

# A survey of intraocular lens preferences of United Kingdom (UK) refractive surgeons

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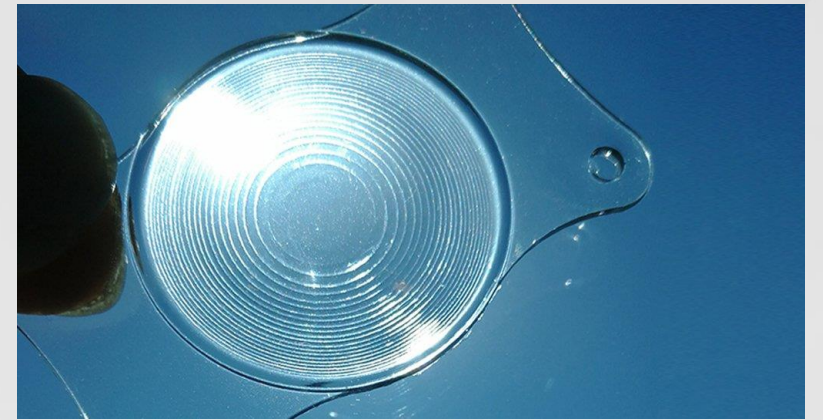
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# Background 1

- Rapid evolution in IOL technology over last two decades
  - Targeting improved visual outcomes, spectacle independence, and reduction of optic phenomena
  - Desire for intermediate distance vision for use of electronic devices
  - 2020 review found 70+ multifocal and extended depth of focus (EDoF) lenses
- Monofocals remain most popular
  - Low cost, often targeted for distance vision
  - Still needs spectacles for intermediate/near vision
  - Can be combined with monovision/blended vision



# Background 2



- Emergence of ‘premium’ IOLs
  - Toric IOLs, ‘premium’ monofocals, EDoF, multifocals
  - Correct for multiple focal distances, improved spectacle independence
  - Concern regarding undesirable visual symptoms
- No literature discussing lens preferences amongst United Kingdom (UK) refractive surgeons
- Aim: to elicit IOL preferences amongst UK surgeons for a ‘neutral’ patient not averse to wearing contact lenses or glasses

# Methods

- Online survey distributed to refractive surgeons across the UK
- Inclusion criteria: those undertaking cataract surgery, refractive lens exchange (RLE), and laser refractive surgery
- Exclusion criteria: <3 years experience



# Questionnaire 1

Question	Answer options
How many years have you been practicing as a refractive surgeon?	Free text answer
What is your overall preferred IOL choice for the typical cataract surgery patient? Assuming there is no ocular co-pathology and no ocular surface issues.	Monofocal Premium monofocal Extended depth of focus Trifocal Multifocal All the above Other (with option for free text answers)
What is the reason for your IOL preference in a typical cataract surgery patient? Multiple options allowed.	Better overall visual outcome Fewer unwanted symptoms Patient preference Cost of lens Best spectacles independence Other (with option for free text answers)



# Questionnaire 2

Question	Answer options
What is your overall preferred IOL choice as a surgeon for the typical refractive lens exchange (RLE) presbyopic patient who is over 50 years of age?	Monofocal Premium monofocal Extended depth of focus Trifocal
Assuming there is no ocular co-pathology and no ocular surface issues.	Multifocal Other (with option for free text answers)
What is the reason for your IOL preference in RLE patients?	Better overall visual outcome Fewer unwanted symptoms Patient preference Cost of lens Best spectacles independence Other (with option for free text answers)
Multiple options allowed.	
In cataract or RLE surgery, do you think it is a good idea to implement mini-monovision when using EDoF lenses?	Yes, for most patients Yes, for selected patients No, in general I do not recommend it Never I do not routinely use EDoF lenses

