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Beliefs and perceptions of sexual and reproductive health and rights among tribal adolescent girls in Kerala, India: A qualitative study

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Abstract

Tribal adolescents experience considerable sexual and reproductive health challenges due to socio-cultural taboos, limited access to health services, and inadequate guidance. These factors increase vulnerability to early marriage, early pregnancy, and poor health-seeking practices. This study examined sexual and reproductive health beliefs and experiences among tribal adolescents in Kerala, India. A qualitative study employing thematic analysis was conducted. Fifty participants (18 adolescent girls, 20 mothers, and 12 health volunteers) were recruited through purposive sampling. Data were collected through eight focus group discussions using validated FGD guides. Five major themes and sixteen subthemes emerged, including menstrual health and hygiene; behavioral and socio-cultural influences; misconceptions regarding sexually transmitted diseases; limited awareness and access to contraceptives; and barriers to reproductive health services such as distance, transport constraints, and lack of adolescent-friendly care. The study concludes that sexual and reproductive health beliefs of tribal adolescents are influenced by socio-cultural norms, knowledge gaps, limited parent–adolescent communication, and restricted healthcare access. Addressing these challenges requires culturally appropriate education, parental involvement, and strengthened adolescent-friendly health services. *(Afr J Reprod Health 2026; 30 [17]: 92-105).*

Keywords: menstrual hygiene,contraception,reproductive health services,indigenous peoples, focus groups

Résumé

Les adolescents issus de communautés tribales font face à des défis considérables en matière de santé sexuelle et reproductive en raison de tabous socioculturels, d'un accès limité aux services de santé et d'un encadrement insuffisant. Ces facteurs accroissent leur vulnérabilité au mariage précoce, à la grossesse précoce et à des pratiques inadéquates en matière de recours aux soins. Cette étude a examiné les croyances et les expériences des adolescents tribaux du Kerala (Inde) concernant la santé sexuelle et reproductive. Une étude qualitative fondée sur une analyse thématique a été menée. Cinquante participants (18 adolescentes, 20 mères et 12 agents de santé bénévoles) ont été recrutés selon une méthode d'échantillonnage raisonné. Les données ont été recueillies lors de huit discussions de groupe (focus groups) à l'aide de guides validés. Cinq thèmes principaux et seize sous-thèmes ont émergé, notamment : la santé et l'hygiène menstruelles ; les influences comportementales et socioculturelles ; les idées fausses sur les maladies sexuellement transmissibles ; la méconnaissance et l'accès limité aux contraceptifs ; ainsi que les obstacles aux services de santé reproductive (éloignement géographique, contraintes de transport et absence de services adaptés aux adolescents). L'étude conclut que les croyances des adolescents tribaux en matière de santé sexuelle et reproductive sont influencées par les normes socioculturelles, les lacunes dans les connaissances, une communication limitée entre parents et adolescents et un accès restreint aux soins de santé. Relever ces défis nécessite une éducation culturellement adaptée, l'implication des parents et le renforcement de services de santé adaptés aux adolescents. *(Afr J Reprod Health 2026; 30 [17]: 92-105).*

Mots-clés: hygiène menstruelle, contraception, services de santé reproductive, peuples autochtones, groupes de discussion.

Introduction

Adolescence (10–19 years) is a critical phase of development characterised by rapid biological, psychosocial changes that influence sexual and reproductive health and rights (SRHR) knowledge, attitudes and practices.[1] These transitions are especially complex in many Indian socio-cultural contexts wherein taboos surrounding sexuality are prevalent, communication between parents and adolescents is limited and school-based curriculum are not comprehensive leading to a fragmented understanding of SRHR and increasing adolescents vulnerability to delayed health seeking.[2] Globally, adolescents comprise 16% of the population, yet face major sexual and reproductive health and rights (SRHR) challenges, including unintended pregnancy, unsafe abortion, early marriage, and sexually transmitted infections.[3] The World Health Organization (WHO) estimates that almost 16 million births occur yearly among girls aged 15-19 years, which account for 95% of all the births in low and middle income countries and is frequently associated with maternal morbidity, neonatal morbidities, and socioeconomic disadvantage.[4] Global commitments such as Sustainable Development Goal 3 underscore the need for universal access to SRHR information and services, with WHO frameworks advocating comprehensive sexuality education, improved contraceptive access, prevention of coerced sex, and adolescent-friendly health services.[5,6] These global perceptions emphasize the need to address structural, cultural, and service delivery barriers that limit adolescents health in marginalized populations

