

Short Communication

Public Knowledge, Attitude, and Perception Toward Conventional and Novel Ocular Treatment in Malaysia

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ABSTRACT One of the major concerns in any pharmacological treatment is the patients' adherence to medication. However, different types of ocular dosage forms might result in different response and compliance from the patients. This study investigated and compared public willingness on different types of dosage forms available for ocular treatment. The study also evaluated their willingness on new approach for the treatment based on their knowledge, attitude, and perception. This study was conducted between October and December 2017 through a set of questionnaires applied to 90 respondents between the age of 18 and 60 years who lived in Muar and Kuantan, Malaysia. The results were analyzed using SPSS software version 22.0 including inferential and descriptive statistics. There was no significant difference in the knowledge level between all age groups towards different types of dosage forms available; eye drops ($P = 0.09$), eye ointment ($P = 0.252$), medicated contact lens ($P = 0.05$), ocular mini-tablets ($P = 0.06$), and ocular inserts ($P = 0.075$). There is a variation of results among the public towards different types of dosage forms with their willingness to try conventional and novel approach. Eye drops show the highest willingness followed by eye ointment (less willingness). However, most of them showed no willingness towards medicated contact lens, ocular mini-tablets, and ocular insert. This research hopes to provide an overview on the development process of new formulation and dosage forms based on the patients' willingness level in an attempt to increase patient compliance.

KEYWORDS: Attitude, dosage form, knowledge, ocular treatment, perception

INTRODUCTION

Human eye has a unique anatomical structure, physiological and biochemical activity that become a challenge for pharmaceutical scientist to formulate any ophthalmic preparation. Over the past two decades, the usage of ocular drug delivery system plays an important role for the treatment and management of ophthalmic diseases.^[1]

One of the major concerns in any pharmacological treatment is the patients' adherence to medication. Up to 59% of the glaucoma patients of Chinese Singaporean descendants reported non-adherence to their eye drops.^[2] Although the patients experienced

difficulty instilling the drugs to the eye, majority of the patients are willing to try new approaches for the ophthalmic treatments as an alternative.^[3] Thus, to address this need, patients' knowledge, perception, and attitude towards different types of dosage forms for the current and the new approaches treatment need to be assessed.

No study has been conducted in Malaysia to investigate public willingness on the different types of dosage

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forms available and on the new approach. Additionally, there is no study focusing on different age groups of the population. This study is important to identify if there is any difference on public willingness towards conventional and novel treatment, which includes types of dosage forms preferred and factors affecting them to use that treatment over the other treatments. Generally, public are preferring to use both conventional and new treatment as long as the treatment is more effective and give better result.^[3]

The objectives of this study are to compare public willingness on different types of dosage forms available for ocular treatment and to evaluate their willingness on new approach for the treatment based on their knowledge, attitude, and perception (KAP). This study gives us an overview on how the public rate the difficulties of using different types of dosage forms of the treatments, which may contribute to their perception and acceptance towards the other treatments available.

STUDY DESIGN AND METHOD

This is a cross-sectional study conducted within an ongoing population survey on their KAP towards different ocular treatments available, either conventional treatment or novel treatment. This study involved a community that was randomly selected in Muar and Kuantan, and was conducted between October and December 2017.

They were required to answer a questionnaire that consists of open- and close-ended questions that were used to assess their willingness on different types of dosage forms for ocular treatments. The questionnaire was divided into three parts: demographic information, KAP of the patients towards conventional treatments (eye drops, ointment, and medicated contact lens) and novel treatments (ocular mini-tablets and inserts), respectively. All the instruments were bilingual (English and Malay) for the participants' convenience. Malay is official language in Malaysia and English is commonly spoken in Malaysia.

The inclusion criteria were: age between 18 and 60 years, fluent and able to read in English or Malay.

