

KNOWLEDGE, ATTITUDES, AND PRACTICES OF REPRODUCTIVE HEALTHCARE SCHEMES AND EVALUATION OF A MENSTRUAL HYGIENE AWARENESS MODULE AMONG TRIBAL WOMEN AND ADOLESCENT GIRLS IN JHARKHAND, INDIA: A MIXED-METHODS PILOT STUDY

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ABSTRACT

PURPOSE:

This study aimed to evaluate the Knowledge, Attitude, and Practices (KAP) related to the healthcare schemes among reproductive-age tribal women, along with the perspective of various stakeholders, and to pilot an awareness module on menstrual health among tribal adolescent girls.

METHOD:

In the first phase needs assessment for KAP with a sample of 100 randomly selected participants was done. This was collected through a questionnaire, followed by an in-depth interview among ten participants. A descriptive analysis in terms of frequency and percentage, followed by the chi-square test was done. For in depth interviews, analysis was performed manually, and themes were generated. In the second phase, a preliminary awareness module related to the menstrual hygiene was developed. A health awareness session of the developed module was delivered to 30 participants, and their feedback were collected.

RESULTS:

Approximately half of the reproductive-aged tribal women (52%) and adolescent girls (50%) were aware of reproductive healthcare schemes; however, awareness of specific services was largely partial and primarily limited to cash-incentive schemes. Scheme utilization was reported by 52% of reproductive-aged women, while no adolescent girls reported utilization. Qualitative findings highlighted cash benefits, cultural practices, lack of supervision, inadequate infrastructure, and limited awareness as key barriers. The menstrual hygiene awareness module was well received, with 46.7% rating it as good and recommending school-based integration and culturally relevant visuals.

CONCLUSION:

This study shows that awareness and use of reproductive healthcare schemes among tribal women and adolescent girls in Jharkhand are low, mainly influenced by cash incentives, reflecting gaps in health communication and service delivery.

The findings highlight the need for culturally appropriate, community-based policy approaches beyond financial incentives. Strengthening awareness activities, training, supervision, and healthcare infrastructure can improve scheme reach and equity. The menstrual health module was well accepted, supporting its integration into school and community programs for wider and sustainable impact.

KEYWORDS

indigenous people, adolescent, female, reproductive health, health awareness

BACKGROUND

The United Nations, Sustainable Development Goals (SDGs) underscore the importance of addressing health, education, and social inequities among indigenous population, as their inclusion is critical to achieve equitable and sustainable development by 2030.[1] In any community, females in the reproductive-age group (15-49 years) constitutes the priority group, because 15-49 year females are given special importance in planning, implementation, evaluation of health and social interventions, because of their critical role as individual, in family, and towards population health outcomes. These age group constitutes approximately 71.14% of the total population in developing countries, with 22.2% of the total population in India.[2] These age groups include some of the most important turning point in women's life. This period also represents a critical window, during which health knowledge, attitudes, and practices established in adolescence. An early adulthood directly influences reproductive outcomes, maternal health, and intergenerational well-being. . By the time they turn 15-18 years, two-third of the female get married, which leads to unsafe pregnancies. Approximately 27 million live births and 30 million pregnancies occur annually in India. Millions of women experience pregnancy-related illness each year, and over 57,000 maternal fatalities occur in India each year.[2] The Indian Maternal Mortality Rate (MMR) is greater in rural regions than in urban regions. Therefore, women play a crucial role in shaping the nation's future.[2] Focusing on one of the Indian states: Jharkhand, which is located in the east-central region of India.[3] This state is also known for its rich biodiversity, consisting of various tribal population. These tribal population refer to indigenous communities with distinct cultural, social, and historical identities, often residing in geographically isolated areas. In India, they are officially recognized as Scheduled Tribes (ST) and commonly face social and health-related disadvantages. There are approximately 32 tribal groups in the state, among which the Santhal Tribes constitutes the majority.[3] The estimated total population of ST is 8,645,042, of which 7,868,150 live in rural areas and 7,76,892 live in the urban region.[3] East Singhbhum, is a district in Jharkhand and a home to various tribal communities, such as the Santhal, Ho, Munda, Kharia, Savar and Bhumij tribes. These communities face healthcare challenges due to socioeconomic disparities, limited healthcare access, traditional beliefs, and practices among tribal communities.[4] The Indian government has implemented various health schemes across the country, including in the state of Jharkhand to tackle these situations. Therefore, the aim of implementing health schemes is to safeguard well-being and establish a prosperous society for women of reproductive age group.[4] There are several health coverage schemes running in India to improve the health of a women and adolescent girls. These healthcare schemes are "Janani Suraksha Yojana" (JSY), "Janani Sishu Swasthya Karyakram" (JSSK), "Pradhan Mantri Matri Vandana Yojana" (PMMVY), "Rashtriya Kishori Swasthya Karyakram" (RKSK), "Poshan Abhiyan" (PA), "Anemia Mukh Bharat" (AMB), and the National Family Welfare Scheme "ASHA Schemes & Enhanced Compensatory Scheme".

