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Male infant circumcision and associated factors in Konso Zone Southern Ethiopia: community based survey

Goye Orkaido Berisha[1], Berhan Tsegaye Negash[1*] and Zemenu Yohannes Kassa[1]

Abstract

Background Infant male circumcision reduces urinary tract infections during infancy and sexually transmitted infections during adulthood. However, people in varous communities challenge male infant circumsizion in Ethiopia. Data regrading male infant circumsion is crucial component of designing preventive strategy, resource allocation and planning mainly in rural communities. Despite its importance, no study is conducted on male infant circumsion practice and associated factors in the study setting so far.

Objective To assess prevalence and factors associated with male infant circumcision in Konso Zone, South Nation Nationality People Regional State of Ethiopia, in 2022.

Methods and materials Community-based cross-sectional survey was conducted among randomly selected districts in Konso Zone, Southern Nation Nationality and Peoples Regional States, Ethiopia, from 30 June to 30 July 2022. A multi-stage sampling technique was applied to enrol study subjects. Data was collected through face-to-face interviews using a structured questionnaire. Then, it was entered into epi-data 4.6 and exported to STATA version 14 for analysis. Descriptive statistics were presented using tables,charts and texts. Bivariate and multivariable logistic regression analysis were used to evaluate association between each independent variable and dependent variable. All explanatory variables with *P*-value less than 0.25 in bivariate regression were fitted into multi-variable regression. Variables whose *P*-value less than 0.05 with 95% confidence intervals (CI) was used to declare statically significance.

Results Prevalence of male infant circumcision was 24.9% in this study. Factors such as women with good knowledge of male circumcision (AOR = 7.3; 95% CI: 4.3, 12.5), women age more than 36 years (AOR = 2.2; 95% CI: 1.1, 4.3) and women with a favourable attitude to male circumcision (AOR = 9.2; 95% CI: 4.5, 18.8) were significantly associated with male infant circumcision practice in this study.

Conclusion Prevalence of male infant circumcision was lower in this study compared to national threshold. Women knowledge towards male infant circumcision, aged more than 36 years, and women with favourable attitude to male circumcision are factors positively associated with male infant circumcision. Hence, stakeholders should empower women using health education about male infant circumcision and mobilise the community.

Keywords Practice, Infant male Circumcision, Konso, Ethiopia

Abberevation

HIV: Human Imunne Virus.
USA: United States of America.
MIC: Male Infant Circumsion.
COR: Crude Odds Ratio.

*Correspondence:
Berhan Tsegaye Negash
birieman67@gmail.com
[1] College of Medicine and Health Science, Hawassa University, Hawassa, Ethiopia

AOR: Adjusted Odds Ratio.
SPSS: Statstical Package for Social Science.
VIF: Variance Inflation Factor.
CI: Confidence Interval.
UTI: Urinary Tract Infection,SDG-Sustainabele Development Goal.
ANC: Ante Natal Care.
SNNPR: Southern Nation Nationalities Peoples Regional State.
IRB: Institutional Review Board.

Background

Male infant circumcision is the surgical removal of some or all parts of penis's foreskin(prepuce), and recognized as the oldest recorded human surgical practice [1, 2]. It is one of the common procedures in the world. It is often deeply embedded in cultural and religious traditions [3]. According obstetricians and paediatricians, the best time is during the child's first year, as it is simpleast procedure with fewer complication, low cost, and faster recovery compared to circumsion performed in childhood or adulthood [13, 14].

Early infant male circumcision (EIMC) offrers several advantage over circumsion performed in later life, including lower costs, fewer side effects, a simpler technical operation [4] and decreased missed work and school; due to these advantages, some countries integrated the services with perinatal services [5, 6]. Existing evidence shows that the health benefits of male circumcision outweighs the risks. The specificmedical benefits obtained from male circumsion included the following: improved hygiene, reduced incidence of urinary tract infection (UTI) [7], sexually transmitted infections (STI) [8], penile cancer, and phimosis, and reduced incidence of human papillomavirus-related cervical cancer in female sexual partners [9–11]. Additionally, male circumcision reduces the transmission of HIV, prostate cancer and penile dermatoses [11, 12] and prevents balanitis during childhood [13].

The complication rates of the procedure range between 0.19% and 3.1% [14, 15]. Three randomised controlled trials (RCT) in Africa showed that male circumcision reduced the risk of HIV infection by 50% to 60% [16]. On the contrary, Complications with circumcision, like with any surgical procedure[17, 18]. Although some acute complications are rare, Early (intra-operative) problems include discomfort, hemorrhage, edema, or insufficient skin removal are frequently modest and curable. However, if the glans is not protected during the treatment, major complications could arise, leading to death from excessive bleeding and glans penis amputation[19–21]. Pain, wound infection, the development of a skin bridge between penile shaft and glans, infection, urinary retention, meatal ulcer, meatal stenosis, fistulas, loss of penile sensitivity, sexual dysfunction, and glans penis edema are examples of late (post-operative) problem [22]. On the contrary, other findings stated that male circumcision does not appear to penile sexual function/sensitivity or sexual satisfaction.