Adolescent SRHR in India also exhibits enduring inequalities due to cultural norms, educational disadvantage, early marriage and caste-based vulnerabilities.[7] The NFHS-5 reported high rates of adolescent pregnancies among Scheduled Tribes (8.7%) due to early sexual initiation, poor contraceptive awareness and low autonomy in fertility choices.[2] Moreover, India experiences more than 11.8 million adolescent pregnancies per year and unfilled contraceptive need is particularly high among tribal adolescents.[8] Inadequate communication regarding SRHR, poor menstrual hygiene practices, stigma associated with puberty and mobility restriction further compound the risk.[9] Despite being a high-performing state in health indicators, Kerala continues to experience SRHR inequities among tribal groups.[10] The state has a tribal population of 4.84 lakh, comprising around 35 tribes, most of whom reside in forested and geographically inaccessible areas.[11] In Thiruvananthapuram district, 129 settled tribal pockets with protected forest zones experience limited transportation, sanitation, irregular medical camps, suboptimal immunization and high out of pocket expenses.[12] Studies among tribal adolescents in Kerala and neighbouring states reveal low awareness about menstruation, pregnancy symptoms, fertility and transmission of HIV; the subjects also experienced fear during menarche, strict menstrual regulations at home, domestic violence and school-related problems during menstruation.[12-14] High school dropouts, early marriage trends, constrained gender behaviours and misconceptions cause high SRHR vulnerabilities in adolescent girls residing in Kuttichal and its adjacent tribal areas.[15]

The Health belief model provides a useful framework to understand how tribal adolescents perceive health risks, severity, benefits and barriers related to SRHR.[16] Among Indigenous peoples, perceived susceptibility is potentially reduced due to lack of biological knowledge and perceived barriers include shame, parental silence, cultural taboos, distance to facilities and fear of community judgment.[17] Limited self-efficacy, result from constrained independence to desire for privacy and gender norms, further limit preventive behaviours (e.g., use of contraceptives or help-seeking).[18] Misinformation such as the belief that medical treatment is a source of infection or that menstruation often arises from intergenerational messages, past negative experiences and minimal interaction with the health system.[14] International evidence shows adolescents often conceptualise sexual health using moral, structural and cultural frameworks influenced by social norms and familial expectations.[19] Similarly Indian qualitative research discusses secrecy surrounding menstruation, early sexual initiation, home-based restrictions, lack of communication with parents and gender based vulnerabilities among rural and tribal adolescents however,[20] few qualitative studies

have concentrated on tribal settlements in Kerala though early marriage, menstrual taboos, school dropout or partial immunization high risk sexual behaviour are documented from areas like Kuttichal and Vithura.[12,15] In addition, the paucity of culturally informed explanations for perpetuation of these beliefs highlights the importance of exploratory research.

Given these complexities, an understanding of SRHR beliefs and their embedding within the sociocultural context is required to develop interventions that are sensitive to the cultural life among adolescent girls.Existing evidence suggests that communication on SRHR in tribal hamlets is influenced by generational silence, geographical remoteness, top-down decision-making, and a lack of frontline health exposure.[21] Without exploring these beliefs and their transmission ,strategies to implement education interventions or adolescent friendly services may be culturally insensitive or ineffectual.[22] Therefore context-based information is needed for the development of culturally tailored IEC materials to strengthen SRHR services among adolescents in collaboration with ASHA workers, anganwadi staff, teachers, and health promoters.[23] In this context, the present study was conducted to assess knowledge and attitude regarding SRHR among adolescent girls, their parents and health volunteers in selected tribal settlements of Kuttichal Panchayat of Kerala.

Objective

To explore the sexual and reproductive health and rights (SRHR) beliefs of tribal adolescent girls, their mothers, and health volunteers.

Methods

Setting

The study was conducted in the remote tribal settlements of Podiyam, Pattampara, and Anakal Mele Aamala within Kuttichal Grama Panchayat in Thiruvananthapuram district, Kerala, India**.** This region consists of 27 tribal settlements predominantly inhabited by the Kani tribe**,** a traditionally forest-dependent Indigenous community residing in the Agasthyamala Biosphere Reserve**.** The setting is characterized by acute infrastructural deficiencies. Most residents live in incomplete huts constructed of bamboo and reeds, many of which are plastered with mud and cow dung, and large areas remain without electricity. Public transportation facilities were limited and available only in some settlements, restricting travel between hamlets often dependent on unpaved mud roads. Furthermore, no schools or healthcare facilities were located within the settlements. Long distances to primary schools and language barriers contribute to high school dropout rates, with most residents discontinuing their education after primary school and many girls leaving school after the 10th grade. Economically, the community relies on agriculture, animal husbandry, and rubber cultivation, subsisting primarily on a diet of rice and tubers. Formal healthcare is highly inaccessible, as the nearest Primary Health Centre is located 15–17 km away, requiring travel through forest terrain or emergency jeep transport costing ₹2,500–₹3,000 per trip. Consequently, residents rely primarily on traditional herbal medicine, supplemented only by monthly medical camps. Overall, geographic isolation, poor sanitation, and educational barriers substantially restrict adolescents' access to hygiene and reproductive healthcare services and influence their health-related behaviours

