

Determinants of Circumcision Timing in Indonesia: A Mixed-Methods Study of Health, Cultural, and Socioeconomic Factors

Faktor-Faktor Penentu Waktu Sunat di Indonesia: Studi Metode Campuran tentang Faktor Kesehatan, Budaya, dan Sosial Ekonomi

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ABSTRACT

Background: Circumcision is widely practiced in Indonesia, yet its timing varies across regions despite known medical and economic advantages of early (neonatal) circumcision.

Objective: This study aims to analyze the distribution and determinants of circumcision age in Indonesia using a mixed-methods approach, integrating quantitative data and qualitative insights.

Methods: Data were collected from multiple circumcision providers across several provinces. Quantitative analysis was conducted to assess age distribution, while qualitative interviews explored parental decision-making. Findings were interpreted using the Health Belief Model and Social Ecological Model.

Results: Most circumcisions occurred at ages 6–10 years, reflecting a dominant school-age pattern. Regional variation was observed, with earlier circumcision more common in West Nusa Tenggara and West Java, and delayed circumcision in Central Java and East Kalimantan. Decisions were influenced by cultural norms, religious beliefs, financial readiness, perceived pain, and social expectations. Economic factors also contributed, as delayed circumcision was often linked to financial planning and ceremonial practices, while early circumcision was perceived as more cost-efficient.

Conclusion: Circumcision timing in Indonesia is shaped by multi-level determinants beyond medical considerations. Culturally sensitive strategies are needed to promote informed decision-making.

Keywords: Circumcision; Timing; Determinants

ABSTRAK

Latar Belakang: Sirkumsisi merupakan prosedur yang banyak dilakukan di Indonesia, namun waktu pelaksanaannya bervariasi antarwilayah meskipun sirkumsisi dini (neonatal) memiliki keuntungan medis dan ekonomi.

Tujuan: Penelitian ini bertujuan untuk menganalisis distribusi dan determinan usia sirkumsisi di Indonesia menggunakan pendekatan mixed-methods.

Metode: Data dikumpulkan dari berbagai penyedia layanan sirkumsisi di beberapa provinsi. Analisis kuantitatif dilakukan untuk menilai distribusi usia, sementara wawancara kualitatif mengeksplorasi pengambilan keputusan orang tua. Temuan diinterpretasikan menggunakan Health Belief Model dan Social Ecological Model.

Hasil: Sebagian besar sirkumsisi dilakukan pada usia 6–10 tahun, menunjukkan pola dominan usia sekolah. Terdapat variasi regional, dengan sirkumsisi lebih dini di Nusa Tenggara Barat dan Jawa Barat, serta lebih lambat di Jawa Tengah dan Kalimantan Timur. Keputusan dipengaruhi oleh norma budaya, keyakinan agama, kesiapan finansial, persepsi nyeri, dan ekspektasi sosial. Faktor ekonomi juga berperan; penundaan sering terkait dengan perencanaan biaya dan acara, sedangkan sirkumsisi dini dianggap lebih efisien.

Kesimpulan: Waktu sirkumsisi di Indonesia dipengaruhi oleh faktor multi-level di luar pertimbangan medis. Diperlukan pendekatan sensitif budaya untuk mendukung pengambilan keputusan yang lebih tepat.

Kata Kunci: Sirkumsisi; Usia; Determinan

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INTRODUCTION

In any circumcision practice, it is important to consider the perspectives of the individuals and families involved. Circumcision is often considered a sign of religious or cultural identity. Several medical studies suggest that circumcision is ideally performed during infancy (Bicer et al., 2015). One study suggests that circumcision performed within the first week of life may offer optimal outcomes. Furthermore, uncircumcised infants have been shown to harbor a higher number of bacterial colonies in the genital area compared to circumcised infants (Morris et al., 2024).

Culturally, circumcision in Indonesia is deeply embedded in religious and social traditions. Various ethnic groups have distinct ceremonial practices associated with circumcision, such as *basunat* in the Banjar community, *massunna* in the Makassar community, *sunat rasul* in Aceh, and *sepitan* among the Sundanese (Wahyuni, 2019).

