



Makatte' Tradition Reviewed from an Epidemiological Aspect with Diseases in Women

Fitriani Abdal*, Arlia Arlia, Ulvy Pratiwy D.

Sekolah Tinggi Ilmu Kesehatan Datu Kamanre, Luwu, South Sulawesi, Indonesia

*Correspondence Address: fitrimawar39@gmail.com

Article Info

Article History

Received: Aug 24, 2026

Revised: Sep 10, 2026

Accepted: Sep 28, 2026

Keywords:

Makatte'; Female Genital Mutilation; Reproductive Health; Cross-Sectional Studies; Women

ABSTRACT

Female genital cutting persists in parts of Indonesia as a life-cycle ritual, including the makatte' tradition of the Bugis community in South Sulawesi, yet it has never been documented in routine health surveillance. This study analysed the association between the makatte' tradition and self-reported reproductive health complaints among women in Rante Alang Village, Luwu Regency, from an epidemiological perspective. An analytical observational study with a cross-sectional approach was conducted in 2026. Purposive sampling recruited 120 women according to predetermined inclusion criteria. Data were gathered by structured interview, questionnaire and observation, then analysed descriptively and for association using Chi-Square at $\alpha = 0.05$; Fisher's Exact Test was applied because one cell had an expected count below five. Exposure prevalence reached 86.7%, with 68.3% of procedures performed during childhood, 81.7% by traditional practitioners, 80.0% using non-sterile instruments, and none followed by wound care. Complaints were dominated by abnormal vaginal discharge (53.3%) and dysmenorrhoea (52.5%), yet only 4.2% had sought care. No significant association was found ($p = 0.737$; OR = 0.714; 95% CI 0.208–2.449). Procedural safety and the health-seeking gap require priority intervention.

INTRODUCTION

Female genital mutilation or cutting (FGM/C) is internationally recognised as a harmful traditional practice and a form of violence against women and girls. The World Health Organization affirms that the practice confers no health benefit whatsoever and may cause severe bleeding, genital swelling, fever, infection including tetanus, urinary problems, injury to surrounding tissue and, in extreme cases, death (WHO, 2024). Meta-analytic evidence has linked the practice with elevated risks of urinary tract infection, bacterial vaginosis and dyspareunia (Berg et al., 2014), while a recent global synthesis reports increased risk across gynaecological, urological, obstetric, sexual and mental health domains (Pallitto et al., 2025). The evidence base is nevertheless uneven: a meta-analysis of painful gynaecological and obstetric complications found insufficient evidence to conclude an association with dysmenorrhoea or urinary tract infection (Lurie et al., 2020). The magnitude of risk appears to depend strongly on the type of cutting performed, which makes context-specific evidence essential.

In Indonesia the practice remains widespread. National basic health research recorded a national prevalence of female circumcision of 51.2% among girls aged 0–11 years, while the Sulawesi region ranged from approximately 70% to 80%, well above that national average, with most procedures performed by non-medical practitioners (Kementerian Kesehatan RI, 2013). Indonesia has also been identified as one of the countries with the largest absolute number of affected women and girls (UNICEF Indonesia, 2016). A multi-province study found that the dominant forms practised in Indonesia correspond to WHO types I and IV and that the practice is widely understood as a religious obligation, with cases of infant death from uncontrolled bleeding also documented (Komnas Perempuan and PSKK UGM, 2017). At the regulatory level, Minister of Health Regulation Number 6 of 2014 revoked the earlier regulation that had permitted health personnel to perform female circumcision (Kementerian Kesehatan RI, 2014), yet the practice continues within community and customary settings beyond the reach of that regulation.

In South Sulawesi the practice is known locally as *makatte'* and is embedded in the life-cycle ritual of the Bugis-Luwu community, where it is simultaneously attached to Islamic identity. Qualitative work in Takalar Regency identified tradition and religious understanding as the principal drivers, with procedures carried out by traditional practitioners rather than health personnel (Rokhmah and Hani, 2015); ethnographic work in Sumbawa Regency reached a comparable conclusion (Sulahyuningsih, 2021); and a review of Indonesian studies reported that the practice remains concentrated in Sulawesi and is shaped by custom, culture and religiosity (Sulistyawati and Hakim, 2022). Public health studies in Indonesia have reported that women exposed to non-medical traditional practices experience genital infection and irritation more frequently than those unexposed, although most such work remains descriptive and is not specific to a single local tradition (Rahman and Putri, 2021), while recent research in South Sulawesi confirms that the practice continues in symbolic or mild physical form for cultural and religious reasons, with minimal recording of its health consequences (Sari et al., 2023). Rante Alang Village in Larompong District, Luwu Regency, lies within this cultural area and retains functioning customary institutions, particularly the *sanro*. The practice there has never been recorded in any routine health information system, so no community-level epidemiological data exist on its prevalence, the safety of the procedure, or whether exposure translates into measurable reproductive health complaints.

