



## ORIGINAL ARTICLE

# Publication analysis of the contact lens field: What are the current topics of interest?



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### Abstract

**Purpose:** To determine the main current research interests of scientists working in the contact lens field.

**Methods:** All articles published in the 2011 issues of all journals included in the Journal Citation Reports subject category *Ophthalmology* were inspected to expose those papers related to the contact lens field. Information regarding source journal was obtained and authorship details were recorded to determine the top most prolific authors, institutions and countries. A comprehensive list of key words was compiled to generate a two-dimensional term map in which the frequency of occurrence of a particular term is defined by label size and the distance between two terms is an indication of the relatedness of these terms, based on their co-occurrences within groups of key words. Clusters of related terms were also identified.

**Results:** Visual examination of all articles uncovered a total of 156 papers, published in 28 different journals. *Contact Lens & Anterior Eye*, *Eye & Contact Lens* and *Optometry and Vision Science* had 27 articles each. The most prolific authors and institutions revealed the predominance of countries with long research tradition in the contact lens field. Ten different word clusters or areas of interest were identified, including both traditional, yet unresolved issues (e.g., comfort or dry eye), and the latest research efforts (e.g., myopia control).

**Conclusions:** These findings, which revealed contact lenses to be a fertile area of research, may be of relevance to new researchers as well as to those interested in exploring the latest research trends in this scientific discipline.

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**PALABRAS CLAVE**

Autores;  
Lentes de contacto;  
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Instituciones

## Análisis de publicaciones en el campo de las lentes de contacto: ¿cuáles son las cuestiones de interés actuales?

**Resumen**

**Objetivo:** Determinar los principales intereses actuales de los científicos que trabajan en el campo de las lentes de contacto.

**Métodos:** Se revisaron todos los artículos publicados en 2011 en las ediciones de todas las publicaciones incluidas en Journal Citation Reports, en la categoría de *Oftalmología*, en relación a las lentes de contacto. Se obtuvo información relativa a la fuente de la publicación, y se registraron datos sobre la autoría, para determinar los principales autores, instituciones y países más prolíficos. Se compiló una amplia lista de palabras clave para generar un mapa terminológico bidimensional en el que la frecuencia de ocurrencia de un término particular se definía mediante el tamaño de la etiqueta, siendo la distancia entre dos términos un indicador del parentesco de dichos términos, basado en las co-ocurrencias entre grupos de palabras clave. También se identificaron grupos de términos relacionados.

**Resultados:** El examen visual de todos los artículos descubrió un total de 156 documentos, publicados en 28 publicaciones diferentes. *Contact Lens & Anterior Eye*, *Eye & Contact Lens* y *Optometry and Vision Science* incluyeron 27 artículos cada una. Los autores e instituciones más prolíficos revelaron la predominancia de países con amplia tradición investigadora en el campo de las lentes de contacto. Se identificaron diez diferentes grupos o áreas de interés mundiales, incluyendo cuestiones tanto tradicionales, aunque aún sin resolver (por ejemplo, confort u ojo seco), como los últimos esfuerzos investigadores (por ejemplo, control de la miopía).

**Conclusiones:** Estos hallazgos, que revelaron que las lentes de contacto eran un área fértil de investigación, pueden resultar pertinentes para los nuevos investigadores, así como para aquellas personas interesadas en explorar las últimas tendencias investigadoras en esta disciplina científica.

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## 1. Introduction

Scientists and clinicians devoting their research efforts to the contact lens field witnessed with interest and acclamation the recent incorporation to the Institute for Scientific Information (ISI) Journal Citation Reports (JCR) of two of the most influential publications in this field: *Eye & Contact Lens* (in 2010) and *Contact Lens & Anterior Eye* (in 2011). The Science Edition of the JCR lists about 5000 journals according to their impact factor, which is defined as "the average number of times articles from the journal published in the past 2 years have been cited in the current JCR year",<sup>1,2</sup> and classifies them in subject or thematic categories. Both contact lens journals are included in the *Ophthalmology* category, which also lists publications dedicated to ophthalmology, vision science and optometry.

In a seminal paper by Efron, Brennan and Nichols published in January 2012 the authors performed a complete citation analysis of the contact lens field, from the first article by Adolf Fick, dating from 1888 to February 2011.<sup>3</sup> Efron and co-workers examined all subject categories of the "Science Citation Index Expanded" database by following a search strategy consisting of providing the search engine of the Web of Science (Thomson Reuters, New York, NY) with a list of commonly employed terms in the contact lens field. After further refining their research, a total of 3096 articles were compiled, whereupon the most highly cited, influential papers were identified and the leading authors, source journals, institutions and

countries associated with those articles were acknowledged.

Citation analysis is a useful approach for assessing the quality of research in a given field, based on the assumption that influential articles are more frequently cited by other researchers and clinicians. As such, abundant citation analysis literature exists, either examining the *Ophthalmology* subject category in general,<sup>4-6</sup> or a particularly relevant subspecialty (such as dry eye).<sup>7,8</sup> However, *per definition*, citation analysis uncovers the most highly cited articles of a given time period. Therefore, it may not be the best approach to determine the current topics of interest of a scientific discipline, with potentially high impact recent articles requiring several years to show a clear trend regarding their citation count.<sup>8</sup> This effect was evident upon exploring the 10 most highly cited articles in the contact lens field (ranked by citation count), with the most recent paper dating from 1999 (although an analysis by citation frequency, that is, cites per year, unveiled more recent research contributions).<sup>3</sup> In addition, it has been documented that, in general, basic and diagnostic research areas have an above average citation impact, in detriment of clinical research,<sup>9</sup> which may result in unwanted bias if citation analysis is employed to review current research trends.

The aim of the present study was to determine the current topics of research interest in the contact lens field. For this purpose, all articles published in the 2011 issues of all journals included in the JCR subject category *Ophthalmology* were visually inspected in order to expose those papers

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