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ORA- Mixed-Method Research

Rajaswala Paricharya and Menstrual Practices: A Mixed-Methods Study on Cultural Beliefs and Reproductive Health Outcomes in Anand District of Gujarat, India.

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ABSTRACT:

Background: Menstruation, though being a physiological process, it is also influenced by social, cultural and personal practices. *Rajaswala Paricharya* is an Ayurvedic code of conduct outlining do's and don'ts observed by women during menstruation. Despite growing interest, quantitative association between menstrual restrictions and reproductive health are underexplored. There is a gap of large-scale surveys integrating socio-demographic factors like education, rural-urban divides and socio-economic status. Exploration of such association through mixed-method approaches can triangulate the cultural beliefs with statistical evidence. Theoretically it has been revealed that non-adherence of restrictions are linked with oxidative stress and hormonal imbalances causing PCOS and infertility but lack validation through studies in diverse populations. The present study fills the gap by employing mixed methodology to quantify associations if any between menstrual practices and outcomes, also revealing qualitative narratives on beliefs. Validating Ayurvedic wisdom of *Rajaswala Paricharya* against menstrual regularity and disease prevalence may help to bridge tradition with evidence-based medicine to sustain reproductive health. **Methods:** Questionnaire after validation was used with mixed methodology approach for in depth interviews and focus group discussions with adult female in Anand District of Gujarat, India. Total 59 in depth interviews, 15 focus group discussions (8 to 10 participants in each), 460 female surveys. MS Excel was used for descriptive statistics and Pearson's chi square test through SPSS software for further statistical analysis. **Results:** Socio cultural restrictions like prohibition from entering kitchen 62.1% and restricted diet significantly influenced reproductive health ($p<0.05$) for associations with chronic illness, menstrual disorders and illness in progeny. Qualitative themes highlighted the need for rest and seclusion and considered as health promoting. **Conclusion:** Using mixed methodology integrating qualitative and quantitative data for understanding the importance and impact of menstrual practices is the key highlight of the study. Association between certain menstrual practices and reproductive health outcomes were identified as statistically significant in quantitative data analysis. Amongst the qualitative narratives during discussions and interviews, the need for rest, seclusion and dietary restrictions were professed as health promoting behavior. To reassess the menstrual practices through scientific lens is emphasized by mixed method findings..

KEYWORDS: *Ayurveda,* Menstrual practices, Mixed-methods, Oxidative stress*, Rajaswala paricharya,* Reproductive health

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1. INTRODUCTION

Ayurveda defines all epochs of woman's life like *Bala*, *Kumari*, *Rajaswala*, *Ritumati*, *Garbhini*, *Prasuta*, *Sutika*. (different epochs of women's life) The term *Rajaswala* refers to a woman who is menstruating or in her menstrual phase. The status of *Dosha* (regulatory functional factors of the body) and *Dhatu* (major structural components of the body) with variations and dominance of particular *Doshas* in each epoch are described in detail. Preventive steps in the form of diet and lifestyle modifications to achieve health during these epochs are termed as *Paricharya* (code of conduct) to achieve health during all these epochs. [1]

Rajaswala Paricharya specifically incorporates diet and lifestyle modification during menstruation to alleviate *Vata dosha* aggravation and promoting endometrial repair and regeneration. Studies have also highlighted to observance of regimen of *Rajaswala Paricharya* to be contributing in easing Premenstrual Syndrome (PMS) and dysmenorrhea.

In India, menstrual disorders are most common among the gynecological issues contributing to burden like infertility, PCOS and somatic syndromes. Contemporary studies focus on menstrual hygiene management and access of sanitary products along with taboos and limited exploration of physiological and impact on reproductive health. A mixed method study design in diverse setting of Anand district of Gujarat, India, addresses the gap of knowledge and validate the outcome of menstrual practices and *Rajaswala Paricharya* on reproductive health.

Null hypothesis (H0) There is no significant co relation between menstrual practices and general illness, menstrual disorders, illness in progeny

Alternate hypothesis (Ha) There is significant co relation between menstrual practices and general illness, menstrual disorders, illness in progeny

Aim and Objectives:

(a)To construct and validate questionnaire about observance of *Rajaswala paricharya (*menstrual practices) and its implications on reproductive health.

(b)To study the observance of menstrual practices and *Rajaswala paricharya*.

2. METHODOLOGY

A chronological mixed method research design was adopted to explore and discover the observance of Rajaswala Paricharya and other traditional or contemporary menstrual practices and their impact on reproductive health.

Study Design:

Sampling technique:

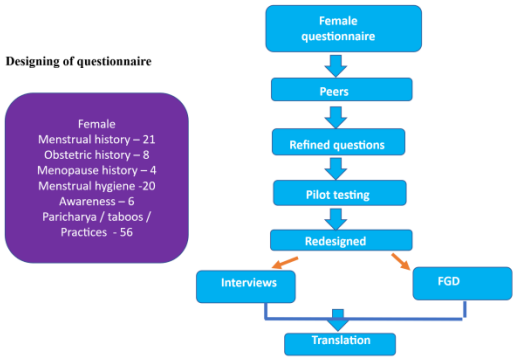
For the quantitative phase, standard formula for cross sectional survey was utilized for sample size determination.: n=z2p(1−p)e2 n = \frac{z^2 p (1-p)}{e^2} n=e2z2p(1−p), where z=1.96 z = 1.96 z=1.96 (95% confidence interval), p=0.5 p = 0.5 p=0.5 (conservative estimate of prevalence for maximum variability, based on prior Indian studies on menstrual practices showing ~50% adherence to restrictions ,), and e=0.05 e = 0.05 e=0.05 (5% margin of error). This yielded a minimum n≈385 n \approx 385 n≈385.