Despite the availability of these schemes, evidence suggests that their utilization remains suboptimal among tribal women, largely due to gaps in the awareness, sociocultural barriers, inadequate health communication, and systemic challenges at the service delivery level.[5] East Singhbhum district, which has a substantial tribal population, presents a critical context for examining these disparities. Understanding the extent of scheme utilization and the barriers faced by the tribal women in this district is essential for identifying implementation gaps and informing context-specific interventions.[4] Therefore, this study focus on assessing the utilization of healthcare schemes among tribal women of reproductive age in East Singhbhum, Jharkhand, and on developing and validating a culturally appropriate menstrual health awareness booklet to enhance knowledge, awareness, and informed health-seeking behavior.

This pilot study was a part of doctoral research, conducted in two phases.[4] In the first phase, the objectives of the study were to assess the knowledge, attitudes, and practices of relevant healthcare schemes among adolescent girls and tribal women in the reproductive-age group. Another objective was to understand the challenges faced in the provision of tribal women's healthcare schemes from different stakeholders' perspectives. The second phase was the implementation phase, with the objective of developing and validating an awareness booklet on menstrual health for tribal adolescent girls and to evaluate the perception of participants toward it. Despite of the documented gaps in the utilization of reproductive healthcare schemes among tribal population, evidence from Jharkhand integrating KAP assessment, stakeholder perspectives, and pilot testing of a culturally tailored menstrual health intervention is limited. Therefore, this pilot mixed-methods study addresses the gap by combining these elements in the tribal setting.

METHODS:

A cross-sectional study was conducted in East Singhbhum district of Jharkhand. An Institutional Ethics Committee (IEC) approval was taken from Manipal Tata Medical College, Institutional Ethics Committee with the IEC number MTMC/IEC/2023/53. . Data collection was initiated after the participation information sheet was explained to the study participants. Signatures were obtained from the study participants on the informed consent form, and in the case of minors, written assent was also obtained from the concerned parents/guardians. Eight healthcare schemes were included to assess the knowledge, attitudes, and practices of these schemes among the study participants as listed in Table 1.[6]

TABLE 1: EIGHT HEALTHCARE SCHEMES INCLUDED IN THE STUDY

Adolescent Girls schemes	Schemes for reproductive-age group women
1.Rashtriya Kishori Swasthya Karyakram	4.Janani Suraksha Yojana
2.POSHAN Abhiyan	5.Janani Sishu Suraksha Karyakaram
3.Anaemia Mukh Bharat	6.Pradhan Mantri Matri Vandana Yojana
	7.Pradhan Mantri Surakshit Matritva Abhiyan
	8.Family Planning Schemes under NHM including: a. ASHA Scheme b. Enhanced Compensatory Scheme
	8. Anemia Mukh Bharat

In Phase 1 (Need assessment), Under objective 1, to assess the KAP towards reproductive health schemes of India, the study focused on adolescent girls (10-19 years) and tribal women (15-49 years) from the Santhal, Ho, Munda, Bhumij, Kharia, and Sabar tribes. Details of the different tribes living in the East Singhbhum region are mentioned in Table 2: Name and percentage of the different tribes residing in the East Singhbhum District excluding migrant populations and those with mental illness.

TABLE 2: NAME AND PERCENTAGE OF THE DIFFERENT TRIBES RESIDING IN THE EAST SINGHBHUM DISTRICT

Sl. No.	Name of the different tribes residing in the East Singhbhum District	Percentage
1.	Santhal	15.01%
2.	Bhumij	5.44%
3.	Ho	2.48%
4.	Munda	2.36%

5.	Ghasi	1.08%
6.	Bhuiya	0.70%
7.	Dom	0.65%
8.	Mahli	0.59%
9.	Oraon	0.54%
10.	Kharria	0.48%
11.	Savar	0.35%
12.	Lohra	0.24%
13.	Gond	0.18%

Two villages were randomly selected from the Golmuri cum Jugsalai block in East Singhbhum, Jharkhand, with 50 participants chosen from each village: 25 reproductive-aged women and 25 adolescent girls.

Knowledge was assessed under three domains: awareness of healthcare schemes, awareness of services provided under the schemes, and source of information. These domains captured participants' recognition of schemes, understanding of scheme benefits, and the channels through which information was obtained. Attitude was assessed in three domains: perceived benefits of healthcare schemes, overall experience with scheme-related services, and perceptions regarding the role of community participation in improving community health. Whereas practices were assessed in three domains: utilization of healthcare schemes, receipt of financial assistance, and perceived adequacy of existing schemes in meeting tribal community health needs.

In objective two, to understand the challenges faced in the provision of tribal women's healthcare schemes from different stakeholders' perspectives. Purposive sampling technique was used for qualitative analysis, and in-depth interviews were conducted with 10 participants. These participants were frontline health workers and other volunteers such as Accredited Social Health Activist (ASHA) workers, Auxiliary Nurse Midwifery (ANMs), Anganwadi Workers (AWWs), Gram Mukhiya/ Gram Pradhan (village head), Health Officers, and Tribal women of reproductive age group.

