

Effect of Cold Hip Bath on Constipation Severity, Bowel-Related Quality of Life and Stool Characteristics: A Pre–Post Interventional Study

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Abstract

Background: Constipation is a common gastrointestinal complaint that impairs quality of life. Cold hip bath, a naturopathic hydrotherapy procedure, is traditionally used to stimulate peristalsis and relieve pelvic congestion, but controlled clinical evaluation with validated scores remains limited.

Objectives: To evaluate the effect of a 10-day cold hip bath protocol on constipation severity, bowel-related quality of life and selected stool characteristics in subjects with constipation.

Materials and Methods: A single-group pre–post pilot study was conducted on 10 participants (7 male, 3 female; age 18–60 years) with constipation at GNCYMCH, Mysuru. Participants received cold hip bath (water temperature approximately 14–24°C) for 15–20 minutes daily for 10 days. Outcomes were Dissatisfaction Index and Satisfaction Score (quality-of-life scale for constipation), Wexner Constipation Score, and descriptive Bristol stool parameters (volume, colour, odour), assessed on Day 1 and Day 10. Data were analysed using Wilcoxon signed-rank and paired t-tests; effect sizes were expressed as Cohen's d.

Results: Highly significant improvements were observed in primary outcomes. Dissatisfaction Index decreased from 37.30 ± 10.47 to 20.60 ± 6.93 ($\Delta -16.70$, $p = 0.002$, $d = -2.77$). Satisfaction Score increased from 5.10 ± 2.69 to 12.30 ± 2.16 ($\Delta +7.20$, $p = 0.002$, $d = 2.95$). Wexner Constipation Score decreased from 11.10 ± 5.99 to 7.20 ± 4.61 ($\Delta -3.90$, $p = 0.002$, $d = -2.04$). All 10 participants improved on these three measures. Changes in stool volume, colour and odour were small and non-significant.

Conclusion: Cold hip bath over 10 days was associated with statistically significant and clinically meaningful improvements in constipation severity and bowel-related quality of life. Larger controlled trials are warranted.

Keywords: Constipation; Cold hip bath; Hydrotherapy; Wexner Constipation Score; Quality of life; Bristol stool chart; Naturopathy; Peristalsis

1. Introduction

Constipation is a common gastrointestinal condition characterised by infrequent bowel movements (typically fewer than three per week), hard or lumpy stools, straining, and a sense of incomplete evacuation [1,2]. Global prevalence estimates for functional constipation vary widely; pooled estimates using standardised criteria are in the order of 10–16%, with higher rates in women, older adults and lower socioeconomic groups [3,4]. Unmanaged constipation impairs quality of life and may contribute to anorectal complications.

Standard management includes dietary fibre, adequate fluid intake, physical activity and, when needed, osmotic or stimulant laxatives. Many patients remain incompletely satisfied with pharmacological options, prompting interest in non-drug strategies [5]. Naturopathy emphasises stimulation of the body's self-regulatory mechanisms through modalities such as hydrotherapy. Cold hip bath—immersion of the pelvic region in cool water (commonly described in the range of approximately 14–24°C)—is traditionally used to stimulate bowel activity, improve lower abdominal circulation and relieve pelvic congestion [6,7].

Proposed physiological effects include reflex stimulation of intestinal motility via cutaneous and visceral autonomic pathways and local circulatory change. Empirical clinical data linking short-course cold hip bath protocols to validated constipation severity and quality-of-life scores remain limited. The present pilot study evaluated a 10-day cold hip bath protocol on constipation severity, bowel-related quality of life and selected stool characteristics.

2. Aims and Objectives

Primary objective: To evaluate the effectiveness of cold hip bath in reducing the severity of constipation (Wexner Constipation Score) and improving bowel-related quality of life (Dissatisfaction Index and Satisfaction Score).

Secondary objectives: To observe changes in selected Bristol stool parameters (volume, colour, odour) and participant tolerance of the procedure.

3. Materials and Methods

3.1 Study design and setting

A single-group pre–post pilot study was conducted at Government Nature Cure and Yoga Medical College & Hospital (GNCYMC&H), Mysuru, Karnataka, India.

3.2 Participants

Ten participants (7 male, 3 female; age range 18–60 years) with constipation were enrolled after written informed consent. All completed the 10-day protocol.

Inclusion criteria: Subjects of either sex, age 18–65 years, with constipation; willingness to undergo cold hip bath and provide informed consent.

