.24	Significant
Day 28	EG2 vs EG3	7.15	6.00	1.15	0.06-2.24	0.5557	2.07	0.86	Significant

Table 13 presents *post hoc* comparisons which shows that EG1 and EG2 at Day 2 did not significantly differ from each other (difference=0.46 g, 95% CI: -0.64-1.56, Cohen's d= 0.18, p>0.05), but both significantly differed from EG3: EG1 vs.EG3 (difference= 1.79 g, 95% CI: 0.69-2.89, t=3.18, Cohen's d=0.67, p<0.05) and EG2 vs. EG3 (difference= 1.33g, 95% CI: 0.24-2.42, t=2.398, Cohen's d= 0.48, p<0.05). At day 28, EG3 showed significant difference in comparison to EG1 and EG2: EG1vs. EG3 (difference=1.74 g, 95% CI: 0.63-2.84, t=3.08, Cohen's d= 0.1821.24, p<0.05) and EG2 vs. EG3 (difference=1.15 g, 95% CI:0.06-2.24, t=2.07, Cohen's d=0.86, p<0.05) both demonstrated large effect sizes. EG1 vs EG2 was statistically comparable at day 28 (difference=0.58 g, 95% CI: -0.52-1.68, t=1.036, Cohen's d=0.42, p>0.05).

Table 14: Two-way ANOVA Table to assess the medication adherence between experimental groups at site 1.

Source of variation	SS	d_f	MS	F	*p*-value
Experimental Group	0.91	2	0.45	15.10	<0.001
Day	425.50	2	212.75	7089.80	<0.001
Experimental group x Day	1.62	4	0.40	13.52	<0.001
Error	3.15	105	0.03		
Total	431.18	113			

Table 14 presents the two-way ANOVA for medication adherence at Site 1 (n=38: EG 1: n= 8, EG 2: n= 11, EG3: n= 19). All sources of variation are highly significant: experimental group (F=15.10, d_f =2, p<0.001), day (F=7089.80, d_f =2, p<0.001) and the interaction (F=13.52, d_f =4, p<0.001).

Table 15: Group wise mean weight of medication bottle on Day 5 and Day 28 at site 1.

Group	Initial	Day 2	Day 28
EG1	9.25	9.02	5.35
EG2	9.25	9.01	5.23
EG3	9.25	9.00	4.79

Table 15 shows on Day 28 EG3 had the lowest weight at Site 1 (4.79 g) versus EG1 (5.35 g) versus EG2 (5.23 g).

Table 16: *Post hoc* Pairwise comparisons between experimental groups at each time point at site 1.

Time Point	Comparison	Mean 1	Mean 2	Difference (g)	95% CI	SE	*t*-statistic	Significance
Day 2	EG1 vs EG2	9.02	9.01	0.01	-0.11-0.13	0.06	0.15	Not Significant
Day 2	EG1 vs EG3	9.02	9.00	0.23	-0.10-0.14	0.06	0.37	Not Significant
Day 2	EG2 vs EG3	9.01	9.00	0.01	-0.09-0.12	0.05	0.26	Not Significant
Day 28	EG1 vs EG2	5.35	5.23	0.11	0.00-0.24	0.06	1.88	Significant
Day 28	EG1 vs EG3	5.35	4.79	0.56	0.44-0.68	0.06	9.17	Significant
Day 28	EG2 vs EG3	5.23	4.79	0.45	0.34-0.55	0.05	8.55	Significant

Table 16 presents *post hoc* pairwise comparisons of bottle weights between experimental groups at each time point at site 1. All pairwise comparisons were significant at Day 28.

Table 17: Two-way ANOVA table to assess the medication adherence between experimental groups at site 2.

Source of variation	SS	d_f	MS	F	*p*-value
Experimental Group	6.64	2	3.32	24.92	<0.001
Day	2608.23	2	1304.11	9788.88	<0.001
Experimental group x Day	9.57	4	2.39	17.95	<0.001
Error	28.38	213	0.13	-	-
Total	2652.81	221	-	-	-

Table 17 presents two-way ANOVA for medication adherence at Site (n=112: EG 1: n= 29, EG 2: n= 27, EG3: n= 18). All sources of variation are highly significant: experimental group (F=24.9229, d_f =2, p<0.001), day (F=9788.88, d_f =2, p<0.001) and the interaction (F=17.95, d_f =4, p<0.001).

Table 18: Group wise mean weight of medication bottle on Day 5 and Day 28 at site 2.

Group	Initial	Day 2	Day 28
EG1	15.63	14.80	8.40
EG2	15.63	14.75	7.94
EG3	15.63	14.67	7.28

Table 18 shows on Day 28 EG3 had the lowest weight at site 2 (7.28 g) versus EG1 (8.4 g) and EG2 (7.94 g).

