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Circumcision on the web: A comparison of quality, content, and bias online

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Abstract *Objective:* In 2012, the American Academy of Pediatrics (AAP) newborn circumcision policy statement expressed that although benefits outweigh risks, final decisions lie with parents. Although health information on the Internet is plentiful, the quality and availability of information on circumcision, including dissemination of AAP and AUA policy statements, is unknown. We analyzed English and Spanish circumcision websites to evaluate their overall quality, detail, accuracy, and bias.
Methods: In April 2013, three search engines were queried for English and Spanish circumcision websites, which were analyzed utilizing the DISCERN Plus scale for content quality as well as additional study-specific criteria.
Results: We analyzed 214 websites (141 English, 73 Spanish). Most websites in both languages had very good content quality and were neutral regarding circumcision. Regardless of language, only 21% of sites mentioned the updated AAP guidelines. Surprisingly, the AUA circumcision policy statement did not appear in the top results. Spanish sites were more likely to give good descriptions of circumcision procedures than English sites ($p < 0.04$), less likely to cite sources ($p < 0.01$), and more likely to describe benefits ($p = 0.02$)..
Conclusions: Newborn circumcision information on the Internet is of very good quality, but different English and Spanish characteristics possibly reflect cultural bias, which may explain the disparate rates of circumcision between different groups in the USA. The AAP's circumcision policy statement was referenced by a minority (20%) of websites, and AUA's policy statement was not even part of the top results. The AUA should have a more active role in providing accurate and comprehensive online information to parents regarding circumcision.

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Introduction

The debate surrounding elective circumcision in newborns has gained national attention, thanks in part to high profile media coverage and strong opinions from many medical and non-medical advocacy groups. The American Academy of Pediatrics (AAP) updated its own policy statements regarding circumcision in 2012. The new recommendations state that although the health benefits of newborn circumcision outweigh the potential risks, parents should ultimately decide whether circumcision is in the best interests of their child [1]. Explicit in this recommendation is the need to "weigh medical information in the context of [a parent's] own religious, ethical, and cultural beliefs and practices." Similarly, the American Urological Association (AUA) policy on circumcision states that medical risks and benefits, as well as parents' beliefs and preferences should be considered [2]. Although physicians remain a trusted source of medical information, an increasing number of tech-savvy Americans now turn to the Internet for advice, information, and opinions regarding healthcare issues. An estimated 85% of Americans have access to the Internet, with the highest use among younger generations of, or approaching, childbearing age. Eighty percent of these users already use the Internet to gather healthcare information [3]. Although online information is more easily accessible than ever through smartphones and portable computing, this information is not vetted for factual accuracy, completeness, or freedom from bias. Furthermore, there is no assurance that this information will be consistent across cultural or linguistic barriers, the importance of which may contribute to the varying rates of circumcision between population groups within similar geographic areas; for example, the lower circumcision rates among Hispanic populations compared with their non-Hispanic counterparts [4–6].

In an attempt to characterize the information available to parents regarding newborn circumcision, we undertook an assessment of circumcision-related webpages to evaluate their overall quality, accuracy, and bias. We performed analyses of both English and Spanish language websites using a validated information quality tool and study-specific questions to assess the information available to parents deciding about newborn circumcision. We also investigated the prominence of policy statements and recommendations from professional organizations such as the AAP and the AUA throughout these websites. To our knowledge, this is the first such analysis of quality and dissemination of online information for newborn circumcision.

Materials and methods

In April 2013, we queried Google, Yahoo!, and Bing, which in total represent 92% of Internet search engine use [7], for the terms "circumcision," "circumcision procedure," "infant circumcision," "newborn circumcision," "pediatric circumcision," "circuncisión," "circuncisión del bebé," "circuncisión infantil," "circuncisión pediatria," and "procedimiento de circuncisión." As a 2011 study showed that over 99% of Internet users click through links found on the first two pages of search engine results [8], we extracted only these websites for our analysis. After removing duplicated links, a total of 214 unique websites were analyzed, representing over 99% of web traffic for the search terms used.

Each website was evaluated by the DISCERN Plus criteria, a validated tool to measure the content quality of written health information [9]. This tool has been used in a variety of publications to assess the quality of online information regarding medical treatment options [10–13]. The DISCERN tool is made up of 15 questions, each assessing the aims, relevance, descriptions, and bias of health related information on a particular treatment option. The questions are scored individually by raters from 1 to 5, with 1 corresponding to 'poor' quality and 5 being "excellent" quality. The range of possible DISCERN Plus scores was from 15 to 75, with higher scores corresponding to better overall content quality. DISCERN score cutoffs were utilized to separate "very poor" (15–25), "poor" (26–35), "good" (36–50), "very good" (51–65), and "excellent" (66–75) content. In addition to the DISCERN Plus criteria, we also assessed how well each site described the circumcision procedure, whether the site was for, against, or neutral to routine newborn circumcision, the source of the website (academic, commercial, news, blog/personal user, encyclopedia), the language of the website (English or Spanish), and whether the site mentioned the AUA and/or AAP 2012 circumcision policy statements.

Two evaluators rated the websites, with a validation set of 30 sites evaluated by both raters to measure for evaluator bias. Bias was assessed by each reviewer based on the language, images, explicit recommendations, and overall tone. The intraclass correlation coefficient (ICC) between the raters was 0.77, indicating excellent agreement between raters. The web browsers used for this evaluation were cleared of all previously cached website data, and privacy modes were enabled to ensure that these data did not influence search results and website content. Statistical analysis was performed in SPSS version 19 (IBM Inc., Armonk, NY, USA). ANOVA and chi-square tests were used for comparisons of continuous and categorical variables, respectively. Statistical significance was considered as $p < 0.05$.

Results

In total, 141 English language and 73 Spanish language webpages were analyzed. Of the maximum 75 points, the mean DISCERN Plus score was 50.8 (range 15–75, SD 14.6) for English sites, and 52.9 (range 34–73, SD 7.3) for Spanish websites, indicating "very good" quality information with no significant difference in quality between languages ($p = 0.24$). As seen in Fig. 1, most sites in each language took a neutral position regarding circumcision (53.9% vs. 58.9% in English vs. Spanish, respectively); however, more than a quarter had a clear anti-circumcision bias (28.4% and 26.0%), and less a pro-circumcision bias (17.7% vs. 15.1%). Interestingly, language did not influence the type or amount of bias ($p = 0.77$). Several types of websites, including news outlets, forums, social media, and academic sites were identified from our English and Spanish language