Globally, one in three males are circumcised. Despite universal coverage of male infant circumsion in some areas, the coverage is low still in some other settings [23]. Among male population, nearly one-quarter is circumcised making it one of the top surgical procedure [24, 25].

The prevalence of male circumcision uptake in Ethiopia stands at 61.2% [26]. The decision to circumcise an infant is a multifaceted decision influenced by the parents' race, ethnicity, insurance status, socioeconomic situation, hospital type, place of residence, and healthcare provider practises, among many others [3, 27]. Furthermore, older maternal age, older paternal age, having attended antenatal care, and infants' fathers being circumcised were significantly associated with neonatal male circumcision [28]. Globally, 37% to 39% of men worldwide estimated to have been circumcised for religious, cultural, medical, and public health reasons [16]. Infant circumcision is one of the methods used to lower the prevalence of HIV in order to achieve Sustainable Development Goal (SDG) 3, which aims to ensure healthy lives and promote well-being for all ages by preventing HIV/AIDS[29]. Information about male infant circumcision is paramount for effective and efficient implementation of public health programs and intaitives.

Therefore, this study serve as resource for stakeholders to implement interventions at increasing infant circumcision. The objective of this study to evaluate prevalence and factors associated with male infant circumcision in the Konso zone, Southern Ethiopia.

Methods and materials

Study area and period

This study was carried out from 30 June to 30 July,2022, at Konso zone. Konso zone is located at Southern Nation Nationalities and peoples Regional State (SNNPRS) of Ethiopia. It is approximately 640 km SouthWest of Addis Ababa, the nations' capital. The zone comprises five districts and 43 Kebeles(sub-districts). With only two of these being urban. The total population of Konso is 301,757,including 31,757 women of reproductive age group. The child population is estimated to be 16,698 with nearly half (49%) being male infants. Konso zone has two district hospitals, 14 health centers, and 65 health posts. The primary livelihood of the people in Konso is a mixed farming, which includes small livestock holdings complemented crop cultivation (See Fig. 1).

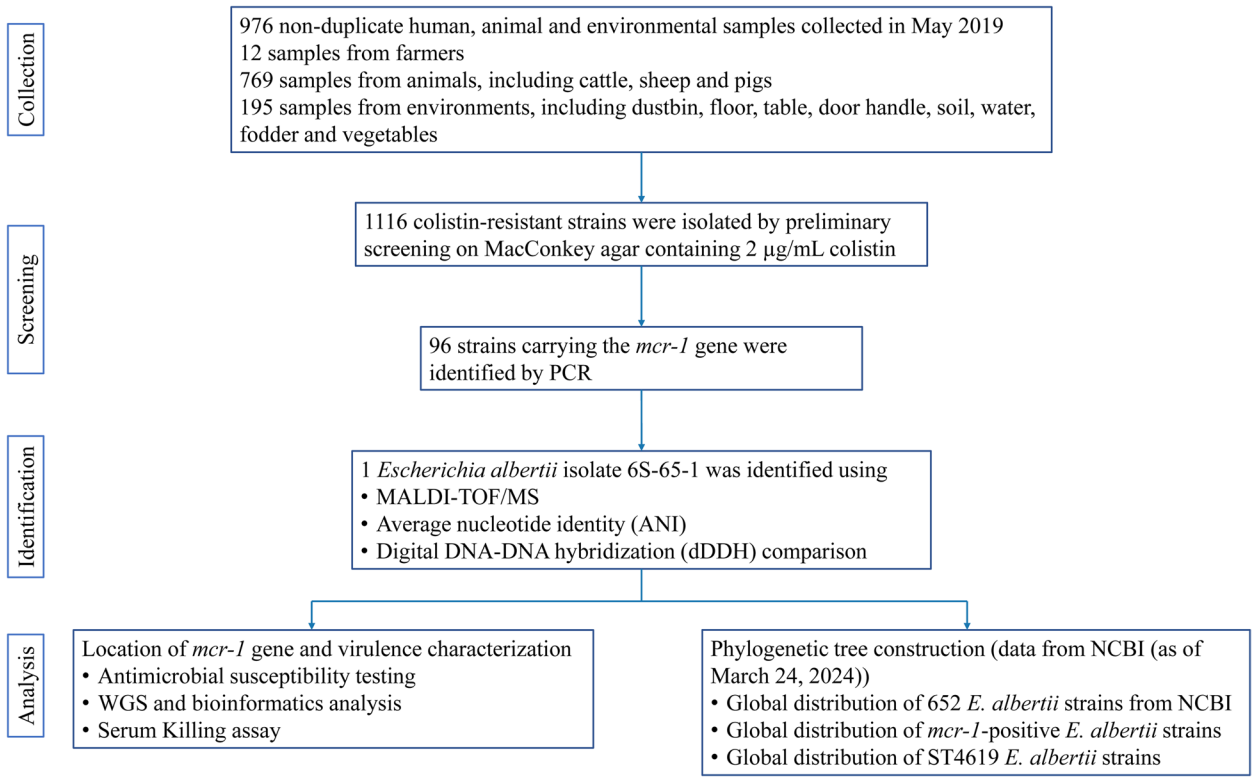


Fig. 1 …

Study design and population

A quantitative, community-based cross-sectional study was carried out with randomly selected women of reproductive age who had given birth within the 12 months leading up to the data collection period.The source population comprised infants and their legal representantives (legal guardian) in Konso zone. The study population included mothers (legal representative) of infants residing in the selected districts and Kebeles (sub-districts) who were presented during data collection period.. However, women who had lived in the study area less than 6 months,and women who had communication problem were excluded from the study.