Table 19: *Post hoc* Pairwise comparisons between experimental groups at each time point at site 2.

Time Point	Comparison	Mean 1	Mean 2	Difference	95% CI	SE	*t*-statistic	Significance
Day 2	EG1 vs EG2	14.80	14.75	0.05	-0.09-0.18	0.069	0.69	Not Significant
Day 2	EG1 vs EG3	14.80	14.67	0.13	0.00-0.26	0.069	1.90	Significant
Day 2	EG2 vs EG3	14.75	14.67	0.08	-0.05-0.22	0.07	1.16	Not Significant
Day 28	EG1 vs EG2	8.40	7.94	0.46	0.33-0.59	0.069	6.79	Significant
Day 28	EG1 vs EG3	8.40	7.28	1.11	0.98-1.25	0.069	16.43	Significant
Day 28	EG2 vs EG3	7.94	7.28	0.65	0.52-0.79	0.069	9.30	Significant

Table 19 shows at Day 28 comparisons at site 2 were significant and EG1 vs EG3 had the strongest effect (t=16.43, p<0.001).

Form 2: 14- Item questionnaire (English).

Sl. No.	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.	Do you always remember to take eye drops on time?					
2.	Do you know how to instill your eye drops?					
3.	Do you consistently take your eye drops as prescribed?					
4.	Can you distinguish between different bottles if you are using more than one type of medicines?					
5.	Do you take every dose of your eye drops without skipping?					
6.	Do you know the indication of your eye drops?					
7.	Do you take your eye drops regularly even when you start feeling better?					
8.	Do you avoid using more eye drops than what is prescribed?					
9.	Do you continue taking your medicine even if you feel temporarily worse?					
10.	Do you know the timing interval of your eye drops?					
11.	Do you follow the recommended time and avoid instilling eye drops at the wrong time?					
12.	Do you wash you're your hands before instilling your eye drops?					
13.	Do you continue taking your eye drops even if they are expensive?					
14.	Do you take care of your eye after surgery?					
Strongly Agree- 4 Agree- 3 Neutral- 2 Disagree- 1 Strongly Disagree- 0						

Day 28, all three pairwise comparisons were significant: EG1 vs EG2 (difference=0.4602; 95% CI:0.33-0.59, t=6.79, p<0.05), EG1 vs EG3 (difference=1.11; 95% CI:0.98-1.25, t=16.43, p<0.05), and EG2 vs EG3 (difference=0.65; 95% CI:0.52-0.79, t=9.30, p<0.05) Table 19.

DISCUSSION

The study examined the efficacy of various educational interventions in relation to medication knowledge and adherence in low-literacy patients in the post-surgery period after cataract operation. The results show that pictogram-based education which included take home materials enhanced a greater knowledge retention and medication adherence when compared to verbal education only or clinic-based pictogram education.

Knowledge retention outcomes

The findings showed that all the three experimental groups were found to have better scores on knowledge after educational intervention. However, EG3, which received verbal education along with take-home pictograms, achieved significantly higher mean scores at both post-test1 (40.36±2.03) and post-test 2 (39.64±2.03) compared to EG1 (32.56±2.93 and 32.08±2.93) and EG2 (32.78±2.73 and 32.30±2.93). The superiority effect of take-home pictograms in EG3 aligns with the findings from Braich *et al.* (2011), who reported that pictogram significantly improved postoperative cataract patients' understanding of eye drop regimen. Similarly, Mbanda *et al.* (2021), who observed that visual aids enhance comprehension and memory retention among low literacy population, consistent with Dual Coding

Theory (Paivio, 1986). For chronic disease management, Merks *et al.* (2021) reported that there was improved medication understanding in patients using pictograms and Katz *et al.* (2018) confirmed their utility in pharmacy-based counselling. Dowse and Ehlers (2005) found that pictogram effectiveness was population specific, which shows the importance of culturally adopted tools. In this study pictograms were developed in the regional language to ensure cultural relevance.

The insignificant difference between EG1 (verbal only) and EG2 (verbal with clinic-based pictograms) suggest that short term exposure to pictograms during a single clinic visit, with the ability to refer them later, provide limited additional benefit over verbal education alone. These findings underscore the importance of providing pictogram to the patients for them to review at home, particularly given that 40-80% of the medical information provided by healthcare professionals is forgotten immediately (Kessels, 2003). The take home pictograms in EG3, acted as continuous reminder tool, which helped patients to relearn correct technique and reinforce their knowledge throughout the post-operative period.

The two-way ANOVA revealed that test time point accounted for 46% of the variance in knowledge scores, while experimental group accounted for 23%, indicating that both the timing of assessment and the type of intervention significantly influenced

Form 3: 14- Item questionnaire (Gujarati).