For clustered sampling across rural and urban areas and to account for non response rate, 460 participants were

targeted. Snowball sampling technique with key informants as community health workers, ASHA workers were utilized in current study and recruited for in depth interviews and focus group discussion.

The present study design involved two distinct phases:

1. Quantitative Phase (First): Questionnaire was prepared and validated.



Pic 1: Flow chart showing designing of questionnaire.

The scale content validity index (S-CVI) was 0.92_which is acceptable.

Reliability of questionnaire four domains; menstrual health, reproductive health, menstrual practices and attitude towards menstrual practices. Table 1 denotes the alpha score and reliability level of female questionnaire.

Table 1: Alpha score for questionnaire.

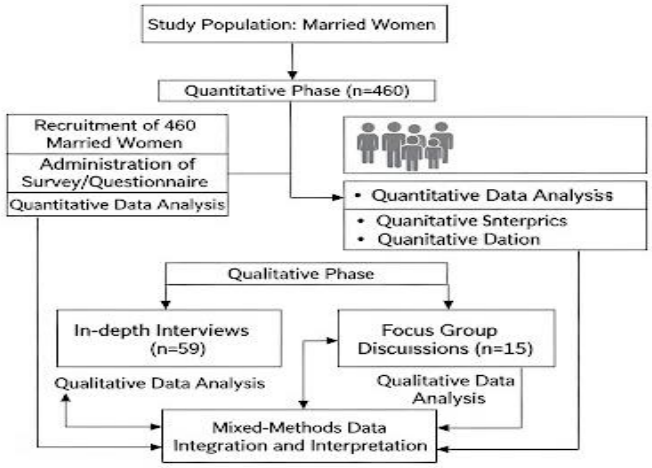
Variables	No of items	Alpha score	Reliability level
Menstrual Health	8	0.845514598	Good
Reproductive Health	6	0.805943	Good
Practices	9	0.919477338	Excellent
Attitude	10	0.894864404	Good

- Cross sectional survey through a structured questionnaire was conducted among 460 married women. The variables included prevalence of menstrual practices, awareness, menstrual health, reproductive health, chronic illness and illness in offspring.
- Analysis of quantitative data was done to identify associations and patterns using descriptive statistics and inferential analysis through Pearson's chi-square test.
- SPSS Software: IBM Corp, Released 2013. SPSS statistics for window version 22.0, Armonk, New York.
- Missing values were coded as 9.

2. Qualitative Phase (Second):

- In the chronology, based on quantitative results, qualitative methods were used to understand and gain deeper insights into the experiences, cultural meanings and individual interpretations of practices among the participants.
- Respondents were selected and their beliefs, attitudes and motivations behind the observing or neglecting menstrual practices were explored through in depth (n=59) interviews and focus group discussions. (n=15, 8-10 participants in each group). Interviews were conducted by key informants, trained researchers with field knowledge after training and debriefing ensuring reflexivity. Thematic analysis was used for coding and synthesis. Data saturation was achieved.

This explanatory design allowed the researchers to use the qualitative data to explain, validate, and enrich the quantitative findings and uncover contextual nuances.



Pic 2: Flow chart showing participant recruitment

Parul University: PU No. PU/PIA/IEC/02/2021/016 dated 24/07/2021, GJPIASR, CVMU : CVMU/GJPIASR/IEC/6-2022-23/06 dated 1/05/2023.

CTRI Registration: CTRI registration was done prospectively CTRI/2021/12/038623 dated 15/12/2021.

Observations and Integration of Results:

Total 35 villages and areas of Anand district were covered during the study between Jan 2022 to December 2022.

Following is the response of restricted practices mentioned by adult female during the study.

