

Culturally Tailored Home-based Yoga Intervention for Lymphoma Patients on Chemotherapy

Abstract

Context: Although proven effective in solid cancers, there is a dearth of evidence-based studies supporting yoga as an intervention to improve health-related quality of life (HRQOL) among patients with lymphoma. **Aim:** The aim of this study was to develop a remotely supervised, home-based yoga intervention to improve HRQOL for lymphoma patients undergoing chemotherapy. **Settings:** This project was conducted at a tertiary care hospital in Northern India. **Methodology:** Experts in lymphoma, yoga, psychiatry, and nursing collaborated to formulate the intervention. Following a comprehensive literature review and stakeholder consultations, the intervention, named “Yoga Therapy” for patients with lymphoma, was developed. It included counseling regarding the benefits of yoga, a video and booklet on yoga, practical yoga sessions, telephonic support, regular follow-ups, random and need-based re-demonstrations, and adherence charts. The feasibility and safety of the intervention were assessed through a pilot study. **Results:** The developed intervention was found feasible, effective, and safe to be conducted during the pilot study. Reasonable adjustments were made in the final intervention to address individual needs, lymphoma burden, and other patient-specific concerns. **Conclusion:** The developed intervention was explicitly developed for patients with lymphoma during chemotherapy and seemed to be appropriate for its effectiveness testing during a randomized controlled trial.

Keywords: Chemotherapy, health-related quality of life, lymphoma, yoga

Introduction

Lymphomas are the serious hematological malignancies typically treated with multiagent chemotherapy.^[1,2] Similar to other cancers, lymphoma patients often experience side effects such as high stress, fatigue, depression, anxiety, and sleep disturbances during chemotherapy, significantly lowering their overall health-related quality of life (HRQOL).^[3-5] Preserving HRQOL during cancer treatment is essential, and yoga can significantly contribute to improving it.^[6-8] However, unlike solid tumors, there is a lack of systematic and scientific evaluation of yoga-based interventions for their effects on HRQOL in lymphoma and other hematological malignancies.^[9,10] This gap may be due to the generally poor health status of these patients and the intensive chemotherapy required for treating lymphoma.

Research suggests that individualized, need-based, and culturally tailored

interventions are more effective in improving patient outcomes.^[11] Given yoga's origins in India and its familiarity among the population, developing a disease-specific yoga intervention for lymphoma patients undergoing chemotherapy was considered appropriate.^[12,13] This article details the development of a culturally acceptable, economical, and easy-to-follow home-based yoga intervention using information technology (IT) to enhance HRQOL among lymphoma patients during chemotherapy.

Methodology

This project focused on developing an intervention called “Yoga Therapy” for patients aged over 18 with newly diagnosed, histologically confirmed lymphoma, who were scheduled to undergo chemotherapy at the adult hematology clinic outpatient department of a tertiary hospital in North India. Experts in hematology oncology, psychiatry, nursing, and yoga collaborated on the intervention's development. The methodology has been outlined in

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accordance with the TIDieR guidelines [Table 1].^[14] The process was conducted in two phases, as detailed below.

Phase I: Predevelopment stage of the intervention

This phase focused on identifying key concepts to guide the development of a yoga-based intervention, “Yoga Therapy,”

tailored to the needs of patients with hematological cancers undergoing chemotherapy. Several factors were considered before developing the intervention:

1. Selecting inclusion and exclusion criteria: Only lymphoma patients were included in the study for the development and implementation of the yoga

Table 1: Template for intervention description and replication checklist for intervention