ક્રમ	પ્રશ્ન	સંપૂર્ણપણે સંમત	સંમત	તટસ્થ	અસંમત	સંપૂર્ણપણે અસંમત
1.	શું તમે હંમેશા સમયસર આંખના ટીપાં લેવાનું યાદ રાખો છો?					
2.	શું તમે જાણો છો કે આંખમાં ટીપાં કેવી રીતે નાખવા?					
3.	શું તમે તમારા આંખના ટીપાં નિયમિતપણે સૂચવ્યા મુજબ લો છો?					
4.	જો તમે એક કરતા વધુ પ્રકારની દવાઓનો ઉપયોગ કરી રહ્યા હોવ, તો શું તમે અલગ-અલગ બોટલો વચ્ચે તફાવત પારખી શકો છો?					
5.	શું તમે એક પણ ડોઝ ચૂક્યા વગર તમારા આંખના ટીપાં લો છો?					
6.	શું તમે જાણો છો કે તમારા આંખના ટીપાં કયા કારણસર (કઈ બીમારી માટે) છે?					
7.	શું તમે સારું લાગવા માંડે ત્યારે પણ નિયમિતપણે આંખના ટીપાં લેવાનું ચાલુ રાખો છો?					
8.	શું તમે સૂચવેલા પ્રમાણ કરતા વધારે ટીપાં નાખવાનું ટાળો છો?					
9.	જો તમને થોડા સમય માટે વધુ ખરાબ લાગે, તો પણ શું તમે તમારી દવા લેવાનું ચાલુ રાખો છો?					
10.	શું તમે તમારા આંખના ટીપાં વચ્ચે રાખવાના સમયના અંતર વિશે જાણો છો?					
11.	શું તમે ભલામણ કરેલ સમયનું પાલન કરો છો અને ખોટા સમયે આંખના ટીપાં નાખવાનું ટાળો છો?					
12.	શું તમે આંખમાં ટીપાં નાખતા પહેલા તમારા હાથ ધોવો છો?					
13.	જો આંખના ટીપાં મોંઘા હોય, તો પણ શું તમે તેને લેવાનું ચાલુ રાખો છો?					
14.	શું તમે સર્જરી (ઓપરેશન) પછી તમારી આંખની સંભાળ રાખો છો?					
સંપૂર્ણપણે સંમત - ૪ સંમત - ૩ તટસ્થ - ૨ અસંમત - ૧ સંપૂર્ણપણે અસંમત - ૦						

knowledge outcomes. The lower standard deviation in EG3 (SD=2.03) compared to EG1 (SD=2.93) andEG2 (SD=2.73) suggests more consistent knowledge retention across participants who received take home pictograms, indicating that this intervention was comparatively more effective.

Medication Adherence Assessment

In accordance with WHO's assertion that upon improving adherence, patient may have greater positive impact on health than any improvement in particular medical treatments and healthcare professional should acknowledge that poor medication adherence contributes to suboptimal clinical benefits as reported by Sabaté (2003). In this study Medication adherence was measured by the bottle weight which showed significant improvements in EG3 compared to both EG1 and EG2. At Day 28, the mean bottle weights were lowest in EG3 (6.00 g), indicating greater medication adherence compared to EG1 (7.74 g) and EG2 (7.16 g). The significant differences observed at Day 28 across all pairwise comparisons demonstrated that take-home pictograms had a higher positive impact on medication taking behaviour. These findings align with study done by Merks *et al.* (2021), who reported that patient counselling with pictograms significantly influence adherence to therapy and with Houts *et al.* (2006) who reported that visual aids can help to improve patients' understanding of health information.

Site-specific analysis revealed interesting patterns. At Site 1, which used Prednisolone with a simpler dosing regimen (four times daily tapering to once daily), all three groups showed relatively good adherence, but significant difference was seen only at Day 28. At Site 2, which had more complex Moxifloxacin-Dexamethasone regimen (initial hourly dosing, then tapering gradually), EG3 demonstrated superior adherence from Day 2 itself. This suggests that take- home pictograms are beneficial particularly for complex medication regimens, where patient needs frequent reference to changing dosing schedules.

The significant interaction was observed at both the site ($p<0.001$) indicate that different educational interventions had varied effectiveness over time, with increase in duration the better outcome was observed in patients who took pictograms at their home.

This pattern suggests that the ability of reference pictogram at home is important as patients have complex and changing dosing schedule after cataract surgery.