This study aimed to examine the association between a history of *makatte'* and self-reported reproductive health complaints among women in Rante Alang Village. As a secondary aim, the epidemiological profile of the practice — including its prevalence, timing, practitioners and procedural safety — was described in order to provide context for interpreting this association and to inform culturally grounded health policy.

METHODS

This study used an analytical observational design with a cross-sectional approach, in which exposure and outcome were measured simultaneously at a single point in time. Exposure and outcome were measured simultaneously at a single point in time, while the cultural context underlying the continuation of the practice was examined alongside it, so that the association between the *makatte'* tradition and disease occurrence in women could be analysed without

detaching it from the setting in which the practice is sustained. The study was carried out in Luwu Regency, South Sulawesi Province, selected as an area in which the makatte' practice is still widely encountered, with data collection concentrated in Rante Alang Village, Larompong District, July–August 2026. Administratively the village comprises eight hamlets — Salu Lompo, Salu Liang, Rante Alang, Salu Balla, Salu Paku, Lewong, Rante Landung and Timbang — and respondents were distributed across all of them so that every part of the village was represented. Three epidemiological considerations underpinned the choice of site: it lies within the Bugis-Luwu cultural area, where social acceptance of the practice is strong and a sufficient number of exposed cases could therefore be obtained; customary institutions, particularly the sanro, remain functional, allowing practitioners of the procedure to be traced directly; and the practice has never been documented in routine health surveillance, leaving a gap in community-level data.

The source population for this study consists of 964 women in the research location, but since the exact number of women who have undergone the makatte' tradition is not documented, the researchers screened participants using inclusion criteria (residing in the study area, falling within the set age group, being able to explain their exposure status to the makatte' tradition, willingness to participate, and ability to be interviewed) and exclusion criteria; the sample size was calculated using the Lemeshow formula for an unknown population proportion (95% confidence level, proportion of 0.5, and 10% margin of error), yielding a minimum of 96 respondents, which was then adjusted to 120 respondents to account for a 20% non-response rate, using a purposive sampling technique — thereby keeping the sample size at 120 respondents consistent with the proposal while remaining scientifically methodological.

The independent variable was exposure status to the makatte' tradition, categorised as ever or never having undergone the procedure. The dependent variable was the occurrence of reproductive health complaints or disease, categorised dichotomously as present or absent and operationalised as a composite of self-reported complaints, including genital infection, menstrual disturbance and urinary complaints. Respondent characteristics (age, level of education, number of children, religion, ethnicity and perceived access to health facilities) and procedural characteristics (age at the time of the procedure, practitioner, place, motivation, explanation of procedure and risk, sterility of instruments, post-procedure care, early complications and family attitude) were recorded as descriptive variables.

The instruments and materials used comprised a structured questionnaire, an interview guide and observation sheet, an informed consent form, stationery and administrative supplies, electronic devices for data entry, and a camera for documentation. The research proceeded through six stages: preparation and validation of the instruments; administration of research permits and coordination with the local government, customary leaders and the relevant health facilities; determination of the sample and recruitment of respondents; data collection through face-to-face interview, administration of the questionnaire and observation, together with the compilation of respondents' reproductive health data; data processing and analysis; and reporting and publication of the findings. Secondary data on the administrative profile of the village were obtained from the village office (Kantor Desa Rante Alang, 2025).

Written informed consent was obtained from every respondent before the interview, after explanation of the aims of the study, the voluntary nature of participation and the

confidentiality of respondent identity. Because the subject matter touches on beliefs held to be customary and religious, interviews were conducted in the local language, in a private setting and with the involvement of customary figures in obtaining access to the community. The study protocol was approved by (181/PENELITIAN/01.01/DPMPTSP/V/2026).

