

Impact of Consuming Seeds Mix Laddu on Regulating Menstrual Cycle Irregularities among Young Women: A Nutritional Intervention Study

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Abstract

Menstrual cycle irregularities are common among young women and may be associated with dietary, lifestyle, and hormonal factors. This study evaluated the reported impact of a seed mix laddu intervention on menstrual-cycle characteristics and related symptoms among women aged 17–25 years. A total of 30 female participants with reported menstrual irregularities were selected purposively from an initial group of 100 women. A three-month nutritional intervention was undertaken using a seed mix laddu prepared from flax, pumpkin, sesame, and sunflower seeds. Pre- and post-intervention information was collected using structured questionnaires covering anthropometry, dietary and lifestyle patterns, menstrual characteristics, symptoms, compliance, tolerability, and participant feedback. Before intervention, 23% reported cycles shorter than 24 days, 30% reported cycles longer than 35 days, and 47% reported irregular or unpredictable cycles. After the intervention, 99% were reported as having cycles within 24–35 days. Normal bleeding increased from 37% before intervention to 77% after intervention, while heavy bleeding decreased from 47% to 17%. The proportion reporting 5–7 days of bleeding increased from 47% to 63%. Reported severe cramps, heavy bleeding, mood swings, and fatigue were lower after intervention, with reductions reported as 83% to 40%, 43% to 23%, 27% to 14%, and 60% to 27%, respectively. Most participants consumed the laddu at least 4–6 times per week; 80% reported no side effects. Ninety percent expressed willingness to continue the intervention, and satisfaction ratings were either satisfied (70%) or extremely satisfied (30%). The findings indicate a favorable change in self-reported menstrual outcomes and good acceptability of the seed mix laddu over three months. However, the study was a small, single-group nutritional intervention based largely on self-reported outcomes; therefore, the findings should be interpreted as preliminary and should not be considered proof of causality.

Key Words: Menstrual irregularity; seed mix laddu; nutritional intervention; menstrual cycle; premenstrual symptoms; young women

Introduction

The menstrual cycle is an important indicator of reproductive health, and deviations in cycle length, bleeding pattern, or associated symptoms can affect daily functioning and quality of life. The thesis underlying this manuscript identifies dietary habits, stress, lifestyle factors, and hormonal disturbances as relevant considerations in menstrual irregularity. It also highlights the potential nutritional relevance of seeds because flax, pumpkin, sesame, and

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sunflower seeds provide essential fatty acids and micronutrients discussed in the literature review. Previous studies cited in the thesis have examined dietary patterns, nutritional interventions, seed-based approaches, and lifestyle factors in relation to menstrual characteristics and premenstrual symptoms. However, the thesis notes a practical gap in evaluating a culturally familiar seed-based food format among young women with menstrual irregularities. Accordingly, the present study evaluated a three-month seed mix laddu intervention and assessed changes in menstrual-cycle characteristics, bleeding patterns, menstrual symptoms, compliance, tolerability, and participant acceptability.

.Objectives of the Study

- To assess dietary patterns and menstrual health status among young women with reported irregular menstrual cycles.
- To evaluate changes in menstrual-cycle regularity following seed mix laddu supplementation.
- To assess changes in premenstrual and menstrual symptoms following the intervention.
- To document compliance, tolerability, perceived health benefits, and acceptability of the seed mix laddu.

Methodology of the Study

Study design and participants

The study was conducted in Hyderabad among women aged 17–25 years. The thesis reports an initial sample of 100 women, from whom 30 participants experiencing irregular menstrual cycles were selected for the intervention using purposive sampling. Participants were college students who voluntarily agreed to participate.

Intervention

Participants received a specially formulated seed mix laddu containing flaxseed, pumpkin seed, sesame seed, and sunflower seed for a period of three months. The manuscript retains the intervention description reported in the thesis and does not introduce a dose that was not specified in the source document.

Data collection

Pre-intervention and post-intervention information was collected using structured questionnaires. The instruments covered general information and anthropometry, menstrual history, dietary patterns and food frequency, sleep and physical activity, health conditions, medication and supplement use, menstrual-cycle characteristics, bleeding duration and type, menstrual symptoms, missed periods, intervention consumption frequency, other dietary changes, weight change, side effects, additional perceived benefits, willingness to continue, recommendation, and satisfaction.