Implications for low-literacy population

The sociodemographic profile of the participants of this study highlights the clinical relevance of these findings with Over 71% of the sample having limited literacy. Braich *et al.* (2011) selected three geographically, linguistically and culturally distinct Indian populations and found that test score did not show statistical difference in accordance to geographic regions, suggesting that their results were generalizable across diverse low literacy population. Similarly, the two sites selected for the present study were successfully randomised on the basis of educational levels which give validity to the generalisability of the findings. The superiority of take-home pictograms in varying literacy levels highlights that pictograms are inclusive for population with limited reading ability as they convey meaning through images rather than text (Gutierrez *et al.*, 2022). The pictorial superiority was well documented in this study especially when majority of the participants in this study were elderly, a study done by Mbanda *et al.* (2021) showed that pictogram enhances memory than words which provides a robust evidence for the observed outcomes.

Role of pharmacist-led education

A distinctive feature of this study is that educational intervention was provided by pharmacists that positions pharmaceutical care as an active contributor in postoperative outcomes. The study demonstrates the importance of role of pharmacist in patient education and medication adherence support. The effectiveness of take home pictograms in EG3 aligns with the fact that pharmaceutical care models should be incorporated with patient education tools. The educational intervention delivered by pharmacist, particularly when combined with take home pictograms, enabled patients to become active participants in their health management. This aligns with the study done by (Merks *et al.*, 2021; Cheng, 2024) which suggests the effectiveness of intervention and supports the importance of pharmaceutical care, where role of pharmacists extend beyond dispensing to include patient education and adherence monitoring.

CONCLUSION

This study provides evidence that pictogram significantly influences postoperative medication knowledge and adherence in cataract surgery patients. The take-home pictograms-based counselling demonstrated superior outcomes compared to verbal counselling and clinic-based pictogram demonstration in both, knowledge retention and medication adherence. The brief exposure without ability to reference materials at home, gives no meaningful advantage was suggested as there was no significant difference in verbal counselling and clinic-based pictogram demonstration. This highlights that it is not pictogram itself, but its continuous accessibility during post-operative period that gives improved outcomes. In a population where majority of population were illiterate or had only primary education, the take-home pictogram serves as critical memory enhancement tool, throughout complex medication regimen. These findings indicate that pharmacist-delivered take –home pictogram education should be integrated as an essential component in patient counselling, particularly in settings characterised by limited health literacy.

LIMITATIONS

The study was conducted at only two centres in Gandhinagar, Gujarat, India, which limited the generalizability to the other geographic, cultural and clinical settings.

Medication adherence was measured via bottle weight method, which cannot ensure accurate instillation technique or actual drop delivery.

The small 28-day follow-up may be insufficient to measure long term adherence.

STRENGTHS

This study was conducted as randomised parallel-group controlled design with equal gender distribution (50:50). The high proportion of illiterate and primary educated participants addresses the most vulnerable population to assess the medication adherence.

Adherence measurement and knowledge assessment at two follow-up time points provides a thorough evaluation of intervention effectiveness.

ABBREVIATIONS

α: Cronbach's alpha; **ANOVA:** Analysis of Variance; **CI:** Confidence Interval; **CVI:** Content Validity Index; $\mathbf{d_f}$**:** Degrees of freedom; **EG1:** Experimental Group 1; **EG2:** Experimental Group 2; **EG3:** Experimental Group 3; **F:** F-statistic; $\boldsymbol{\eta^2}$**:** Partial eta squared; **K.B.I.P.E.R.:** K.B. Institute of Pharmaceutical Education and Research; **KBICE:** K.B. Independent Ethics Committee; **MS:** Mean Square; **MSO:** Microsoft Office; **p:** Probability value; **r:** Test–retest correlation coefficient; **SD:** Standard Deviation; **SE:** Standard Error; **SPSS:** Statistical Package for the Social Sciences; **SS:** Sum of Squares; **t:** *t*-statistic; **WHO:** World Health Organization; $\boldsymbol{\chi^2}$**:** Pearson Chi-square.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

World Health Organisation. (2023). Blindness and vision impairment (Fact sheet). https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment

Lee, S.Y., Gurnani, B., & Mesfin, F. B. (2024). Blindness. In StatPearls [Internet]. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK448182/

Moshirfar, M., Milner, D., & Patel, B. C. (2023). Cataract surgery. In StatPearls. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK559253/

Mukit, F. A., Patel, A., Gorrai, A., Wesberry, J., DelMonte, D.W., & Anderson, D. (2024). A review of postoperative drops used in cataract surgery. EyeWiki. https://eyewiki.org/A_Review_of_Postoperative_Drops_Used_in_Cataract_Surgery

Nouraeinejad, A. (2023). Factors of noncompliance with prescribed eye drops in patients undergoing cataract surgery. Journal of Medical Access, 7, Article 27550834231152341 https://doi.org/10.1177/27550834231152341