Exclusion criteria: Acute abdomen or suspected bowel obstruction; severe systemic illness limiting participation; open wounds or active infection in the immersion area; inability to sit in the bath; refusal of consent.

3.3 Intervention

Participants received cold hip bath daily for 10 days. Water temperature was in the cool range traditionally used for this procedure (approximately 14–24°C). The patient sat so that the region from the navel to the upper thighs was immersed, with feet and legs outside the tub where feasible, for 15–20 minutes. Gentle rubbing of the lower abdomen was encouraged as per institutional practice. After the bath, the patient was dried with a towel. Concurrent conventional care, if any, was continued as clinically indicated.

3.4 Outcome measures

Assessments were performed on Day 1 (pre-intervention) and Day 10 (post-intervention):

- Quality-of-life scale for constipation: Dissatisfaction Index (lower = better) and Satisfaction Score (higher = better).
- Wexner Constipation Score (lower = less severe constipation).
- Bristol stool-related parameters: stool volume, colour and odour (descriptive; clinical direction of change less clearly standardised).

3.5 Statistical analysis

Descriptive statistics (mean, SD, median, minimum, maximum) were calculated. Normality of difference scores was assessed with the Shapiro–Wilk test. Wilcoxon signed-rank test was the primary inferential test; paired t-tests are reported for completeness. Effect size was Cohen’s d (paired). Two-tailed $\alpha = 0.05$. Analyses performed in Python (SciPy/NumPy).

4. Results

All 10 participants (7 male, 3 female) completed the intervention.

4.1 Descriptive and inferential statistics

Table 1. Descriptive statistics (n = 10)

Outcome	Time	Mean	SD	Median	Min	Max
Dissatisfaction Index	Pre	37.30	10.47	38.5	23.0	51.0
	Post	20.60	6.93	20.5	12.0	32.0
Satisfaction Score	Pre	5.10	2.69	5.0	1.0	9.0
	Post	12.30	2.16	12.0	10.0	16.0

Wexner Constipation Score	Pre	11.10	5.99	11.5	3.0	24.0
	Post	7.20	4.61	7.0	1.0	17.0
Stool Volume	Pre	2.55	1.12	2.5	0.5	4.0
	Post	2.80	0.63	2.8	2.0	4.0
Colour	Pre	4.00	1.56	4.0	2.0	6.0
	Post	3.90	1.45	4.0	2.0	6.0
Odour	Pre	2.30	0.95	2.0	1.0	4.0
	Post	1.70	0.82	1.5	1.0	3.0

Table 2. Change scores and inferential statistics (n = 10)

Outcome	Mean Δ	SD Δ	Wilcoxon p	t-test p	Cohen's d	Improved
Dissatisfaction Index	-16.70	6.02	0.002	<0.001	-2.77	10/10
Satisfaction Score	+7.20	2.44	0.002	<0.001	2.95	10/10
Wexner Constipation Score	-3.90	1.91	0.002	<0.001	-2.04	10/10
Stool Volume	+0.25	1.34	1.000	0.569	0.19	6/10
Colour	-0.10	1.60	0.941	0.847	-0.06	—
Odour	-0.60	1.07	0.172	0.111	-0.56	6/10

Note: Lower Dissatisfaction Index and Wexner Constipation Score indicate improvement; higher Satisfaction Score indicates improvement. Stool parameters are descriptive.

4.2 Graphical representation

Figure 1 presents grouped mean $\pm$ SD comparisons for the primary outcomes. Figure 2 shows individual outcome panels.