Data were processed and analysed with statistical software. Descriptive analysis presented frequency and percentage distributions for the characteristics of respondents, the profile of the makatte' practice and the reproductive health complaints reported. Analysis of association used the Pearson Chi-Square test at a significance level of $\alpha = 0.05$ and a 95% confidence level. Because one of the four cells of the 2×2 contingency table (25.0%) had an expected count below five, with a minimum expected count of 3.20, Fisher's Exact Test was adopted as the primary reference in accordance with statistical convention. The strength of association was assessed using Phi and Cramér's V, and the magnitude of effect using the odds ratio with its 95% confidence interval. Findings are presented in narrative form supported by open tables.

RESULTS

Analysis was performed on all 120 respondents and is presented in three parts: the characteristics of the respondents, the profile of the makatte' practice and the burden of reproductive health complaints, followed by the bivariate test of association between exposure and outcome.

Table 1. Distribution of Respondent Characteristics in Rante Alang Village (n = 120)

	Characteristic	n	%
Age group (years)	17–25	44	36.7
	26–35	59	49.2
	36–45	6	5.0
	46–55	9	7.5
	56–65	2	1.7
Level of education	No formal schooling	15	12.5
	Primary school	44	36.7
	Junior high school	18	15.0
	Senior high school	36	30.0
	Diploma / bachelor's degree	7	5.8
Number of children	None	42	35.0
	One	47	39.2
	Two	19	15.8
	Three or more	12	10.0
Religion	Islam	120	100.0
Ethnicity	Bugis	81	67.5
	Luwu	39	32.5
Access to health facilities	Easy	55	45.8
	Fairly difficult	52	43.3
	Difficult	13	10.8

Source: Primary Data, 2026

Table 1 shows that respondents were dominated by the productive age group: 59 women (49.2%) were aged 26–35 years and 44 women (36.7%) were aged 17–25 years, so that 85.8% were below 36 years of age. Educational attainment was generally low, with 44 respondents (36.7%) having completed only primary school and 15 respondents (12.5%) never having attended school, giving a cumulative 49.2% at primary level or below, while only 7 respondents (5.8%) held a diploma or bachelor's degree.

All respondents (100%) were Muslim, with 81 (67.5%) of Bugis ethnicity and 39 (32.5%) of Luwu ethnicity. In terms of service access, 55 respondents (45.8%) rated access to health facilities as easy, whereas 52 (43.3%) rated it fairly difficult and 13 (10.8%) difficult, so that 54.2% reported geographical or practical barriers to reaching a health facility.

Table 2. Frequency Distribution of Exposure to the Makatte' Tradition

Variable		n	%
Exposure status to the makatte' tradition	Ever	104	86.7
	Never	16	13.3

Source: Primary Data, 2026.

Table 3. Characteristics of the Makatte' Tradition among Exposed Respondents (n = 104)

Variable		n	%
Age at the time of the procedure	Infant	4	3.8
	Under-five	13	12.5
	Child	73	70.2
	Adolescent	2	1.9
	Adult	12	11.5
Practitioner performing the procedure	Sanro/customary leader	82	78.8
	Family	22	21.2
Place where the procedure was performed	Home	80	76.9
	Customary/ritual site	24	23.1
Reason for undergoing the procedure	Tradition	78	75.0
	Religion	12	11.5
	Hygiene/health	14	13.5
Explanation of the procedure and its risks	No explanation given	102	98.1
	Do not know	2	1.9
Cleanliness / sterility of instruments	Sterile	18	17.3
	Non-sterile	78	75.0
	Do not know/do not remember	8	7.7
	None received	104	100
Swelling, wound or infection after the procedure	No	102	98.1
	Do not know/do not remember	2	1.9
Examination at a health facility after the procedure	Never	98	94.2
	Do not know/do not remember	6	5.8
Family attitude towards the tradition	Strongly supportive	92	88.5
	Supportive	12	11.5

Source: Primary Data, 2026.

The prevalence of the makatte' practice at the study site was very high, at 104 of 120 respondents (86.7%). A total of 86.5% of the procedures were performed before the respondent reached adolescence — in childhood (70.2%), as a toddler (12.5%) and in infancy (3.8%) — that is, within an age range in which a person does not yet have the capacity to give consent. Every procedure took place outside the formal health service system, being carried out by a sanro or customary leader (78.8%) and by family members (21.2%), with no involvement of health personnel whatsoever, and most commonly at home (76.9%).