Matossian, C. (2021). Challenges to topical drop adherence after cataract surgery. Opthalmology Times. https://www.ophthalmologytimes.com/view/challenges-to-topical-drop-adherence-after-cataract-surgery

Sarkar, S., Kasturi, N., & Bardoloi, N. (2021). Minimizing topical medication in cataract surgery. TNOA Journal of Opthalmic Science and Research, 59(4), 338-343. https://doi.org/10.4103/tjosr.tjosr_61_21

Vandenbroeck, S., De Geest, S., Dobbels, F., Fieuws, S., Stalmans, I., & Zeyen, T. (2011). Prevalence and correlates of self reported nonadherence with eye drop treatment: The Belgian Compliance Study in Opthalmology (BCSO). Journal of Glaucoma, 20(7), 414-421. https://doi.org/10.1097/IJG.0b013e3181f7b10e

Devireddy, N., Farooqi, I., Hidinger, I., Kortei, A., & Wilkinson, M. (2025). Eyedrop compliance and literacy-related adherence barriers after cataract surgery in Koforidua, Ghana. Clinical Opthalmology, 19,1223-1228. https://doi.org/10.2147/OPTH.S519124

Kvarnstrom, K., Westerholm, A., Airaksinen, M., & Liira, H. (2021). Factors contributing to medication adherence in patients with a chronic condition: A scoping review of qualitative research. Pharmaceutics, 13(7),1100. https://doi.org/10.3390/pharmaceutics13071100

Devina S. (2014). An analysis of literacy and gender trends in Gujarat [Conference paper]. Census Data Dissemination Workshop, Ahmedabad, Gujarat. ResearchGate. https://www.researchgate.net/publication/275815111_An_Analysis_of_Literacy_and_Gender_Trends_in_Gujarat

Bozkurt, F.D., Onder, C., Yildizdal, C., & Addic A. (2025). The impact of health literacy on medication adherence and acceptance in COVID-19 patients with home monitoring. Perspectives in psychiatric care, 2025, Article 5554009. https://doi.org/10.1155/ppc/5554009

Mathias, E. G., Dhyani, V. S., Krishnan, J. B., Rani, U., Gudi, N., & Pattanshetty, S. (2023). Community based health literacy interventions in India: A scoping review. Clinical Epidemiology and Global Health, 22, 101310. https://doi.org/10.1016/j.cegh.2023.101310

Kessels, R. P. C. (2003). Patients' memory for medical information. Journal of the Royal Society of Medicine, 96(5), 219–222. https://doi.org/10.1177/014107680309600504

Merks P., Swieczkowski D., Balcerzak M., Religioni U., Drelich E, Krysiński J. Hering D., Jaguszewski M., (2021). Patient counselling service with the use of pictograms as the pharmaceutical care tool: Influence on knowledge, satisfaction, and adherence to therapy. Cardiology Journal, 28(6), 879–886. https://doi.org/10.5603/CJ.a2021.002

Brait, W. (2024). The role of pharmacy services in medication adherence and compliance. Journal of Applied Pharmacy, 16(3), 426. https://www.longdom.org/open-access/the-role-of-pharmacy-services-in-medication-adherence-and-compliance.pdf

Mbanda, N., Dada, S., Bastable, K., Gimbler-Berglund, I., & Schlosser, R. W. (2021). A scoping review of the use of visual aids in health education materials for persons with low-literacy levels. Patient Education and Counseling, 104(5), 998–1017. https://doi.org/10.1016/j.pec.2020.11.034

Gutierrez, M. M., Patikorn, C., & Anantachoti, P. (2022). Evaluation of pharmaceutical pictogram comprehension among adults in the Philippines. *Journal of pharmaceutical policy and practice*, *15*(1), 30. https://doi.org/10.1186/s40545-022-00426-y

Saramunee, K., Sungthong, B., Taengthonglang, C., & Phimarn, W. (2025). Pictogram comprehension and medication-use literacy among undergraduate students: A cross-sectional survey study. Journal of Pharmaceutical Policy and Practice, 18(1), Article 2522312. https://doi.org/10.1080/20523211.2025.2522312

Merks, P., Świeczkowski, D., Balcerzak, M., Drelich, E., Białoszewska, K., Cwalina, N., Krysinski, J., Jaguszewski, M., Pouliot, A., & Vaillancourt, R. (2018). The evaluation of pharmaceutical pictograms among elderly patients in community pharmacy settings - a multicenter pilot study. *Patient preference and adherence*, *12*, 257–266. https://doi.org/10.2147/PPA.S150113

World Health Organisation. (2009). Hand hygiene: Why, how & when? https://www.who.int/publications/m/item/hand-hygiene-why-how-when