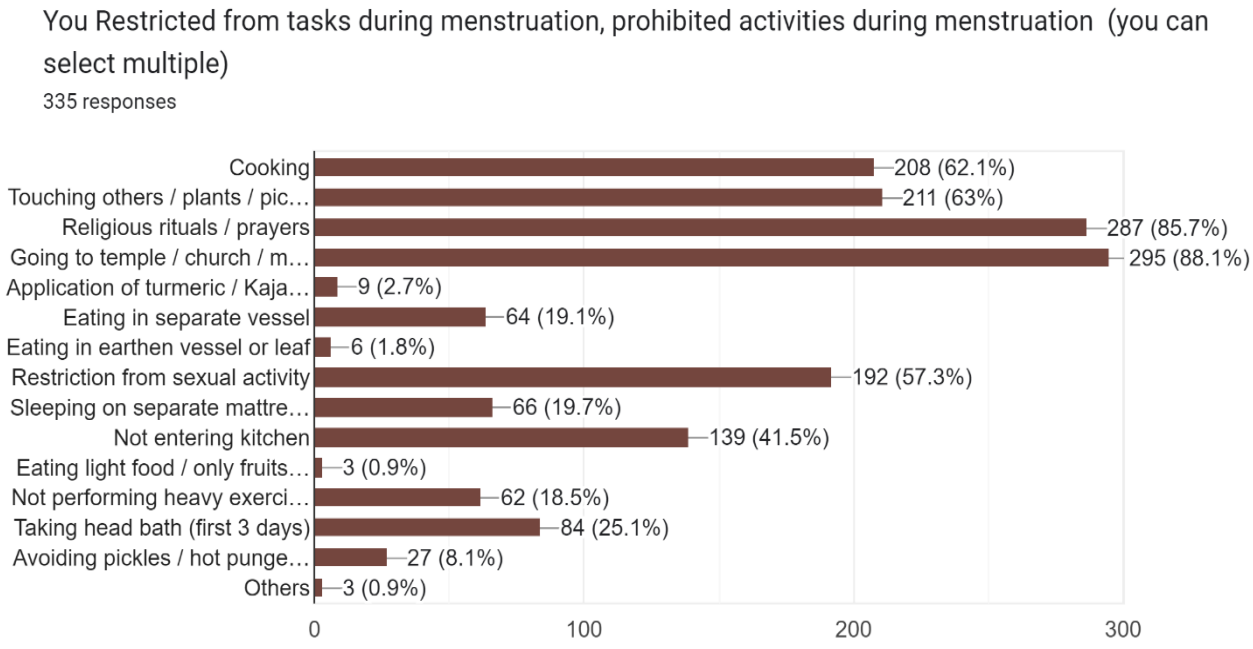


Chart 1: Restricted practices during menstruation

A theme that emerged recurringly during focus group discussions and interviews was that adjusting dietary and lifestyle choices during menstruation has a potential contribution in maintenance of reproductive health - the idea that was found new and intriguing by many.

21.4% of respondents answered that themselves and no one in the family follows such restrictions. 61% agreed and 24% strongly agreed that rest is needed during menstruation. 36.9% agreed that restrictions are for maintaining reproductive health and menstrual regularity.

Menstrual health

Average age of menarche was found 14.2 years from 401 respondents. Regular cycle with duration ranging from 26-28 days was found in 45.7% (201) respondents. 34.5% each (152) had duration as 3-4 days and 4-5 days.

55.2% (243) said that their menstrual cycles were always regular. Whereas 16.8%(74) replied as sometimes and 8.6%(38) replied as rarely. History of sometimes taking medications for menstrual regularization was found in 14.9%(63), often in 3.8%(16) and never needed in 74.9%(317) respondents. In 110 respondents consuming medications, 53.6%(59) took allopathic medications whereas 31.8%(35) consumed Ayurveda medicines for regularization. When enquired about whether it is safe to take hormonal medications, out of 333 respondents 46.8% (156) disagreed, whereas 15.2%(52) agreed, 18.9%(63) neither agreed nor disagreed as they didn't -know what to respond.

Discomfort during menstruation

Chart 2 represents the types of discomfort during menstruation. Menstrual cycle was painful sometimes in 48.8% (208) out of 462 respondents. 34.5%(140) replied they needed break sometimes due to severe pain during menstruation. Out of 267 respondents when asked whether they needed break due to pain during menstruation every time, 141(52.8%) replied they needed full day break from college/home/work due to pain during menstruation. 84(31.5%) required half day break and 42(15.7%) replied they needed more than one day break.22.7%(90) opted for sometimes requirement of medicine for pain relief during menstruation. 73.6%(273) never consulted any doctor for pain. 39.2%(160) suffered from premenstrual symptoms sometimes. 23.2%(93) replied they never got any emotional support or relaxation at work place or home during menstruation, 37.7%(151) got relaxation sometimes. The women from villages mentioned that they had to do all other work like labor work in cow shed, washing clothes, utensils except cooking. They also added that women residing in cities had benefit as they didn't have to do such work.

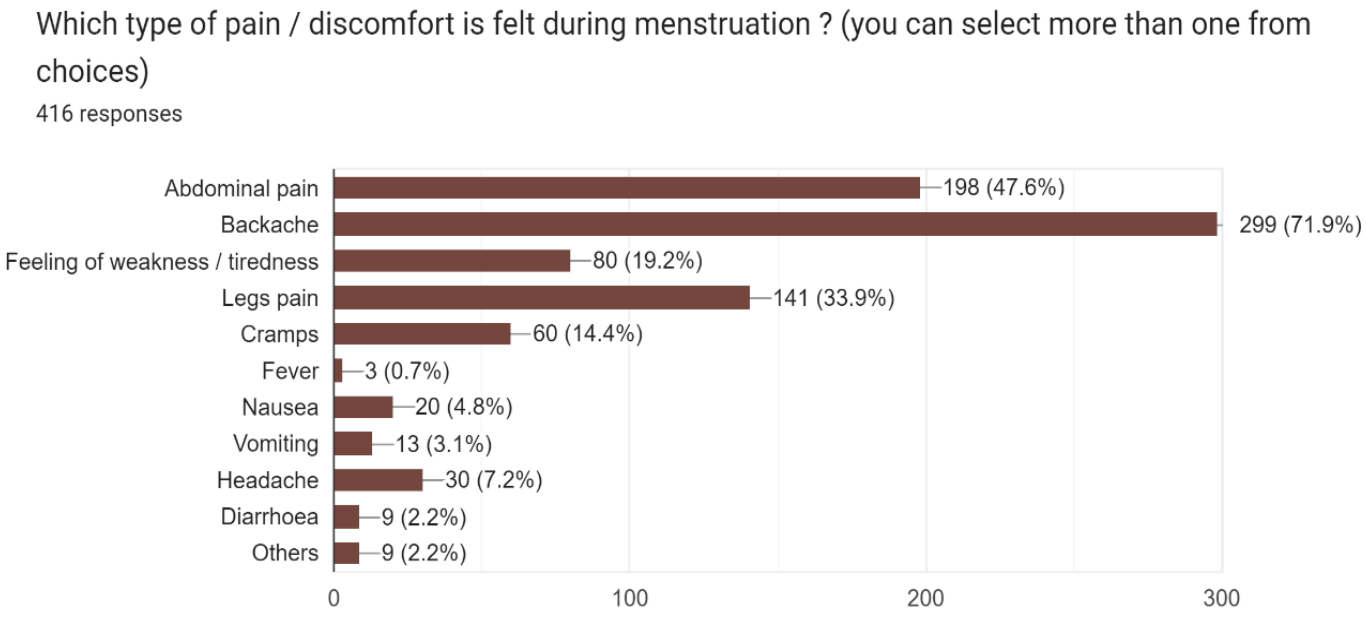


Chart 2 : Type of discomfort during menstruation

Chronic illness:

Hypothyroidism was the most prevalent condition, affecting 13 individuals. Tuberculosis and diabetes were reported in 8 individuals each, followed by asthma and hypertension, each affecting 7 individuals. Arthritis was seen in 4 cases, while uterine fibroid affected 3 individuals. Rheumatoid arthritis and leucoderma were reported in 2 cases each.

