MAYO CLINIC

REVIEW

Circumcision Rates in the United States: Rising or Falling? What Effect Might the New Affirmative Pediatric Policy Statement Have?

Brian J. Morris, DSc, PhD; Stefan A. Bailis, PsyD; and Thomas E. Wiswell, MD

Abstract

The objective of this review was to assess the trend in the US male circumcision rate and the impact that the affirmative 2012 American Academy of Pediatrics policy statement might have on neonatal circumcision practice. We searched PubMed for the term *circumcision* to retrieve relevant articles. This review was prompted by a recent report by the Centers for Disease Control and Prevention that found a slight increase, from 79% to 81%, in the prevalence of circumcision in males aged 14 to 59 years during the past decade. There were racial and ethnic disparities, with prevalence rising to 91% in white, 76% in black, and 44% in Hispanic males. Because data on neonatal circumcision are equivocal, we undertook a critical analysis of hospital discharge data. After correction for underreporting, we found that the percentage had declined from 83% in the 1960s to 77% by 2010. A risk-benefit analysis of conditions that neonatal circumcision protects against revealed that benefits exceed risks by at least 100 to 1 and that over their lifetime, half of uncircumcised males will require treatment for a medical condition associated with retention of the foreskin. Other analyses show that neonatal male circumcision is cost-effective for disease prevention. The benefits of circumcision begin in the neonatal period by protection against infections that can damage the pediatric kidney. Given the substantial risk of adverse conditions and disease, some argue that failure to circumcise a baby boy may be unethical because it diminishes his right to good health. There is no long-term adverse effect of neonatal circumcision on sexual function or pleasure. The affirmative 2012 American Academy of Pediatrics policy supports parental education about, access to, and insurance and Medicaid coverage for elective infant circumcision. As with vaccination, circumcision of newborn boys should be part of public health policies. Campaigns should prioritize population subgroups with lower circumcision prevalence and a higher burden of diseases that can be ameliorated by circumcision.

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The present article examines the trend in male circumcision in the United States, contemporary issues, and what these might mean for the future of circumcision practice in this country. The publications referenced were selected for relevance from among the first author's (B.J.M.) collection of more than 3000 on the topic of male circumcision that had been retrieved using the search term *circumcision* from weekly PubMed alerts between January 1999 and December 2013 and from Current Contents between January 1988 and December 1998. All the articles were filed under the subcategories of rates, policy, ethics, risks, and each of the medical conditions that male circumcision affects.

WHAT THE LATEST RATES DATA SHOW

The review was triggered by a recent report by the Centers for Disease Control and Prevention (CDC) on the prevalence of circumcision among males aged 14 to 59 years in the United States.[1] The CDC data were obtained from the National Health and Nutrition Examination Surveys (NHANESs) for 2005 to 2010, in which interviews were administered to a nationally representative sample of 6294 males. The CDC researchers estimated total circumcision prevalence to be 80.5% (Table 1). Racial differences were apparent: Prevalence was 90.8% in non-Hispanic white, 75.7% in non-Hispanic black, and 44.0% in Mexican American males. The recent figures are higher than in the CDC's previous report based on NHANES data for 1999 to 2004[2] (Table 1).

Because these data are for males aged 14 to 59 years—and most circumcisions in the United States take place during the neonatal period—they largely reflect past practice. What happened

From the School of Medical Sciences, University of Sydney, Sydney, NSW, Australia (B.J.M.); People Incorporated, St Paul, MN (S.A.B.); and Center for Neonatal Care, Orlando, FL (T.E.W.).

ARTICLE HIGHLIGHTS

- There has been a rise in circumcisions in men to 81% during the past decade.
- The rise has occurred in white (91%), black (76%), and Hispanic (44%) males.
- Corrected hospital discharge data show a fall in national neonatal circumcision prevalence of 6 percentage points to 77%.
- The fall in infant circumcisions is concomitant with demographic changes, most notably the increase in the proportion of Hispanic people (traditionally noncircumcising) in Western states but also the withdrawal of Medicaid coverage in 18 states.
- A risk-benefit analysis shows that benefits vastly exceed risks.
- Ethical and legal considerations support the right of male minors to protection from disease by parents consenting to their circumcision.
- The affirmative policy of the American Academy of Pediatrics should logically result in an increase in infant circumcisions in the United States and in reintroduction of access to Medicaid funding for poor families.

in the 1950s through the 1990s may not be what is happening today.

Estimates of prevalence of neonatal circumcision generally rely on hospital discharge data.[3] Such figures are taken from records of procedures performed during the neonatal hospital stay. However, few studies have investigated the reliability of hospital discharge data as an estimate of neonatal circumcision prevalence; those that have done so have found a substantial discrepancy. A survey in Maryland found that the prevalence was 75.3% based on hospital discharge data but 82.3% based on a postpartum survey.[4] An earlier study in Atlanta found that circumcision was recorded for only 84.3% of boys who had received a circumcision.[5] In referring to their sample in July 1985, the authors stated, "If we had relied solely on [summary information in the medical record, usually found on the face sheet] we would have estimated that the circumcision rate for that period was 75.3% rather than 89.3%."[5,p.414]

These previous comparisons have been of local samples only. To better ascertain recent trends nationally, we considered it instructive to critically compare the new NHANES findings with National Hospital Discharge Survey (NHDS) data for 1979 to 2010 as reported recently by the CDC.[3] The present evaluation, therefore, updates the comparison of NHANES and NHDS data by Waskett in 2007.[6] That study was limited by having only 1980s births available for comparison. The present analysis is, therefore, more informative.

We show in Table 2 the prevalence of circumcision in the NHANES and NHDS samples for comparable birth years. It is readily apparent that NHANES data show a substantially higher prevalence of circumcision than suggested by the NHDS figures. The recent NHDS analysis did note in the first paragraph, however, that their figures "do not include circumcisions performed outside the hospital setting [...] or those performed at any age following discharge from the birth hospitalization."[3] The present article refers to nonhospital and postdischarge circumcisions as "unrecorded circumcisions." The number of these can be estimated by comparison of NHDS data with NHANES data, where the latter records circumcisions performed at any time and any location.

Our calculation involved the following formula: $a = i + u(1 - i)$, where a is the prevalence from NHANES data for men and boys aged 14 to 59 years (which, for convenience, is referred to as "adult circumcisions" for the purpose of this article), i is the prevalence in infancy as captured by NHDS data, and u represents unrecorded circumcisions. Thus, u can be obtained from values for a and i using simple algebra, ie, $u = (a - i) / (-i + 1)$. An explanation of the rationale for this formula appears in the Supplemental Appendix (available online at http://www.mayoclinicproceedings.org). Values for these unrecorded circumcisions are shown in Table 2, alongside the percentage of males deemed by raw NHDS data to be uncircumcised and the percentage who were actually found to

TABLE 1. Comparison of Total Circumcision Prevalence in Men and Boys Aged 14 to 59 Years in 2005 to 2010[1] Compared With 1999 to 2004[2a]

Race/ethnicity	Prevalence (% [95% CI]) 1999-2004	2005-2010	Change (%)
Overall	79 (77-80)	80.5 (78.4-82.5)	+2.5
Non-Hispanic white	88 (87-90)	90.8 (89.1-92.6)	+3.4
Non-Hispanic black	73 (69-77)	75.7 (72.0-79.4)	+4.1
Mexican American	42 (43-57)	44.0 (41.0-46.9)	+4.8

[a]Note that data for 1999 to 2004 were published by the Centers for Disease Control and Prevention as whole numbers,[2] whereas data for 2005 to 2010 were published to 1 decimal point.[1]

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