Dowse, R., & Ehlers, M. (2005). Medicine labels incorporating pictograms: Do they influence understanding and adherence? Patient Education and Counseling, 58(1), 63–70. https://doi.org/10.1016/j.pec.2004.06.012

InstructionalDesign.org. (n.d.). Dual coding theory (Allan Paivio). https://www.instructionaldesign.org/theories/dual-coding/

Houts, P. S., Doak, C. C., Doak, L. G., & Loscalzo, M. J. (2006). The role of pictures in improving health communication: a review of research on attention, comprehension, recall, and adherence. Patient education and counseling, 61(2), 173–190. https://doi.org/10.1016/j.pec.2005.05.004

Brown, M. T., & Bussell, J. K. (2011). Medication adherence: WHO cares?. *Mayo Clinic proceedings*, *86*(4), 304–314. https://doi.org/10.4065/mcp.2010.0575

Sabaté, E. (Ed.).(2003). Adherence to long-term therapies: Evidence for action. World Health Organization.

Cheng J. (2024). Role of pharmacists in patient education and medication management. RR International Pharma Journal (RRIPJ), 2(2),30-35.

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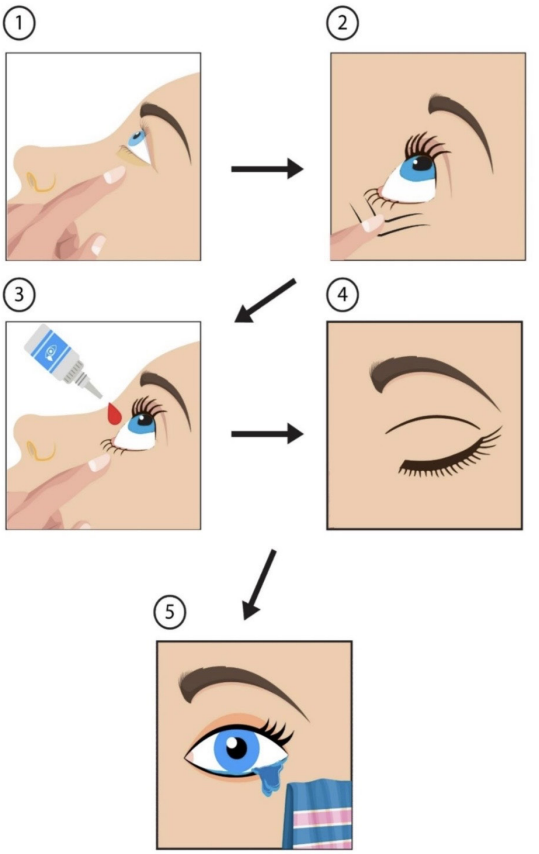
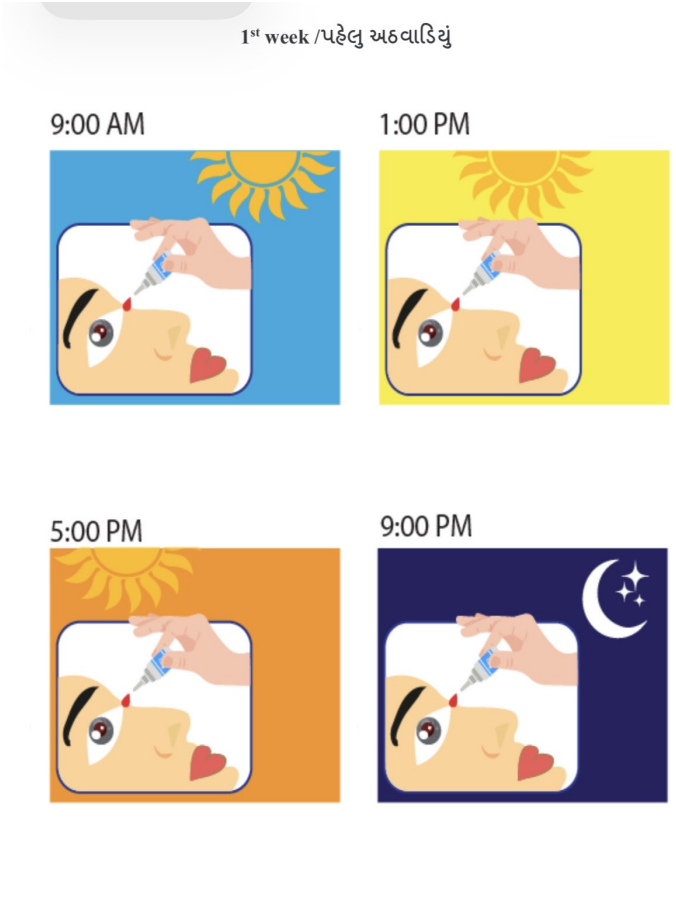
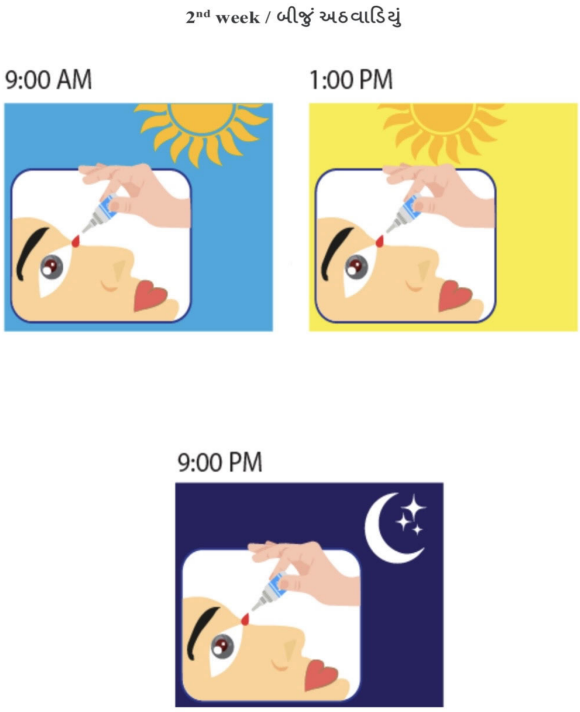
Supplementary Figure 1: WHO hand hygiene pictogram.