For many families, circumcision is not merely a medical procedure but a significant rite of passage, often accompanied by communal celebrations. These cultural factors strongly influence the timing of circumcision, sometimes outweighing medical considerations. Consequently, decisions regarding circumcision are shaped by a complex interaction of tradition, social expectations, and parental beliefs.

In addition to health and cultural dimensions, economic factors also play a crucial role. The cost of the procedure, access to healthcare facilities, choice of provider, and perceived financial burden significantly influence parental decisions (Lokorio et al., 2023). Neonatal circumcision is generally associated with lower costs and faster recovery, whereas circumcision at older ages often involves higher expenses, longer healing periods,

and indirect costs such as parental work absence (Morris et al., 2024).

Given the multifaceted nature of circumcision practices in Indonesia, a comprehensive understanding that integrates medical, cultural, and economic perspectives is essential. This study aims to explore circumcision practices in Indonesia by examining how these factors interact to shape parental decision-making and clinical practices, with implications for pediatric health policy and preventive care strategies.

MATERIALS AND METHODS

A. Research Design

This study employed a mixed-methods design integrating quantitative and qualitative approaches to comprehensively examine circumcision age typology and its underlying determinants in Indonesia.

B. Population and Sample

The quantitative component aimed to describe the distribution of circumcision age. Data were collected retrospectively from medical records of circumcision procedures performed between 2022 and 2023 across multiple healthcare facilities, including primary healthcare clinics, specialized circumcision centers, and private circumcision practices located in Java, Sumatra, Kalimantan, and West Nusa Tenggara. A total of 5,104 cases were included in the analysis.

For the qualitative component, informants were selected using purposive sampling to ensure variation in socioeconomic background, education level, cultural setting, and their children's age at circumcision. Informants consisted of parents who had circumcised their sons or were planning to do so. Codes (I1)–(I6) refer to individual interview participants and are used to maintain anonymity while distinguishing between different informants in the qualitative data. Each

code represents a unique participant involved in the study.

C. Research Instruments

The quantitative component utilized a medical record extraction form to collect information on circumcision age, year of procedure, and healthcare facility location.

The qualitative component employed a semi-structured interview guide developed to explore factors associated with circumcision age decision-making, including medical considerations, cultural influences, and economic factors.

D. Data Analysis Techniques

Quantitative data were analyzed using descriptive statistics to calculate the percentage distribution of circumcision age. Additional analyses, including categorization into four age groups (0–1 year, 2–5 years, 6–10 years, and >10 years) and regional comparisons, were conducted to explore geographical variations.

Qualitative data were analyzed using thematic analysis. Interview transcripts were reviewed repeatedly, coded, and organized into themes representing parental considerations and contextual influences related to circumcision timing.

By integrating quantitative patterns with qualitative insights, this study sought to provide a more comprehensive understanding of circumcision practices in Indonesia, particularly in relation to the interaction among medical evidence, cultural norms, and socioeconomic considerations.

RESULT AND DISCUSSION

A. Perspective On Circumcision Age

Male circumcision should be performed under sterile conditions using appropriate techniques to minimize the risk of complications and infection. Although circumcision is commonly carried out during childhood, there is no universal consensus regarding the optimal

age for the procedure. The primary absolute medical indication for early circumcision in children is pathological phimosis (Harper et al., 2022). In practice, the timing of circumcision is influenced by multiple factors, including the child's health status, parental preferences, and cultural or religious considerations.

Several studies have compared neonatal circumcision with procedures performed at older ages. For instance, Morris suggested that neonatal circumcision may be associated with lower complication rates, faster healing, favorable cosmetic outcomes, and reduced costs (Morris et al., 2024). In the United States, neonatal circumcision is commonly performed within the first few days of life, often by trained non-urologic providers (Press et al., 2024).