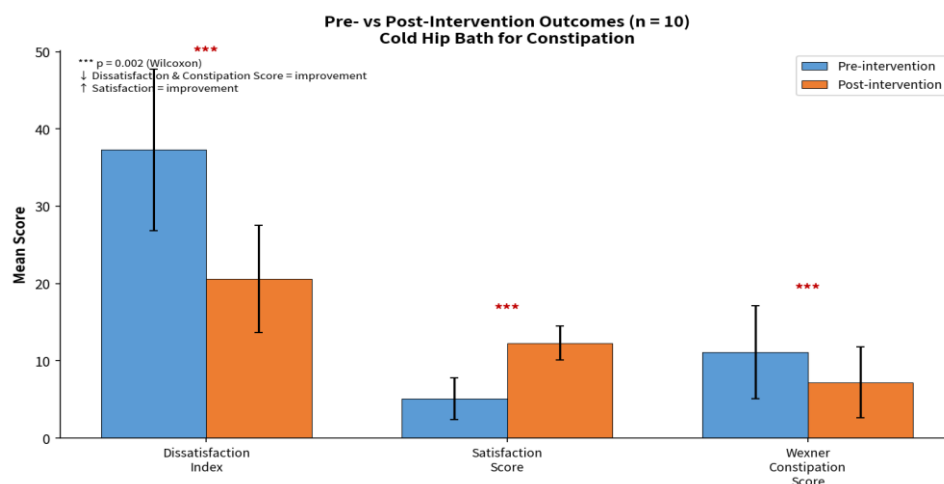


Figure 1. Mean pre- and post-intervention scores ($\pm$ SD). *** p = 0.002 (Wilcoxon signed-rank test).

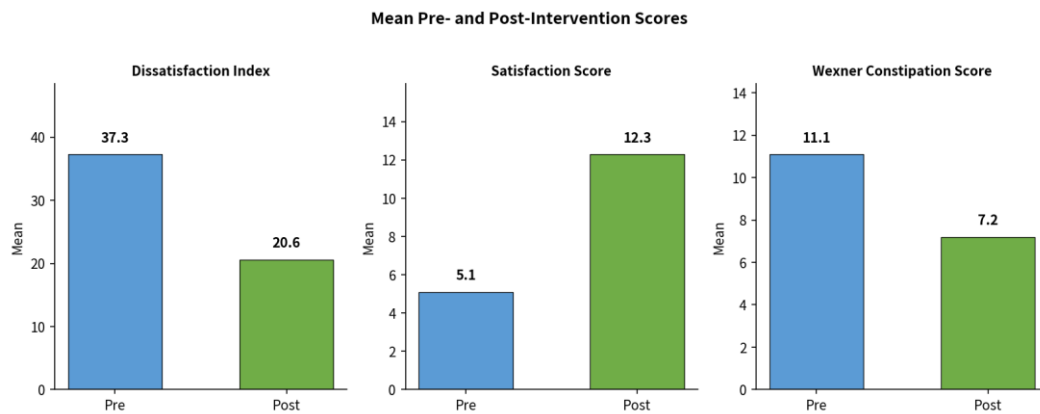


Figure 2. Mean pre- and post-intervention scores for Dissatisfaction Index, Satisfaction Score and Wexner Constipation Score.

4.3 Summary of key findings

Dissatisfaction Index: Mean reduction -16.70 (SD 6.02); $p = 0.002$; $d = -2.77$; 10/10 improved.

Satisfaction Score: Mean increase $+7.20$ (SD 2.44); $p = 0.002$; $d = 2.95$; 10/10 improved.

Wexner Constipation Score: Mean reduction -3.90 (SD 1.91); $p = 0.002$; $d = -2.04$; 10/10 improved.

Stool volume, colour and odour: small, non-significant changes.

5. Discussion

In this single-group pre–post pilot study, a 10-day cold hip bath protocol was associated with highly significant reductions in Dissatisfaction Index and Wexner Constipation Score and a large increase in Satisfaction Score. Every participant improved on these three primary measures. Effect sizes were large to very large. Changes in descriptive stool parameters (volume, colour, odour) were small and not statistically significant.

These findings are consistent with the traditional hydrotherapeutic rationale that cool pelvic immersion may stimulate gastrointestinal motility through cutaneous–visceral reflex pathways and local circulatory effects [6,7]. Improvement in validated symptom and quality-of-life scores is clinically relevant even when single stool-characteristic items do not change significantly, because constipation burden is multidimensional.

Limitations include the small sample size ($n = 10$), absence of a control or sham group, short duration, single-centre design, and lack of long-term follow-up. Causal attribution cannot be established. Bristol-related colour and odour ratings depend on the specific scales used and should be interpreted descriptively. Larger randomised controlled trials with standardised outcome definitions, longer follow-up and objective motility measures would strengthen the evidence base.

6. Conclusion

Within the limitations of this single-group pre–post study, cold hip bath administered daily for 10 days was associated with statistically significant and clinically meaningful improvements in constipation

severity and bowel-related quality of life. The procedure was simple, non-invasive and well tolerated. These preliminary findings support further evaluation of cold hip bath as a naturopathic adjunct in the management of constipation.

Declarations

Conflict of interest: The author declares that there is no conflict of interest.

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Ethics: Written informed consent was obtained from all participants. The study was conducted as a student dissertation under institutional supervision.

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