Statistical and descriptive analysis

The thesis primarily reports frequencies and percentages for categorical variables and descriptive anthropometric values. This manuscript therefore presents the source-reported descriptive results without creating unreported inferential p-values or effect estimates. Percentages are reproduced from the thesis; where the source contains internal rounding or

reporting inconsistencies, the values are retained and explicitly identified rather than silently recalculated.

. Results and Discussion

Thirty participants completed the intervention assessment reported in the thesis. The results are presented as descriptive distributions and pre- versus post-intervention comparisons. All tables and figures are confined to the Results section, following the requested manuscript structure.

Participant characteristics

Table 1. Baseline age and BMI distribution of participants (N=30).

Characteristic	Category	n	%
Age	17–19 years	2	6.7
Age	20–22 years	20	66.7
Age	23–25 years	8	26.6
BMI	<18.5 kg/m ²	7	23.3
BMI	18.5–24.9 kg/m ²	14	46.6
BMI	25–29.9 kg/m ²	4	13.3
BMI	30–34.9 kg/m ²	5	16.6

Most participants were aged 20–22 years (66.7%). The largest BMI category was 18.5–24.9 kg/m² (46.6%), followed by BMI <18.5 kg/m² (23.3%).

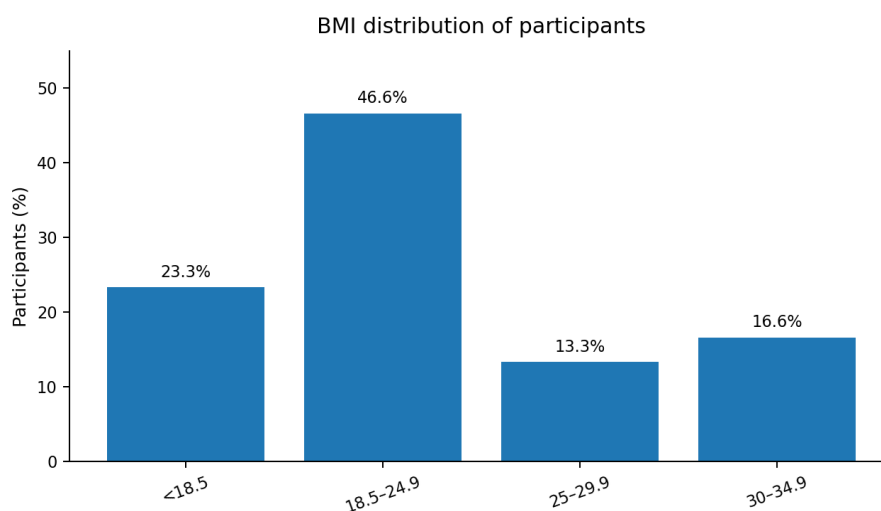


Figure 2. Distribution of participants by BMI category

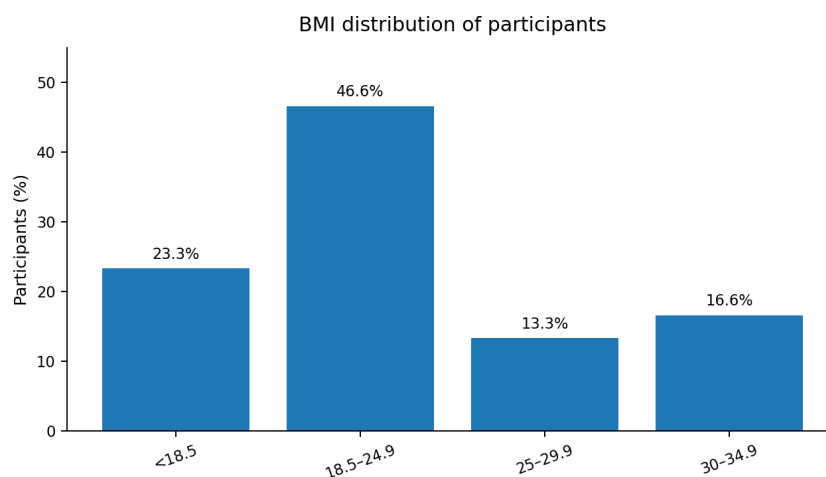


Figure 2. Distribution of participants by BMI category.

Dietary and lifestyle characteristics

Table 2. Selected dietary and lifestyle characteristics of participants (N=30).