Sample size calculation and sampling procedure

The sample size was calculated using EpiInf software version 7 StatCalc. A single proportion formula was used,with the following assumptions: A prevalence of male infant circumsion was taken as 50% (No study has done before),95% confidence interval (CI), 5% margin of error (absolute level of precision).

The standard chocran formula(:$n = z^2\ pq/d^2$) was applied, and by pluging these value into formula, an intail sample size of 384 was obtained. To account the design effect, the sample size was multipliedby 1.5 and an additional 10% was added to compensate for potential non response, This resulted in the final sample size 634. The sample size was also computed using factors associated with male infant circumsion from prevous similar studies and the largest calculated sample size was applied in the study (See Table 1).

Konso zone was selected intentionally as a study site by considering the cultural malpractice of male infant circumsion and lack of previous researches related to the topic. A multistage (two-stage) sampling technique was used to select the study participants from thecommunities.

In the first stage, the kebeles were based on residence and selected proportionality using simple random sampling. Out of five districts in Konso Zone, samples was collected from 30–40% of Kebeles,specically from Karate and Karat Zuria districts. In the second stage, households with infants were identified using community health workers' registration book.

Systematic random sampling technique was done to select the study units. The K-value was calculated by dividing the estimated population by sample size (K = 1129/634 = 1.8) selecting every second household; Data collection until the desired sample size was obtained. In the household with more than one infant,

Table 1 Sample size calculation based on different factors associated with infant male circumcision, Ethiopia, 2022

Factors	OR	Prevalence	Power	CT	Ratio	Sample	Reference
Age	0.44	34.8	80	95%	1:1	222	(Waters et al. 2013)
Religion	6.92	90.7%	80	95%	1:1	68	(Walcott et al. 2013)
Newborns are too little to be circumcised	1.75	33.3%	80	95%	1:1	344	(Sorokan et al. 2015)

simple random sampling was used to select the study unit. Households that were closed during data collection-were revisited 2–3 times before being classified as "non-respondents" (See Fig. 2).

Study variables

Figure 3 display the logical pluasablity of the variables in this study. The dependent variable is the practice male infant circumcision,binary outcome. The independent variables were categorized into infant factors, socio-demographic variable, information access variables, and behavoirals factors. The socio-demographic characterstics of parents include the mother's age, mother's religion, mother's education, marital status, and infant's father's age. The information access domain encampasses the source of information about male infant circumcision, such as radio,friends and elders, and facility related factors including the availability circumsion services. The behavioral factors involve the knowledge and attitude of mothers' of infants in the study area. The infant factors include the infants'age in months (See Fig. 3).

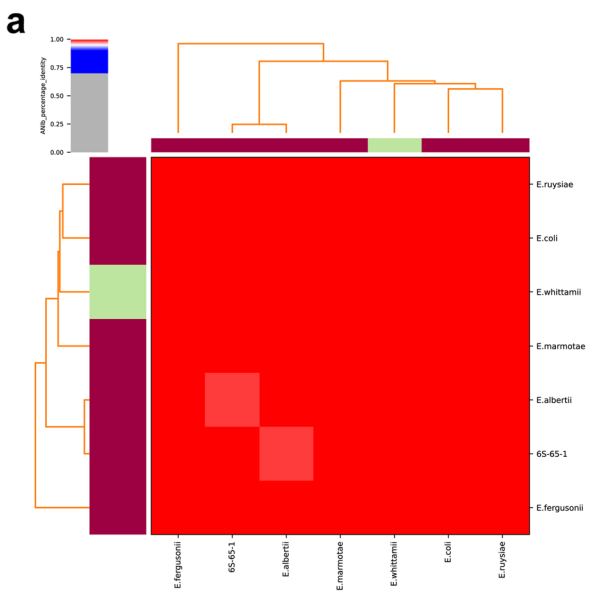
Operational definitions

Knowledge

Knowledge about male infant circumsion was assessed using four items. Each item was coded as '1'for 'yes' '2' for "no"and '3', for "I do not know". The over all response was determined by summing all responses for all items. The the total score was then into binary outcome variable. participants who scored above the median vale were considered as having adequate knowledge and were coded as '1',while those scoring below the median were coded as '0'.

