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A bibliometric analysis of past and emergent trends in animal welfare science

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Abstract

A bibliometric analysis was undertaken to chart the development of animal welfare (AW) science as a whole, and of the individuals, organisations and countries that have had most academic impact to date. Publication data were collected from the Web of Science for the year range 1968–2017 and by-hand pre-processing of the data was undertaken to identify reviews and original research articles on AW. VOSviewer was used to create bibliometric networks. There has been a 13.3% annual growth in AW publications in the last 50 years with Animal Welfare and Applied Animal Behaviour Science the most frequent publishers of AW publications. Farm animals continue to dominate the subject of AW research and comparison of network visualisations for five key species suggested possible gaps in the research, such as relatively little emphasis on emotion research for some farm animals and little research on inherited disorders in dogs. However, keyword analysis indicated a recent broadening of AW findings to include other international contexts, such as conservation and sustainability. Highly cited review articles were grouped into five clusters with affective state (ie emotions, moods) and fish welfare the most recent topics. Almost all core authors of original research articles study farm animals, though in the last ten years other topics, such as consumer attitudes and wildlife, have emerged as highly cited areas of original research articles. Network analysis of organisations revealed the University of Bristol, UK as the main publisher of original research articles. Citation analysis indicated that many low-cited articles were originating from Germany and were published in German journals, suggesting that many worthwhile results and opinions on AW may be being missed by other researchers due to a language barrier. Several limitations of bibliometric analysis to generate an overview of AW science were identified, including the challenge of how to search and extract all the relevant publications in this discipline. In conclusion, animal welfare science is still in an exponential phase of growth which will bring opportunities, such as for the publication of new journals, but also challenges. The insights generated by this study suggest bibliometric analysis to be a useful addition to other approaches investigating the trends and concepts of animal welfare.

Keywords: *animal welfare, animal well-being, bibliometrics, citation analysis, publications, scientometrics*