Study design

A descriptive-qualitative phenomenological research design was employed to understand the lived experiences in relation to Sexual and Reproductive Health and Rights (SRHR) beliefs of adolescent girls, mothers, and health volunteers. Based on the philosophical traditions of Husserl and Heidegger, phenomenology seeks to understand the meanings people have constructed in their lives, making it ideal for exploring SRHR beliefs hinged on personal experiences, cultural values, and social environments.[24-25]Data analysis followed Braun and Clarke's reflexive thematic analysis, which is suitable for identifying patterned meanings across diverse participant groups. [26]

Participant's selection and sampling

Purposive sampling was used to recruit participants who could provide rich and diverse perspectives on sexual and reproductive health beliefs and perceptions. The study included 50 participants across eight focus group discussions (FGDs)**,** comprising 18 adolescent girls (10–17 years), 20 mothers of adolescent girls, and 12 community health volunteers from four tribal settlements.Participants were recruited with the help of several community contacts (e.g., health volunteers, local leaders) and we made efforts to minimize gatekeeper bias. Rapport-building visits preceded recruitment. There were no refusals and no dropouts among the eligible participants.

Eligibility criteria:Eligible participants included adolescent girls, mothers of adolescent girls, and health volunteers residing in the selected tribal settlements who were able to communicate in the local language, Malayalam. Health volunteers were included if they had a minimum of one year of experience Temporary residents, critically ill individuals, those unable to communicate in Malayalam, and individuals who had previously participated in similar reproductive and sexual health discussions were excluded.

Data collection procedure

Data were collected between 25 June and 30 July 2025 through eight semi-structured focus Group Discussions (FGDs) conducted across four tribal settlements to achieve data triangulation. The participants comprised adolescent girls (three FGDs), mothers (three FGDs), and community health volunteers (two FGDs)**,** with 6–8 participants in each discussion. Separate semi-structured FGD guides were developed for each participant group following an extensive literature review and consultation with qualitative research experts. Although the wording of the questions was tailored to the experiences and roles of each group, all guides explored five common domains: (1) menstrual knowledge, beliefs, and practices; (2) early marriage and its perceived impact on girls' wellbeing; (3) awareness, beliefs, and stigma related to HIV and other sexually transmitted infections; (4) knowledge and perceptions of contraception; and (5) access to reproductive health services and barriers to their utilization.

The questions were open ended and probing such as : *"Can you share your experience when you got your first period?"* and *"What problems do girls face in accessing reproductive health information or services?"* (adolescent girls); *"Have you discussed menstruation or early marriage with your daughter?"* and *"What are your views on contraceptive use?"* (mothers); and *"Do adolescent girls receive information about menstruation before menarche?"* and *"What challenges do families face in accessing reproductive health services?"* (health volunteers).

The FGD guides were content validated by qualitative research experts and pilot tested among participants with similar characteristics, resulting in minor revisions to improve clarity and cultural appropriateness. All FGDs were conducted by the Principal Investigator (PI), an experienced female nursing researcher, with extensive experience conducting qualitative research. Each session lasted 30–45 minutes and was conducted in Malayalam to facilitate open discussion. With participants' consent, discussions were audio-recorded and supplemented with field notes. The recordings were transcribed verbatim in Malayalam and translated into English by the PI. The English transcripts were independently reviewed and back-translated by a bilingual expert to ensure linguistic and conceptual equivalence. Any discrepancies were resolved through consensus. The finalized English transcripts were used for coding and thematic analysis. Data collection continued until thematic saturation was achieved.

Data analysis

Analysis was conducted manually according to Braun and Clarke's six phases of thematic analysis.[26] Transcripts were read in conjunction with field notes multiple times for familiarization. The data were inductively line-by-line coded under separate headings for each participant group, using participants own expressions. Codes were compared and combined to generate themes of agreement and disagreement. Codes were clarified, modified and defined. Two authors independently coded the data, any discrepancies were discussed

and consulted with a qualitative research expert. Data saturation was reached by the sixth focus group discussion, with subsequent discussions contributing to further refinement and confirmation of themes.

Ethical clearance

The study was conducted in accordance with the Declaration of Helsinki**,** the Indian Council of Medical Research (ICMR) National Ethical Guidelines**,** and the professional code of ethics for nursing research**.** Ethical clearance was obtained from the Central Ethics Committee of Nitte (Deemed to be University) (Ref. No.: NU/CEC/2025/905**).**

Written informed consent was obtained from parents and health volunteers prior to participation in the Focus Group Discussions (FGDs) on reproductive and sexual health. For adolescent girls, written parental consent and assent were obtained before participation.