In Phase 2, a preliminary menstrual hygiene module under the Rashtriya Kishor Swasthya Karyakram was developed and was delivered to 30 participants through an interactive session, followed by a Q&A segment. This module talked about the menstrual hygiene awareness booklet was designed as an educational intervention to improve menstrual health knowledge and hygiene practices. It covered menstruation basics, hygienic practices, sanitary product use and disposal, and myth-busting messages in simple, illustrated language. A training/awareness session presentation of this booklet of around three to four hours was provided to 30 study participants. Feedback was collected. The details of the module are provided in the extended data file as the menstrual hygiene scheme preliminary module.[7]

STATISTICAL METHODS:

SAMPLE SIZE CALCULATION

In phase 1, this pilot study was part of a doctoral research project with a total sample size of 745.[4] For objective 1, considering 10% of the study sample (n=74) and a dropout rate of 20%, the final calculated sample size was 92, which was rounded to 100. This figure was rounded up to 100 to enhance statistical precision, ensure adequate representation of subgroups, and account for potential incomplete or missing responses during data collection, thereby strengthening the methodological rigour of the study. A self-administered questionnaire validated by external experts and translated into Hindi language was used.[8] The tool has two sections: Section A covers demographic details, and Section B consists of a baseline survey on tribal women's knowledge, attitudes, and practices related to the eight healthcare schemes. The content validity index (CVI) score of the questionnaire was 0.92, with a reliability score of 0.734 using Cronbach's alpha. This is a statistical measure used to assess the internal consistency and reliability of items within a scale, indicating how closely related the items are in measuring the same construct. Descriptive statistics (frequency, percentage, and median)

and a chi-square test were used to examine the association between two categorical variables by comparing observed frequencies with expected frequencies. . Raw data set is mentioned in the data availability section.[9]

Under objective 2, qualitative part, analysis was done manually with the help of Microsoft Excel software. A total of ten in-depth interviews with ASHA, ANM, gram mukhiya, tribal women, and adolescent girls with the help of an interview guide was done.[8] The SWOC framework was used to organize qualitative findings because it provides a structured and systematic approach to capturing internal strengths and weaknesses as well as external opportunities and challenges related to the implementation and utilization of healthcare schemes, thereby enhancing analytical clarity and programmatic relevance.

In Phase 2, a preliminary awareness module on menstrual health [7] was developed on the basis of gaps identified in the literature and the results and suggestion came from the study participants from objective 1 and 2 under phase 1. This booklet was also validated by the public health experts with a CVI index of 0.79 and delivered to 30 adolescent girls and reproductive-aged tribal women from one of the blocks in East Singhbhum district in the state of Jharkhand, India. The training sessions included interactive lectures, local-language audiovisual clips, question and answer sessions, and feedback collection.

RESULTS:

PHASE 1 (NEED ASSESSMENT)

In both the groups i.e. tribal women and adolescent girls the majority number of participants were from the Santhal tribe. Approximately 48% of the study participants were aged between 15 to 29 years, and 60% of the study participants were aged 10-15 years. The characteristics of the participants are listed in Table 3.[10]

TABLE 3: SOCIO-DEMOGRAPHIC DATA REPRESENTING CHARACTERISTICS OF THE STUDY PARTICIPANTS

Reproductive-age tribal women (n=50)		Adolescent girls (n=50)	
Variables	Percentage	Variables	Percentage
Marital Status		Marital Status	
Married	94%	Unmarried	100%
Widowed	6%		
Religion		Religion	
Sarna Dharam	100%	Sarna Dharam	100%
Tribal Affiliation		Tribal Affiliation	
Santhal	70%	Santhal	100%
Munda	18%		
HO	12%		
Age		Age	
20-29years	48%	10-15 years	60%
30-39 years	20%	15-19 years	40%
40-49 years	32%	NA	NA

Knowledge: Among reproductive-aged women (n = 50), 26 participants (52%) were aware of reproductive healthcare schemes, while 24 (48%) were not aware. However, none of the women reported complete awareness of the services available under these schemes; 26 (52%) had only partial awareness, and 24 (48%) reported no awareness of scheme services. Among adolescent girls (n = 50), 25 (50%) were aware of healthcare schemes and 25 (50%) were not aware. Similar to reproductive-aged women, none of the adolescent girls demonstrated complete awareness of services under the schemes; 25 (50%) reported partial awareness, while the remaining 25 (50%) had no awareness. Regarding sources of

information, among reproductive-aged women who were aware (n = 26), 17 (65%) reported ASHA workers as their primary source of information, while 9 (35%) received information through AWWs. In contrast, among aware adolescent girls (n = 25), only 2 (8%) obtained information through ASHA workers, AWWs, or family and friends, whereas the majority, 23 (92%), relied solely on AWWs as their source of information.