A clinical study conducted in Turkey compared circumcision outcomes across three age groups: under 1 year, 1–7 years, and above 7 years. The findings indicated that circumcision performed during infancy was associated with shorter recovery time, fewer anesthesia-related complications, and lower procedural costs (Bicer et al., 2015). These findings are consistent with reports from parents in this study, who observed faster healing in infants compared to older children.

(I1) "We don't have any plans to circumcise him as a baby. Since he had an infection, we immediately circumcised him. Most people circumcise their sons when they are in elementary school, and on average, it takes their sons a week or more to heal. My son healed in less than a week. So from this, I realized that circumcision before the age of one results in faster healing."

Uncircumcised infants have been reported to exhibit higher bacterial colonization in the genital area compared to circumcised infants, which may increase the risk of infection (Morris et al., 2024). In particular, circumcision has been

associated with a reduced risk of urinary tract infections (UTIs), especially during the first year of life. This protective effect is clinically relevant, as UTIs are more common in male infants than in older children (Morris et al., 2024).

Circumcision may also play a role in the management of certain medical conditions. One important indication is pathological phimosis, a condition in which the foreskin cannot be retracted, potentially leading to hygiene difficulties, inflammation, and infection. In such cases, early circumcision may be indicated to prevent further complications (Harper et al., 2022). Early evaluation during circumcision may also facilitate the identification of certain genital anomalies, although circumcision itself is not a diagnostic procedure.

From the three age categories, i.e., babies, children, and adults, it was found that the highest incidence of UTI was in babies, at 57.53% (Tawfeeq, 2018). One of the significant medical benefits of circumcising babies is the protective effect against UTIs. This is widely known in the medical field due to numerous studies that have shown a lower risk of UTIs in circumcised babies compared to those who are not circumcised (Morris et al., 2024). In this study, we interviewed parents who had their sons circumcised, and some of

them mentioned that their sons' condition did not relapse after the circumcision, indicating potential health benefits.

(I2) "My first son used to have frequent fevers. He would recover for a while and then get a fever again. My friend, whose husband is a circumcision operator, told me that the foreskin inside the penis should be cleaned regularly, especially after bathing. This is different if my son has already been circumcised, as there is no need to clean the foreskin because it has been cut and is guaranteed to be clean. That's why I had my son circumcised at the age of 8. Alhamdulillah, after circumcision, he no longer gets frequent fevers like before."

However, not all children are suitable candidates for early circumcision. In cases of congenital abnormalities such as hypospadias, or conditions like buried penis and certain comorbidities, circumcision may need to be postponed until appropriate corrective management has been performed (Alsowayan, 2024).

B. Typology Of Circumcision Ages In Indonesia

Data were collected from multiple circumcision providers, including primary healthcare facilities and specialized circumcision clinics across several provinces in Indonesia.

Table 1. Circumcision Age Distribution and Median

No	Province	0–1 year	2–5 years	6–10 years	>10 years	Median Age for Circumcision (years)
1	Pekanbaru	12	14	72	65	9
2	Bengkulu	19	103	605	42	8
3	Banten	24	54	88	26	8
4	West Java	8	41	26	2	6
5	Central Java	9	42	750	425	10
6	Yogyakarta	258	325	1,184	130	9
7	East Java	17	25	97	4	8
8	East Kalimantan	22	51	216	206	10
9	West Nusa Tenggara	35	85	16	6	2

As shown in Table 1, the distribution of circumcision age varied considerably across provinces. The majority of procedures were concentrated within the 6–10 years age group in most regions, reflecting a dominant school-age circumcision pattern. Nevertheless, clear regional differences were evident. West Nusa Tenggara exhibited a higher proportion of early circumcision (≤ 5 years), whereas Central Java and East Kalimantan

showed a greater proportion of circumcisions performed at older ages (>10 years). This heterogeneous distribution underscores significant regional variation in circumcision practices.

The most common ages at circumcision also varied by province, ranging from early childhood to late childhood. To further illustrate this pattern, Figure 1 presents the percentage distribution of circumcision by age.