Trustworthiness and rigor

Methodological rigour was ensured by employing Lincoln and Guba's (1985) four criteria of trustworthiness.[25] Credibility was established with prolonged engagement with participants, verbatim transcription of FGDs, and descriptive field notes capturing context and non-verbal cues. Following each FGD, peer debriefing was used to facilitate reflexive interpretation and triangulation between perspectives of adolescent girls, mothers, and health volunteers sought. Reliability was validated by a transparent and systematic process of analysis, independent coding by two researchers, and expert supervision. Confirmability was established through reflexive journaling, audit trail and transcript verification, and 'transferability' was addressed by providing a detailed description of the study setting, participants, and data collection procedures.

Results

Thematic analysis of triangulated data from adolescent girls, mothers, and health volunteers resulted in five major themes and sixteen subthemes related to SRHR beliefs. The conceptual framework developed from the emerged themes and their interrelationships is presented in Figure:1

Theme 1: Menstrual health and hygiene

Menstrual health emerged as the most prominent concern across all participant groups. Adolescents, mothers, and community health volunteers consistently described menstruation as a life event surrounded by inadequate preparation, cultural silence, and restrictive traditional practices. Although schools and health workers provided some information, it was often fragmented and insufficient to address adolescents' informational and emotional needs.Across all participant groups, menstrual experiences reflected the interplay between limited knowledge, cultural beliefs, and restricted communication, which collectively influenced adolescents' preparedness and health-seeking behaviours**.**

Lack of preparedness for menarche

Most adolescent girls reported experiencing menarche without prior information, resulting in fear and confusion. Many stated**,** *"No, no one told me,"* and *"I didn't know."* One girl recalled, *"I got scared and called my mother."* Mothers acknowledged that menstruation was rarely discussed before its onset. One admitted, *"We did not tell them before it happened,"* while another noted that her own mother had also remained silent. The consistency of these narratives across adolescents and mothers suggests that inadequate preparation for menarche remains an intergenerational issue, leaving many girls emotionally unprepared for this important developmental transition.

Informal sources of information

In the absence of parental communication, adolescents relied on peers, elder girls, and teachers for information. One participant shared, *"My mother didn't tell me; nearby elder girls told me,***"** while another said, *"It was not my mother who told me—my friends told me."* Mothers corroborated this reliance on schools, stating, *"Teachers usually tell them in school, and then they come home and ask doubts."* Although schools partially