Sample size determination

The study population comprised all population with three different ranges of age groups, which are between age 18–35 (Group A), 36–49 (Group B), and 50–60 years old (Group C) in Muar and Kuantan, Malaysia. Groups A, B, and C represent the young, middle-aged, and older adults, respectively. Sample size is calculated using the equation below:

$$n = \frac{[DEFF * Np(1-p)]}{\left[(d^2 / Z_{1-\alpha/2}^2 * (N-1) + p * (1-p) \right]}$$

where DEFF = 1.0 (Design effect (for complex sample survey)), $n = 416,724$ (population size), $P = 0.5$ (probability), $d = \pm 10.33\%$ (confidence limits as % of 100), and $Z = 95\%$ (confidence level). Finally, a minimum sample of 30 people from each age group for the total of 90 people was randomly selected based on the formulation.

Questionnaire and measurements

Self-constructed questionnaire guided by literatures and experts was used, which assessed the KAP among public towards conventional and novel ocular treatment in Malaysia focusing in Muar and Kuantan's setting. Participants' knowledge on each type of dosage form available was categorized based on either yes, no, or not sure answer. If the patient has experienced any of the treatments, the rate of instillation and comforts were measured by scale from 1 to 10, where 1 indicated very difficult or uncomfortable and 10 indicated very easy or comfortable. Their rate of willingness to try each of the treatment available was also measured in the same manner. The questionnaires contained 20 questions and were filled out within 15 min during the time of the interview.

Ethical consideration

Ethical approvals for the study were obtained from IIUM Research Ethics Committee (IREC) (IIUM/504/14/11/3/IREC 2017–056). The randomly selected participants were informed about the research and the intended use of the information obtained. Written informed consent was obtained before enrolling the participants into the study.

Data analysis

All statistical analysis was performed using SPSS software version 22.0 including inferential and descriptive statistics. Chi-squared tests were used appropriately to assess the relationship between KAP variables and willingness to try different dosage forms available.

RESULTS AND DISCUSSION

Overall, 53.3% of the respondents were female while 46.7% were male, with 100% response rate. More than half of the respondents possessed higher education (67.8%), followed by secondary education (15.6%), primary education (12.2%), and no education (4.4%). In general, less than half (38.9%) of the respondents have been suffering from eye diseases, which was more prominent in Group C (60.0%). The common

eye diseases stated were dry eye, infection, glaucoma, and others. Group B was the least suffering from eye diseases with only 20.0% followed by Group A (36.7%). The respondents were also asked on the types of dosage forms they previously used to treat their eye diseases. The eye drops were recorded as the most frequently used (77.1%), followed by ointments (14.3%) and gels (11.4%). According to Jampel *et al.*,^[4] eye drops medication was most valued by the patient because it does not cause any blurring effects as well as drowsiness.

For the familiarity on eye drops, 77.8% stated that they know about eye drops, as showed in Table 1. This is expected since it is commonly used among public regardless of age group due to low cost, convenience, easy administration, and absence of blurring effect.^[4-6] Group C was the highest age group having familiarity on eye drops compared with others. This is possibly because most of them have probably been prescribed with eye drops due to eye disease. To assess the knowledge of the respondents towards eye drops, they were asked on differences between eye drops, suspension, and emulsion preparations. Slightly more than two-thirds (73.4%) of the respondents did not know the differences between those three preparations, while only a small percentage (26.6%) stated to know the differences, with 13 people from Group A, 9 from Group B, and 2 from Group C.

In contrast, Group A has the highest percentage of familiarity on eye ointment compared with the other two age groups. Only a small percentage of respondents have familiarity about medicated contact lens. This is

because it is not widely used as it is usually prescribed to elderly people for treating glaucoma.^[7]

However, conventional ophthalmic drug delivery system has its own limitations. Some of the limitations are low ocular drug bioavailability and retention time due to nasolacrimal drainage in the eye.^[8] Ocular mini-tablets and ocular inserts are novel treatments which are tiny sterile ophthalmic solid or multi-layered drug that were innovated with the aim to prolong contact time and drug release thus increasing its bioavailability and efficacy.^[9] From the findings, majority of respondents showed low knowledge on ocular mini-tablets and ocular inserts, where most of them answered no to these questions.