Attitude

Attitude score towards male circumsion was evaluated using 8 items. Study participants received a score of '1'correctly answering an item and '0' for incorrect answers. The overall attitude score was computed by calculating the median, with scores categorized into two groups: '0' for an unfavorable attitude and '1' for a favorable attitude [30].



b

Query genome	Reference genome	DDH	Model C.I.
6S-65-1	*Escherichia fergusonii* (SAMN21218855)	34.2	[31.8 - 36.7%]
	Escherichia coli (SAMN01911278)	40.9	[38.5 - 43.5%]
	Escherichia marmotae (SAMN18536562)	38.8	[36.3 - 41.3%]
	Escherichia ruysiae (SAMN37199584)	39.9	[37.4 - 42.4%]
	Escherichia whittamii (SAMN15803250)	38.7	[36.2 - 41.2%]
	Escherichia albertii (SAMN33094113)	88.5	[86.0 - 90.6%]

All reference genome from NCBI

Fig. 2 Schematic representation of sampling procedure for male infants' circumcision and associated factors

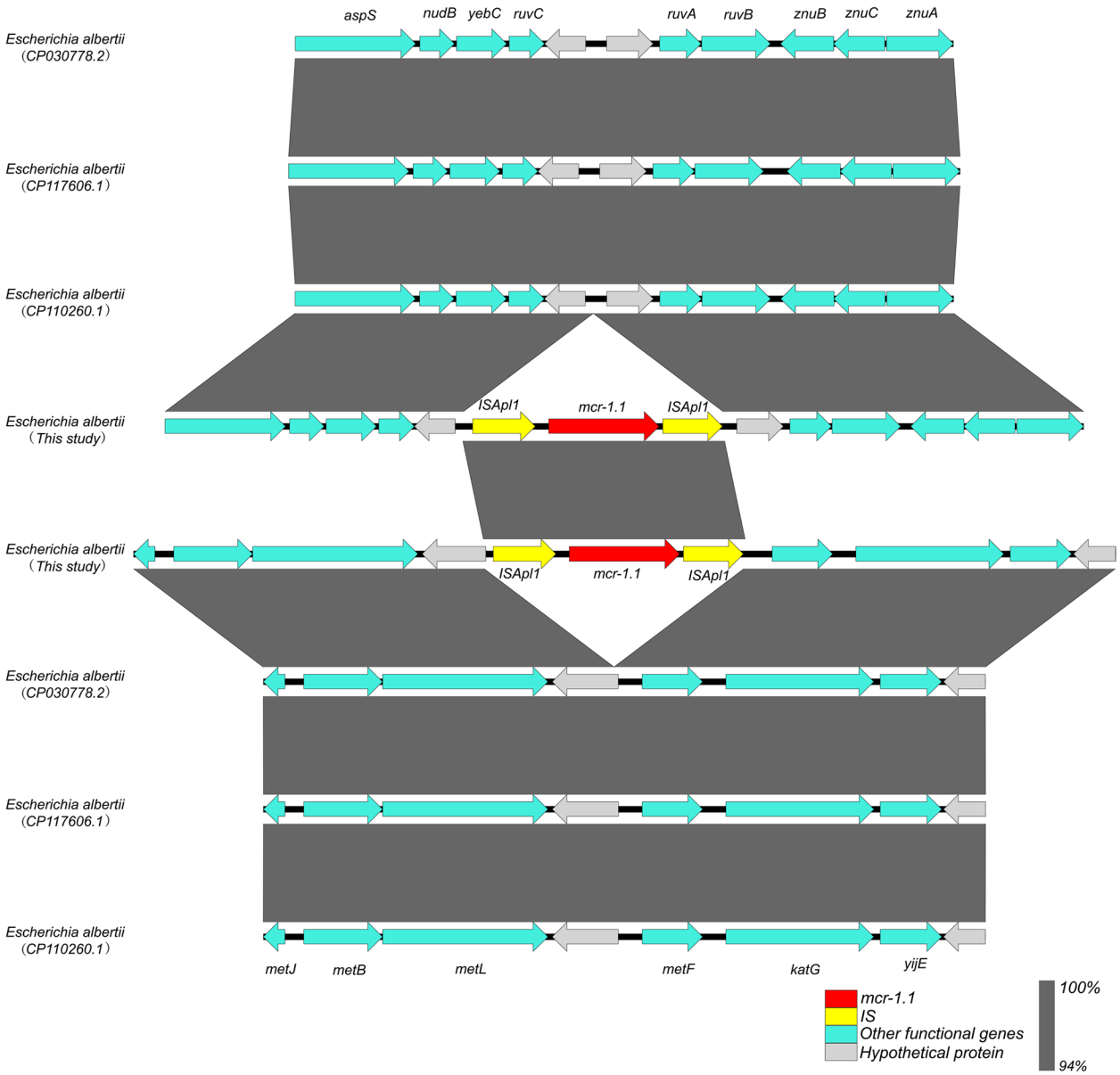


Fig. 3 ...

Data collection tools and procedure

Data were collected by face to face interview using a pretested and structured questionnaire. For developing these questionnaire our study involved a a comprehensive review of existing literature [31–34]. The questionnaire comprised five sections: 1) socio-demographic, 2) information on male infant circumsion, 3) practice of circumcision, 4) knowledge towards male infant circumsion and 5) attitudes towards male infant circumsion are assessed. The socio-demographic section included multiple response questions. Intiallys develop in Englsih. First, the questionnaires was translated translated into Amharic and then back to English to check the consistency. Six diploma level fluent in the local language health professionals fluent in the local language were employed as interviewers,with two BSc midwives serving as supervisors.