Variable	Category	n	%
Dietary pattern	Non-vegetarian	27	90
Dietary pattern	Vegetarian	3	10
Meal frequency	1–2 meals/day	11	36.7
Meal frequency	3–5 meals/day	19	63.3
Sleep	<5 h	6	20
Sleep	5–6 h	15	50
Sleep	7–8 h	7	23
Sleep	>8 h	2	7
Physical activity	Daily	12	40
Physical activity	3–5 times/week	7	23
Physical activity	Once/week	3	10
Physical activity	Rarely	4	14
Physical activity	Never	4	13

The sample was predominantly non-vegetarian (90%) and 63% reported consuming 3–5 meals per day. Half of the participants reported sleeping 5–6 hours per night. Daily physical activity was reported by 40%, while walking was the most common activity in the thesis.

Table 3. Food-frequency distribution among participants (counts; N=30).

Food item	Daily	Weekly	Once/15 days	Monthly	Never
Chia seeds	0	5	2	11	12
Flax seeds	1	3	0	7	19
Sunflower seeds	1	2	2	7	18
Pumpkin seeds	1	2	1	10	16
Sesame seeds	0	3	1	9	17
Fruits	8	15	5	2	0
Vegetables	20	9	1	0	0

Whole grains	16	12	1	1	0
Red meat	7	9	6	4	4
Dairy products	18	5	6	1	0
Processed foods	6	12	7	5	0
Sugary snacks	8	8	7	7	0

Seed consumption was comparatively low before the intervention. For example, 19 of 30 participants reported never consuming flaxseed and 18 of 30 reported never consuming sunflower seeds. In contrast, vegetables and dairy products were commonly consumed.

Menstrual-cycle characteristics before and after intervention

Table 4. Selected menstrual outcomes before and after the three-month intervention.

Outcome	Before intervention (%)	After intervention (%)
Cycle <24 days	23	—
Cycle 24–35 days	—	99
Cycle >35 days	30	—
Irregular/unpredictable cycle	47	—
Normal bleeding	37	77
Heavy bleeding	47	17
Light bleeding	13	6
Spotting	3	0
Bleeding 5–7 days	47	63
Bleeding 3–5 days	41	20
Bleeding 2–3 days	12	7
Bleeding >7 days	—	10

The source thesis reports a marked shift in cycle characteristics after intervention: 99% of participants were reported to have cycle lengths within 24–35 days. Normal bleeding increased from 37% to 77%, while heavy bleeding decreased from 47% to 17%. The proportion reporting 5–7 days of bleeding increased from 47% to 63%. Because the source does not provide participant-level paired data, these changes are presented descriptively rather than assigned an independently calculated significance level.

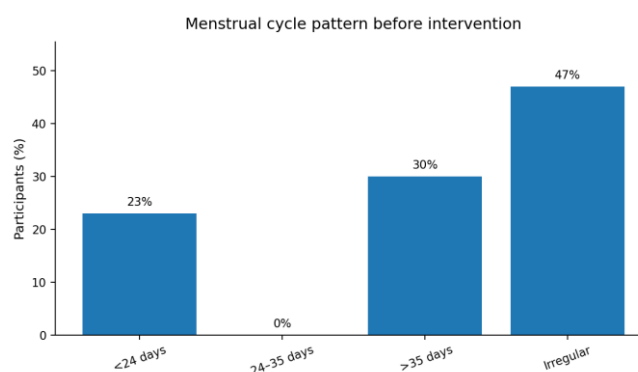


Figure 3. Menstrual-cycle pattern before intervention. Note: the post-intervention source value of 99% within 24–35 days is reported separately because the source does not provide a complete paired frequency table.

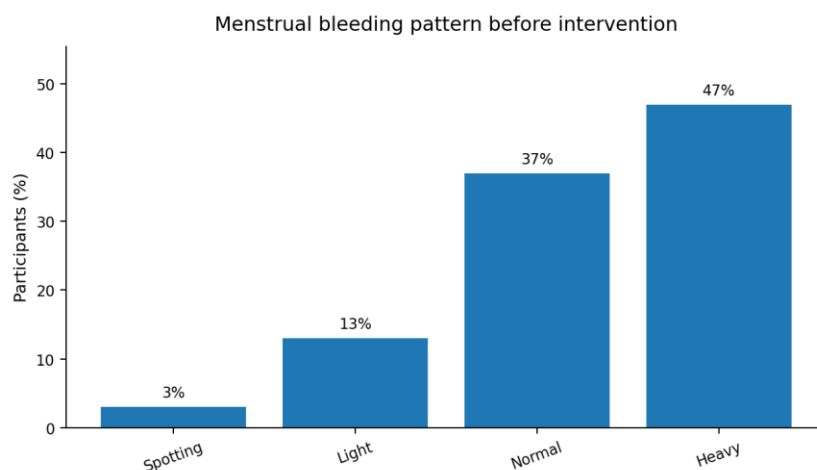


Figure 4. Menstrual bleeding pattern before intervention.