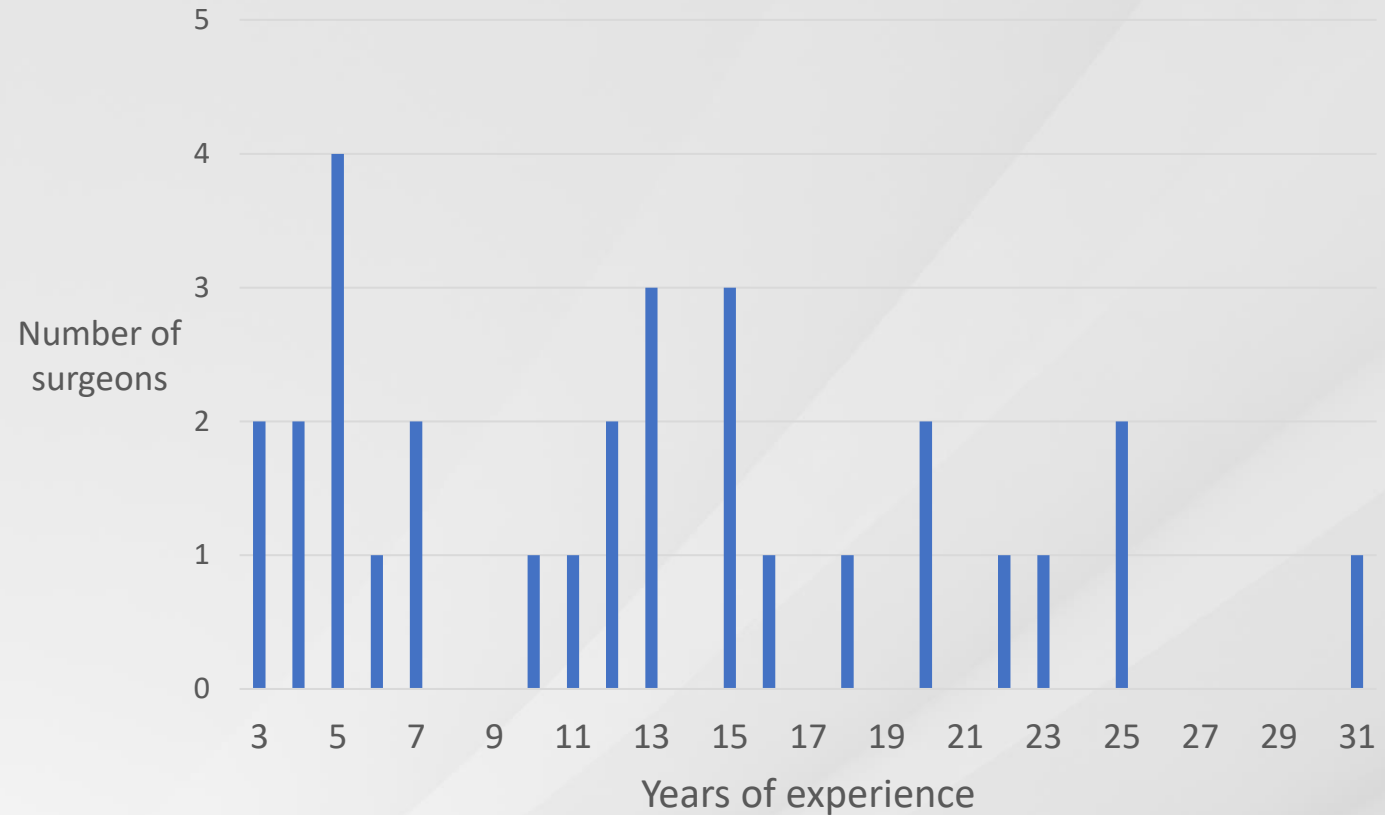
# Questionnaire 3

Question	Answer options
Do you think that 'mix and match' of a trifocal/multifocal IOL with another IOL type (e.g. monofocal) is a good idea?	Yes, for most patients Yes, for selected patients No, in general I do not recommend it Never Other (with option for free text answers)
For cataract or RLE surgery, at what level of cornea astigmatism would you prefer to implant a toric IOL?	<1D 1D or higher 1.5D or higher 2D or higher 2.5D or higher I do not use toric IOLs I prefer other techniques to treat cornea astigmatism Other (with option for free text answers)