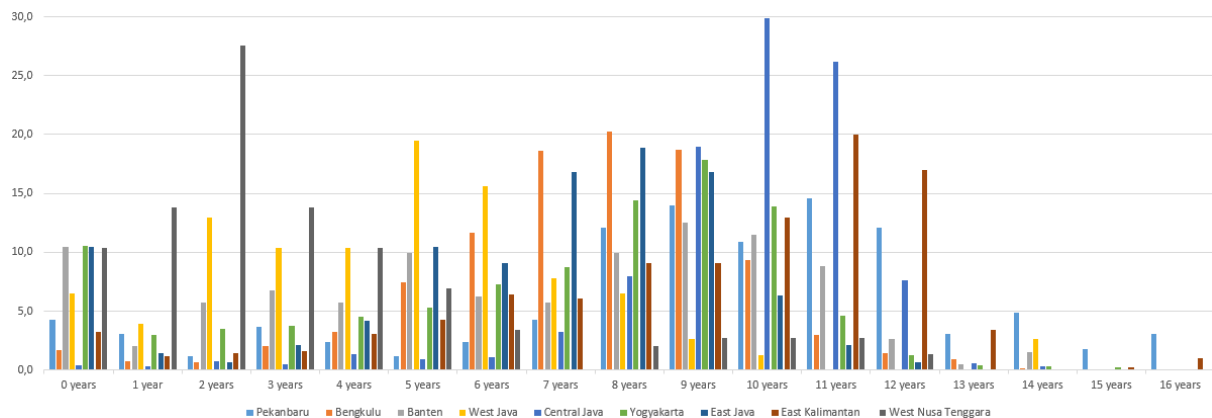


Figure 1. Percentage of Circumcision Based on Age

The data also show that the proportion of circumcision at age 0 years was higher than at other early childhood ages (1–4 years) in several provinces, including Banten, Yogyakarta, East Java, and West Nusa Tenggara. Additionally, circumcision rates peaked between the ages of 8 and 10 years in multiple provinces, with at least five regions demonstrating proportions above 10% within this age range. These findings suggest that circumcision most commonly occurs during the elementary school period within the sampled population.

Higher proportions of early-age circumcision (≤ 5 years) were observed in West Java and West Nusa Tenggara compared to other provinces, indicating a tendency toward earlier circumcision practices in these regions. Circumcision at age 13 years and above was consistently rare across all regions, accounting for less than 5% of cases.

Overall, these findings indicate substantial regional differences in circumcision timing, which may be associated with cultural practices, healthcare access, and economic considerations, as further explored in the qualitative analysis.

C. Determinants Of Circumcision Age Decision

The decision regarding circumcision timing appears to be influenced by a complex interplay of cultural, medical, and family-related considerations. In this study, the majority of participants circumcised their sons during elementary school age, reflecting a dominant practice within the sampled population. However, previous literature suggests that circumcision performed during infancy has been associated with several potential medical and economic advantages (Morris et al., 2024).

Cultural and social environments play a significant role in shaping parental decision-making. In many Indonesian communities, circumcision is closely associated with social identity, maturity, and tradition. As a result, parents often follow the prevailing norms within their communities when determining the timing of circumcision. For instance, in Javanese communities, circumcision is commonly performed during elementary school age, which influences parental perceptions regarding the “appropriate” timing (Iswara, 2019).

(I3) “For me, the best age for circumcision is during elementary school, when he can express where the pain is. When it's done during babies, I think it's troublesome because he will cry. We don't know where the pain is. However, when he is in elementary school, he can point out the location of the pain. Here, on average, it's around the second or third grade of elementary school when most are circumcised together. Another reason is also related to financial readiness. When the child is older, we usually have more time to prepare the budget for the procedure and the celebration. In our area, circumcision is often accompanied by a small event or gathering, so it requires additional expenses. If it is done during elementary school age, we can plan it better financially.”

Economic considerations play an important role in determining the timing of circumcision. Previous studies have shown that financial barriers, including procedure costs and household income, significantly influence the uptake of circumcision services (Lokorio et al., 2023). Additionally, evidence suggests that financial incentives can increase circumcision uptake, further highlighting the role of economic readiness in decision-making (Ensor et al., 2019).