Several conditions were reported in single cases, including PCOS, backache, thyroid tumor, breathing difficulty, jaundice with kidney disease, nerve pain in the leg, bronchitis, asthmatic bronchitis, pregnancy-induced hypertension with paralysis, cardiac disease, tumors in the neck, kidney disease with jaundice, abdominal pain with backache, kidney stones, menstrual and uterine problems, obesity, difficulty in speaking, piles, epilepsy, psychological issues with giddiness, chronic vaginal infection, headache with giddiness, fatty liver, HIV, varicose veins, and being handicapped.

Reproductive health:

63(17%) women required treatment for conception and 86(28.5%) had history of abortion. Complication during delivery was reported by only 37(10%) women. While describing obstetric history, the participants were reluctant to mention the details of their reproductive health problems.

Out of 48, 18 women suffered from irregular menstruation post-partum, 13 complained of delayed lactation, 3 had hypertension and one with convulsions during and post-delivery.

Illness in progeny:

Out of 22 respondents who reported illnesses in their children, various health conditions were observed. Mental retardation was reported in four children, while handicap was noted in four cases. Three children were reported to have low birth weight, and two cases of child mortality were mentioned. Squint was observed in twins as well as in two other individual cases.

Additionally, conditions such as ill health, less body weight, weak twins, skin problems, and a congenital heart defect requiring surgery were also reported. Some respondents mentioned children being constantly ill or having a history of severe medical conditions, including one child who was mentally retarded and passed away before the age of ten.

Association between menstrual traditional practices and reproductive health, chronic illness and illness in progeny.

To find the association between the practices and health, two way chi square test was used. In table 2 Pearson Chi square (2 way) analysis showed prohibition from cooking was significantly associated with all variables like chronic illness, menstrual disorders, illness in progeny. ($P<0.05$). The alternate hypothesis here was accepted showing relation between practices and illness. Maximum restricted practices showed significant relation with chronic illness. Apart from prohibition from cooking and entering kitchen, abstinence and hot pungent food also showed significant relation with menstrual disorders ($P<0.05$), here too alternate hypothesis was accepted. Illness in progeny was only significantly associated with Prohibition from cooking, sleeping on separate mattress, application of cosmetics.

Rest all other practices showed weak evidence for relation and significant (P>0.1) and hence null hypothesis was accepted.

Table 2: Association between prevalence of disease and observance of menstrual practices (traditional)

Menstrual practices (Traditional)		Chronic medical illness		Menstrual Irregularity / pain / Pre menstrual		Children suffering from illness	
		Yes	No	Yes	No	Yes	No
Cooking	Yes	21	117	50	159	6	149
	No	54	135	78	173	16	172
Entering kitchen	Yes	17	87	27	112	5	104
	No	57	164	101	218	17	215
Touching plants / pickles / others	Yes	24	127	69	176	12	163
	No	51	125	29	156	10	158
Sleeping on separate mattress	Yes	6	41	16	50	7	47
	No	86	211	112	280	15	273
Eating in separate vessel	Yes	10	40	20	46	2	45
	No	64	211	107	285	20	274
Taking head bath	Yes	9	54	23	63	2	65
	No	65	198	105	268	20	255

The table compares whether these spiritual practices are followed (indicated by "Yes") or not (indicated by "No") and provides the corresponding frequency or count of individuals in each category.

1. Religious Rituals: Respondents who engage in religious rituals during menstruation (Yes) tend to have higher rates of chronic medical illnesses (43 vs. 32) compared to those who do not engage in these rituals (No).

There appears to be a correlation between participating in religious rituals during menstruation and higher rates of menstrual irregularities (80 vs. 48).

However, there is no clear association between this practice and children suffering from illnesses

2. Going to Temple/Mosque/Church/Any Religious Place: Those who go to religious places during menstruation (Yes) have higher rates of chronic medical illnesses (37 vs. 37) compared to those who do not go (No). There is also a correlation between going to religious places and higher rates of menstrual irregularities (79 vs. 49). Similar to religious rituals, there is no clear association between this practice and, children suffering from illnesses.

Table 3: Association between prevalence of disease and observance of menstrual practices (spiritual)

Menstrual Practices (Spiritual)	Chronic Medical Illness		Menstrual Disorders		Children Suffering From Illness	
	Yes	No	Yes	No	Yes	No

Religious Rituals	**Yes**	43	151	80	208	12	206
	No	32	100	48	118	9	113
Going To Temple / Mosque / Church / Any Religious Place	**Yes**	37	156	79	210	14	203
	No	37	96	49	121	8	117

Table 4: Relationship between prevalence of disease and observance of menstrual practices (*Rajaswala Paricharya*)