Data quality control

The quality of data was assured by proper designing and pre-testing of the questionnaires. Questionare was written in English, translated into local language (Amharic and Konsogna) by a fluent translator. To ensure consistency,It was then translated back to English. It was

pretested on 5% of the total sample size in distric outside of the study area. Based on the pretest findings, necessary modification was promptly made. Data collectors recieved one day training on the questionnaire topics, interviewing procedures, the study's goal, the importance of privacy, discipline, and approach to the interviewers, and the confidentiality of the respondents. Written Informed consent was obtained from each respondent before data collection began. At the end of the day, data collectors, the principal investigator, and supervisors checked data for completeness, accuracy, and consistency, and corrective discussions were undertaken with all the research team members. During the whole period of data collection, the lead investigator and supervisor conducted daily on-site monitoring. Remarks were given during morning times for eliminating or minimising errors and taking corrective actions timely. After completing the data collection process, a questionnaire was checked for completeness, and the required data were categorised and recorded.

Data processing and analysis

The data were manually verified for completeness, coded and entered into Epi data 4.6. before being exported to STATA version 14 for analysis. Descriptive statistics, including frequencies and cross-tabulations, were conducted.Variables with p -value less than 0.05 from chi-square test statstics were analyzed using binary logistic regression. Results were presented using bar charts and pie charts in addition to textsual and tabular formats.Variables with $P<0.25$ in bivariable analysis were included in the final multivariable model to account for potential confoundes. The overall model fit was evaluated with with Hosmer–Lemeshow goodness-of-fit test (P-value = 0.0654) and M = multicollinearity was assessed using Variance Inflation Factor (mean VIF = 1.25). The strength of the relationships between Male Infant Circumsion (MIC), and explanatory variableswas expressed as adjusted odds ratios (AOR) with 95% confidence intervals (CI). P-value *less than* 0.05 was indicative ofa statistically significant association.

Results

Out of a total of 634 study participnats, 599 completed the interview,resulting a response rate of 94.5%. Table 2 details the socio-demographic characterstics study participants. The median age of infants mothers was 27 years,while the median age of the infant was as approximately 6 (SD + 0.23) months. Majorities of the respondents, 90.4%, lived in rural area. Protestant is the dominant religion accounting 72.3%. Nearl all participnats, 99.7%,reported that they are married. Regarding the educational status of the study participants, more than half (51.4%) of them had no formal education (See Table 2).

Information about male infant's circumcision

Figure 4 illustrates the source of information for study participnts in this study. More than three-quarter (75.7%) study subjects had adequate information about male infant circumcision. Among study subjects, only few of them (1.14%) used radio as a source of the information about male infant circumsion in the study setting (See Fig. 4).

Prevalence of male infant circumsion

The finding of this study depicts that the prevalence of infant male circumsion in the study setting is 24.9% (95% CI: 21.7%, 28.53%) (See Fig. 5).

Knowledge of parents about male infant circumsion

Table 3 presents the respondents knowledge about male infant circumcision. The study findings show that approximately 191(30.9%) of the study participants think that one benefit of male infant circumcision is the prevention of urinary tract infections. In contrast, only 18.96% (117) of the respondents recognize that male circumcision can lower the risk of sexually transmitted infections (STIs), including HIV. Additionally, the majority of participants, 87.52% (540), are unsure whether circumcision decreases a woman's risk of developing cervical cancer later in life. Only a small fraction, 9.72% (60), acknowledge that male infant circumcision can reduce the risk of penile cancer in men (See Table 3).

Attitude of parents about male infant circumsion

According to Table 4 report, About 195 (31.6%) of the study participants agree that infants are too enough to be circumcised. According to responses, 175 (28.16%) mothers' revealed that circumcised infants were more hygienic than uncircumcised ones. Besides, 192 (31.12%) respondents agreed that male infant circumsion was safe, and 172 (27.88%) respondents agreed that male infant circumsion should protect males from Infection in the future. The majority of respondents, 493 (79.90%), agreed that a medical facility was the ideal place to circumcise their male newborn, whereas 299 (48.46%) disagreed that their community would support the practice (See Table 4).

Factors associated with male infant circumcision

On binary logistic regression, variables like infant age, women age, residence, maternal education, paternal education, mother's occupation, father's occupation, knowledge, and attitude towards male infant circumsion were found to have statistically significant association with male infant circumsion. Multiple logistic

Table 2 Socio-demographic characteristics of respondents for male infants' Circumcision in Konso zone SNNPRS, Ethiopia, from 30 June to 30 July 2022

Variables	categories	Frequency	Per cent
Age of respondents	≤ 25 years	264	42.79
	26–35 years	260	42.14
	≥ 36 years	93	15.07
Age of Infants	≤ 6 months	281	45.54
	> 6 months	336	54.46
Place of residence	Urban	59	9.56
	Rural	558	90.44
Participant religion	Protestant	446	72.29
	Orthodox	171	27.71
Participants marital status	Married	615	99.68
	Other	2	0.32
Maternal education	Non-formal education	317	51.38
	Primary	88	14.26
	Secondary and above	212	34.35
Paternal education	Non-formal education	274	44.41
	Primary	90	14.59
	Secondary and above	552	41.01
Mother Occupation	Housewife	121	19.61
	Government or private employ	132	21.39
	Farmer	248	40.19
	merchant	116	18.80
Father occupation	Non-employ	70	11.35
	Government or private employ	188	30.47
	Farmer	230	37.28
	merchant	129	20.91