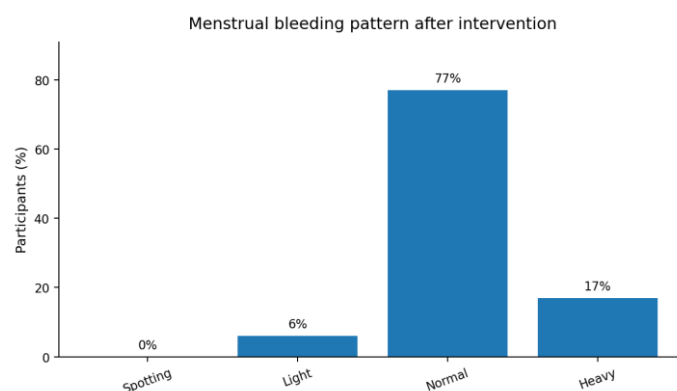


Figure 5. Menstrual bleeding pattern after intervention.

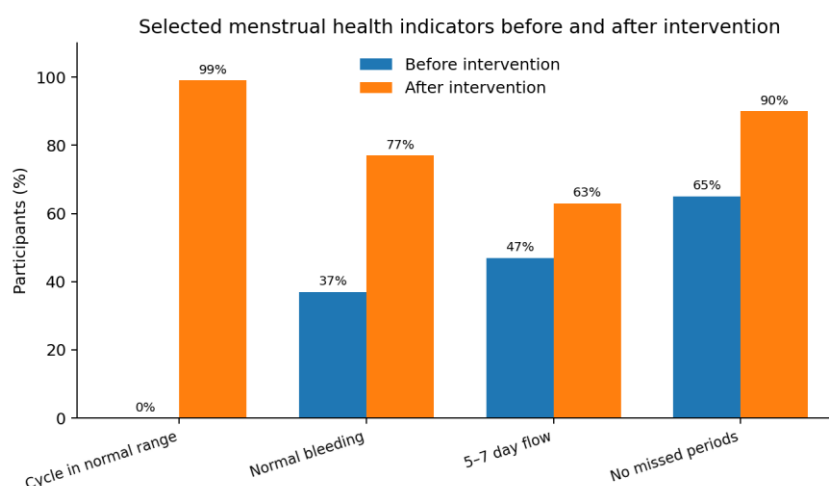


Figure 6. Selected menstrual-health indicators before and after intervention. Values are source-reported percentages; the source contains some rounding/reporting inconsistencies.

Menstrual symptoms and perceived improvement

Table 5. Reported menstrual symptoms and post-intervention symptom changes.

Reported symptom	Before (%)	After (%)	Reported reduction (%)
Severe cramps	83	40	42
Heavy bleeding	43	23	23
Fatigue	60	27	24
Mood swings	27	14	2

Severe cramps were the most frequently reported symptom before intervention (83%). The thesis reports lower post-intervention symptom proportions and separate participant-reported reductions: 42% reported reduced cramps, 23% reduced heavy bleeding, 24% reduced fatigue, and 2% reduced mood swings; 10% reported no change. These data indicate a favorable descriptive trend, although the questionnaire and analysis do not establish whether changes were statistically significant.

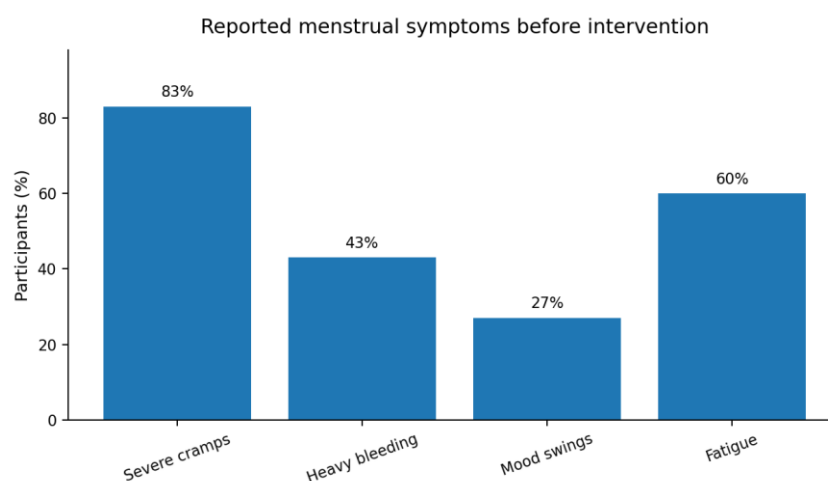


Figure 7. Reported menstrual symptoms before intervention.