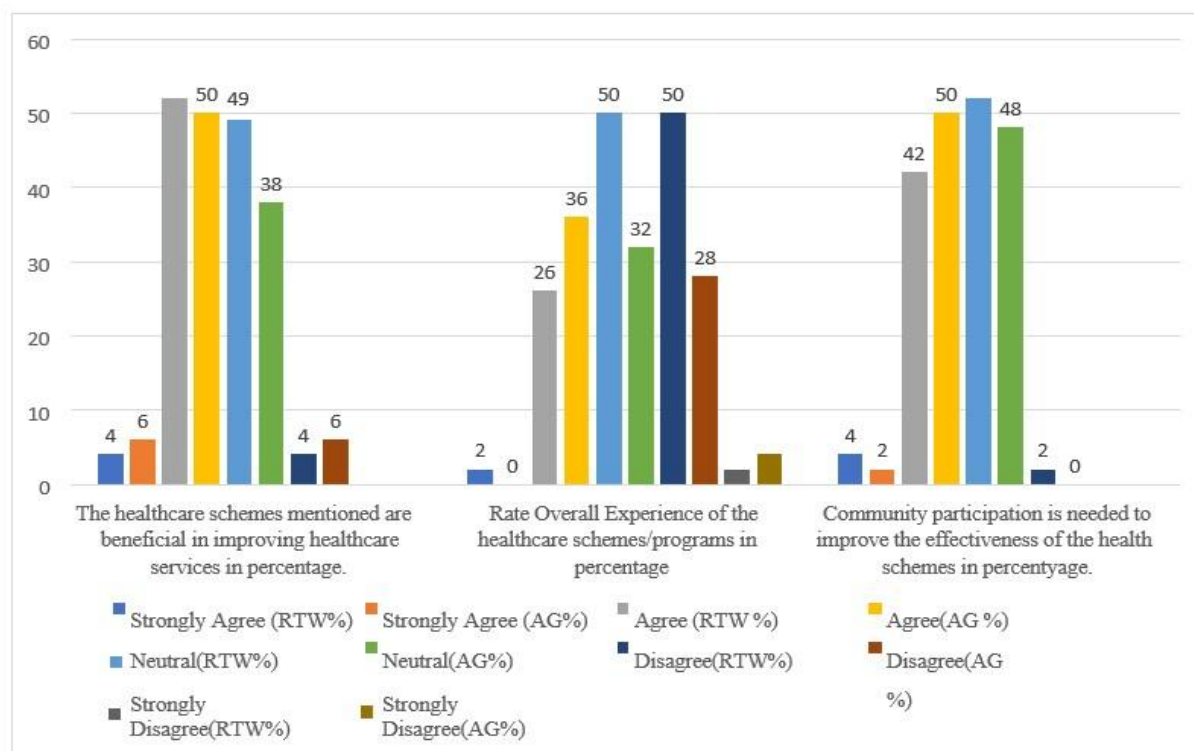
A chi-square test revealed that tribal affiliation among reproductive-aged women was significantly associated with awareness of healthcare schemes (P=0.024). However, age and occupation among women and age among adolescent girls were not significantly associated with awareness. Similarly, the education level of adolescent girls did not significantly impact their awareness of healthcare schemes. The results of the association test are presented in Table 4.[11]

TABLE 4: ASSOCIATION OF SOCIO-DEMOGRAPHIC FACTORS WITH KNOWLEDGE OF HEALTHCARE SCHEMES AMONG REPRODUCTIVE AGE GROUP WOMEN.

Knowledge	Categories	Levels (N=50)		Chi Square value	Df	P value
		Yes/Partial	No			
Awareness of healthcare schemes/Programs	Tribal Women in the reproductive age group					
	Age					
	20-29	8	16	4.84	2	0.089
	30-39	5	5			
	40-49	11	5			
	Tribal Affiliation					
	Santhal	21	14	7.44	2	0.024
	Munda & Ho	5	10			
	Occupation					
	Homemaker	20	19	0.0366	1	0.848
	Self employed /Government /Private Job	6	5			
Education						
Illiterate	8	8	2.58	4	0.630	
Literate	18	16				
Awareness of healthcare schemes/Programs	Adolescent Girls					
	Education					
	Primary education	16	20	9.04	4	0.060
	Secondary education	9	5			
	Age					
10-14	17	13	1.33	1	0.248	
15-19	8	12				

Attitude: The analysis of attitudes revealed that 50% (n=25) of the participants in both groups were neutral regarding the perceived benefits of healthcare schemes in improving services. However, both groups agreed that community participation is essential for improving the effectiveness of healthcare schemes, with 42% (n=21) of reproductive-aged women and 50% (n=25) of adolescent girls supporting this view. Figure 1 [12] shows detailed attitudes toward reproductive healthcare schemes.