Menstrual practices (*Rajaswala Paricharya*)		**Chronic medical illness**		**Menstrual Regularity / pain / Pre menstrual**		**Children suffering from illness**	
		Yes	**No**	**Yes**	**No**	**Yes**	**No**
Application of turmeric, kajal, mehendi / wearing flowers in hair / cosmetics	**Yes**	3	4	2	7	2	5
	No	71	248	126	324	20	315
Eating in earthern vessel or leaf	**Yes**	10	40	17	48	2	45
	No	64	211	110	280	20	274
Restriction from sexual activity	**Yes**	29	112	45	151	8	142
	No	46	140	82	181	14	179
Eating light food	**Yes**	2	1	1	2	0	1
	No	71	251	126	329	21	319
Not performing exercise Not doing any strenuous activity / excessive walking/ excessive talking	**Yes**	8	33	23	42	1	36
	No	67	219	105	290	21	285
Avoid eating pickles, hot pungent food	**Yes**	6	16	13	17	0	18
	No	68	236	115	314	22	302

Table 4 is related to "Menstrual Practices" (*Rajaswala Paricharya*) and its association with various factors such as chronic medical illness, menstrual regularity/pain/premenstrual symptoms, children suffering from illnesses, and specific practices during menstruation. It compares whether certain practices are followed (indicated by "Yes") or not (indicated by "No") and the corresponding frequency or count of individuals falling into these categories. Below is an interpretation of the table:

1. Restriction from application of Turmeric, Kajal, Mehendi, Wearing Flowers in Hair, or Cosmetics: Those who practice restriction in applying cosmetics during menstruation (Yes) have a very small number of individuals with chronic medical illnesses (3) compared to those who do not follow restriction (No, 71).

There is no strong association between this practice and menstrual regularity or the presence of illnesses in children.

2. Eating in Earthen Vessel or Leaf: Those who eat in earthen vessels or leaves during menstruation (Yes)

have a relatively higher number of individuals with chronic medical illnesses (10) compared to those who do not (No, 64). There is no clear association between this practice and menstrual regularity or the presence of illnesses in children.

3. Restriction from Sexual Activity: Those who restrict sexual activity during menstruation (Yes) tend to have a higher number of individuals with chronic medical illnesses (29) compared to those who do not restrict it (No, 46). There is no strong association between this practice and menstrual regularity, or the presence of illnesses in children.

4. Eating Light Food: Those who eat light food during menstruation (Yes) have a very small number of individuals with chronic medical illnesses (2) compared to those who do not eat light food (No, 71). There is no clear association between this practice and menstrual regularity or the presence of illnesses in children.

5. Not Performing Exercise, Not Doing Strenuous Activity/Excessive Walking/Excessive Talking:

Those who avoid exercise and strenuous activity during menstruation (Yes) tend to have a slightly higher number of individuals with chronic medical illnesses (8) compared to those who do not avoid it (No, 67). There is no strong association between this practice and menstrual regularity, or the presence of illnesses in children.

6. Avoid Eating Pickles, Hot Pungent Food: Those who avoid eating pickles and hot, pungent food during menstruation (Yes) have a small number of individuals with chronic medical illnesses (6) compared to those who do not avoid it (No, 68). There is no clear association between this practice and menstrual regularity, or the presence of illnesses in children.

Significant associations ($p<0.05$)

Table 5: Pearson Chi square (P value)

		Pearson chi square (2 way) p value				
Sr No	Menstrual practices	Chronic medical illness	Menstrual disorders	Menopause complications	Illness in Progeny	Illness in family members
1	Cooking	0.005	0.088	0.113	0.081	0.000
2	Entering kitchen	0.058	0.007	0.116	0.337	0.005
3	Touching	0.005	0.183	0.902	0.732	0.012
4	Sleeping on mattress	0.079	0.468	0.625	0.033	0.903
5	Eating in separate vessel	0.612	0.614	0.697	0.509	0.778
6	Taking head bath	0.076	0.793	0.437	0.200	0.003
7	Religious rituals	0.662	0.825	0.491	0.198	0.000
8	Visiting temples /religious places	0.067	0.731	0.042	0.985	0.002
9	Application of cosmetics	0.198	0.720	0.622	0.016	0.570
10	Abstinence	0.375	0.052	0.494	0.471	0.006
11	Eating light food	0.065	0.828	-	0.798	0.563