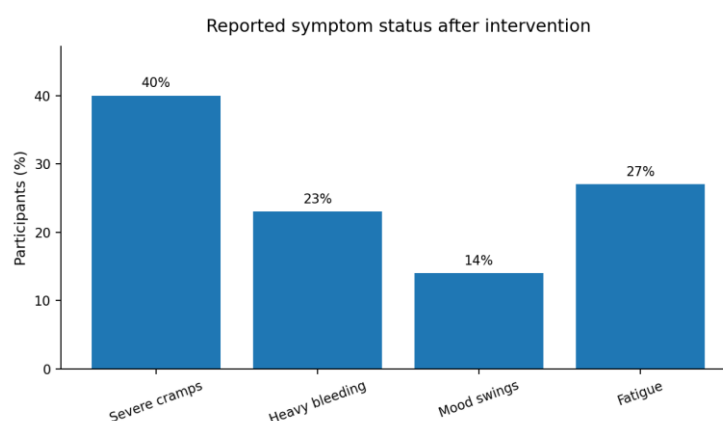


Figure 8. Reported symptom status after intervention.

Compliance, tolerability, and acceptability

Table 6. Compliance, tolerability, weight change, and acceptability indicators (N=30).

Indicator	Category	n	%
Laddu consumption	Daily	12	40
Laddu consumption	4–6 times/week	17	57
Laddu consumption	2–3 times/week	1	3
Other dietary changes	None	23	77
Other dietary changes	Papaya	5	17
Other dietary changes	Chia seeds	2	6
Weight change	No change	21	70
Weight change	Gain	5	17
Weight change	Loss	4	13
Side effects	None	24	80
Side effects	Bloating	5	17
Side effects	Constipation	1	3
Continue intervention	Yes	27	90
Continue intervention	Maybe	2	7
Continue intervention	No	1	3
Satisfaction	Satisfied (4/5)	21	70
Satisfaction	Extremely satisfied (5/5)	9	30

Consumption was frequent: 57% reported consuming the laddu 4–6 times per week and 40% daily. Eighty percent reported no side effects, while bloating and constipation were reported by 17% and 3%, respectively. Most participants reported no additional dietary changes during the intervention (77%). Ninety percent expressed willingness to continue the laddu, and all satisfaction ratings were 4 or 5 on the five-point scale.

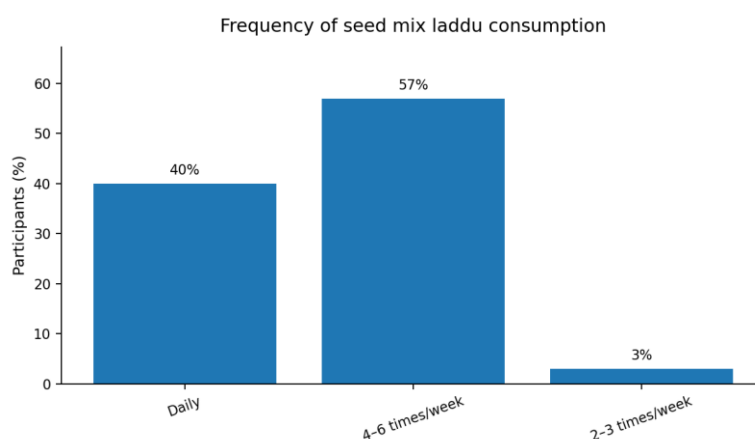


Figure 9. Frequency of seed mix laddu consumption.

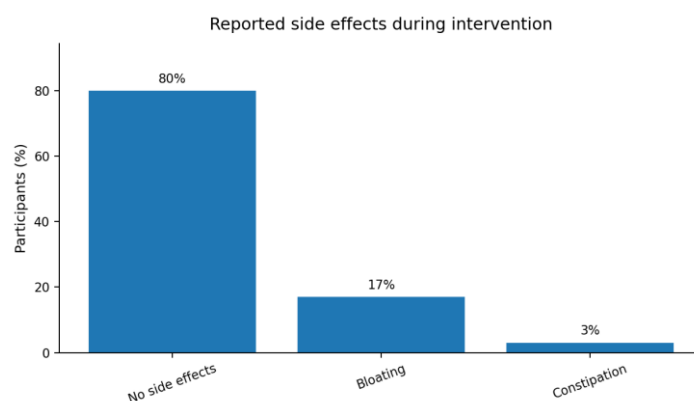


Figure 10. Reported side effects during intervention.