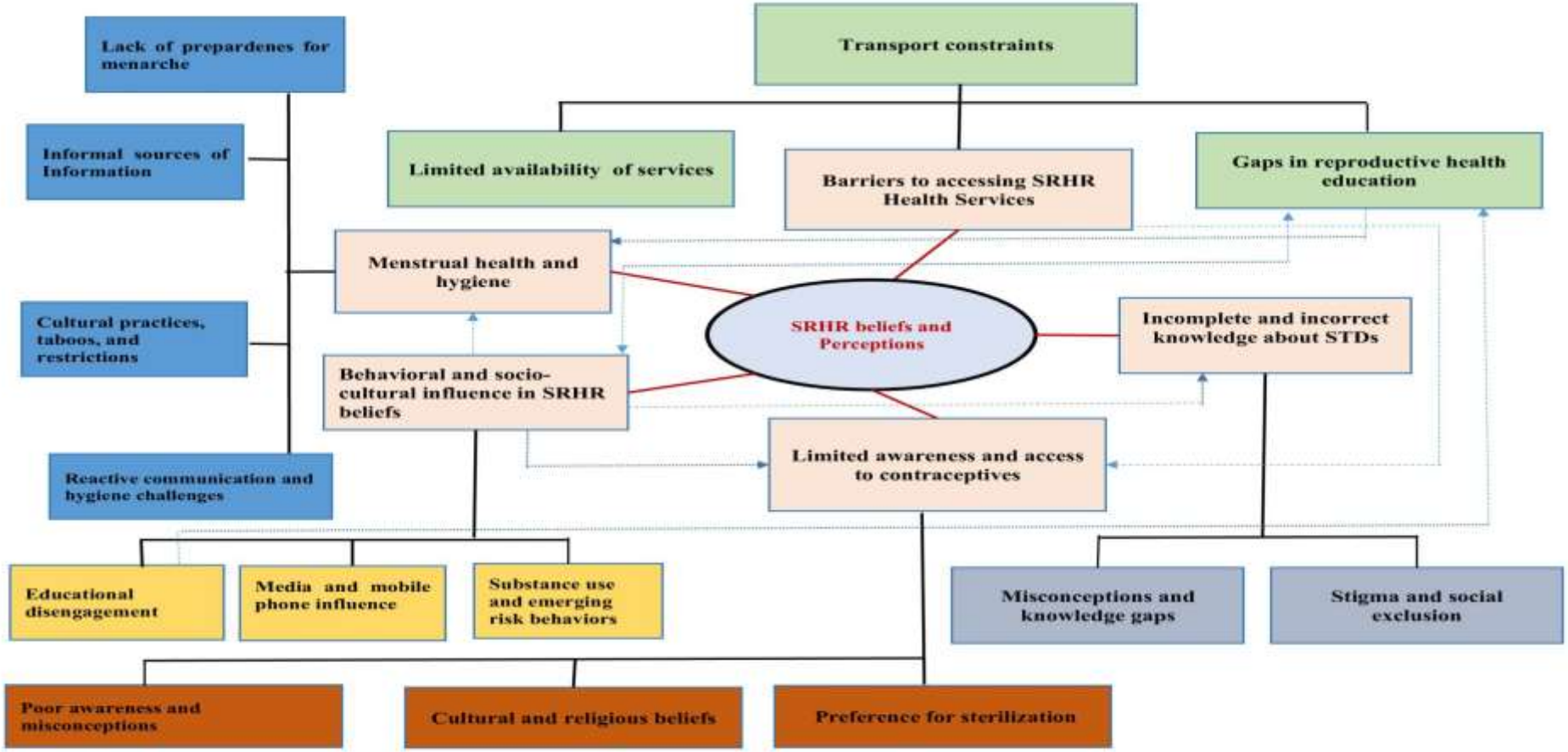


Figure 1: Conceptual representation of themes and subthemes

compensated for the lack of family communication, the information provided was often insufficient to address adolescents broader concerns regarding menstrual health and self-care.

Cultural practices, taboos, and restrictions

Menstruation was embedded within strong cultural norms involving isolation and ritual observance. Adolescents described enforced seclusion: *"Want to stay in a room for 14 days,"* and *"After getting my period, I was not allowed to go out of the house."* Mothers echoed similar practices: *"She will stay inside the house for 16 days."*

At the same time, menarche was celebrated through elaborate rituals emphasizing fertility and womanhood. Adolescents described large gatherings and symbolic practices: *"All the relatives are invited,"* and *"We have to catch fish… that signifies the number of children in future."* Mothers described celebrations *"like a wedding."* These rituals reflected the strong influence of traditional beliefs on menstrual experiences, reinforcing societal expectations linking menstruation with marriage and motherhood while often prioritizing ritual observance over health-related education.

Reactive communication and hygiene challenges

Communication about menstruation was largely reactive rather than anticipatory. Mothers explained, "*After it happened, they would mention their difficulties and we would explain.*" Health volunteers also observed hesitancy in discussing menstruation, particularly in the presence of male health workers, noting that girls preferred communicating through female intermediaries. Poor menstrual hygiene practices were consistently reported across the discussions. Health volunteers described common complaints associated with inadequate hygiene, stating, "*They report itching, white discharge.*" Adolescents highlighted practical challenges in managing menstruation at school, explaining, "*If it is cloth, they can't change it properly*." Despite receiving counselling, resistance to adopting recommended hygiene practices persisted. Furthermore, self-medication and the normalization of menstrual symptoms by mothers often delayed timely healthcare-seeking. Collectively, these accounts indicate that delayed communication, inadequate menstrual hygiene practices, and delayed healthcare-seeking contributed to the persistence of preventable reproductive health problems among adolescent girls.

Theme 2: Behavioral and socio-cultural influences on SRHR beliefs

Adolescents sexual and reproductive health and rights(SRHR) beliefs were shaped by a combination of educational engagement, media exposure, and prevailing socio-cultural norms surrounding marriage and relationships. Although increasing awareness regarding the importance of education and delayed marriage was acknowledged, traditional expectations and emerging social influences continued to shape adolescents' decisions and experiences

Educational disengagement

Health volunteers identified school dropout and declining academic motivation as concerns, particularly among boys. One stated, *"Many stop studying even though facilities exist."* Outreach efforts were often unsuccessful: *"If we repeatedly go to their houses, they hide from us."* Mothers acknowledged that disengagement from education limited adolescents' exposure to accurate RSH information. In contrast, girls who remained in school were perceived to have better awareness of menstruation, contraception, and pregnancy prevention. Collectively, these accounts suggest that continued school attendance facilitated greater access to reproductive health information and promoted informed health-related decision-making.

Media and mobile phone influence

Unrestricted mobile phone use emerged as a strong influence on adolescents' beliefs. Health volunteers noted, *"Parents don't know what children are watching… they believe whatever they learn from mobile media is correct."* Participants perceived that information obtained through mobile phones and social media shaped adolescents' understanding of sexuality, fertility, romantic relationships, and contraception, particularly in the

absence of comprehensive reproductive health education. Collectively, these accounts suggest that digital media had become a major source of reproductive health information, despite concerns regarding the accuracy and reliability of its content.

Early marriage and reproductive health consequences

Early marriage was influenced by both perceived choice and socio-cultural expectations. Adolescents described marriage at 18 as self-initiated: *"More girls are getting married at 18 years by their own choice."* Mothers expressed fear of elopement: *"If we don't get them married after 18, they might run away."*Consequently, marriage was often viewed as a means of avoiding social stigma. However, early marriage often led to early pregnancy, discontinuation of education, and increased caregiving burdens. Adolescents noted that some girls *"came back to their home with kids due to domestic violence."* Health volunteers confirmed that early marriage heightened vulnerability to health complications and limited access to reproductive health services.

