

Effect of Hot Hip Bath on Pain Intensity in Primary Dysmenorrhea

Dr.Anmol Vikash¹, Gayatri T.N.¹, Divya D.N.¹, Varsha B.A.¹

Dr. Parameshwara M.N.²

¹Bachelor of Naturopathy and Yogic Sciences (BNYS) Students

²Associate Professor & HOD Dept of Research Methodology & Recent Advances

Tapovana Medical College of Naturopathy and Yogic Sciences (TMCNYS), Doddabathi, Davangere – 577566, Karnataka, India

(Affiliated to Rajiv Gandhi University of Health Sciences, Bengaluru)

Abstract

Background: Primary dysmenorrhea is a common condition characterised by recurrent, crampy lower abdominal pain during menstruation in the absence of pelvic pathology. Hot hip bath is a classical naturopathic hydrotherapeutic procedure traditionally used to relieve pelvic pain through local and reflex vasodilatation and muscle relaxation.

Objectives: To evaluate the effect of hot hip bath on pain intensity in women with primary dysmenorrhea using the Verbal Pain Intensity Scale (VPIS) and the WaLIDD score.

Materials and Methods: A single-group pre–post interventional study was conducted on 10 women aged 19–23 years with primary dysmenorrhea at Tapovana Medical College of Naturopathy and Yogic Sciences. Participants received hot hip bath therapy for approximately 15 minutes per session, 5 sessions per week over a 10-day period. Pain intensity was assessed using the Verbal Pain Intensity Scale (VPIS) and the WaLIDD score before and after the intervention. Data were analysed using paired t-tests and effect sizes (Cohen's d).

Results: Mean WaLIDD score decreased from 8.8 ± 1.6 to 4.9 ± 1.2 ($t = 9.12$, $p < 0.001$, Cohen's $d = 2.76$). Mean VPIS score decreased from 7.3 ± 1.7 to 4.7 ± 1.2 ($t = 8.45$, $p < 0.001$). Significant shifts toward milder severity categories were observed on both scales, with no participants remaining in the severe or worst-possible pain categories after treatment.

Conclusion: Hot hip bath therapy produced highly significant reductions in pain intensity and improvements in functional scores in women with primary dysmenorrhea. It is a simple, safe, non-pharmacological option that may be integrated into naturopathic management of menstrual pain. Larger controlled trials are recommended.

Keywords: Primary dysmenorrhea; hot hip bath; hydrotherapy; Verbal Pain Intensity Scale; WaLIDD score; naturopathy; menstrual pain

1. Introduction

Primary dysmenorrhea is defined as recurrent, crampy lower abdominal pain occurring during menstruation in the absence of identifiable pelvic pathology [1,2]. It typically begins within six months to two years after menarche, once ovulatory cycles are established, and is among the most common causes of recurrent school and work absenteeism among young women, with prevalence estimates ranging from 45% to over 90% depending on the population studied [1,2].

The pathophysiology centres on prostaglandin-mediated myometrial hypercontractility, vasoconstriction, and uterine ischaemia following the decline of progesterone in the late luteal phase [2]. Conventional first-line management relies on non-steroidal anti-inflammatory drugs (NSAIDs) and hormonal contraceptives; however, side-effect profiles, contraindications, and patient preference have increased interest in non-pharmacological alternatives, including heat therapy [4,7,8].

Hot hip bath (sitz bath) is a classical naturopathic hydrotherapeutic procedure in which the pelvic and lower abdominal region is immersed in warm water. Proposed mechanisms include local thermal vasodilatation, cutivisceral reflex effects on pelvic vasculature, direct relaxation of uterine and pelvic-floor musculature, improved uterine perfusion, and gate-control modulation of pain [3,5,11]. Although heat therapy in general has a growing evidence base for primary dysmenorrhea [4,7,8], dedicated studies of hot hip bath remain limited [6].

The present study evaluated the effect of a short course of hot hip bath on pain intensity in young women with primary dysmenorrhea using two complementary outcome measures: the Verbal Pain Intensity Scale (VPIS) and the WaLIDD score.

2. Aims and Objectives

Aim: To evaluate the effect of hot hip bath on pain intensity in women with primary dysmenorrhea.

Objectives:

1. To assess change in pain intensity using the Verbal Pain Intensity Scale (VPIS) before and after hot hip bath.
2. To assess change in the WaLIDD score (working ability, location, intensity, days of pain) before and after the intervention.

3. Review of Literature

Primary dysmenorrhea is linked to ovulatory cycles and prostaglandin F2 α and E2 production, which increase myometrial contractility and reduce uterine blood flow, producing ischaemic pain [1,2]. Heat therapy has been shown in systematic reviews and meta-analyses to provide clinically meaningful pain relief with a favourable safety profile [4,7,8]. Mechanisms include local vasodilatation, reduction of muscular spasm, and activation of segmental pain-gating pathways.

The hip bath immerses the pelvis and lower abdomen, allowing more efficient heat transfer than surface heating pads and engaging cutivisceral reflexes that may influence deeper pelvic structures [3,5,11]. Pilot

and small clinical studies of hot hip bath in primary dysmenorrhea have reported reductions in pain scores [6,14,15,17], although larger controlled trials remain scarce.

4. Materials and Methods

4.1 Study Design and Setting

A single-group, pre-test/post-test quasi-experimental study was conducted at Tapovana Medical College of Naturopathy and Yogic Sciences, Doddabathi, Davangere, Karnataka.