FIGURE 1. ATTITUDE OF REPRODUCTIVE-AGE GROUP TRIBAL WOMEN (RTW) AND ADOLESCENT GIRLS (AG) TOWARDS REPRODUCTIVE HEALTH CARE SCHEMES



Practices: Among reproductive-aged tribal women (RTW), 52%(n=26) reported having availed the benefits of reproductive healthcare schemes and received financial cash assistance, while 48%(n=24) reported not availing such benefits. In contrast, none of the adolescent girls (AG) reported availing financial benefits under the schemes (0%), with all respondents indicating non-utilization. Regarding perceptions of adequacy, 40%(n=20) of RTW felt that existing schemes were sufficient to meet the healthcare needs of the tribal community, whereas 60%(n=30) believed they were inadequate. Among adolescent girls, only 30%(n=15) perceived the schemes as adequate, while a larger proportion, 70%(n=35), reported that existing schemes were insufficient. These findings demonstrate that although over half of reproductive-aged women have accessed scheme benefits, utilization and perceived adequacy remain markedly lower among adolescent girls, underscoring significant gaps in scheme reach and effectiveness for this younger population. Participants from both groups emphasized the need for more awareness and training sessions on healthcare schemes. They were predominantly aware of schemes offering direct monetary incentives (cash benefits): such as Janani Suraksha Yojana (JSY), Pradhan Mantri Matru Vandana Yojana (PMMVY): which were recommended by the majority.

In Objective 2: The qualitative analysis of ten in-depth interviews revealed key themes related to strength, weakness, opportunities, and challenges (SWOC). The verbatim responses in relation to the in-depth interviews on challenges faced in the provision of tribal women's healthcare schemes from the participants are detailed in Table 5,[13] and the themes developed from the interviews are shown in Figure 2.[14]

FIGURE 2: REPORTING OF THE THEMES FROM THE PROBING QUESTIONS BASED ON THE STRENGTH, WEAKNESS, OPPORTUNITIES, AND CHALLENGES (SWOC).

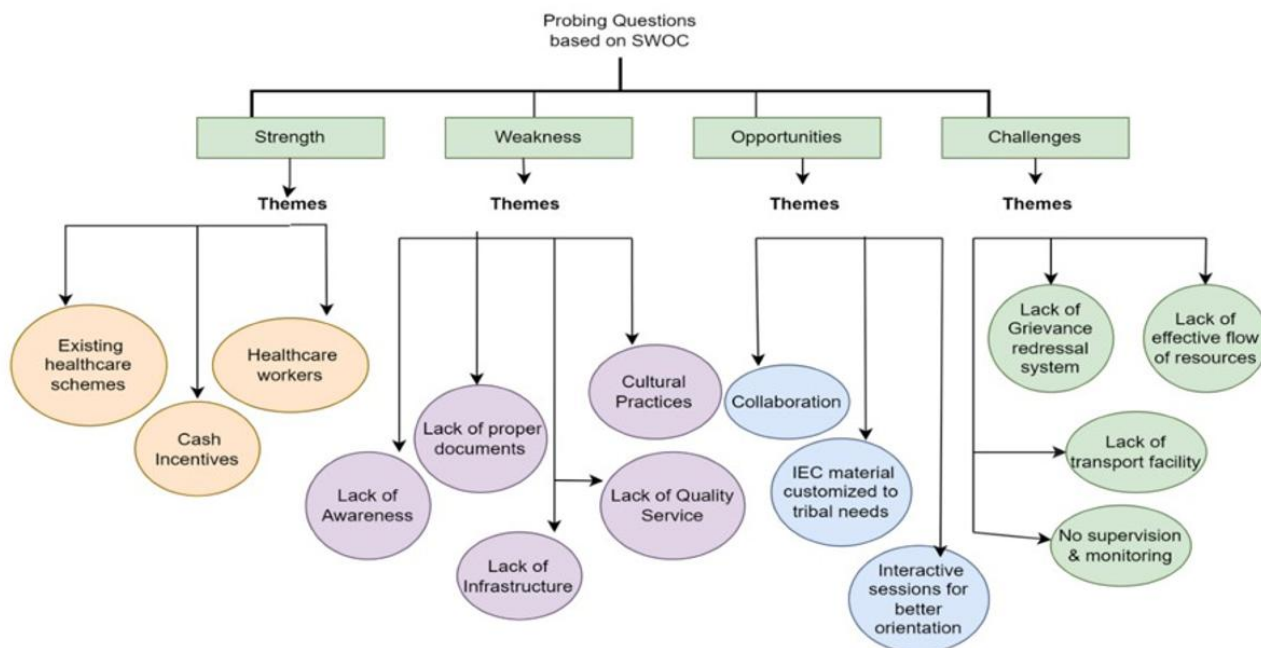


TABLE 5 VERBATIMS BY THE STUDY PARTICIPANTS

S.No.	Participants coded Name & Age	Verbatims by participants
1.	ASHA, 35	“More awareness is needed through pictorial form or audio-visual clips”
2.	Gram Mukhiya, 34	“Still there is a need for awareness, women in this village uses local clothes for maintaining their personal hygiene, and they wash it with plain water”
3.	Adolescent Girl, 18	“We never went to Anganwadi centers, also here is no proper building for Anganwadi centers”
4.	Tribal Women, 28	“I got the money after my delivery, ASHA Didi helped me in getting the money. But I suggest if we can get information on the documentation process, how to open bank account, making aadhar/ pan card”
5.	Tribal Women, 25	“I am not aware of health schemes, only I know that money is given after delivery in hospital”

PHASE 2 (IMPLEMENTATION)

A preliminary module on menstrual health, developed under the RKSK program, was delivered to 30 participants through an interactive session, followed by a Q&A segment. Around n=25 (83.3%) participants reported that the module's design and layout: including font style, spacing, and color scheme were appropriate and user-friendly. Additionally, n= 26(86.6%) participants indicated that the key messages were effectively communicated through the pictorial presentations included in the module. In terms of overall evaluation, 14 participants (46.7%) rated the quality of the training as good, while a majority, 23 participants (76.7%), agreed that the content was relevant and well aligned with the topic. Responses on the Likert scale demonstrated high levels of satisfaction across various components of the module, including content clarity, duration, pace, pictorial presentation, and facilitator effectiveness, with a median score of 4 on a 5-point scale, indicating agreement to strong agreement.