Parental knowledge and health literacy play a crucial role in determining the timing of circumcision. Previous

studies have shown that parental decisions are strongly influenced by perceived health benefits, cultural norms, and interactions with healthcare providers, while limited knowledge and misinformation may lead to delayed circumcision (Bilgili et al., 2025).

Some parents chose early circumcision based on religious motivations, particularly the desire to follow Islamic teachings (sunnah), which they believe bring spiritual benefits. Previous studies have shown that religion is the primary driver of circumcision decisions in Muslim communities, with most parents considering it a religious obligation (Al-Maghlouth & Zakaria, 2025). This is reflected in interviews with parents who opted for neonatal circumcision due to religious considerations.

(I4) “We just found out that what is following the sunnah is circumcision carried out at an early age. We try to carry out the sunnah that we just learned about. We believe that following the sunnah is the most blessed path and among the guidance of the Prophet Sallallahu Alaihi Wasalam is circumcision at an early age.”

Regional variation observed in this study also reflects differences in cultural practices. Provinces such as West Nusa Tenggara and West Java demonstrated a tendency toward earlier circumcision, while regions such as Central Java and East Kalimantan showed a higher prevalence of delayed circumcision. These differences may reflect variations in cultural norms, religious interpretations, and access to healthcare services.

Parental perceptions of pain and psychological impact also influence decision-making (Al-Maghlouth & Zakaria, 2025). Some parents prefer to delay circumcision until the child is older and able to communicate discomfort, while others prefer earlier procedures to avoid potential psychological distress associated with pain at later ages. These differing

perspectives highlight the subjective nature of parental decision-making.

In addition, traditional practices such as mass circumcision events and culturally embedded rituals (e.g., *masunna* in South Sulawesi) further reinforce the timing of circumcision within specific communities. These practices not only serve religious or health purposes but also function as important social and cultural events that strengthen community bonds. Before reaching adolescence, both boys and girls are obliged to undergo *masunna* as a step to cleanse themselves from impurities inside their bodies (Wahyuni, 2019).

The *masunna* process is usually accompanied by a celebratory ceremony because it is considered an honor that must be announced to the broader community. Circumcisions that do not follow this tradition are deemed incomplete, even if the children have undergone circumcision with a doctor (Wahyuni, 2019). One informant also plans to circumcise his child during elementary school age due to the prevailing *masunna* tradition in the surrounding community.

(I5) "In my time as a child, circumcision was usually done from 8 to 10 years old. In Makassar, there is a myth that if you circumcise a child too young, for example, from 3 to 5 years old, their growth may not be optimal. My sons are aged 2, 6, and 8 years. None of them have been circumcised yet. Maybe they will be circumcised at the age of 10."

The circumcision culture in Central Lombok illustrates the interaction between local cultural and religious factors. Although some community members are aware of the potential benefits of early circumcision, many choose to wait for annual mass circumcision events, which are often conducted in religious settings (Mawlid). These events are not only intended to improve hygiene but are also associated with spiritual values, including

collective prayers and religious rituals (Aulia et al., 2023).

(I6) "In my village, circumcision must be carried out in the mosque during mass circumcision. This is the result of an agreement between residents. No one circumcises independently at home. There is a hospital in Mandalika that holds mass circumcisions, but no one is interested. People are more interested in mass circumcision in mosques because many people pray and *dhikr*."

From an economic perspective, early (neonatal) circumcision may offer potential long-term advantages. Previous studies have suggested that early circumcision is associated with lower procedural costs, shorter recovery time, and reduced risk of complications (Alsowayan, 2024). Furthermore, from an opportunity cost perspective, circumcision performed during infancy minimizes disruption to daily activities, as infants do not yet have educational or social obligations. In contrast, circumcision performed at older ages may result in greater indirect costs, including absence from school and reduced productivity.