Theme 3: Incomplete and incorrect knowledge about sexually transmitted diseases

Knowledge gaps and misconceptions

Adolescents demonstrated significant confusion regarding HIV and STD transmission. With many admitted *"I don't know exactly."* Misconceptions included transmission through shared toilets, food, clothes, or mosquito bites. Although some identified sexual contact as a mode of transmission, understanding remained superficial.Parents also exhibited mixed awareness ,mentioning sexual contact and blood transfusion,while retaining several misconceptions. Health volunteers reported improved awareness due to educational programs but emphasized persistent gaps, indicating the need for sustained, culturally sensitive education.

Stigma and social exclusion

Stigma toward people living with HIV remained evident. Adolescents observed, *"People will say they will stay with them, but in reality, no one will."* Parents offered mixed responses, sometimes denying stigma, possibly reflecting socially desirable answers. Persistent stigma discouraged open discussion, voluntary testing, and timely care, reinforcing social exclusion.

Theme 4: Limited awareness and access to contraceptives

Poor awareness and misconceptions

Adolescents reported limited knowledge of contraception, with awareness largely restricted to condoms and oral contraceptive pills. Many responded**,** *"Don't know,"* when asked about other contraceptive methods. Parents demonstrated limited awareness and low utilization, often expressing concerns about side effects: *"Some people got infections after using them, so we are afraid."* Health volunteers also reported reliance on traditional practices and reluctance to use temporary contraceptive methods. Collectively, these accounts indicate that misconceptions and safety concerns continued to influence contraceptive awareness and acceptance.

Cultural and religious beliefs

Cultural and religious beliefs strongly influenced attitudes toward family planning. Health volunteers described fatalistic beliefs, stating, *"God gives children, so there is no need to avoid it."* Parents also viewed closely spaced childbirth as acceptable within the community. Despite ongoing awareness programmes, these beliefs continued to influence attitudes toward voluntary contraceptive use.

Preference for sterilization

Sterilization was widely accepted as the preferred contraceptive method after completing the family, whereas temporary methods were often avoided because of fear and mistrust. One health volunteer explained, *"After two or three children, most of them undergo the operation. They are afraid of using other methods."* Health volunteers also observed a gradual increase in acceptance following institutional deliveries, where women received counselling on family planning.Overall, preferences for permanent contraception coexisted

with fear and mistrust of temporary methods, while some participants reported non-use of any contraceptive method.

Theme 5: Barriers to accessing SRHR health services

Limited availability of services

Participants reported limited reproductive health services within settlements. Medical camps lacked specialist care: *"No gynaecologist… only other doctors."* Geographic isolation and absence of permanent sub-centers restricted timely access to care.

Transport constraints

Transport-related challenges emerged as a major barrier to accessing reproductive healthcare, particularly during emergencies. Participants reported that ambulances often reached only junction points, requiring additional travel through costly jeep services. One participant explained, *"The ambulance will come only up to the junction; from there, we have to take a jeep to reach the settlement it cost around ₹2500-₹3000"* Poor road conditions, long distances, and transportation expenses further restricted timely access to essential reproductive and maternal healthcare services. These accounts indicate that transportation difficulties were not only a logistical challenge but also a significant factor influencing delayed healthcare-seeking among adolescents and women in the community.

Gaps in reproductive health education

Adolescents and parents emphasized the need for structured, detailed, and continuous reproductive health education. Adolescents stated, *"Detailed awareness classes will be good for girls,"* linking education to prevention of early marriage and pregnancy. Parents viewed awareness programmes as beneficial, while health volunteers reported that existing sessions were often limited in scope and frequency, with adolescents sometimes hesitating to actively participate due to embarrassment and fear of judgement.

Discussion

The present study aimed to understand the SRHR beliefs and perceptions of tribal adolescent girls by exploring their voice alongside that of mothers and health volunteers. Moreover, menstrual health was reported as a primary concern, with many girls reaching menarche unprepared leading to fear, confusion and emotional upset. In families, communication about menstruation was rare and many adolescents rely on peers or teachers for information. These results highlight continued generational communication deficits and the influence of cultural menstruation taboos associated with menstruation. These findings have been corroborated in Indian adolescents, where inadequate parent–daughter communication was linked to poor preparedness for menstruation and increased anxiety at menarche. [27] International evidence also suggests that open parent–adolescent communication can play a positive role in improving menstrual experiences and acceptance of menarche and enhances menstrual health literacy, while silence and stigma reinforces misconceptions and contributes to emotional distress.[28] Together these findings suggest that interventions to improve menstrual health in tribal communities may be enhanced by strengthening family communication, school- and community-based health education.