Qualitative feedback further highlighted areas for enhancement to improve cultural relevance and acceptability. Twenty-eight participants recommended incorporating tribal prints and designs to make the module more visually

attractive and contextually representative. Participants also emphasized the need for linguistic adaptation by including the Santhali language using the Devanagari/Hindi script to improve comprehension. Additional suggestions included introducing the module in school settings to strengthen early awareness among adolescents, replacing urban-centric visuals with village-based imagery, and making the finalized module freely accessible to ensure wider dissemination. Overall, these findings suggest that while the module was well accepted, culturally tailored refinements and broader dissemination strategies are crucial to maximize its effectiveness in tribal communities.

DISCUSSION:

AWARENESS AND UTILIZATION OF HEALTHCARE SCHEMES AMONG TRIBAL WOMEN AND ADOLESCENT GIRLS:

Several studies have examined the challenges faced by marginalized tribal communities. These tribal communities are often illiterate and hold traditional beliefs. This study investigated the use of healthcare schemes among reproductive-age tribal women in Jharkhand, India. The findings revealed that awareness of these schemes was limited, with ASHA and AWWs being the key information sources. Despite, most of the women did not utilize the available healthcare benefits. In comparison with our study, a randomized controlled trial examined the socioeconomic inequalities in the receipt of JSY benefits in Jharkhand. The analysis was based on the prospectively collected data on 3,682 births between 2009-2010 from a demographic surveillance system across five districts of Jharkhand and Odisha, India.[15] They reported that the percentage of women who obtained benefits varied greatly by district wise, particularly in the state of Jharkhand when compare to Odisha state, where only 5% of women in Godda District and 40% of women in Ranchi District of Jharkhand state respectively benefitted from the healthcare schemes.[15] Through this pilot study, it was reported that the majority of adolescent girls was unaware of the health schemes and did not receive benefits. The majority of participants recommended awareness session on schemes related to nutrition and anemia, due to a lack of awareness on these topics. Similar to our study, another study from Madhya Pradesh which is an Indian state located in the central region of India reported that tribal girls have remarkably little awareness of the changes that occur during adolescence, compared with the girls from nontribal backgrounds. They also had less knowledge of Human Immunodeficiency Virus (HIV), Sexually Transmitted Infections (STIs), and contraceptive techniques. [16]

ACCESSIBILITY BARRIERS AND RURAL-TRIBAL DISPARITIES:

It was reported that on the basis of publicly available data from the National Family Health Survey (NFHS)-4, the socioeconomic inequities manifested in caste, class differentials, inequities in availability, utilization, and affordability of maternal healthcare services. Also, the probability of not receiving full antenatal care (ANC) was the highest among scheduled caste/scheduled tribe families in India.[17] Scheduled Castes (SC) and Scheduled Tribes (ST) are officially designated groups in India that have historically faced social, economic, and educational disadvantages. SC communities typically include groups that were traditionally marginalized in the caste hierarchy, while ST communities consist of indigenous tribal populations with distinct cultures, languages, and socio-economic practices. Families belonging to these groups often experience limited access to resources, healthcare, and social services, making them a key focus for health and development programs.

Another study[18]conducted in the year 2019, in the city named Ayodhya in one of the Indian state Uttar Pradesh. This study was related to the accessibility of reproductive health schemes for pregnant and lactating women, reported that women in the rural areas of Uttar Pradesh experienced access to and hurdles in using healthcare schemes.[18] Consistent with these findings, our study also observed that tribal women faced substantial challenges in accessing and utilizing available healthcare schemes, primarily due to limited awareness and systemic barriers.

PREFERENCE FOR CASH INCENTIVE SCHEMES:

Our study, revealed that the awareness of healthcare schemes among tribal women was more inclined towards the schemes offering cash benefits. "Participants' preference for recommending cash-incentive schemes such as JSY and PMMVY is understandable, as these programs provide immediate financial support that can reduce economic barriers to maternal and child healthcare. However, this focus also highlights a gap in awareness about non-cash health interventions, such as immunization or nutritional programs, which are equally important for long-term health outcomes.