Item	Description
Intervention name	“Yoga therapy”
Why	As cancer and chemotherapy side effects decline the HRQOL of the individual, this yoga-based multicomponent intervention was developed as a supportive care strategy for improving the overall HRQOL of the patients while undergoing chemotherapy for the treatment of underlying lymphoma
What	It included counseling session, practical yoga sessions, booklet, and video on yoga. Before start of chemotherapy treatment participants were taught yoga and encouraged to do its daily practice at home during the entire chemotherapy period
Who provided	The first author GK a practicing oncology nurse, provided the intervention. She underwent a yoga certification course from a Government of India-recognized Yoga institute
How	Face-to-face and an individualized approach were used while delivering yoga therapy to the participants before the start of chemotherapy, as well as during the follow-up time during the entire treatment period
Where	At the OPD of Adult Hematology Clinic, new OPD, PGIMER, Chandigarh, India. A dedicated room was provided to the participant to ensure their privacy during the yoga sessions
When and how much	After checking the eligibility of the participants the yoga group participants were informed about the intervention components as follows Counseling focused on the following information Nature of the disease What chemotherapy is, its expected side effects How yoga practice could help them during treatment Component, frequency, and duration of yoga practice (daily 30 min for 5 days a week based on the physical activity intervention guidelines by the American College of Sports Medicine) Do and don'ts of yoga practice At home yoga practice Use of telephonic follow-up contacts, video, booklet on yoga, and adherence charts Practical yoga session (on a one-to-one basis): Duration 30 min/day Booklet (in Hindi, Punjabi, and English) and video on yoga Telephonic reinforcement 1 st week of chemotherapy=Minimum of 2 calls 2 nd –4 th week ≥1 call/week 2 nd –6 th month=1 call fortnightly Adherence chart (to be filled by participants daily at home after yoga practice) Follow-up (on every visit to the hospital) Need-based random return demonstrations and repeated sessions
Tailoring	The intervention was personalized and adapted according to the participant's physical capacity. Fatigue, enlarged lymph nodes, along with other chemotherapy-related side effects such as fever and diarrhea can deter participants from performing daily yoga practice at home. So a one-to-one approach was used to guide them. For daily practice. They were told to make contact with the investigator as well as the treating hemato oncologist regarding any query on yoga practice during their follow-up visit, or they can contact the investigator through a dedicated mobile phone
Modifications	Modifications were made in the intervention after the pilot study. As we found participants were having difficulty in remembering the Sanskrit names of asanas. So for the main RCT, we replaced the names with Hindi equivalents. A support person was also involved to help the participants
How well	Intervention fidelity was assessed using a daily adherence chart, which the participants were taught how to fill it, and bring it on every follow-up visit. They were supposed to tick the asanas done on a particular day and mark a cross sign in case they skipped if any, and should write the reason for skipping it. Further, a support person was also involved in maintaining the fidelity of the yoga adherence charts

RCT: Randomized controlled trial, OPD: Outpatient department, HRQOL: Health-related quality of life

intervention. Hematological disorders such as leukemia and multiple myeloma were excluded due to their higher risks of fractures and bleeding, necessitating safer physical activities^[15]

- Supervised versus nonsupervised intervention and why yoga: Literature indicates that most physical activity or yoga-based programs tested during chemotherapy are directly supervised. Although effective, these programs are not feasible in resource-limited settings like India due to factors such as additional financial burden and a lack of trained physical activity instructors.^[16,17] Yoga, however, requires no costly equipment, has cultural roots in India, and is familiar to many people.^[12] Once learned, it can be practiced at home without supervision, provided that safety guidelines are followed.^[18] In addition, lymphoma patients undergoing chemotherapy have reduced immunity due to neutropenia, making home settings safer than community or clinic-based environments for physical activities.^[19] Thus, “Yoga Therapy” was designed as a self-initiated, home-based intervention
- Ensuring constant supervision without extra costs: Providing regular guidance for home-based interventions was challenging since many patients were from distant locations for chemotherapy. Previous studies suggest that telephonic supervision helps maintain adherence to activity-based programs.^[20] To minimize transportation needs without compromising supervision, the intervention was designed to include weekly structured telephonic supervision and follow-up visits to the clinic.

Phase II: Development of “yoga therapy”

The intervention was developed using the “revised Wilson and Cleary health-related quality of life” model as the conceptual framework.^[21] This model targets various patient outcomes (symptoms, functional status, and general health perceptions) to ultimately improve overall HRQOL. Family members (support persons) were involved to enhance adherence. Based on guidelines by Karen J. Sherman for developing a robust yoga intervention, and CLARIFY checklist for the reporting of yoga research, the following domains were considered for “Yoga Therapy:”^[18,22]

Style of yoga

Considering the safety and benefits for the study population, various yoga styles or components were selected from diverse resources including traditional yoga texts, yoga literature, and the “Common Yoga Protocol” issued by the Government of India on the occasion of International Yoga Day 2015.^[10,23,24] These components enhance the physical and mental cleansing of the individual,^[24] thus aiming to improve overall HRQOL.