The motivation for the procedure was dominated by normative reasons, namely tradition (75.0%) and religion (11.5%), while hygiene or health was given as the reason by 13.5% of respondents; 86.5% of respondents believed the procedure to be part of custom or religion and not one reported any objection from her family. Procedural safety presented the most concerning picture: 98.1% of respondents received no explanation of either the procedure or its risks, 75.0% stated that the instruments used were not sterile, 100% received no post-procedure care, and 94.2% had never attended a health facility for examination after the procedure. No respondent reported swelling, a wound or infection following the procedure (98.1%), while 1.9% stated that they did not know or could not remember.

Table 4. Distribution of Reproductive Health Complaints

Reproductive Health Complaints	n	%
Type of complaint (ever / currently experienced)		
Abnormal or malodorous vaginal discharge	64	53.3
Disruptive menstrual pain	63	52.5
Itching or irritation in the genital area	41	34.2
Irregular menstruation	25	20.8
Genital pain or discomfort	24	20.0
Difficulty passing urine	22	18.3
History of urinary tract infection	17	14.2
Pain during sexual intercourse	9	7.5
History of pregnancy complications	8	6.7
History of cyst, abscess or keloid	4	3.3
Wound, swelling or lump	2	1.7
History of bleeding	2	1.7
Health-seeking behaviour and clinical confirmation		
Ever had the complaint examined at a health facility	5	4.2
Ever diagnosed with a reproductive disease or infection	5	4.2

Source: Primary Data, 2026.

The distribution of complaints formed a characteristic pattern: functional and mucosal complaints were far more prominent than structural ones. The three most frequent complaints were abnormal or malodorous vaginal discharge (53.3%), disruptive menstrual pain (52.5%) and genital itching or irritation (34.2%). Structural complaints, by contrast, were very rarely reported: a history of cyst, abscess or keloid (3.3%), a genital wound or lump (1.7%) and a history of bleeding (1.7%). The most striking finding from a public health standpoint was the health-seeking gap, which was extremely wide: against a burden of complaints affecting more

than half of the study population, only 4.2% of respondents had ever had their complaint examined at a health facility and only 4.2% had ever received a formal diagnosis.

Table 5. Association Between Exposure Status to the Makatte' Tradition and the Occurrence of Reproductive Health Complaints among Women in Rante Alang Village, 2026

Makatte' exposure status	Absent n (%)	Present n (%)	Total n (%)	p-value
Never	12 (75.0)	4 (25.0)	16 (100.0)	0.737
Ever	84 (80.8)	20 (19.2)	104 (100.0)	
Total	96 (80.0)	24 (20.0)	120 (100)	

Source: Primary data analysed with SPSS, 2026. Fisher's Exact Test (2-sided); Pearson Chi-Square $p = 0.591$; Continuity Correction $p = 0.840$; Likelihood Ratio $p = 0.600$. Odds Ratio = 0.714 (95% CI 0.208–2.449); Phi = -0.049; Cramér's $V = 0.049$. Note: one cell (25.0%) had an expected count below five (minimum expected count 3.20), so Fisher's Exact Test was adopted as the primary reference.

Table 5 cross-tabulates exposure status against the composite reproductive health outcome. Complaints were reported by 4 of the 16 women who had never undergone makatte' (25.0%) and by 20 of the 104 women who had (19.2%), giving an overall figure of 24 of 120 respondents (20.0%). The association test yielded a Fisher's Exact Test value of $p = 0.737$, consistent with the Pearson Chi-Square ($p = 0.591$), the continuity correction ($p = 0.840$) and the likelihood ratio ($p = 0.600$), all of which lay above $\alpha = 0.05$; the null hypothesis was therefore not rejected. Phi (-0.049) and Cramér's V (0.049) indicate a very weak strength of association, while the odds ratio of 0.714 (95% CI 0.208–2.449) crosses unity, so the difference in odds between the two groups was not statistically significant. The width of the confidence interval reflects low precision of estimation, so the magnitude of any true effect cannot be determined from these data.