Knowledge, Attitudes, and Practices of Reproductive Healthcare Schemes and Evaluation of a Menstrual Hygiene Awareness Module among Tribal Women and Adolescent Girls in Jharkhand, India: A mixed-methods pilot study

This underscores the need for targeted education to improve comprehensive utilization of available health service.[19] Another study conducted in rural areas of Odisha in the year 2018, on a cash transfer scheme for maternal child healthcare practices, reported that a substantial portion of the recipients used cash incentives to pay for healthy meals, prescription drugs, diagnostic tests, and supplementary foods for their children under the financial incentives to mothers who deliver a girl child (MAMTA) Scheme.[20] This highlights that cash-based schemes can positively influence maternal and child healthcare practices when beneficiaries are aware of them.

AWARENESS GAPS AND THE NEED FOR TARGETED HEALTH EDUCATION:

In our study, most adolescent girls and tribal women reported non-utilization of available schemes due to a lack of awareness, emphasizing that without adequate knowledge and training, even potentially beneficial programs like MAMTA may not achieve their intended impact. This underscores the need for targeted awareness campaigns and education to improve uptake of non-cash and cash-based health schemes. Another study[21] conducted in the year 2019, emphasized the need for organized efforts and grassroots-level campaigns on sexual and reproductive health and rights for young people in rural Jharkhand. Although our study focused on schemes related to anemia, such as the Anemia Mukta Bharat (AMB) program, the underlying issue is similar: both studies highlight the critical role of awareness and targeted outreach in improving health outcomes among adolescents and young women. Just as organized campaigns are necessary to improve knowledge and utilization of sexual and reproductive health services, effective awareness and education are also essential to ensure uptake of nutrition-related programs like AMB, particularly in tribal and rural communities." As a result, we conclude that more awareness sessions are needed for anemia prevention. This conclusion has also been reported from another study performed in Odisha where only 20% of the study participants knew about anemia, and the majority of beneficiaries preferred government health care to receive treatment for anemia.[22] Hence, people's perceptions of health-seeking behaviors can change through social mobilization and an increase in community awareness. Effective anemia control goes beyond distributing Iron Folic Acid (IFA) and albendazole tablets; it also requires raising awareness about their proper use, promoting iron-rich diets, and improving sanitation to prevent infections. Integrating education and behavioral interventions with supplementation is essential to ensure adherence and maximize program impact, particularly among adolescents and tribal women. Targeted, culturally appropriate awareness campaigns are therefore critical to enhance the effectiveness of anemia control initiatives. [22]

STAKEHOLDER'S PERSPECTIVE ON SCHEME IMPLEMENTATION:

Another objective of our study was to understand the utilization of healthcare schemes among the tribal reproductive age group population from a stakeholder's perspective, such as the ASHA, AWWs, village representatives, tribal women, and adolescent girls. There is a need for more healthcare awareness, infrastructure, proper documentation, quality services, strengthening of grievance-redressal systems, effective flow of resources, and more monitoring/supervision. A similar study,[23] on accessibility and barriers to maternal health programs in the tribal region of Odisha and concluded that the government's maternal health program barely considers tribal culture and traditions when providing care. Owing to taboos in the community, indigenous women encounter difficulties accessing healthcare services because maternal health programs are not widely accepted or easily accessible. [23] Another study[24] stated that, in Odisha, maternity and newborn care services were not well utilized in the community, and the directions provided by programs (IMNCI) and their actual implementation differed greatly.[24] A similar study[25] also examined the extent to which healthcare schemes were covered. The study reported that the coverage gap score was the highest in northeastern Indian states (55.7%) and the lowest in Kerala (10.48%). [25]

CULTURAL SENSITIVITY AND CULTURAL BARRIERS:

In phase two, the results correlated well with those of other studies conducted in one of the South Indian states i.e. Tamil Nadu,[26] this study concluded that menstruation is shaped by sociocultural norms that reinforce gender role and stigmatizing practices. These norms influence menstrual hygiene management at home and at school. This research emphasizes the importance of understanding girls' personal experiences and recommends tailoring WASH health interventions in the local context. Similarly, another study highlighted the unpleasant experience of using medical jargon while communicating between health care workers and patients.[27] The current study emphasized the need for a culturally sensitive healthcare approach in tribal areas, In our study, we observed that tribal women and adolescent girls

often faced barriers in accessing healthcare due to cultural practices, language differences, and limited awareness of health schemes. These findings emphasize the need for a culturally sensitive healthcare approach in tribal areas to ensure programs are accessible, acceptable, and effective for these populations.

LIMITATIONS OF THE STUDY:

This study had a small sample size, focused on a single scheme in the preliminary booklet, and included only the Santhal tribe, which may limit the generalizability of the findings to other tribes or broader populations. Although the module was developed in Hindi and English without using the Ol Chiki script, participants did not express concerns likely due to limited familiarity with the script, but this could have influenced comprehension and engagement, potentially affecting the accuracy of feedback collected. Additionally, the study relied on self-reported data, which may be subject to recall bias or social desirability bias, potentially impacting the validity of the results.

GENERALIZABILITY:

This study offers insights that may inform health educators, school teachers, community health workers, and NGO personnel working with tribal populations to improve menstrual health awareness. Findings related to knowledge gaps, barriers to scheme utilization, and preferred communication channels are likely transferable to other tribal communities in similar rural and resource-constrained settings. However, elements such as cultural norms, language preferences, and engagement with specific health schemes are context-specific and may vary across tribes. These distinctions should be considered when adapting the findings to other settings to support effective and culturally responsive interventions.

