Understanding Patients' Preferences for Intravitreal Treatment Options in Diabetic Macular Edema: Insights from a Discrete Choice Experiment

PCR127

Hanfei Wang, MMed, Yiwei Li, BS, Han Wang, BS[1], Yusi Suo, BS, Jingbo Zhang, MMed, Xuejing Jin, Professor, PhD*

School of Traditional Chinese medicine, Beijing University of Chinese Medicine,
Beijing, 102400, China

OBJECTIVES

- This study employs a Discrete Choice Experiment (DCE) to reveal diabetic macular edema (DME) patient preferences concerning intravitreal treatment options.

METHODS

Identification of attributes and levels

- **Six attributes** were identified through a literature review, two focus groups, and a best-worst scaling exercise. **The levels of these attributes** were obtained through published clinical trials and drug instructions.

(1) Initial intravitreal injection count	
During the initial treatment phase following a diagnosis of DME, the regimen requires monthly injections of medication for several consecutive months.	One injection per month for 5 months One injection per month for 4 months One injection per month for 3 months
(2) Maintenance injection frequency	
The frequency of intraocular injections during the maintenance phase of treatment to sustain therapeutic effects.	One injection every 2 months One injection per month Monthly check-ups, dosing as needed One injection every 3 to 4 months
(3) Retinal fluid effects	
The proportion of reduction in the central retinal thickness (CRT) one year after treatment compared to the central retinal thickness before treatment.	28% 37% 40% 42%
(4) Visual impact	
The proportion of patients who gained ≥15 Early Treatment Diabetic Retinopathy Study (ETDRS) letters in Best Corrected Visual Acuity (BCVA) score after one year of treatment compared with baseline.	23% 25% 33% 36%
(5) Adverse reactions	
The rates of Serious Adverse events (SAEs), both ocular and non-ocular, within one year of undergoing the treatment regimen.	Ocular SAEs 2%, non-ocular SAEs 22% Ocular SAEs 3%, non-ocular SAEs 20% Rare occurrences of ocular SAE, non-ocular SAEs 20% Ocular SAEs 5%, non-ocular SAEs 12%
(6) Cost	
Excluding the cost of administration and diagnostic fees, the original price per dose of the medication without insurance reimbursement.	3500 CNY per injection of medicine 4000 CNY per injection of medicine 5000 CNY per injection of medicine 6000 CNY per injection of medicine 7000 CNY per injection of medicine 8000 CNY per injection of medicine

Experimental design

- **Three DCE schemes**, each with 9 choice sets, were created using an orthogonal design in SAS 9.4.

	Treatment A	Treatment B
Initial injection count	5 consecutive injections	4 consecutive injections
Maintenance injection frequency	One injection per month	Monthly check-ups, dosing as needed
Retinal fluid effects	40%	37%
Visual impact	33%	25%
Adverse reactions	•Ocular SAEs 3%; •Non-ocular SAEs 20%	•Ocular SAEs 5%; •Non-ocular SAEs 12%
Cost	4000 yuan	7000 yuan

Statistical analysis

- **The preference of attributes, relative importance and marginal cost** were examined through a mixed logit model.

RESULTS

Demographic characteristics

- A total of **170 patients** from 6 Chinese cities were surveyed.

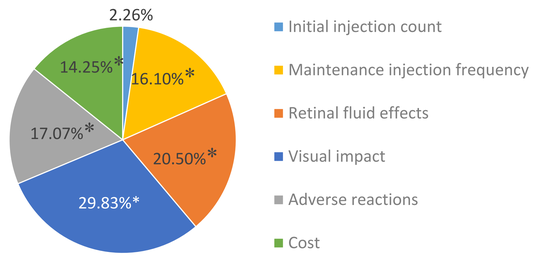
Characteristics of included patients			
Age (yrs):	54.7±12.9	Duration of DME (yrs):	2.1±2.9
Gender:		Duration of diabetes (yrs):	13.9±8.2
Female	75 (44.1%)	Number of injections:	3.2±2.1
Living alone:		Whether both eyes are affected:	
Yes	16 (9.4%)	Yes	115 (67.6%)
Education:		Number of medical visits:	5.2±3.4
High school or below	119(70.0%	Number of medical visits outside of the local area:	2.0±3.0
City:		Time spent on medical visits:(hs)	33.3±48.2
Beijing	42 (24.7%)	Whether suffered from other ophthalmic diseases:	
Tianjin	30 (17.6%)	Yes	56 (32.94%)
Chengdu	11 (6.5%)	Out-of-pocket cost for 1 treatment: (CNY)	2550±1758
Wuhan	28 (16.5%)	Change in condition	
Xi'an	28 (16.5%)	Significant improvement after therapy	91 (53.5%)
Harbin	31 (18.2%)	Medical insurance type:	
Family annual income (CNY):		Urban Employee Basic Medical Insurance	88 (51.8%)
< 30,000	45 (26.5%)	Urban Resident Basic Medical Insurance	22 (12.9%)
30,000-180,000	99 (58.2%)	New Rural Cooperative Medical Insurance	59 (34.7%)
> 180,000	26 (15.3%)	Others	1 (0.6%)