- Duration of yoga: The American College of Sports Medicine (2009) recommends avoiding inactivity and exercising for 150 min per week for hematological malignancy survivors.^[25,26] Therefore, during the entire

chemotherapy period, each yoga session was set at 30 min per day, 6 days per week

- Intervention components: The planned intervention included yogic exercises (warm-up exercises, asanas, and pranayama). Table 2 details various yogic exercises included in the intervention. The chosen asanas and pranayama were relevant to our patient population. Physical limitations of the study population and other participant-specific contextual factors were considered while teaching yoga to individual participants
- Specific sequence of yogasanas: The warm-up exercises were designed to enhance microcirculation and prepare the body for asanas, followed by asanas and pranayama. While a specific sequence of yogic exercises was adhered to, some flexibility was allowed during the initial chemotherapy cycles based on the participants’ physical condition. Participants could perform yoga at any time of the day, in any sequence, either sitting in a chair or in bed, depending on their physical capacity
- Physical fitness eligibility criteria and individual assessment: Assessing the physical fitness of participants for yoga practice presented a significant

Table 2: Yogic exercises included in the “Yoga therapy”

Yoga practice	Duration
Loosening practices/yogic <i>Sukshma Vyayama</i> (4 min) duration	
Neck bending (<i>Greeva Sanchalana</i>)	
Forward and back bending	½ min
Left and right bending	½ min
Hand exercises	
Hand clenching (<i>Mushtika Bandhana</i>)	½ min
Wrist bending (<i>Mani Bandha Naman</i>)	½ min
Wrist joint rotation (<i>Manibandha Chakra</i>)	½ min
Elbow exercise	
Elbow bending (<i>Kehuni Naman</i>)	½ min
Shoulder exercise	
Shoulder rotation (<i>Skandha Chakra</i>)	½ min
Toe exercise	
Toe bending	½ min
<i>Asanas</i> (physical postures) - 16 min	
Standing postures	
<i>Tadasana</i> (palm tree posture)	1 min
<i>Kati Chalan</i> (trunk bending posture)	2 min
Sitting postures	
<i>Sasangasana</i> (the hare posture)	1 min
<i>Vajrasana</i> (sitting on feet posture)	2 min
Prone postures	
<i>Bhujangasana</i> (the cobra posture)	1 min
<i>Makarasana</i> (the crocodile posture)	3 min
Supine posture	
<i>Pavanamuktasana</i> (the wind releasing posture)	1 min
<i>Savasana</i> (the dead body posture)	5 min
<i>Pranayama</i> (breathing exercises) 10 min	
<i>Anuloma Viloma</i> (alternate nostril breathing)	5 min
<i>Bhramari Pranayama</i>	5 min

challenge due to limited resources, time constraints, and varying literacy levels. After extensive discussions with stakeholders, it was decided to use the Eastern Cooperative Oncology Group Performance Status score to assess participants' physical fitness and eligibility for enrollment.^[27] This scale ranges from 0 to 5, with 0 indicating full physical fitness and 5 indicating deceased status. Participants with a PS score of 0–3 were eligible to participate in the trial

5. Instructor qualifications: The qualifications of the instructor play a crucial role in the outcome and safety of the intervention.^[28] The principal investigator of the study (GK), a practicing oncology nurse, obtained certification from a Government of India-recognized yoga institute. The certification course covered all elements of the “Yoga Therapy”
6. Home practice: At our study center, lymphoma chemotherapy is typically delivered on a day-care basis, highlighting the importance of home practice of yoga. To support this, we developed a yoga booklet in Hindi, Punjabi, and English (three commonly spoken languages of this region) providing detailed practice instructions to participants. In addition, a yoga video was created and shared with participants through compact disk or through the mobile application WhatsApp
7. Motivation: To address participant queries about home yoga practice, regular one-to-one interactions were planned during each patient visit to the outpatient department. In addition, one support person (a family member staying with the patient at home) was involved to provide assistance and motivation. Weekly and as-needed telephonic reinforcements were scheduled, particularly during the first three chemotherapy cycles, as side effects are typically more pronounced during this period^[29]
8. Fidelity of self-management records: To monitor adherence to home-based exercises, literature suggests using observation components such as adherence charts as an alternative to supervised physical training programs.^[30,31] Adherence was tracked using a checklist-based adherence chart, which participants and their support persons were trained to fill out after each yoga practice session. Random return demonstrations were also planned during participants' visits to the chemotherapy center
9. Side effect monitoring: Monitoring of side effects resulting from the “Yoga Therapy” was done, with participants instructed to report any side effects experienced during home yoga practice
10. Acceptability of the intervention: Acceptability, defined as the perceived reasonableness or appropriateness of the intervention, was assessed using a 3-point Likert scale.^[32] This scale measured participants' perceptions of the ease of understanding yogic exercises, incorporation into daily life, interest in the intervention, and desire to continue yoga.