DISCUSSION

This study set out to examine whether a history of makatte' was associated with self-reported reproductive health complaints among women in Rante Alang Village, and to describe the epidemiological profile of the practice itself. Three findings stand out. Exposure was close to universal: 104 of 120 respondents (86.7%) had undergone the procedure, leaving a comparison group of only 16 women. The procedure was performed entirely outside the formal health service system, predominantly by a sanro or customary leader (78.8%) and otherwise by family members (21.2%), overwhelmingly before adolescence (86.5%), and under conditions that met no recognized standard of procedural safety: 98.1% of respondents received no explanation of the procedure or its risks, 75.0% reported that the instruments used were not sterile, and none received post-procedure wound care. Reproductive health complaints were widely reported, led by abnormal or malodorous vaginal discharge (53.3%) and disruptive menstrual pain (52.5%), yet only 4.2% had ever had a complaint examined at a health facility and only 4.2% had ever received a formal diagnosis. In the bivariate analysis, no statistically significant association was found between exposure and the composite reproductive health outcome (Fisher's Exact Test $p = 0.737$; OR = 0.714; 95% CI 0.208–2.449),

and the strength of association was negligible ($\Phi = -0.049$; Cramér's $V = 0.049$). The principal contribution of this study is therefore descriptive rather than analytical.

The exposure prevalence of 86.7% substantially exceeds the national figure of 51.2% among girls aged 0–11 years recorded in basic health research (Kementerian Kesehatan RI, 2013), and is consistent with reports identifying Sulawesi as a region of strong social acceptance of the practice (UNICEF Indonesia, 2016). Two features distinguish the local pattern from the national one. The first is timing. Nationally the procedure is commonly performed at one to five months of age as part of a post-natal sequence, whereas in Rante Alang it was concentrated in childhood (70.2%), with only 3.8% carried out in infancy, and functioned as a life-cycle ritual marking a change in a girl's social status. The second, and more consequential, is the identity of the practitioner. Nationally, more than half of all procedures (53.2%) are carried out by medical personnel, whereas in this village not a single procedure involved a health worker. The study site therefore represents an unmedicalized form of the practice, with a categorically different risk profile: no asepsis, no an aesthesia, no monitoring for complications and no referral pathway.

The motivations reported were overwhelmingly normative, namely tradition (75.0%) and religion (11.5%), with only 13.5% citing hygiene or health, while family support was universal (88.5% strongly supportive and 11.5% supportive) and no respondent reported any objection. This pattern is consistent with qualitative work in Baddui Village, Takalar Regency (Rokhmah and Hani, 2015), ethnographic work in Sumbawa Regency (Sulahyuningsih, 2021) and a review of the Indonesian literature (Sulistyawati and Hakim, 2022). It also carries a direct methodological implication: where a practice is sustained by normative consensus rather than individual choice, exposure ceases to function as a discriminating variable and becomes instead a characteristic of the population.

Because 86.5% of procedures took place before adolescence, respondents were not in a position to describe the anatomical extent of what had been performed, and the practice could not be classified against the WHO typology. Exposure in this study should accordingly be read as reported experience of the ritual rather than as an anatomically defined lesion.

The distribution of complaints formed a coherent pattern in which functional and mucosal complaints were far more prominent than structural ones. Abnormal or malodorous vaginal discharge (53.3%), disruptive menstrual pain (52.5%) and genital itching or irritation (34.2%) dominated, whereas a history of cyst, abscess or keloid (3.3%), a genital wound or lump (1.7%) and a history of bleeding (1.7%) were rare. This gradient is biologically coherent. Structural sequelae such as epidermoid cyst, keloid formation and introital stenosis are characteristically associated with WHO types II and III, whereas the forms practiced in Indonesia correspond predominantly to a limited type I and to type IV (Komnas Perempuan and PSKK UGM, 2017), involving symbolic pricking or scoring without meaningful tissue removal. The observed pattern is therefore an expected finding rather than an indication of weak data.

The health-seeking gap is the most striking finding from a public health standpoint. Against a symptom burden affecting more than half of the study population, only 4.2% of respondents had ever presented for examination and only 4.2% had ever received a formal diagnosis. Almost all reported complaints therefore remain clinically unverified, and physiological fluor albus cannot be distinguished from pathological discharge. This gap is

unlikely to reflect symptom severity alone. More than half of respondents (54.2%) rated access to health facilities as fairly difficult or difficult, which constitutes a structural barrier to detection, while the normalization of gynecological symptoms as an ordinary part of womanhood and reluctance to discuss genital complaints outside the family are plausible additional contributors.