# Results 1

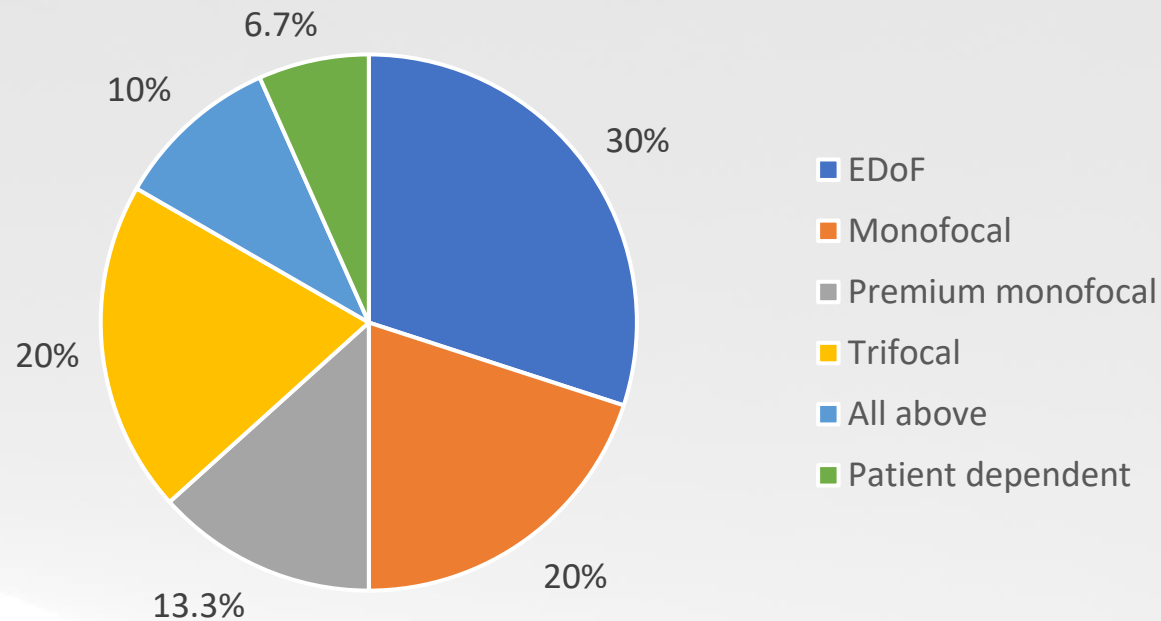
- 31 out of 38 surgeons responded: 81.6% response rate
- 1 respondent excluded – only 1 year experience as a refractive surgeon
- Mean  $\pm$ SD number of years of practice as a refractive surgeon was  $12.8 \pm 7.6$