RECOMMENDATION:

The findings highlight the need for a holistic and culturally sensitive approach to reproductive healthcare delivery among women and adolescent girls in the tribal regions, which should be implemented by state and district health authorities through the integration of local cultural practices, tribal belief systems, and gender-sensitive strategies into existing health schemes. Strengthening the capacity of frontline healthcare workers (ASHA, ANM, and AWW) to deliver context-specific services is essential. In addition, government health departments, in collaboration with local NGOs, community-based organizations, and tribal leaders, should develop robust, pictorial IEC materials in local languages that clearly explain scheme benefits and documentation processes. Repeated and participatory awareness activities, such as street plays, folk media, and structured training sessions can be delivered through schools, anganwadi centers, and Village Health and Nutrition Days to enhance awareness and utilization of reproductive healthcare schemes among tribal women and adolescent girls.

CONCLUSION

This study demonstrates that awareness and utilization of reproductive healthcare schemes among tribal women and adolescent girls in Jharkhand remain limited and are largely driven by cash incentives, highlighting systemic gaps in health communication and service delivery. These findings underscore important public health implications, particularly the need for policy reforms that prioritize culturally responsive, non-monetary behavior-change strategies alongside financial incentives. Strengthening community-based interventions through targeted awareness campaigns, structured training sessions, and improved healthcare infrastructure, can enhance the effectiveness and equitable reach of reproductive-health schemes. Insights from healthcare workers and community leaders further emphasize the need for improved supervision, infrastructure, and quality of care as core components of sustainable health system strengthening. The menstrual health awareness module piloted among tribal adolescent girls was perceived as satisfactory and useful, indicating the potential of school and community-based educational interventions. Participant feedback supports policy-level integration of such modules into school health programs, the use of culturally relevant village-themed visual content, and the free public dissemination of educational materials to promote scalability and long-term impact at the community level.

LIST OF ABBREVIATIONS:

SDG's: Sustainable Development Goals

MMR: Maternal Mortality Rate

JSY: Janani Suraksha Yojana

JSSK: Janani Sishu Swasthya Karyakram

PMMVY: Pradhan Mantri Matri Vandana Yojana

RKSK: Rashtriya Kishori Swasthya Karyakram

PA: Poshan Abhiyan

AMB: Anemia Mukh Bharat

NFHS: National Family Welfare Scheme

IEC: Institutional Ethics Committee

ASHA: Accredited Social Health Activist

AWW: Anganwadi Worker

ANM: Auxiliary Nurse Midwife

ANC: Antenatal Care

MAMTA: Financial Incentives to Mothers who Deliver a Girl Child

HIV: Human Immunodeficiency Virus

STIs: Sexually Transmitted Infections

ETHICS AND CONSENT

This study was approved by the Institutional Ethics Committee (IEC) of Manipal Tata Medical College, Jamshedpur, India. Under IEC number MTMC/IEC/2023/53 dated 16th October, 2023. It was a noninvasive, minimal risk study. Data collection started after the participation information sheet was explained. Written consent approved by the IEC was obtained from the study participants, and in the case of minors, written consent was also obtained from the concerned parents/guardians.

CONSENT FOR PUBLICATION:

Not Applicable

DATA AVAILABILITY: UNDERLYING DATA AND EXTENDED DATA:

Figshare: Dataset 1 contains raw data on the knowledge, attitudes, and practices of reproductive healthcare schemes among tribal women in the reproductive age group. <https://doi.org/10.6084/m9.figshare.27230835.v1> [9]

This study contains the following extended data at figshare:

- Menstrual Hygiene Scheme Preliminary Module. <https://doi.org/10.6084/m9.figshare.27266868.v1> [7]
- Figure 1: Attitudes of reproductive-age group Tribal Women (RTW) and Adolescent Girls (AG) toward reproductive health care schemes. <https://doi.org/10.6084/m9.figshare.27267081.v1> [12]
- Figure 2: Reporting of themes from the probing questions on strengths, weaknesses, opportunities, and challenges (SWOC). <https://doi.org/10.6084/m9.figshare.27267108.v1> [14]
- Table 1: Eight healthcare schemes included in the study. <https://doi.org/10.6084/m9.figshare.27267705.v1> [6]
- Table 3: Sociodemographic data representing the characteristics of the study participants. <https://doi.org/10.6084/m9.figshare.27267792.v1>. [10]
- Table 4: Association of sociodemographic factors with knowledge of healthcare schemes among reproductive-aged women. <https://doi.org/10.6084/m9.figshare.27267957.v1> [11]
- Table 5: Verbatims by study participants. <https://doi.org/10.6084/m9.figshare.27267981.v2>. [13]
- Questionnaire and interview guide. <https://doi.org/10.6084/m9.figshare.27268032.v1>. [8]
- Data are available under the terms of the describe the rights and responsibilities that apply to use of the website at www.figshare.com, and the products and services made available in connection with the Site license (CC by 4.0).

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