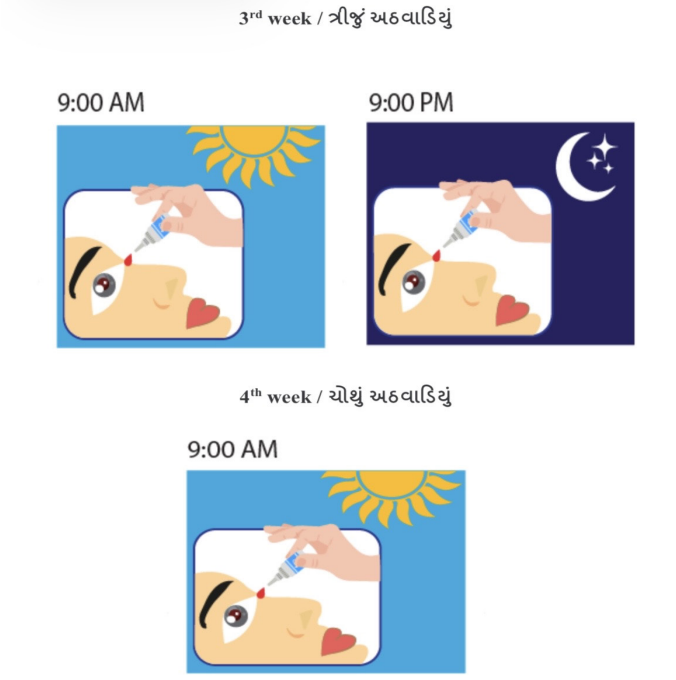
Supplementary Figure 2: Instillation of eye drops.



Supplementary Figure 3: Timing of instillation of eye drops (Site 1) for 1st week.