12	Excessive walking/talking	0.577	0.142	0.060	0.329	0.181
13	Hot pungent food	0.596	0.051	0.563	0.253	0.059

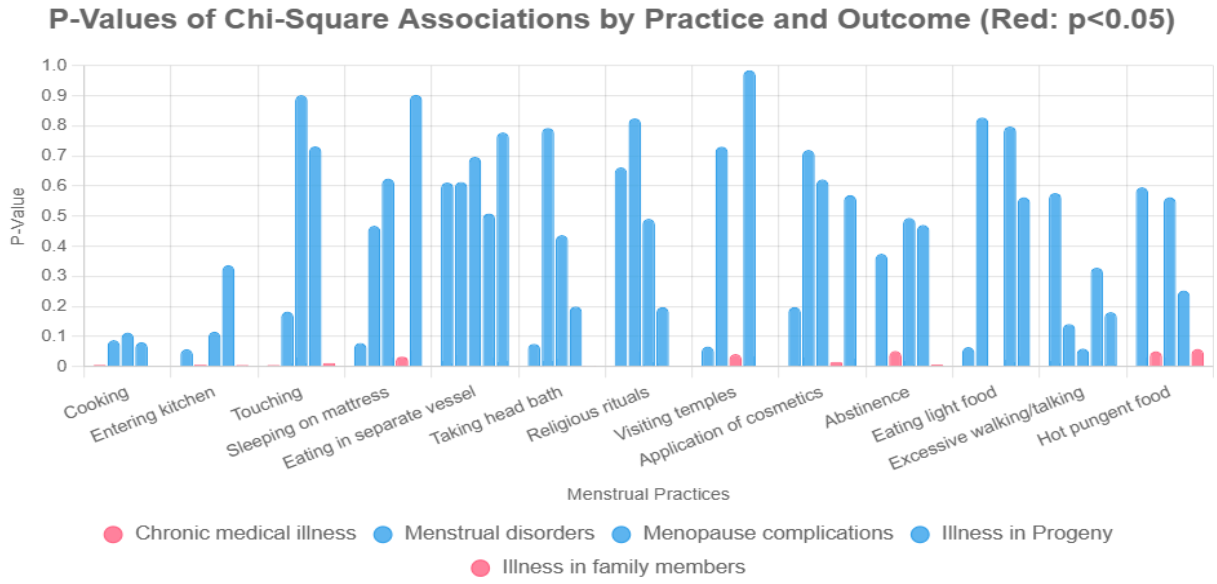


Chart 3: P value of Chi square associations between practice and outcome

Strong association (p=0.000) was found between traditional practices like cooking prohibition and religious rituals with illness in family members. Cooking, touching others and entering kitchen showed significant links with chronic medical illness and menstrual disorders. Abstinence from sexual activity was significantly associated (p=0.052) with menstrual disorders and illness in family members (p=0.006). Food restrictions were also significantly associated with menstrual disorders (p=0.051).

Analysis of menstrual disorders and restrictions through socio-demographic data.

Association between socio-economic, educational and demographic factors with menstrual disorders and restrictions was analyzed. Some of the beliefs and practices were found to be significantly associated with the socio-demographic data and others showed no signification association.

Menstrual Disorders

Socio-economic Status: No significant association was found between menstrual irregularity, pain and PMS and socio-economic status (p=0.067).

Education and Area: Education >= Secondary education (SSC) showed highly significant association with prevalence of menstrual disorders p=0.000. In demographic data or rural vs urban population, women residing in urban areas had more prevalence of menstrual disorders p=0.017.

Menstrual Practices and Restrictions

Strong and significant associations were found between most traditional menstrual restrictions and socio-economic status, education level, and area of residence.

Significant Associations (p<0.05):

Cooking, Entering the Kitchen, Touching Plants/Pickles: Women from lower socio-economic status, education less than SSC and rural areas were more likely to follow these restrictions. (Significant association)

Sleeping on a Separate Mattress: Weaker non-significant association with demographic status but significant association with socio-economic and education level. P=0.129

Eating in a Separate Vessel: Significant association with socio-economic status, education and area of residence.

Taking a Head Bath: The association with education was weaker (p=0.058) whereas significant association was found with socio-economic status and area of residence.

Religious Restrictions: Visiting temples / mosques and other religious activities prohibition was highly significantly associated with all three factors.

Sexual Activity: Abstinence was significantly associated with socio-economic status and area of residence.

Non-Significant Associations (p>0.05):

Cosmetics, Light Food, Hot Pungent Food, and Strenuous Activity: No significant association between use of cosmetics, dietary restrictions, avoiding strenuous exercise with socio-economic status. No significant association with use of cosmetics and dietary restrictions with education or area of residence.

Other Health Outcomes

Menopause Complaints: Significant association with socio-economic level but not with area of residence.

Illness in Progeny: The occurrence of illness in offspring was significantly associated with socio-economic status, but not with education level or area of residence.

Multivariate Analysis (Binary Logistic Regression) : To understand the potential causes and influences of disorders binary logistic regression was used. Health issues and menstrual restrictions as the main predictors and adjusted other factors like age, BMI, socio economic status and education. After adjustments the initial associations weakened significantly. Model fit: Hosmer-Lemeshow $p > 0.05$. This shows that there is no direct cause effect relationship between practices and illness.

3. DISCUSSION:

This study highlights the value of integrating quantitative and qualitative data to understand the impact of menstrual practices. Quantitative findings identified statistically significant associations between certain practices and reproductive health outcomes. (Table 5) Qualitative narratives reinforced the value of rest, dietary restrictions, and seclusion as perceived health-promoting behaviors. The convergence of findings strengthens the argument for reassessing traditional practices through a scientific lens.

Limitations: Self-reported data may be subject to recall or social desirability bias. While FGDs enriched interpretation, the presence of a facilitator may have influenced responses. Cultural diversity within Anand District of Gujarat, India may limit generalizability.

Despite these, the triangulation of findings enhances trustworthiness and offers a framework for culturally informed reproductive health policies.

Modern context of menstruation and stigma leaves contemporary women in a state of confusion, torn between adhering to traditional restrictions and considering them as myths to be disregarded. It has

become imperative to delve into the scientific narratives of traditions and practices to decode their relevance in the contemporary era.

Following is an attempt to understand the practices and its effect on female physiology.

(a) Need for seclusion and isolation: Menotoxin, pheromones. [2-9]

Menstrual seclusion practices in Indian tribal communities extend to isolating women in huts to ensure privacy, rest and protection from infection but often results in illness due to poor hygiene. Government interns through human rights and NGOs work in improving infrastructure where isolation is mandatory.

Research on "menotoxin," which is historical and abandoned as myth now, was proposed to be a toxin found in menstruating women's sweat, saliva and blood demonstrated in 1920s by Dr. Bela Schick. Phytotoxic and rodent students also suggested its link to conditions like pre-eclampsia, PMS and dysmenorrhea. These reports were ridiculed and abandoned later. Martha Clintock in 1971 attributed menstrual synchronization to pheromones via olfactory-hypothalamic pathways. Experiments suggested alterations in cycles though failure of replication of research faced criticism.