Results

The safety, feasibility, and acceptability of “Yoga Therapy” were established through a pilot study. Inputs from the results of this pilot study further refined the final intervention.^[19] Based on the learnings from this pilot study, the following changes were made to the final intervention:

1. Changes in asanas: Following reports of dizziness from two participants during the pilot study, it was decided to replace certain yoga asanas, such as Ardha Chakrasana, with Kati Chalan Asana
2. Language changes: Participants in the pilot study encountered difficulty comprehending the Sanskrit names of various yogasanas. As a result, these names were replaced with Hindi equivalents
3. Flexibility in yoga sessions: Some participants reported difficulty practicing yoga for a continuous 30-min duration during the first chemotherapy cycles. Consequently, it was decided that participants could break the 30-min session into 2 or 3 segments, depending on their physical ability, during the initial cycles. However, in subsequent cycles, participants were encouraged to complete the session without breaks. In cases where participants were unable to leave their bed, they were motivated not to skip daily practice and were instructed to perform yogic exercises in a seated posture, either in a chair or on the bed
4. Fidelity of yoga adherence charts: To ensure participants adhered to daily practice, one support person was involved in monitoring adherence to the yoga regimen.

Discussion

Robust yoga-based interventions for lymphoma patients undergoing chemotherapy are currently lacking, mirroring the situation for other hematological cancers.^[9,33] In this article, we have described the development of a structured yet adaptable yoga-based intervention tailored to the needs of lymphoma patients undergoing chemotherapy, before its evaluation in a randomized controlled trial. The “Yoga Therapy” intervention was carefully crafted to address the specific challenges faced by this patient population. Involving stakeholders from diverse fields such as yoga, psychiatry, clinical hematology-oncology, and nursing strengthened the intervention development process. These experts were well-versed in lymphoma-specific issues and ensured that these concerns were addressed effectively. Further adhering to the TIDieR guidelines enhanced the rigor and standardization process for reporting this intervention.

The “Yoga Therapy” intervention incorporated various methods, including counseling sessions, practical yoga sessions, random return demonstrations, telephonic support throughout chemotherapy treatment, and the provision of educational materials such as booklets and videos on yoga. These methods complemented each other and minimized

the limitations inherent in a home-based intervention, such as the inability to provide real-time supervision of yoga practice sessions conducted at home.

Moving forward, it is imperative for researchers, oncologists, and yoga experts to critically consider the development of cancer-specific yoga interventions. These interventions must be tailored to the individual needs of patients and their specific disease characteristics. Understanding the nature of cancer and its treatment, identifying which yoga postures are relevant and safe for patients, and empowering patients to continue their yoga practice at home are essential steps in promoting the sustained engagement of patients in yoga-based interventions.

Conclusion

We have successfully developed the “Yoga Therapy” intervention, tailored specifically to the needs of lymphoma patients. The methodologies employed in this intervention’s development hold promise for future studies, extending beyond the realm of lymphoma. By adapting and validating these methods, researchers can explore the development of disease-specific yoga interventions for various hematological oncology conditions. This intervention represents a significant step forward in the integration of yoga into comprehensive care strategies for cancer patients, offering potential benefits for a broader patient population.

Ethical statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board (IRB)(Approval number INT/IEC/2017/773).

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Nil.

Conflicts of interest

There are no conflicts of interest.

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