The respondents who had experience in using any of the conventional treatment were evaluated on their difficulties and comfort levels during administration of the medication, as summarized in Table 2. More than half of the respondents have experience in using eye drops. Majority of the respondents considered eye drops as easy to be administered. Those who were having difficulty during eye drops instillation stated that they cannot aim the bottle accurately, thus lead to poor patient compliance.^[10] However, the difficulty does not affect the patients' comfort level after the instillation as the eye drop is in the liquid form and it is absorbed directly in the eye and does not cause any temporary blurred vision. These were proved by a high percentage of comfortable rates.

Meanwhile, only 18 respondents have experienced using eye ointments and majority of them rated instillation

Table 1: Knowledge on different types of dosage form between age of 18–35 (Group A), 36–49 (Group B), and 50–60 years old (Group C)

	Age group	Yes		Total, %	No		Total, %	P Value
		n	%		n	%		
Conventional treatment								
Eye drops	A	21	70.0	77.8	9	30.0	22.2	0.09
	B	20	66.7		10	33.3		
	C	29	96.7		1	3.3		
Eye ointments	A	17	56.7	48.9	13	43.3	51.1	0.252
	B	16	53.3		14	46.7		
	C	11	36.7		19	63.3		
Medicated contact lens	A	11	36.7	23.3	19	63.3	76.7	0.05
	B	9	30.0		21	70.0		
	C	1	3.3		29	96.7		
Novel treatment								
Ocular mini tablets	A	9	30.0	15.6	21	70.0	84.4	0.06
	B	5	16.7		25	83.3		
	C	0	0		30	100.0		
Ocular inserts	A	5	16.7	10.0	25	83.3	90.0	0.075
	B	4	13.3		26	86.7		
	C	0	0		30	100.0		

Table 2: Rating on instillation and comfort using conventional treatment for different types of dosage form available based on two aspects

Rating	Eye drops (N = 54)		Eye ointments (N = 18)		Medicated contact lens (N = 5)	
	n	%	n	%	n	%
Difficulties ^a						
1	1	1.8	7	38.9	—	—
2	4	7.1	—	—	—	—
3	7	13.0	1	5.6	—	—
4	6	11.1	2	11.1	—	—
5	7	13.0	—	—	1	20.0
6	5	9.3	—	—	—	—
7	5	9.3	3	16.7	2	40.0
8	6	11.1	3	16.7	1	20.0
9	3	5.5	2	11.1	1	20.0
10	10	18.5	—	—	—	—
Comfort ^b						
1	3	5.5	8	44.4	1	20.0
2	6	11.1	—	—	—	—
3	4	7.1	2	11.1	—	—
4	—	—	—	—	1	20.0
5	8	14.8	2	11.1	—	—
6	6	11.1	—	—	—	—
7	6	11.1	2	11.1	1	20.0
8	6	11.1	—	—	2	40.0
9	8	14.8	2	11.1	—	—
10	9	16.7	2	11.1	—	—

^aDifficulty levels were categorized by 1–2 (very difficult), 3–4 (difficult), 5 (neutral), 6–7 (easy), and 8–10 (very easy)

^bComfort levels were categorized by 1–2 (very uncomfortable), 3–4 (uncomfortable), 5 (neutral), 6–7 (comfortable), and 8–10 (very comfortable)

of eye ointments as very difficult. They also stated that it is very uncomfortable. However, surprisingly, none of the respondents who have experience with medicated contact lens are having a problem with it. They were considered as easy to instil and comfortable to wear.

For respondents who have not tried any conventional treatment, they were asked on their willingness to try those treatments. Out of 36 respondents, 27.8 and 38.9%, respectively, stated that they are highly willing or willing to try eye drops preparation. This may be because the eye drops are well known among the public and have been established for a long time. In contrast, among 72 respondents who have never tried eye ointments, majority of them were either less willing (30.55%) or not willing at all (25.0%) to try it. Greasy structure and temporary blurred vision effect are the plausible cause of low willingness which may affect their comfort level after instillation. Only 13.9% respondents answered willing or highly willing to try.

On the other hand, for medicated contact lens, majority of them were either not willing at all (31.8%) or less willing to try (28.2%) this treatment. The low willingness level can be related to the previous data on knowledge on medicated contact lens. A majority of respondents

have low knowledge on medicated contact lens and did not have a clear idea about it, which contributes to their low willingness to try the treatment.