These findings can be further understood through established health behavior frameworks, particularly the Health Belief Model (HBM) and the Social Ecological Model (SEM). According to the HBM, parental decisions regarding circumcision timing may be influenced by perceived susceptibility (e.g., risk of infection), perceived benefits (e.g., health and economic advantages), perceived barriers (e.g., fear of pain, financial constraints), and cues to action such as cultural norms and religious teachings (Alyafei & Easton-Carr, 2024). In this study, parents who delayed circumcision often emphasized concerns about pain and financial readiness, whereas those who chose early circumcision were influenced by perceived health benefits and religious motivations.

From a broader perspective, the SEM highlights that health behaviors are shaped not only by individual beliefs but also by interpersonal, community, and societal factors (Prusente et al., 2019). The strong influence of cultural traditions, social expectations, and mass circumcision practices observed in this study reflects the role of community-level and societal-level determinants. For example, traditions such as masunna and communal circumcision events act as reinforcing factors that guide parental decisions beyond purely medical reasoning.

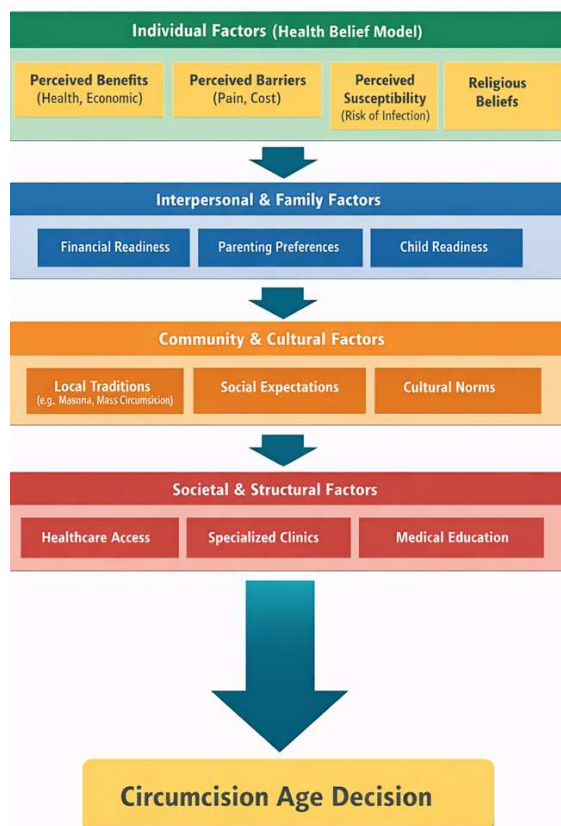


Figure 2. Determinants of Circumcision Age Decision in Indonesia

As illustrated in Figure 2, which presents the conceptual framework of determinants of circumcision age decision in Indonesia, the timing of circumcision is shaped by a complex interaction of factors operating at multiple levels. At the

individual level, as described in the Health Belief Model, parental decisions are influenced by perceived benefits, perceived barriers, and perceived health risks. These individual considerations are further shaped by interpersonal factors such as family financial readiness and parental preferences. At the community level, cultural norms, traditional practices, and social expectations strongly influence perceptions of the appropriate timing of circumcision (Wahyuni, 2019). Meanwhile, structural factors—including access to healthcare services and the availability of circumcision providers—also play an important role (Lokorio et al., 2023). The interaction between these multi-level determinants explains the observed variation in circumcision timing across regions and highlights that parental decision-making extends beyond medical considerations alone.

CONCLUSION

In conclusion, the timing of circumcision in Indonesia is shaped by a complex interaction between medical evidence and socio-cultural factors. While neonatal circumcision has been associated with potential clinical and economic benefits, most procedures in this study were performed during elementary school age, reflecting its role as a cultural and religious rite of passage. These findings underscore that health-related decisions are not solely determined by medical considerations but are deeply embedded within social norms and community practices. Future strategies aimed at promoting early circumcision should adopt culturally sensitive approaches that combine medical education, community engagement, and integration into routine child health services, ensuring that interventions are both evidence-based and socially acceptable.

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