# Results 2: preferred cataract surgery IOL and reasoning

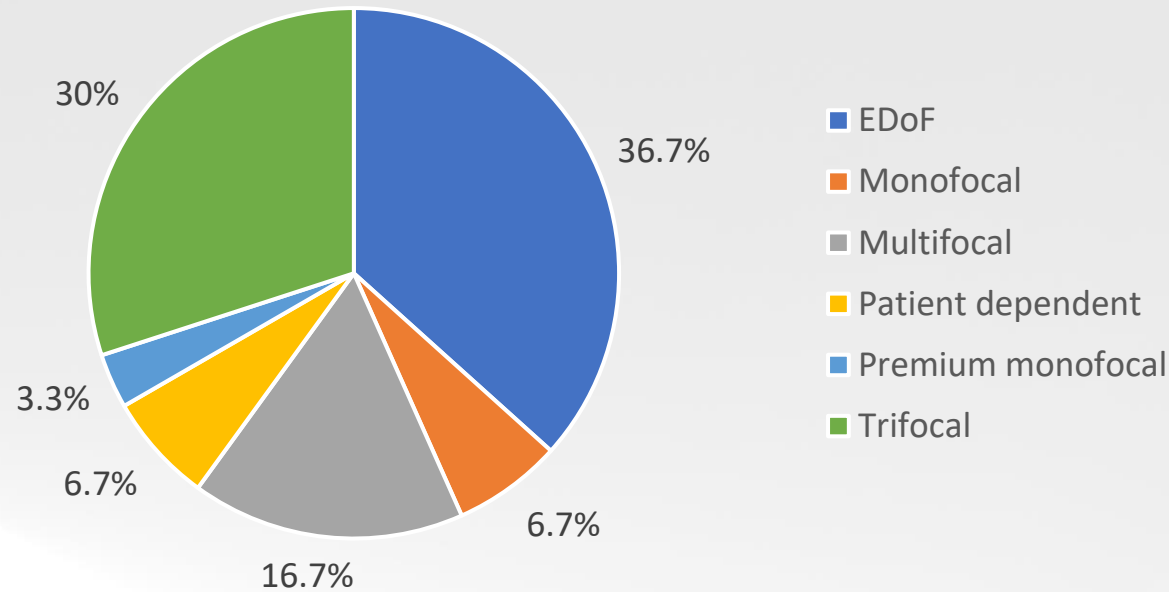
Preferred IOL: typical cataract patient



- Main reason cited for the top 3 lenses:
  - EDoF: better overall visual outcomes
  - Trifocals: best spectacles independence
  - Monofocals: fewer unwanted symptoms

# Results 3: preferred RLE IOL and reasoning

Preferred IOL: RLE in presbyopic patient aged >50



- Main reason cited for the top 3 lenses:
  - EDoF: fewer unwanted symptoms
  - Trifocals: better visual outcomes
  - Multifocals: best spectacles independence

# Results 4

- Mini-monovision with EDoF lenses:
  - 43.3% recommend for select patients
  - 40% recommend for most patients
  - 16.7% do not recommend
- “Mix and match” of a trifocal/multifocal with another IOL type (e.g. monofocal):
  - 60% do not recommend
  - 26.7% recommend for select patients
  - 6.7% recommend for most patients
- Level of corneal astigmatism at which they prefer toric IOLs for cataract/RLE surgery:
  - $\geq 1D$  40%
  - $< 1D$  30%
  - $\geq 1.25D$  and  $\geq 1.5D$  6.7% each
  - $\geq 2D$  3.3%
  - 10% depends on axis of astigmatism, 3.3% prefer other techniques



# Discussion

- For both cataract and RLE surgery, EDoF lenses are the most popular choice amongst UK refractive surgeons
  - Driven by desire for better visual outcomes and less visual disturbances
  - Studies have shown favourable outcomes relating to vision, spectacle independence, and low rates of unwanted visual symptoms
- Mini-monovision with EDoF lenses is a popular technique, whilst mix and matching of multifocal IOLs with another IOL type is not
  - Research into mini-monovision has shown good uncorrected VA at variety of distances, with low rates of spectacle dependence and photic phenomena
  - Research into mix and matching of lenses is limited due to variety of possible combinations, but some have been promising
- Toric lenses utilised at low levels of astigmatism (30%  $<1D$ , 40%  $\geq 1D$ )
  - Evidence of excellent patient outcomes has been published
  - Suggests a move away from alternative procedures

# Conclusions

- Experienced UK refractive surgeons prefer newer IOLs with enhanced optics;  $\geq 50\%$  of respondents favoured either EDoF or trifocals for a 'typical' cataract or RLE patient
- Notably, 30% opt for toric lenses even at  $< 1D$  of astigmatism
- Mini-monovision with EDoF IOLs was well-regarded, whilst mix-and-match of different IOL types was less recommended