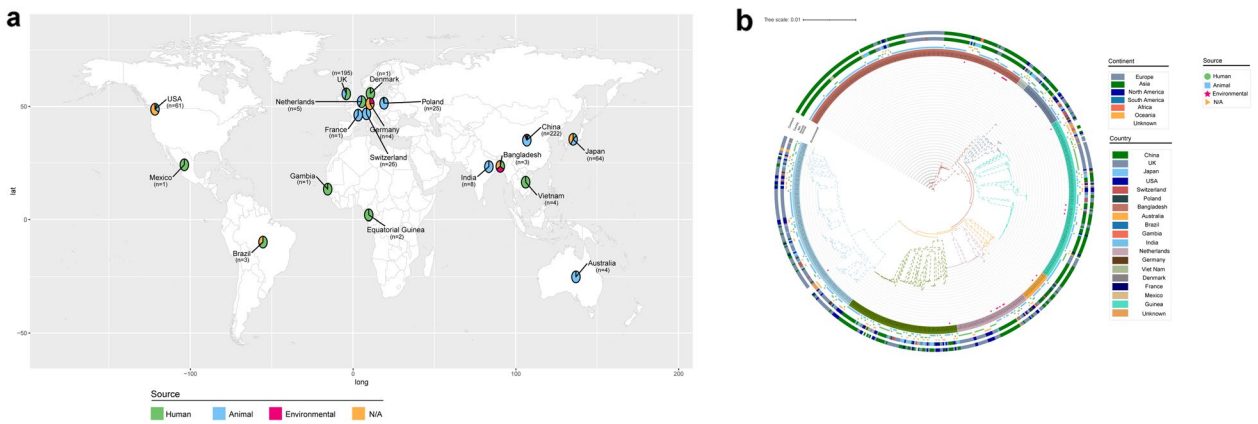


Fig. 4 Information regarding male infants' Circumcision

regression analysis was also computed to control the possible cofounder, explore the association between selected independent variables and male infant circumsion. Only three variables: place of residence, knowledge, and attitude showed a significant association with male infant circumsion in multiple logistic regression model.

The odds of circumsion for rural infants is 15.2 times higher than their counterparts (AOR = 15.2; 95% CI: 5.9, 39.3). Parents with sufficient knowledge have 7.3 times

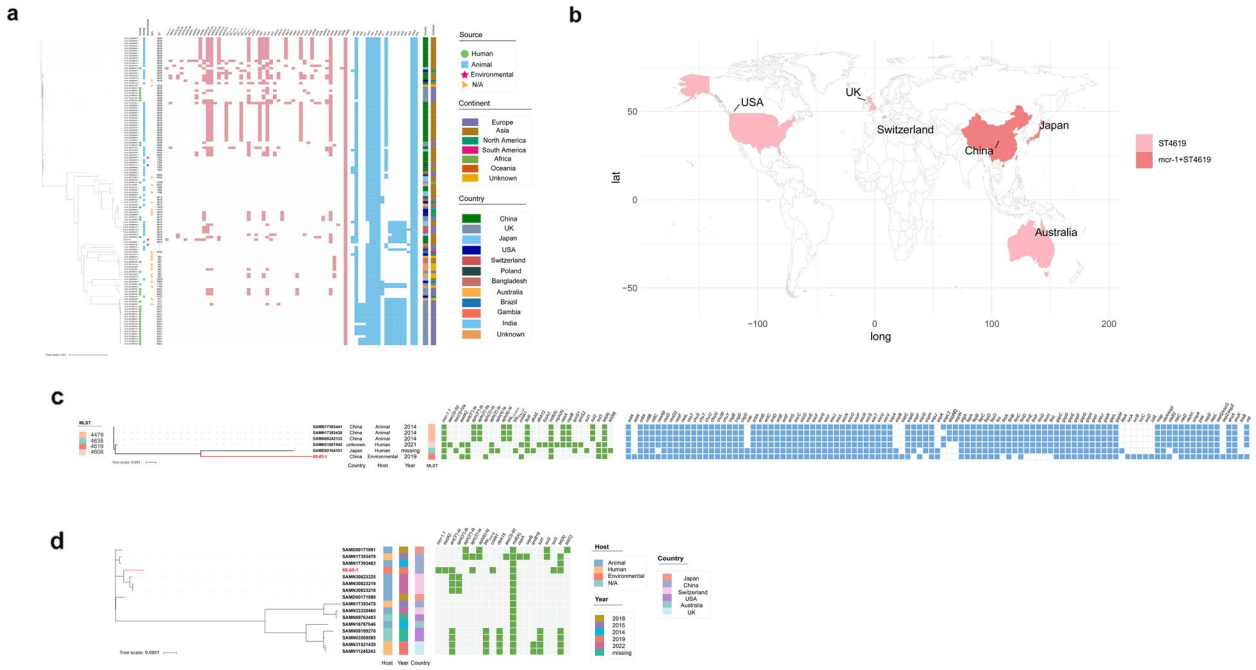


Fig. 5 Practices on male infants' Circumcision

Table 3 Knowledge of Respondents for male infants' circumcision in the Konso Zone SNNPR