Beyond inadequate menstrual knowledge, the findings also highlighted the influence of cultural beliefs and practices on adolescents menstrual experiences.Although cultural beliefs and restrictions surrounding menstruation were evident, they were relatively flexible among the Kani tribe.Participants described several traditional practices observed during menstruation, including ritual bathing, wearing a saree, temporary restrictions on movement, chewing tobacco, and participation in symbolic activities such as fishing. Although these customs reflected the cultural identity of the community, they were generally less restrictive than those reported among the Kurichiya tribe, where elaborate *Therandkalyanam* ceremonies and stricter menstrual restrictions have been documented by Shibu et al.[29] This variation suggests that menstrual traditions differ across tribal communities and should not be viewed as uniform. The findings therefore reinforce the

importance of considering the unique socio-cultural context of individual tribal groups when interpreting menstrual experiences.

In addition to cultural beliefs, menstrual hygiene practices emerged as another important determinant of reproductive health among tribal adolescents**.**Despite increasing awareness of menstrual hygiene, several participants narratives revealed that could compromise reproductive health. Reusable cloths were often used for extended periods, absorbent materials were not changed regularly, and healthcare was typically sought only when symptoms became severe.Comparable findings have been reported by Torondel et al.,[30] which demonstrated an association between inadequate menstrual hygiene practices and adverse reproductive health outcomes. Similarly, the National Family Health Survey (NFHS-5) indicates that although the use of hygienic menstrual products has improved nationally, considerable inequalities still exist among rural and socio-economically disadvantaged populations.[2] Together, these findings suggest that improving menstrual health requires not only greater availability of menstrual products but also culturally appropriate education that addresses misconceptions, promotes hygienic practices, and encourages timely utilization of healthcare services.

Behavioral and socio-cultural factors, including school dropout, poor educational engagement, peer influence, and unregulated media exposure, emerged as important determinants of adolescents' reproductive and sexual health beliefs. Mothers and health volunteers observed that many adolescents showed limited interest in continuing their education, reducing their access to school-based reproductive health education. Consequently, they often relied on peers and mobile phones as their primary sources of reproductive and sexual health information. While digital media can facilitate access to health information, unverified content may reinforce misconceptions and risky behaviours. These observations aligns with the evidence of Pillai, who reported that educational disengagement among tribal adolescents is largely influenced by negative attitudes towards education and low parental educational attainment rather than financial constraints.[31] Similar evidence from a systematic review by Yakubu and Salisu demonstrated that inadequate sexual health education, poor parent–adolescent communication, and socio-cultural norms collectively increase adolescents' exposure to inaccurate sexual health information and unsafe sexual practices in low- and middle-income countries.[32] These findings highlight the need for culturally appropriate, community-based interventions that actively involve families, schools, and community leaders to improve reproductive and sexual health literacy among tribal adolescents.

Although early marriage was perceived to be less common than in previous generations, participants acknowledged that it still occurred within some tribal communities, primarily among school dropouts and socio-economically disadvantaged families.Mothers and health volunteers felt that the gradual decline in early marriage was driven by improved access to education for girls, greater awareness of the health risks associated with adolescent pregnancy, and growing acceptance of delayed marriage within the community.These observations are consistent with national trends indicating a gradual reduction in child marriage in India, although the practice remains disproportionately concentrated among socially and economically marginalized populations.[33] The persistence of early marriage among vulnerable groups suggests that educational opportunities alone are insufficient and should be complemented by sustained community engagement, parental empowerment, and policies addressing the underlying social determinants of adolescent wellbeing.

Misconceptions regarding HIV transmission and persistent HIV-related stigma were common among adolescent girls, mothers, and health volunteers. Many participants believed that HIV could be transmitted through mosquito bites, sharing food, or casual physical contact, while others associated HIV infection with immoral behaviour.These beliefs reflect gaps in HIV-related knowledge and may contribute to fear, social exclusion, and hesitation to seek HIV testing or treatment . Similar misconceptions have been reported among rural populations in India by Kawale et al., while Steward et al. demonstrated that HIV-related stigma remains a major barrier to HIV testing, disclosure, and healthcare

utilization.[34,35]Evidence from other countries also shows that HIV stigma continues to undermine prevention and treatment efforts by discouraging individuals from accessing health services and openly discussing sexual health concerns.[36] The persistence of these misconceptions in tribal communities highlights the need for culturally appropriate HIV education programmes that not only provide accurate information but also address stigma through community participation, school-based education, and active involvement of frontline health workers.

