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Scleral publications & contact lens category growth

In their editorial to the special edition of Contact Lens and Anterior Eye on scleral lenses [1], van der Worp et al highlight the difficulties in publishing peer reviewed studies in a category where funding is difficult and sample sizes often limited. They further note that much of the enthusiasm for scleral lens fitting lays with highly experienced clinicians whose interest is in presenting individual case studies rather than larger cohorts.

That said, the authors show a graph of publications in which 'scleral lenses' was a key word. The data shows a dramatic increase in the number of publications on the topic since 2000. While not doubting the increase in interest in the subject, little can be drawn from the data without consideration of a control. Is the increase due, as implied by the authors, to a resurgence in academic interest in sclerals? Or could it be a consequence of an increase in, or willingness to publish, contact lens studies in peer reviewed journals?

Publication data on different fields in contact lenses was obtained from the 'PubMed' database to replicate that published in the editorial. In addition to 'scleral lenses' (ScCL) the following key words were also searched for: 'Contact Lenses' (CL), 'Soft Contact Lenses' (SCL), ''Rigid Contact Lenses' (RCL), 'Gas Permeable Contact Lenses' (GPCL), 'Myopia Control Contact Lenses' (McCL) and 'Toric Contact Lenses' (TCL). 'Contact Lens Dry Eye" (CLDE) was also added.

The results of the search, going back to 1961, are shown in Fig. 1. They show that the number of peer reviewed papers on 'Contact Lenses' has nearly doubled since 2000, from 248 to 489 in 2018. Across this time frame the number of papers in the individual fields searched for represented an average of 78% of all 'Contact lens papers.

The increase in published articles was driven by all categories, but the increase in the number of papers was driven largely by Soft Contact lenses (77) and Contact Lens Dry Eye (67). These 2 categories drove 60% of the increase. Scleral lenses (44) and Multifocal lenses (36) represented a further 30% of the increase.

The addition of control data does not invalidate the authors contention that the increase in sclerals is increasing at an academic level. The total number of scleral articles represented 11% of the total number of contact lens publications, significantly higher that the use of sclerals in practice. It does however put the rise in interest into the bigger context of the contact lens category as a whole.

This type of publication review does have value in indicating where the evidence base for the contact lens category is being focussed. Is contact lens research being directed towards the issues that will ultimately grow the category? Veys and Sulley cited industry data showing the number of contact lens drop outs each year to be close to the number of new entrants to the category [2]. In a prospective study of retention rates amongst new wearers [3] the reasons for discontinuation were:

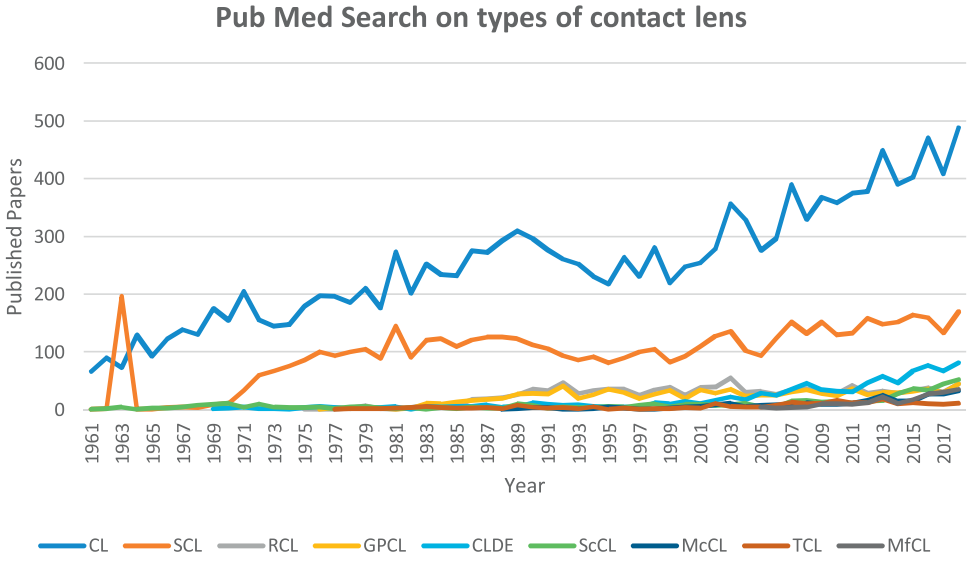

Fig. 1. Publication rate (yearly) of contact lens publications in total and by category from the National Library of Medicine search engine (www.pubmed.com) (n = 14,746).

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- Discomfort net (inc. dryness): 17%
- Vision net (distance, near): 32%
- Handling 15%
- Cost: 13%
- Interest/convenience: 13%

If we accept that academic research can do little to address the last two reasons for drop out, then to what extent is evidence being produced to address the 3 areas that represent 63% of the reasons for contact lens discontinuation?

Going back to PubMed and searching the last 10 years shows that the key words 'contact lens comfort' and 'contact lens discomfort' represent 7% and 6% respectively of the publications and, with 'contact lens dry eye' representing 13% of all publications, one could argue that around a quarter of publications are focussed on the issue driving 17% of patient drop out. In the prospective study, issues of vision were predominantly associated with astigmatic and presbyopic patients. Published research on these two categories has been poorly served over the past 10 years with just 4% of publications on 'multifocal contact lenses' and 3% on 'toric contact lenses'. The key words 'contact lens handling' appear in just 2% of publications, despite handling being cited for almost as many drop outs as discomfort.

Analyses like these are crude assessments of where academic interest lies. They take no account of the contact lens industries unpublished product development research, nor of the, many excellent, articles in the non-peer reviewed press. They do however give an indication of where academic, and one might argue, institutional teaching interest sits. They provide a timely reminder that there remain some basic issues of vision and handling which need addressing if the industry is to continue to grow.

References

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[3] A. Sulley, G. Young, C. Hunt, S. McCready, M.T. Targett, R. Craven, Retention rates in new contact lens wearers, Eye Contact Lens (September (Suppl 1)) (2018) S273–S282.

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