Variables	Categories	Frequency	Per cent
Is male infant circumcision Helping prevent urinary tract Infections?	Yes	191	30.96
	No	3	0.49
	I do not know	423	68.56
Reduce man's risk of getting certain STIs, including HIV/AIDS, in their later age	Yes	117	18.96
	No	5	0.81
	I do not know	495	80.23
Is male circumcision Reducing a woman's risk of cervical cancer?	Yes	65	10.53
	No	12	1.94
	I do not know	540	87.52
Male circumcision Reduces a man's risk of cancer of the pines at a later age	Yes	60	9.72
	No	15	2.43
	I do not know	542	87.84

more chance to have circumcised infant than their counterparts (AOR = 7.31; 95% CI: 4.3, 12.5). Lastly, parents who had favorable attitude towards male circumcision were 9.2 times more likely to have their infants circumcised than their counterparts (AOR = 9.16; 95% CI: 4.5, 18.8) (See Table 5).

Discussion

In the current study, the estimated prevalence of male circumcision among infants is 24.7% (95% CI: 21.7%, 28.53%).

On one hand, this finding is lower compared to Ethiopian national prevalence of male infant circumsion (92.2%) [32]. This discrepancy might be due to population variation, social and cultural variables. The national result is higher due to the fact that the national prevalence indicates for all age male circumcision. The time of circumsion after birth various across societies and cultures in Ethiopia. Furthermore, this finding is lower than finding of a study done in USA (60% −90%) [35]. This discrepancy may be attributed to advanced knowledge, better healthcare access, and technologies in USA compared

Table 4 Attitudes of respondents towards male infants' Circumcision in Konso Zone

Variables	Categories	Frequency	Per cent
Are infants too enough to be circumcised	Strongly disagree	102	16.53
	Disagree	219	35.49
	Neutral/not decided	82	13.29
	Agree	195	31.60
	Strongly agree	19	3.08
Circumcised infants are more hygienic than uncircumcised	Strongly disagree	17	2.76
	Disagree	144	23.34
	Neutral/not decided	265	42.95
	Agree	175	28.36
	Strongly agree	16	2.59
MIC is safe	Strongly disagree	99	16.05
	Disagree	228	36.95
	Neutral/not decided	78	12.64
	Agree	192	31.12
	Strongly agree	20	3.24
MIC Protect him from future Infection	Strongly disagree	17	2.76
	Disagree	75	12.16
	Neutral/not decided	336	54.46
	Agree	172	27.88
	Strongly agree	17	2.76
If infants are not circumcised may face psychological problems in their later age	Strongly disagree	99	16.05
	Disagree	219	35.49
	Neutral/not decided	74	11.99
	Agree	205	33.23
	Strongly agree	20	.24
Health institution is the best place to circumcise their infant male	Strongly disagree	6	0.97
	Disagree	29	5.67
	Neutral/not decided	69	11.18
	Agree	493	79.90
	Strongly disagree	20	3.24
Circumcision of male infants would be viewed positively in their community	Strongly disagree	305	49.43
	Disagree	299	48.46
	Neutral/not decided	13	2.11
Guardians or Parents are the primary decision maker to whether circumcise or not	Strongly disagree	4	0.65
	Disagree	1	0.16
	Neutral/not decided	13	2.11
	Agree	398	64.51
	Strongly agree	201	32.58

to the study setting. Moreover, measurement, potential over-reporting and geographic variations might be the alternative explanations for this variation [39].

On the other hand, this finding exceeds the finding of study done in Australia and New Zealand [37]. This could be explained due to circumcision is not viewed as significantly enhancing male protectionfor sextaully transmitted infection in these countries, and it is considered less effective compared to safe sex practices.

The age of infants' mothers was one of the independent factor associated with male circumsion. In line with existing litratere [38], older women were more likely to have their infants circumcised compared to younger one. This may be linked to a growing awareness about the issue among women who has children [39]. The findings of this study indicate that infants who reside

Table 5 Logistic regresion analysis of factors associated with male infants' circumcision among male infants in Konso Zone, South Ethiopia