Fisher's Exact Test yielded $p = 0.737$, consistent with the Pearson Chi-Square ($p = 0.591$), the continuity correction ($p = 0.840$) and the likelihood ratio ($p = 0.600$), all of which lay above $\alpha = 0.05$; the null hypothesis was therefore not rejected. Phi (-0.049) and Cramér's V (0.049) indicate a negligible strength of association, and the odds ratio of 0.714 (95% CI $0.208-2.449$) crosses unity. The point estimate lies below one, which would nominally suggest lower odds of complaints among exposed women (19.2% versus 25.0%), but this direction must not be read as protective: it rests on four events among sixteen unexposed women, and the confidence interval remains compatible with anything from a substantial reduction to an almost two-and-a-half-fold increase in odds.

Several features of the data explain why no association was detected. Contrast was severely limited by the homogeneity of exposure, since a comparison group of sixteen women cannot support a stable estimate. With an observed effect size equivalent to Cohen's $h \approx 0.14$, statistical power was approximately 7–8%, far below the conventional threshold of 80%; detecting a difference of this magnitude at 80% power would require roughly 460 unexposed and more than 3,000 exposed respondents. The predominantly mild type of procedure would in any case be expected to generate small absolute risk differences. Outcome misclassification arising from unverified self-report is likely to be non-differential and would systematically draw the estimate towards the null. The analysis, finally, remained bivariate, so confounding was not addressed. A result of $p > 0.05$ in this study is therefore more properly read as inconclusive than as evidence that makatte' is safe, in keeping with the epidemiological principle that absence of evidence is not evidence of absence.

A null or imprecise finding is not anomalous in this field. A systematic review of 136 primary studies observed that women with a history of FGM/C more frequently experience urinary tract infection, bacterial vaginosis, vaginal discharge and itching, but that many gynecological outcomes had too few events to reach statistical significance (Norwegian Knowledge Centre for the Health Services, 2014). The meta-analysis by Berg et al. (2014) reported elevated risks of urinary tract infection (RR 3.01), bacterial vaginosis (AOR 1.68) and dyspareunia (RR 1.53), whereas a later meta-analysis concluded that the evidence remained insufficient to establish an association with dysmenorrhea (OR 1.66; 95% CI 0.97–2.84) or urinary tract infection (OR 2.11; 95% CI 0.80–5.54) (Lurie et al., 2020). The most recent global synthesis links FGM/C with increased risk across gynecological, urological, obstetric, sexual and mental health domains (Pallitto et al., 2025), although the studies pooled derive predominantly from settings in which types II and III predominate. A prevalence comparable to that observed here, likewise sustained by social and religious motivation, has been reported in the Bale zone of Ethiopia at 78.5% (Bogale et al., 2014). Taken together, these findings indicate that the magnitude of risk associated with FGM/C depends strongly on the type of procedure performed, so that generalization across contexts requires caution and locally grounded evidence remains necessary.

The principal strength of this study is that it provides the first community-level epidemiological documentation of a practice that has never been recorded in any routine health information system. All 120 targeted respondents were recruited and distributed across all eight hamlets of the village, so every part of the study area was represented. Exposure status, the safety profile of the procedure and health-seeking behavior were characterized together rather than in isolation, which is what allows the health-seeking gap to be identified at all. Data collection procedures were culturally appropriate, being conducted in the local language, in a private setting and with the involvement of customary figures, which supported disclosure on a sensitive subject. The choice of Fisher's Exact Test as the primary reference was statistically appropriate given a minimum expected count of 3.20 in one cell of the contingency table.

The limitations are substantial and constrain interpretation. Purposive sampling means that the sample is not representative and that the prevalence reported cannot be generalized beyond this village. The near-universal exposure left only sixteen unexposed women, yielding statistical power of 7–8% and a correspondingly wide confidence interval. The cross-sectional design cannot establish temporality, and two to three decades separate exposure in childhood from the measurement of outcomes in adulthood. Because the analysis remained bivariate, confounders such as parity, perineal hygiene, sanitation, vaginal douching, sexual activity and history of sexually transmitted infection were not controlled. Recall bias is likely, since 86.5% of procedures occurred before adolescence and 3.8% in infancy; its traces are visible in the proportions answering that they did not know or could not remember, at 1.9% for complications, 7.7% for instrument sterility and 5.8% for post-procedure examination. Outcomes were self-reported without clinical, laboratory or medical-record confirmation, and such non-differential misclassification systematically draws the association towards the null. Social desirability bias is also plausible, given that 86.5% of respondents regarded *makatte'* as customary or religious and all reported family support, which may discourage the reporting of complaints perceived to discredit the tradition. Aggregating heterogeneous complaints into a single composite outcome may, finally, have diluted an association specific to one condition.