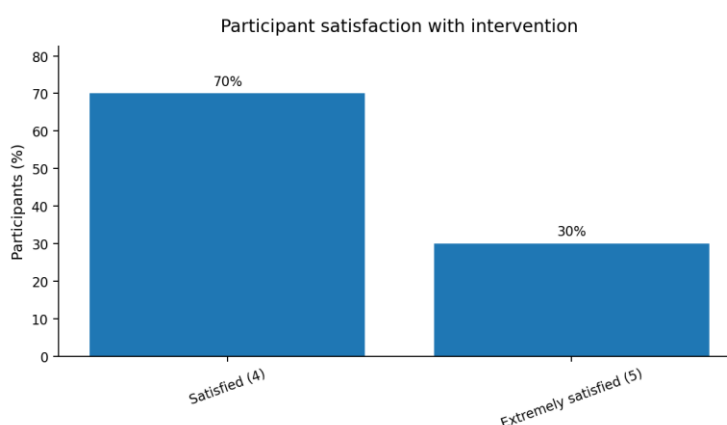


Figure 11. Participant satisfaction with the intervention.

Additional perceived benefits

Table 7. Additional participant-reported outcomes.

Outcome	n	%
Reported overall menstrual-health improvement	30	100
Reduced hair fall	18	60
No reduction in hair fall	12	40
No missed periods during intervention	27	90
Missed periods during intervention	3	10

All participants reported an improvement in overall menstrual health. Reduced hair fall was reported by 60%. The thesis also reports that 90% had no missed periods during the three-month intervention. These are participant-reported outcomes and should not be interpreted as objective biochemical or clinical endpoints.

Discussion

The present study describes favorable changes in self-reported menstrual characteristics after a three-month seed mix laddu intervention. The most notable descriptive finding was the reported shift toward a 24–35-day cycle range, together with a higher proportion of normal

bleeding and a lower proportion of heavy bleeding. The reduction in reported cramps and fatigue is also consistent with the study objective of assessing menstrual symptom changes. These observations are directionally consistent with studies cited in the thesis that examined dietary patterns, seed-based interventions, and nutritional approaches to menstrual or PCOS-related outcomes. For example, the thesis cites work on dietary patterns and menstrual disorders, nutritional approaches to PMS, and seed-based interventions in PCOS. However, the present study differs from controlled trials because it used a small purposively selected sample, did not include a control group, and relied largely on questionnaire-based self-reporting. Therefore, changes observed over three months may reflect the intervention, natural cycle variation, behavioral changes, reporting effects, or other unmeasured factors. The source also contains a few internal inconsistencies in percentages—for example, the reported 99% post-intervention normal-cycle proportion cannot correspond exactly to 30 participants without rounding. These discrepancies have been retained transparently rather than corrected by assumption.

Conclusion

In this small three-month nutritional intervention among 30 young women aged 17–25 years, consumption of a seed mix laddu was associated with favorable self-reported changes in menstrual-cycle regularity, bleeding pattern, and menstrual symptoms, together with high reported acceptability and generally good tolerability. The findings support the feasibility of studying culturally familiar seed-based foods as a dietary strategy for menstrual health. Nevertheless, the study design and sample size do not permit causal conclusions. Larger controlled studies using validated symptom scales, standardized dietary assessment, objective clinical or biochemical measures, and participant-level paired statistical analysis are required to confirm effectiveness.

Limitations

- Small sample size (N=30) and purposive sampling limit generalizability.
- No parallel control group was reported.
- Most outcomes were self-reported through structured questionnaires.
- The thesis does not provide participant-level paired data required for independent recalculation of intervention significance.
- Some source-reported percentages contain rounding or internal reporting inconsistencies; these were not silently corrected in the manuscript

Recommendations

- Conduct larger randomized or controlled nutritional intervention studies.
- Use validated menstrual-symptom and quality-of-life instruments.
- Record exact participant-level cycle lengths, bleeding days, and symptom scores at each follow-up.
- Include objective anthropometric, biochemical, and hormonal measures where appropriate.
- Standardize the intervention dose and document adherence quantitatively.

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