Variables	Categories	Male infants' Circumcision			COR(95% CI)	AOR(95% CI)	*P*-value
		Yes (%)	No (%)				
age of respondent's	≤ 25 years	57(9.24)	207(33.55)		1	1	
	26–35 years	69(11.18)	191(30.96)		1.31(0.88, 1.96)	0.78(0.44, 1.37)	0.389
	≥ 36 years	28(4.54)	65(10.53)		1.56(0.92, 2.66)	2.15(1.07, 4.34)	**0.032***
Age of Infants	≤ 6 months	61(9.89)	220(35.66)		1	1	
	> 6 months	93(15.07)	243(39.38)		1.38(0.95, 2.00)	1.31(0.72, 2.40)	0.379
Place of residence	Urban	51(8.64)	8(1.36)		28.16(12.97, 61.15)	15.21(5.9, 39.23	**< 0.001***
	Rural	103(16.69)	455(73.74)		1	1	
Maternal education	Non-formal education	293(47.49)	24(3.89)		1	1	
	Primary	71(11.51)	17(2.76)		2.92(1.49, 5.73)	1.28(0.38,4.31)	0.689
	Secondary and above	99(16.05)	113(18.31)		13.93(8.49, 22.88)	1.06(0.26, 4.33)	0.930
Paternal education	Non-formal education	258(41.82)	16(2.59)		1	1	
	Primary	73(11.83)	17(2.76)		3.76(1.81, 7.80)	2.36(1.00, 5.61)	0.051
	Secondary and above	132(21.39)	121(19.61)		14.78(8.43, 25.93)	1.94(0.84, 4.47)	0.118
Mother Occupation	Non-employ	81(13.13)	40(6.48)		1	1	
	Gov't/private employ	55(8.91)	77(12.48)		2.84(1.70,4.74)	1.14(0.52,2.47)	0.746
	Farmer	228(36.95)	20(3.24)		1.18(0.11,0.32)	1.61(0.55,4.69)	0.380
	Merchant	99(16.05)	17(2.76)		0.35(0.18,0.66)	0.73(0.29,1.81)	0.494
Father occupation	Non-employ	61(9.89)	9(1.46)	1		1	
	Gov't/private employ	87(14.10)	101(16.37)	7.87(3.69,16.76)		1.94(0.75,5.01)	0.168
	Farmer	212(34.36)	18(2.92)	0.56(0.25,1.35)		2.70(0.73,9.97)	0.136
	Merchant	103(16.69)	26(4.21)	1.71(0.75,3.89)		1.80(0.67,4.84)	0.242
Knowledge	Poor	384(62.24)	35(5.67)	1		1	
	Good	79(12.80)	119(19.29)	16.53(10.56,25.87)		7.31(4.31, 12.45)	**0.001***
Attitude	Unfavorable	295(47.81)	10(1.62)	1		1	
	Favorable	168(27.23)	144(23.34)	25.29(12.96,49.33)		9.16(4.46, 18.81)	**0.001***

in urban areas are more likely to undergo circumcision compared to their counterparts. This is consistent with previous study conducted in Tanzania [40].

Likewise, awareness about male infant circumcision is statistically associated with practice of male infant circumsion. As observed from this study, infants of women whose knowledge is adequate about male circumsion has higher chance of being circumcised than their counterparts. This finding is supported by findings of study conducted in Lusaka, Zambia [33]. This could be due to lack adequate knowledge among infants care takers. The knowledge about male circumsion emerges in the understanding of parents and guardians to improve their attitude toward the decision to circumcise their infant boys [41].

Compatible with prevous study in Gaborone, Botswana [30], the resoult of this study shows male infants whose parents had favourable towards male circumcision have higher odds of being circumsized than their counterparts. This discrepancy might be due to unstructured responses from respondents revealing that they are most concerned as the male infants are too young or too small and do not object to male Circumcision [30].

Limitation of the study

This study had several strengths. Firstly, it produced reliable results due to its well-designed methodology, adequate sample size, and use of random sampling techniques. Secondly, the high response rate further supports the generalizability of the findings. Additionally, the study's community-based design allowed for the examination of the issue within a real-world context. However, the study's focus was limited to infants, which may restrict the generalizability of the results. The cross-sectional nature of the study also means that it could not establish cause-and-effect relationships. To address these limitations, qualitative research exploring the cultural opinions and perceptions of parents could provide deeper insights into the factors influencing male infant circumcision. Moreover, expanding the study to include children over one year of age could provide a more comprehensive understanding.

Implication of the study

This study highligheted the importance of awareness creation among women and community members. Furthermore, it is important to incorporate male infant circumsion issue in the national policies and routine health institution practices. Hence, people in the communities could positively think the benefit of male infant circumsion. Efforts might be strengthened to enrich information for elderly women about the potential benefit of male infant circumsion especially in some communities where male circumsion is taken as taboo.

Conclusion

In this study, the prevalence of male infant Circumcision was found to be lower compared to national report. Factors like having good knowledge, women's age beyond 36 years, and women with positive attitude towards male circumcision were positively associated with male infant circumsion. Strengthening health education for women to enhance knowledge and community mobilization and engagement for shaping perception are should be mandatory practices.

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

GO wrote the proposal, designed the methodology analysed the data and drafted the first draft of manuscript. BT and ZY designed methodology, data analysis and interpretation of the result, and drafted the initial manuscript. All the authors revised, read and approved the subsequent drafts of the manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from Institutional Review Board (IRB) of College of Medicine and Health Science of Hawassa University. Furthermore, regional and district health offices were communicated through official letter of permission. Relevant school directors and teachers were well informed about the scope and objective of the study. The study protocol was clarified for parents /legal guardians/ of the study subjects and informed written consent was taken from parents or legal guardians of the study participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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