Debate & Analysis

Word cloud analysis of the *BJGP*:

5 years on

INTRODUCTION

A 'word cloud' is a visual representation of word frequency derived from written text.[1] The more often the word appears within the passage being analysed, the larger it appears in the image generated. This provides viewers with a synopsis of the main themes contained within the text.[2] Word clouds are increasingly being used within the public and private sector as a tool to identify the focus of written material.

As research tools, however, word clouds have a number of limitations. They fail to group words that have the same or similar meaning, for example, 'GP' and 'GPs' or 'Practice' and 'practice'.[3] In addition, the words are retrieved out of context as the technique omits the semantics of the words, as well as the phrases they comprise.[2]

THE *BJGP*'S CHANGING EDITORIAL POLICY

Back in 2012, I conducted a word cloud analysis of the entire content of the *British Journal of General Practice* (*BJGP*) from 2011 using the online programme Wordle (http://www.wordle.net/).[1] A maximum word limit of 100 was set. Common English words were removed. Five years on, I decided to repeat this exercise to measure the 2016 journal content against the *BJGP*'s current editorial policy, as well as to compare and contrast the 2011 and 2016 content to see whether there has been a change in the intervening period. I examined all 2016 issues of the *BJGP*, constituting 500 000 words. The image generated based on the 2016 content can be seen on the cover of this journal and as Figure 1.

In 2011, the *BJGP*'s editorial policy stated that it was *'an international journal publishing articles of interest to primary care clinicians, researchers, and educators worldwide. Priority is given to research articles asking questions of direct relevance to patient care.'*[1] In 2016, the journal describes itself as *'an international journal publishing research, debate and analysis, and clinical guidance for family practitioners and primary care researchers worldwide'*.[4] As before, the *BJGP* gives priority to *'research articles asking questions of direct relevance to patient care'*.

ANALYSIS OF THE WORD CLOUD

In 2011, the two most prominent words highlighted in the word cloud were 'care' and 'patient/s'.[1] This is also the case in 2016, and confirms that the *BJGP* is sticking to its editorial policy. In terms of the journal's concentration on research articles, the word 'research' appears in the word cloud in both 2011 and in 2016.

The words 'GP/s', 'primary', 'general', 'practice/s', and 'clinical' all appear in both the 2011[1] and the 2016 analysis. Furthermore, 'education' fails to materialise in both years. However, both the terms 'training' and 'university' are present, reflecting the fact that the journal has recently published a number of articles, and more than one editorial, on medical

Figure 1. Word cloud analysis of the **BJGP**, *2016*.

"There is again the suggestion that the journal is too UK, NHS, England and London focused."

students, general practice careers, and the undergraduate curriculum. A new word in the 2016 analysis is 'family', which conforms to the new target audience of 'family practitioners'.

In terms of the international aim of the journal, the 2011 analysis suggested that its content was perhaps too weighted towards the home audience, with 'UK', 'London', and 'NHS' being the only geographic terms to appear in the word cloud;[1] this is also the case in 2016, although 'England' also features as a lower-order geographic word.

The medical conditions that figured most prominently in the 2011 analysis were 'cancer' and 'depression';[1] cancer is still there in 2016, though 'depression' has been replaced by 'diabetes', emphasising the growing importance of this condition, which is reaching epidemic proportions.[5]

The full extent of the patient journey was revealed in 2011, with 'symptoms', 'diagnosis', and 'treatment' all included;[1] this is also the case in 2016. The increasing use of the internet to help navigate this journey is signified by the appearance of a new word — 'online' — in the 2016 analysis.

'Quality' appeared only as a minor term in 2011, which was a surprise, given its importance in patient care;[1] 'risk' emerged larger. In 2016, 'risk' is still there, but 'quality' no longer appears at all in the top 100 words.

A new term that appears in the 2016 analysis is 'pressure'. This could have three meanings, and a limitation of the word cloud methodology is that it cannot distinguish between the three. The word could simply reflect the use of the term 'blood pressure', which appeared in a number of articles. It could be related to the phrase 'peer pressure', as 'peer' is also visible in the word cloud. However, it could equally point to the great strain that doctors in primary care are working under as the population ages and demand for health care increases.

CONCLUSION

In conclusion, a word cloud analysis of the 2016 *BJGP* has shown that it seems to have largely fulfilled its stated aim of ensuring that priority is given to research articles of direct relevance to patient care for family practitioners and primary care researchers. A comparison of 2011 and 2016 content shows that there have been very few changes in the themes covered over the last 5 years. There is again the suggestion that the journal is still too UK, NHS, England, and London focused, and should do more to broaden its geographic scope as it aspires to be international. More worryingly for the profession, a term that has disappeared from the 2016 word cloud is 'quality'. It has been replaced by the new word 'pressure', which may point to the significant increase in demand for care that has occurred over the last 5 years; demand that primary care practitioners are coping with in their everyday practice.

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REFERENCES
1. Atenstaedt R. Word cloud analysis of the *BJGP*. *Br J Gen Pract* 2012; DOI: https://doi.org/10.3399/bjgp12X630142.
2. McNaught C, Lam P. Using Wordle as a supplementary research tool. *Qual Rep* 2010; **15(3):** 630–643. http://nsuworks.nova.edu/tqr/vol15/iss3/8 (accessed 20 Mar 2017).
3. Ramsden A, Bate A. *Using word clouds in teaching and learning.* University of Bath, 2008. http://opus.bath.ac.uk/474/ (accessed 20 Mar 2017).
4. British Journal of General Practice. About BJGP. http://bjgp.org/page/about (accessed 6 Apr 2017).
5. Herman WH, Zimmet P. Type 2 diabetes: an epidemic requiring global attention and urgent action. *Diabetes Care* 2012; **35(5):** 943–944.