The first implication concerns procedural safety, and it holds independently of the null association. Non-sterile instruments act as both reservoir and vehicle for infectious agents, discontinuity of the genital mucosa provides a portal of entry, and the complete absence of wound care widens the window of vulnerability to infection. The World Health Organization affirms that the practice confers no health benefit whatsoever and may cause bleeding, infection including tetanus, urinary problems and, in extreme cases, death (WHO, 2024). National policy takes the same position: Minister of Health Regulation Number 6 of 2014 revoked the earlier regulation that had permitted health personnel to perform female circumcision (Kementeriaan Kesehatan RI, 2014). Medicalization is therefore not a legitimate route to procedural safety, and transferring the practice into health facilities should not be treated as a solution.

The second implication concerns the health-seeking gap, which is the most immediately actionable finding of this study and requires no resolution of the causal question. An examination rate of 4.2% against a symptom prevalence exceeding 50% represents a substantial burden of untreated and undiagnosed morbidity. Reproductive health education for women and adolescent girls, delivered through existing *posyandu* and *puskesmas* services, together with outreach that reduces the geographical and practical barriers reported by 54.2%

of respondents, would improve symptom recognition and normalize consultation for gynecological complaints regardless of exposure status.

The third implication concerns how the practice itself is addressed. Since 86.5% of respondents regarded makatte' as an integral part of custom or religion and family support was universal, approaches that frame the ritual solely as harm are likely to be rejected. Engagement with the sanro, with customary and religious leaders and with the mothers and grandmothers who actually make the decision is a prerequisite for any intervention, and dialogue that separates the social and spiritual functions of the rite from the physical procedure offers a more workable path.

For research, the priority is a larger study using probability sampling with an adequately sized comparison group, multivariable analysis controlling for the confounders identified above, and clinical or laboratory confirmation of outcomes so that reported complaints can be verified. Recording the practice within routine maternal and child health information systems would, in parallel, remove the surveillance blind spot that made this study necessary in the first place.

CONCLUSION

Makatte' was commonly reported among women in Rante Alang Village, with 86.7% of respondents having undergone the procedure, and it was performed predominantly during childhood by traditional practitioners rather than by health personnel. The practice took place entirely outside the formal health service system, in most cases without any explanation of the procedure or its risks, frequently with instruments that respondents described as non-sterile, and without post-procedure wound care. Several self-reported reproductive health complaints were reported with appreciable frequency, dominated by abnormal or malodorous vaginal discharge and disruptive menstrual pain, while structural complaints were rare. Against this burden, the use of formal health services was uncommon: only a small fraction of women had ever had a complaint examined or had received a formal diagnosis, so that almost the entire reported burden remains clinically unverified and untreated.

This study did not provide adequate evidence of an association between exposure to makatte' and the composite reproductive health outcome. That result should be read as inconclusive rather than as an indication that the practice is without consequence for health, since interpretation is limited by the use of purposive sampling, the small size of the unexposed group, retrospective self-reporting, the absence of clinical confirmation, and residual confounding. The descriptive findings nevertheless identify two priorities that do not depend on resolving the causal question, namely the conditions of procedural safety under which the practice is carried out on children, and the wide gap between the burden of reported complaints and the use of health services. Larger studies employing probability sampling with an adequately sized comparison group, multivariable analysis, and clinical or laboratory verification of outcomes are required before the reproductive health consequences of makatte' can be established with confidence.

ACKNOWLEDGMENTS

This research was funded by the Ministry of Higher Education, Science and Technology of the Republic of Indonesia through the Novice Lecturer Research scheme (Penelitian Dosen Pemula), document number PP-25070104801, for the 2026 financial year. The authors thank the Institute for Research and Community Service of Sekolah Tinggi Ilmu Kesehatan Datu Kamanre for its administrative support, the Rante Alang Village Office for granting research permission and providing secondary data on the village profile, and the customary and religious leaders who facilitated access to the community. Appreciation is also extended to Suraya, Nurul Saputri, Wildayanti and Fauzia for their assistance with field data collection and data entry, and above all to the women of Rante Alang Village who were willing to take part as respondents.