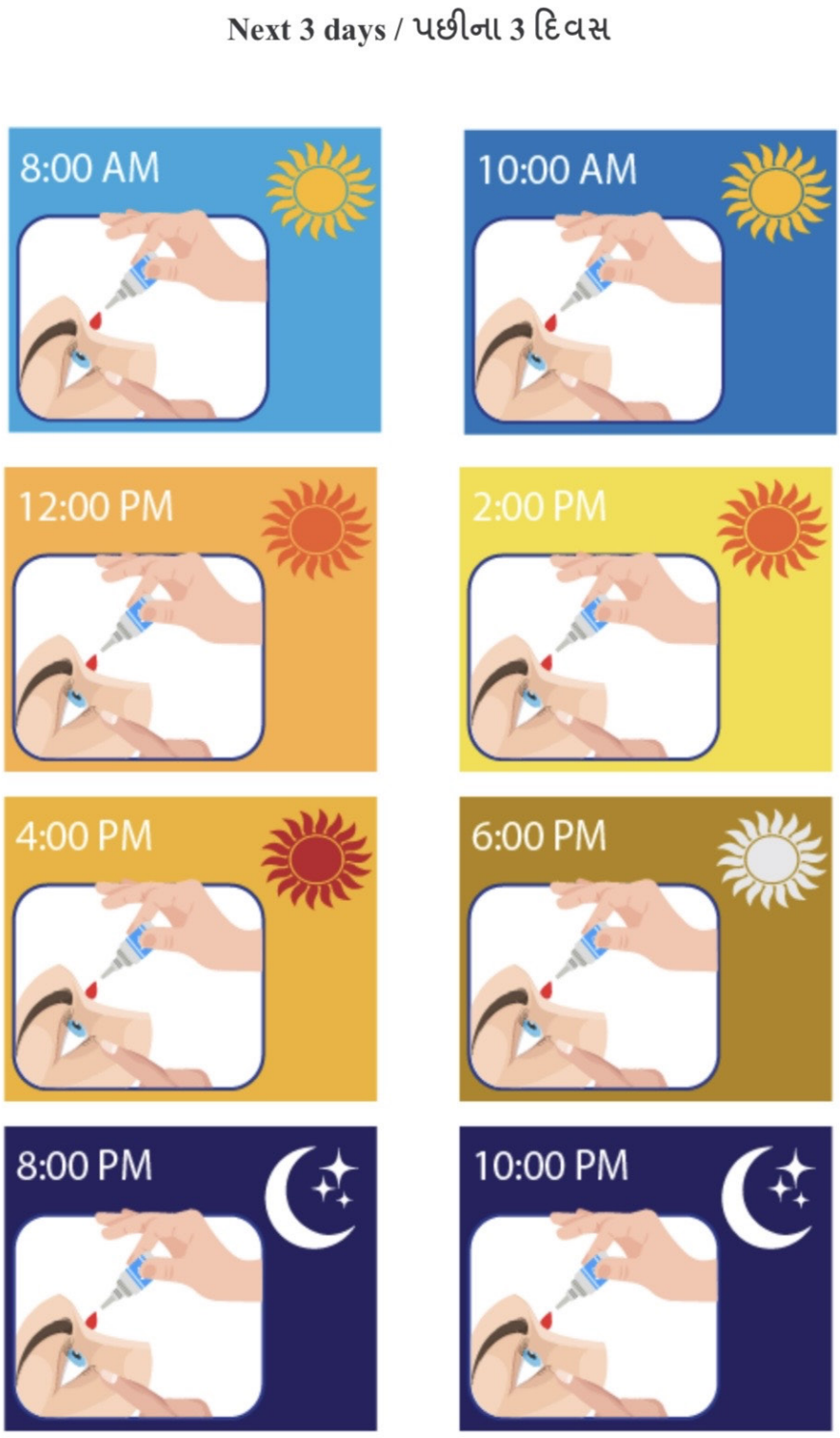


Supplementary Figure 4: Timing of instillation of eye drops (Site 1) for 2nd week.



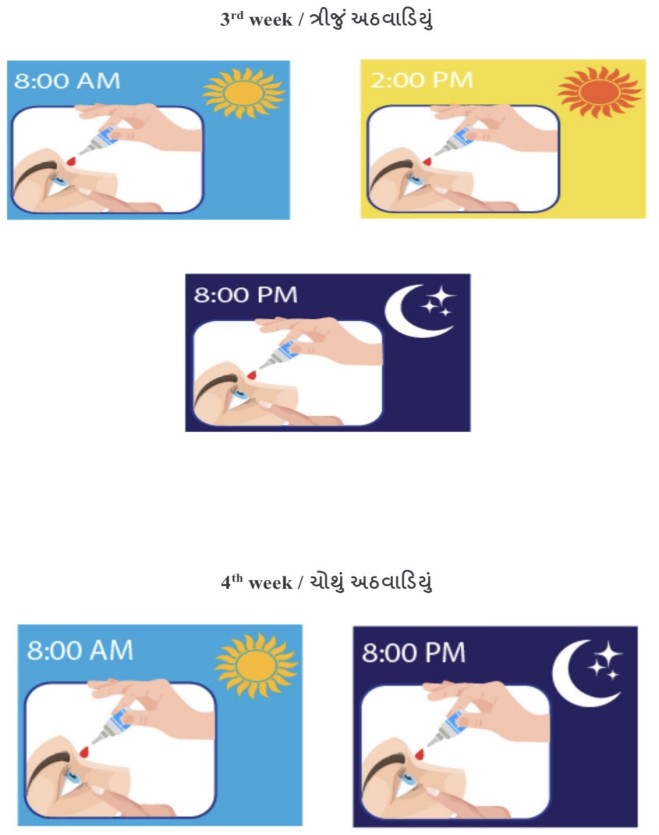
Supplementary Figure 5: Timing of instillation of eye drops (Site 1) for 3rd week and 4th week.

Supplementary Figure 6: Timing of instillation of eye drops (Site 2) for 1st three days.



Supplementary Figure 7: Timing of instillation of eye drops (Site 2) for next three days.

Supplementary Figure 8: Timing of instillation of eye drops (Site 2) for 2nd week.



Supplementary Figure 9: Timing of instillation of eye drops (Site 2) for 3rd and week 4th.