(b) Oxidative stress during menstruation: Dietary restrictions and preferences [8-16]

Endometrial shedding triggers inflammation and production of free radicles triggering a state of oxidative stress (OS), which is linked to disorders like endometriosis, PCOS, Pre-eclampsia, subfertility due to decreased antioxidant state.

Preference of food during menstruation such as fruits rich in vitamin C, ghee, milk, rice all are rich in antioxidants. This may help in reducing the oxidative stress and hence maintain the reproductive health. In menarche celebrations, jaggery, sesame, coconut, milk, fruits, dry fruits with ghee are given which all acts as antioxidants. Such diet rich in anti-oxidants administered during *Rajaswala* period help to counter oxidative stress and hence prevent damage to many systems and organs.

(c) Exercise and Menstruation: Amenorrhea and Endometriosis

The reason for amenorrhoea with low bone mass and energy deficit termed as 'female athletic triad' in sports women can be hypothalamic suppression. Stress of competition and training, deficiencies, low body mass index, inadequate leptin and altered hormone metabolism have been studied as reasons for menstrual dysfunctions leading to consequence of infertility and hypo estrogenic complications. [17,18,19,20]

The association of vigorous exercise and amenorrhoea is also found in a study where secondary amenorrhoea is found in 44% of women who exercise vigorously as compared to 2-5% in normal population prevalence.[21] Heavy exercises in female also increases circulating androgen which may again trigger hormonal imbalance. [22] In *Rajawala paricharya*, the restriction of excessive walking, running is emphasized to avoid *Vata dosha* aggravation. These evidences suggest that heavy exercises can induce hormonal imbalance leading to reproductive dysfunction. *Vata vriddhi* causes *dhatu*

kshaya which may in turn cause *Artava kshaya,* as mentioned above a sign of amenorrhea.

Vigorous exercise during menstruation may promote retrograde menstruation travelling up to fallopian tube and pelvic cavity initiating endometriosis. [23] Systematic review of data show that the studies there are no controlled and randomized studies identifying whether physical exercise prevents or triggers endometriosis. [24]

(d) Restriction from sexual activity: Cause of endometriosis, STD and other benign conditions

Sexual intercourse during menstruation is only for pleasure of man mainly and not for childbirth was proposed in New Testament. [25] Incidence of endometriosis and pelvic inflammatory disease was higher in women who were indulging in sexual intercourse during menstruation. [26] Women having vaginal intercourse had five times higher risk of endometriosis and three times higher in women with non coital sexual activity. [27] Orgasm during sexual activity is a probable reason given for retrograde menstruation and facilitate blood flow through cervix becoming etiology for endometriosis. [28] Vaginal intercourse during menstruation increases the risk of Pelvic Inflammatory Disease (PID), Sexually transmitted disease, dyspareunia and loss of libido in men due to menstrual blood smell. [29] A study in rural Kenya revealed that most men considered menstruation is ideal for conception. [30] Contradictory to the above study, a study conducted in India discovered misconception amongst men about menstruation being safe as contraception and that there is no chance of conception during menstruation. [31]

Ayurveda mentions abstinence as one of the important codes of conduct during menstruation and the consequence of sexual intercourse during menstruation on the male partner as well the offspring are described. Disturbance of *apana vayu* function, guilt or anxiety during intercourse may be the probable causes for the consequences like intra uterine death, shortened lifespan and less body parts.

Energy utilization during sexual intercourse

A study conducted to evaluate energy expenditure in young and healthy men and women during sexual intercourse, the results showed that mean energy expenditure during sexual activity was 101 kcal or 4.2 kcal/min in men and 69 kcal or 3.1 kcal/min in women, which is considered moderate intensity of physical exercise. [32] This study comprehends the text of *Manusmriti* and Ayurveda where sexual activity during menstruation may cause loss of *Ayu* and *Teja*.

(e) Healing powers of menstruation: Stem cells

Recent studies have shown Menstrual blood derived stem cells (MenSc) to be novel source of mesenchymal stem cells (MSC). MenScs in pre-clinical studies have shown effective therapeutic functions in prevention and control of diseases such as liver disease, diabetes, stroke, Duchenne muscular dystrophy, premature ovarian failure, Asherman syndrome, endometriosis, myocardial infarction, Alzheimer's disease, acute lung injury, cutaneous wound, endometriosis, and neurodegenerative diseases. [33,34]

(f) Menstruation as impurity:

In almost all civilizations, the menstrual blood is considered as impure and that the menstruating female is in temporary period of impurity. Ayurveda also mentions that menstruating women will not suffer from diseases like Diabetes as toxins are removed from her body through menstruation. [35] Sinu Joseph in her book Rtu Vidya [36] explains that the idea of menstrual blood when referred as impure is dismissed to make women feel empowered and we become rigid in its defense.

(g)Restrictions on touching menstruating women:

The oxidative stress during menstruation results in production of positively charged atoms and hence they tend to attract electrons from those who touch them. Hence a person who touches menstruating women experiences loss of electrons putting their body at a risk of oxidative stress. Moving water produce negative ions hence bathing is a good way to regain loss of electrons by those who are impacted by coming into contact with menstruating women. Increase in positive ions in body is considered to weaken immune system and susceptible to disease. Menstruation is a state where there is naturally loss of electrons with increase in positive ions.