The preference and relative importance of attributes

- The preference of the attributes on intravitreal treatment choice were all statistically significant ($p < 0.05$), except for Initial injection count.

Attributes and levels	β	SE	P
Initial intravitreal injection count: 5 consecutive injections (ref.)			
4 consecutive injections	0.056	0.201	0.779
3 consecutive injections	0.178	0.175	0.311
Maintenance injection frequency: One injection every 2 months (ref.)			
One injection per month	**-1.856**	0.401	**<0.001**
Monthly check-ups, dosing as needed	0.423	0.288	0.141
One injection every 3 to 4 months	**0.888**	0.295	**0.003**
Retinal fluid effects: 28% (ref.)			
37%	**0.569**	0.241	**0.018**
40%	**1.258**	0.311	**<0.001**
42%	**1.842**	0.369	**<0.001**
Visual impact: 23% (ref.)			
25%	**0.641**	0.260	**0.014**
33%	**1.720**	0.354	**<0.001**
36%	**2.629**	0.510	**<0.001**
Adverse reactions: Ocular SAEs 2%, non-ocular SAEs 22%(ref.)			
Ocular SAEs 3%, non-ocular SAEs 20%	-0.069	0.237	0.772
Rare occurrences of ocular SAE, non-ocular SAEs 20%	**1.269**	0.264	**<0.001**
Ocular SAEs 5%, non-ocular SAEs 12%	**1.145**	0.265	**<0.001**
Cost	**-0.001**	0.000	**<0.001**

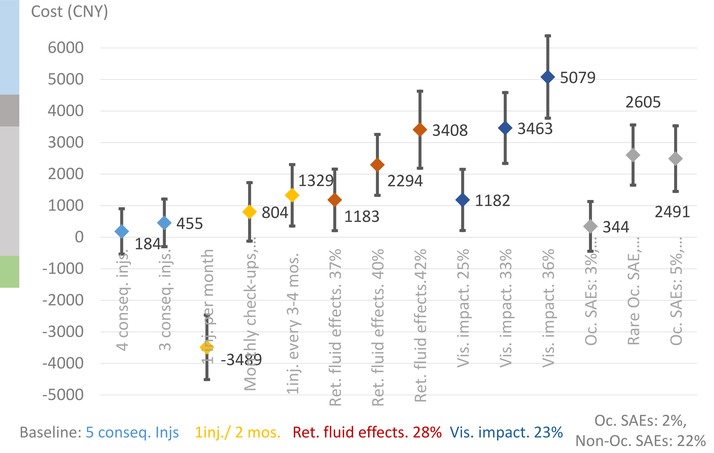
- Visual impact was the most important attribute influencing parents' choice, with the highest score (29.83%), followed by retinal fluid effects (20.50%) and adverse reactions (17.07%).



*Coefficient of attributes $p < 0.05$

Marginal cost analysis

- Patients have shown a preference for higher expenditures in exchange for **improved effectiveness** (vision improvement and reduction in retinal fluid), **reduced risk of ocular SAE** and **a treatment with injections every 3 to 4 months**.
- Patients expressed a marginal willingness to pay 1329 yuan for a treatment regimen involving injections every 3 to 4 months, as opposed to injections every 2 months. Additionally, they were willing to accept a therapy one injection per month when compensated with 3489 yuan. In comparison to the baseline, patients were willing to pay an additional 2605 yuan when serious ocular adverse events were infrequent.



CONCLUSIONS

- **Patients preferred the therapy with higher effectiveness, lower risk of SAE, longer Injection interval, and lower cost.**
- These insights will aid healthcare providers in customizing treatment plans to better align with the needs and preferences of patients.