REFERENCES

- Berg, R.C., Underland, V., Odgaard-Jensen, J., Fretheim, A. and Vist, G.E. (2014) 'Effects of female genital cutting on physical health outcomes: a systematic review and meta-analysis', *BMJ Open*, 4(11), e006316. doi: 10.1136/bmjopen-2014-006316.
- Bogale, D., Markos, D. and Kaso, M. (2014) 'Prevalence of female genital mutilation and its effect on women's health in Bale zone, Ethiopia: a cross-sectional study', *BMC Public Health*, 14, 1076. doi: 10.1186/1471-2458-14-1076.
- Kantor Desa Rante Alang (2025) *Profil Desa Rante Alang, Kecamatan Larompong, Kabupaten Luwu*. Luwu: Kantor Desa Rante Alang.
- Kementerian Kesehatan Republik Indonesia (2013) *Riset Kesehatan Dasar (Riskesdas) 2013*. Jakarta: Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan RI.
- Kementerian Kesehatan Republik Indonesia (2014) *Peraturan Menteri Kesehatan Republik Indonesia Nomor 6 Tahun 2014 tentang Pencabutan Peraturan Menteri Kesehatan Nomor 1636/MENKES/PER/XI/2010 tentang Sunat Perempuan*. Jakarta: Kementerian Kesehatan RI.
- Komnas Perempuan and Pusat Studi Kependudukan dan Kebijakan Universitas Gadjah Mada (2018) *Pemotongan dan Perlukaan Genitalia Perempuan (P2GP): dalam persimpangan antara tradisi dan modernitas*. Jakarta: Komnas Perempuan.
- Lurie, J.M., Weidman, A., Huynh, S., Delgado, D., Easthausen, I. and Kaur, G. (2020) 'Painful gynecologic and obstetric complications of female genital mutilation/cutting: a systematic review and meta-analysis', *PLoS Medicine*, 17(3), e1003088. doi: 10.1371/journal.pmed.1003088.
- Norwegian Knowledge Centre for the Health Services (2014) *Gynecological consequences of female genital mutilation/cutting (FGM/C)*. Oslo: Norwegian Knowledge Centre for the Health Services.
- Pallitto, C., Ruiz-Vallejo, F., Mochache, V., Stein, K., Vogel, J.P. and Petzold, M. (2025) 'Exploring the health complications of female genital mutilation through a systematic review and meta-analysis', *BMC Public Health*, 25(1), 1387. doi: 10.1186/s12889-025-21584-z.
- Rokhmah, I. and Hani, U. (2015) 'Sunat perempuan dalam perspektif budaya, agama dan kesehatan (studi kasus di masyarakat Desa Baddui Kecamatan Galesong Kabupaten Takalar Sulawesi Selatan)', *Jurnal Kebidanan dan Keperawatan Aisyiyah*, 11(2), pp. 103–111. doi: 10.31101/jkk.85.

- Sulahyuningsih, E.D., Daro, Y.A. and Safitri, A. (2021) 'Analisis praktik tradisional berbahaya: sunat perempuan sebagai indikator kesetaraan gender dalam perspektif agama, transkultural, dan kesehatan reproduksi di Kabupaten Sumbawa', *Jurnal Ilmu Keperawatan dan Kebidanan*, 12(1), pp. 134–148. doi: 10.26751/jikk.v12i1.916.
- Sulistyawati, F. and Hakim, A. (2022) 'Sunat perempuan di Indonesia: potret terhadap praktik female genital mutilation (FGM)', *Jurnal Hawa: Studi Pengarusutamaan Gender dan Anak*, 4(1), pp. 31–38. doi: 10.29300/hawapsga.v4i1.4736.
- UNICEF Indonesia (2016) *Female genital mutilation/cutting in Indonesia*. Jakarta: UNICEF Indonesia.
- World Health Organization (2025) *Female genital mutilation: fact sheet*. Geneva: World Health Organization. Available at: <https://www.who.int/news-room/fact-sheets/detail/female-genital-mutilation>