4.2 Participants

Ten female students aged 19–23 years with clinically diagnosed primary dysmenorrhea were enrolled. All completed the protocol with no dropouts.

Inclusion criteria:

- Age 19–23 years, female
- Clinical diagnosis of primary dysmenorrhea (cyclic pain beginning with or shortly before menses, lasting ≤ 72 hours, no pelvic pathology)
- VPIS in the severe-to-worst range and WaLIDD score ≥ 2

Exclusion criteria:

- Mild or no pain on VPIS or WaLIDD score ≤ 1
- Suspected secondary dysmenorrhea or any contraindication to warm-water immersion

4.3 Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants. Confidentiality was maintained and participation was voluntary.

4.4 Intervention

Hot hip bath was administered for approximately 15 minutes per session, five sessions per week over a 10-day period (total of approximately 10 sessions). Sessions were supervised by trained naturopathy interns under the guidance of the faculty supervisor. Water temperature was maintained in the conventional hot range used in naturopathic practice.

4.5 Outcome Measures

Verbal Pain Intensity Scale (VPIS): An ordinal scale ranging from “no pain” to “worst possible pain,” scored numerically for analysis.

WaLIDD Score: A composite instrument assessing working ability, location of pain, intensity (Wong–Baker), and days of pain; higher scores indicate greater severity (range 0–12).

4.6 Statistical Analysis

Descriptive statistics (mean $\pm$ SD) were calculated. Pre- and post-intervention scores were compared using the paired t-test. Effect size was expressed as Cohen's d. A p-value < 0.05 was considered statistically significant. Severity-category shifts were tabulated descriptively.

5. Results

All 10 participants completed the intervention with no reported adverse events.

5.1 Demographic Profile

All participants were female students aged 19–23 years.

5.2 Primary Outcomes

Table 1 presents the pre- and post-intervention comparisons.

Outcome	Pre (Mean $\pm$ SD)	Post (Mean $\pm$ SD)	Mean Reduction	t-value	p-value
WaLIDD Score	8.8 $\pm$ 1.6	4.9 $\pm$ 1.2	-3.9 $\pm$ 1.1	9.12	<0.001
VPIS	7.3 $\pm$ 1.7	4.7 $\pm$ 1.2	-2.6 $\pm$ 1.0	8.45	<0.001

Table 1. Comparison of pre- and post-intervention scores ($n = 10$)

Both outcomes showed highly significant reductions. The effect size for the WaLIDD score was very large (Cohen's $d = 2.76$).

5.3 Severity Category Shifts

On the VPIS, participants moved out of the severe and worst-possible categories; 40% entered the mild-pain category after treatment. On the WaLIDD score, 40% moved into the minimal category and no participants remained in the moderate or severe categories (Tables 2 and 3).

VPIS Category	Pre n (%)	Post n (%)	Shift
Mild (1–3)	0 (0%)	4 (40%)	+40%
Moderate (4–6)	5 (50%)	6 (60%)	+10%
Severe (7–9)	3 (30%)	0 (0%)	-30%
Worst possible (10)	2 (20%)	0 (0%)	-20%

Table 2. Shift in VPIS severity categories ($n = 10$)

WaLIDD Category	Pre n (%)	Post n (%)	Shift
Minimal (0–3)	0 (0%)	4 (40%)	+40%
Mild (4–6)	5 (50%)	6 (60%)	+10%
Moderate (7–9)	3 (30%)	0 (0%)	–30%
Severe (10–12)	2 (20%)	0 (0%)	–20%

Table 3. Shift in WaLIDD severity categories (n = 10)

6. Discussion

The present study demonstrated that a short course of hot hip bath therapy produced highly significant reductions in both VPIS and WaLIDD scores in young women with primary dysmenorrhea, accompanied by clear shifts toward milder severity categories and a very large effect size on the composite WaLIDD measure.

These findings are consistent with the established mechanisms of heat therapy—local and reflex vasodilatation, reduction of myometrial and pelvic-floor spasm, improved uterine perfusion, and segmental pain gating [3–5,8,11]—and with previous small studies of hip-bath and hydrotherapy interventions in primary dysmenorrhea [6,14,15,17]. Water immersion may confer a more efficient and regionally targeted thermal effect than surface heating alone [5].

Limitations include the small sample size (n = 10), absence of a control or comparator group, short intervention period, lack of long-term follow-up, and single-centre design. Outcome measures relied on self-report. Future randomised controlled trials with larger samples, sham or active comparators, and extended follow-up are needed to confirm efficacy and durability.

Despite these limitations, the magnitude of change, favourable safety profile, low cost, and practicality of the protocol support hot hip bath as a useful non-pharmacological option within an integrated naturopathic approach to primary dysmenorrhea.

7. Conclusion

Within the limitations of this single-group pre–post study, hot hip bath therapy administered over approximately 10 days significantly reduced pain intensity and improved functional scores in women with primary dysmenorrhea. The intervention was safe and well tolerated. These findings support its use as a complementary naturopathic modality. Larger controlled trials are recommended to confirm and extend these results.

Acknowledgements

The authors express sincere gratitude to Dr. Parameshwara M.N., Associate Professor, TMCNYS, for his valuable guidance and constant encouragement & Dr. Shashikumar Meharwade, for granting necessary

permission and infrastructure; to the members of the Institutional Ethics Committee for timely review and clearance; and to all study participants for their willing cooperation.

Conflict of Interest

The authors declare that they have no conflict of interest.

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