Similarly, important knowledge gaps were evident regarding contraceptive methods and family planning.The present study identified limited awareness and low utilization of temporary contraceptive methods among tribal communities. Despite being aware of condoms, oral contraceptive pills, and intrauterine devices, participants were reluctant to use these methods due to misconceptions about side effects, particularly fears of infertility and other long-term health consequences. These findings are consistent with those reported by Nigar, who observed that despite high awareness of contraceptive methods, their utilization remained considerably low among rural women.[37]Conversely, the study by Suchithra and Sujina found comparatively greater contraceptive utilization in rural Kerala, predominantly through female sterilization and intrauterine devices , reflecting regional differences in contraceptive practices and access to reproductive health services.[38] Similar findings have been reported globally, where fear of side effects, inadequate counselling, gender norms, and sociocultural beliefs remain important barriers to contraceptive uptake despite increasing awareness.[39] These results underscore the importance of culturally appropriate counselling, community-led awareness programmes, and enhanced male participation in addressing misconceptions and enabling informed choices about contraception

Although there were behavioral determinants of reproductive health, knowledge and perceptions, study participants identified many structural barriers and constraints that limited their access to reproductive health services. Access to reproductive health services was constrained by multiple structural and health system barriers. Participants described irregular outreach services, non-functional sub-centres, shortages of skilled healthcare personnel, and inadequate transportation, resulting in delayed care-seeking, missed antenatal visits, and reduced utilization of preventive health services. Similar challenges have previously been documented in tribal settlements of Kuttichal.[13] These findings indicate that under utilization of reproductive health services is influenced not only by individual awareness but also by deficiencies in service availability and accessibility. Evidence from low- and middle-income countries has demonstrated that geographical isolation, transportation difficulties, limited health infrastructure, and perceived poor quality of care continue to hinder equitable access to reproductive healthcare.[40] Strengthening primary healthcare infrastructure, ensuring functional sub-centres, improving emergency transportation, and expanding culturally responsive outreach services through frontline health workers are essential to improve reproductive health outcomes among tribal populations.

Taken together, the findings suggest that reproductive and sexual health among tribal adolescents is shaped by the interaction of cultural beliefs, family communication, educational opportunities, community norms, and health system factors. Addressing these interconnected challenges requires culturally responsive, multi-sectoral interventions that strengthen family engagement, school-based reproductive health education, community participation, and accessible primary healthcare services. Such integrated approaches are essential to improve reproductive health literacy and promote equitable reproductive health outcomes among tribal adolescents.

Strengths and limitations

A major strength of this study is the inclusion of multiple stakeholder perspectives by exploring the reproductive and sexual health beliefs and perceptions of adolescent girls alongside those of mothers and community health volunteers, enabling data triangulation and a more comprehensive understanding of the socio-cultural context. The use of focus group discussions across four tribal settlements further enhanced the credibility and richness of the findings. However, the study was

conducted among Kani tribal communities in selected settlements of Kerala; therefore, the findings may not be transferable to other tribal populations with different cultural and geographical contexts. In addition, the reliance on self-reported information may have introduced recall and social desirability bias, particularly when discussing sensitive reproductive and sexual health issues.

Implications for practice and policy

The findings underscore the need for culturally responsive and community-based reproductive and sexual health interventions for tribal adolescents. Strengthening parent–adolescent communication, integrating age-appropriate reproductive health education within schools and community settings, and enhancing the capacity of frontline health workers to deliver culturally sensitive health education may improve reproductive health literacy and service utilization. Policy initiatives should prioritize strengthening primary healthcare services in tribal areas through functional sub-centres, regular outreach programmes, reliable referral and transport systems, and sustained community engagement. Future research should evaluate the effectiveness of culturally tailored interventions and explore reproductive and sexual health beliefs across diverse tribal communities to inform context-specific policies and programmes.

Conclusion

This study offers a comprehensive analysis of sexual and reproductive health and rights (SRHR) dynamics among tribal adolescent girls by triangulating the viewpoints of the youth, their mothers, and local health volunteers.The evidence indicates that SRHR beliefs among tribal adolescents are shaped by family communication patterns, cultural practices, educational opportunities, and structural barriers to healthcare access.

While the adolescent girls highlighted persistent information gaps, deep-seated misconceptions, and structural barriers to accessing care, the testimonies of mothers and health volunteers underscored how restrictive communication patterns, socio-cultural norms, and deficient support systems reinforce these vulnerabilities. Ultimately, this research emphasizes the necessity of grounding public health strategies within the unique contextual realities of indigenous communities. By centering the voices of these key stakeholders, this study provides an empirical foundation for developing inclusive, culturally sensitive, and youth-responsive reproductive health initiatives.

Conflict of interest

The authors declare that they have no conflicts of interest related to this study.

Author contributions

S.J.S. conceptualized and conducted the study and wrote the original draft of the manuscript. S.N. supervised the study methodology, contributed to the data analysis, and critically reviewed and edited the manuscript. L.R.N. co-supervised the study methodology and contributed to the editing of the manuscript.Every author played a role in evaluating the work, shaping the final narrative, and offering intellectual insights throughout the study. All authors reviewed and approved the final manuscript.

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Data availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The complete qualitative transcripts are not publicly available due to ethical considerations and sensitive nature of the information shared by the participants.

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