(h) Seclusion –light exposure- melatonin

Melatonin a hormone secreted from pineal gland in response to darkness is associated with maintaining circadian rhythm and sleep. Recent evidence suggest it is also related with reproductive and bone health. There is an organized melatonin rise in late luteal phase i.e. after post ovulatory progesterone elevation. Women during menstrual and follicular phase have least attention and concentration as compared to in the luteal phase. [37] Few research suggests morning exposure to natural light in follicular phase may stimulate the secretion of hypophyseal reproductive hormones which may further promote ovarian follicle growth thereby increasing ovulation rates in women with lengthy menstrual cycles. It also improves mood and has antidepressant effect which may help to alleviate menstrual symptoms like mood swings and irritability. [38] In other work related to light exposure and menstrual cycle, it was indicated that light exposure may affect menstrual cycles through melatonin influence especially in women with endocrinopathies such as PCOS. [39]

The study of menstrual practices and disorders in relation to socio-demographic factors revealed a strong impact on traditional menstrual practices, predominantly among rural, less educated and lower socio-economic groups. Contrarywise, disorders related with reproductive health were more prevalent among women with higher education status and residing in urban areas.

These findings (Table 5) partially support traditional menstrual practices and their perceived health benefits for family and chronic illness prevention. This resonates the concept of rest, reduced domestic work, light exposure or stress reduction. Non-significant results challenge endorsements and risks like dangers of isolation.

Proposed *Rajaswala Paricharya* for contemporary women and its benefits

There are evidence where observance of *Rajaswala Paricharya* cures ailments like dysfunctional uterine bleeding, dysmenorrhea, premenstrual syndrome, [40,41] and also been practiced as pre conception care. In the present study, awareness of Ayurvedic regimen as in *Rajaswala Paricharya* was not known to females of urban as well as rural areas. The knowledge about such regimen with scientific evidence was given during interviews and focus group discussions and advised them to spread this knowledge to younger generation. The grievance about the younger generation was that they do not believe in these restrictions, as they consider them superstitions. It was discussed that if younger generation is provided with scientific evidence they will believe, follow, and spread the awareness of *Rajaswala Paricharya*. The young generation are key to spreading knowledge as they quickly broadcast through various campaigns.

The recruitment of follicle for next menstrual cycle and regeneration of endometrium occurs during the first 4-5 days of menstrual cycle. *Rajaswala paricharya* where code of conduct is eating foods rich in anti-oxidants and anti-inflammatory helps in proper follicle development and endometrium regeneration.

Table 6: Proposed practices during menstruation

Sr No	Practices	Contemporary practices	Recommended practices with benefits
1	Seclusion	Not seen much in urban and nuclear families. Seclusion is limited to a space in house and not outside village.	Few minutes of seclusion at home especially during first two days of menstruation for inner focus and meditation, also for rest. Propose menstrual leave. Prevent menstrual cycle imbalance in another female in family /work place.
2	Avoidance of heavy exercises	Not avoided	No physical training, visiting gymnasiums, avoiding excessive walking, running or any other physical games and exercises. Prevent from endometriosis and other menstrual disorders like amenorrhoea. Do's -Brisk walking for few minutes if comfortable. *Asanas* like *Balasana, pavanamuktasana, paschimottaasana*, Cat's pose, Cow's pose can be done.
3	Prohibition of sexual activity	Practiced by many.	Prohibit Sexual intercourse till stoppage of menstruation. Prevents infections, PID and endometriosis. Prevents loss of energy from female during menstruation.
4	Prohibition of religious activity	Practiced by many.	To avoid visiting temples or any religious places with ongoing religious rituals. Avoiding chanting mantras. Prevents chakra imbalance and hence will help in maintaining HPO axis.
5	Prohibition from use of	Not practiced by many.	To avoid use of henna, kajal during first 3 days of menstruation can help in ensuring proper flow during menstruation.

	cosmetics		Prohibition from use of other cosmetics will decrease additional oxidative stress due to xenoestrogens. Will prevent sexual arousal due to presence of pheromonal effect of perfumes.
6	Dietary restrictions	Not practiced.	Carrom seeds, *Krishna tila* (black sesame seeds) [42], Jaggerry, fresh fruits, milk, ghee, coconut. Antioxidant activity reduces oxidative stress hence reduces risk of subfertility, endometriosis, habitual abortion, amenorrhea and premature ovarian failure. *Laddo* (Indian Sweet Ball)made from *methi* (Fenugreek) *jeerak* (cumin) *ajwain* (carrom seeds), Daliya (cracked wheet), rice gruel with ghee

Proposed menstrual practices.

Lifestyle changes, increased stress levels and faulty dietary habits in the contemporary era have impact on menstrual health. Though the traditional menstrual practices are rooted in cultural beliefs and Ayurveda, they also hold scientific relevance in homeostasis, prevention of disorders and promoting overall well-being. Adaptation of these practices in a balanced with can help in enhancement of well-being whilst aligning with contemporary lifestyle. The proposed practices as above can be integrated and customized into daily routines.

4. CONCLUSION:

Ayurveda describes *Rajaswala Paricharya* which integrates dietary, lifestyle and psychological dimensions towards holistic health regimen for women during menstruation. Present study utilizing mixed-method approach confirmed that the traditional menstrual practices do persist yet there is limited awareness of Ayurveda concepts. The practices were found to have statistically significant association with reproductive health and other health outcomes. Scientific validation of practices with cultural understanding offers a pathway to customize and modernize health education without discarding traditional wisdom as taboo.

Observance of *Rajaswala Paricharya* after necessary adaptations for modern multitasking women can contribute to maintain overall health equilibrium during menstruation including physical and psychological health. Dismissal of traditional menstrual practices as myths, superstition or taboo has been an area of discussion but it is crucial to identify and propagate scientific relevance and explore their impacts.

Further research should be focused to establish causal relationship and gain deeper insights by evaluation of oxidative stress, hormonal profiling and vaginal pH in association with observance and non-observance of *Rajaswala Paricharya*. Evidence based understanding and its promotion can bridge the gap between contemporary and traditional era, fostering a decisive

and informed approach towards prevention of menstrual health.

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