Meanwhile, for novel treatment, all respondents were asked to evaluate their willingness to try ocular mini-tablets and ocular insert as future treatment. Since both are relatively new, most of the respondents were not exposed to and have low knowledge about it. Slightly more than half (54.4%) of the respondents were not willing at all to try this type of dosage form, followed by 13.3% who were less willing. Only very little percentage were willing (2.2%) and highly willing (3.3%) to try it as one of their future ocular treatments. The same pattern can be seen on ocular insert where 58.9% were not willing at all to try or consider ocular insert as an alternative treatment in future. Only 15.6% were willing and 2.2% were highly willing to try this new treatment as an alternative.

The low willingness preference among the respondents may be due to their perception and worry to try mini-tablets because it is applied on the eye in solid dosage form. Similar perception was observed on ocular inserts as well. This is because of the difficulty in placement and removal of insoluble inserts which

may be considered as driven factor to low willingness level among the respondents. From this willingness evaluation on novel treatment, it can be concluded that majority of respondents have low preference even though novel treatment provides same or better therapeutic outcome as conventional treatment. This is contrary with the study done on Singaporean glaucoma patients, where most of them were willing to try the new method, which is subconjunctival injection, as an alternative to the current conventional glaucoma treatment.^[3]

CONCLUSION

From the study conducted, it can be concluded that public have different preferences and willingness to try both conventional and novel ocular treatments. Eye drops is the most preferable ophthalmic dosage form. Most of the respondents found eye drops to be the easiest to administer with a high percentage of comfort rate. However, two-thirds of them could not differentiate between eye drops, suspension, and emulsion preparations. It is also suggested that majority of them are reluctant towards novel ocular dosage form due to their lack of knowledge about it. The importance of this research is that manufacturers and scientists can consider some aspects before developing new formulation and dosage forms according to the patients' willingness level in an attempt to increase patient compliance and as a good strategy in term of marketing.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Mortazavi SA, Jafariarz Z, Ghadjahani Y, Mahmoodi H, Mehtarpour F. Formulation and in-vitro characterization of sustained release matrix type ocular timolol maleate mini-tablet. *Iran J Pharm Res* 2014;13:19-27.
2. Foo RC, Lamoureux EL, Wong RC, Ho SW, Chiang PP, Rees G, *et al.* Acceptance, attitudes, and beliefs of Singaporean Chinese toward an ocular implant for glaucoma drug delivery. *Invest Ophthalmol Vis Sci* 2012;53:8240-5.
3. Chong RS, Su DH, Tsai A, Jiang Y, Htoon HM, Lamoureux EL, *et al.* Patient acceptance and attitude toward an alternative method of subconjunctival injection for the medical treatment of glaucoma. *J Glaucoma* 2013;22:190-4.
4. Jampel HD, Schwartz GF, Robin AL, Abrams DA, Johnson E, Miller RB. Patient preferences for eye drop characteristics: a willingness-to-pay analysis. *Arch Ophthalmol* 2003;121:540-6.
5. Rawas-Qalaji M, Williams CA. Advances in ocular drug delivery. *Curr Eye Res* 2012;37:345-56.
6. Kayikcioglu O, Bilgin S, Uyar M. Review on the eyedrop self-instillation techniques and factors affecting these techniques in glaucoma patients. *Scientifica (Cairo)* 2016;2016:9183272.
7. Gurwitz JH, Glynn RJ, Monane M, Everitt DE, Gilden D, Smith N, *et al.* Treatment for glaucoma: adherence by the elderly. *Am J Public Health* 1993;83:711-6.
8. Patel A, Cholkar K, Agrahari V, Mitra AK. Ocular drug delivery systems: an overview. *World J Pharmacol* 2013;2:47-64.
9. Sabere ASM. Formulation and characterisation of conventional and 3-D printed mini-tablets and inserts for ocular use [dissertation]. University College London; 2016.
10. Moosa RM, Choonara YE, du Toit LC, Kumar P, Carmichael T, Tomar LK, *et al.* A review of topically administered mini-tablets for drug delivery to the anterior segment of the eye. *J Pharm Pharmacol* 2014;66:490-506.