

Implementation of Integrative Nursing for Oncology Inpatients: A Mixed Methods Research Protocol

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Implementation of Integrative Nursing for Oncology Inpatients: A Mixed Methods Research Protocol

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Abstract

Background: Integrative nursing (IN) involves the application of external naturopathic nursing interventions, such as compresses, embrocations, and therapeutic baths and washes. While experts' internal evidence supports IN, external evidence remains limited. However, there is a growing synthesis of evidence in the field of IN, both in general and in relation to specific symptoms. As part of a university hospital project, oncology patients on project-related wards received IN interventions as supportive care during their hospital stay within the scope of counseling.

Objective: The present study aims to investigate the acceptance, feasibility, and implementation conditions of integrating IN for inpatients respecting multiple perspectives, and to evaluate perceptions, experiences, and benefits.

Methods: The study employs a convergent parallel mixed methods approach and utilizes the Consolidated Framework for Implementation Research as its theoretical framework. This evaluation study will consist of five sub-studies that reflect multiple perspectives on the project. Patients, relatives, and hospital staff will participate in the study. The sub-studies will include a single-arm pre-post questionnaire (sub-study 1) and semi-structured interviews (sub-study 2) with patients, a cross-sectional survey of their relatives (sub-study 3), semi-structured interviews with the nursing and medical staff (sub-study 4), and a project-related documentation (sub-study 5). The analysis of qualitative data will be conducted through qualitative content analysis, while quantitative data will be analyzed through descriptive and inferential statistics.

Results: After analyzing the data separately, the sub-study results will be integrated and triangulated to generate meta-inferences. The recruitment phase was initiated in October 2023. As of March 2025, the data collection is ongoing, and data analysis has not yet commenced.

Conclusions: The present article expounds upon a mixed-methods research protocol aimed to elucidate the implementation of IN in a university hospital setting. The study's results will offer a theory-based contribution to the implementation of IN for inpatients. The study will also examine its initial effects at the patient level. Clinical Trial: The trial was registered with the German Trials Register (DRKS): DRKS00032318.

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Original Manuscript

Protocol**Implementation of Integrative Nursing for Oncology Inpatients: A Mixed Methods Research Protocol**

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Keywords: integrative medicine; integrative oncology; complementary nursing intervention; study protocol; quality of care; inpatient care; symptom management; nursing counseling; supportive care

Abstract

Background: Integrative nursing (IN) involves the application of external naturopathic nursing interventions, such as compresses, embrocations, and therapeutic baths and washes. While experts' internal evidence supports IN, external evidence remains limited. However, there is a growing synthesis of evidence in the field of IN, both in general and in relation to specific symptoms. As part of a university hospital project, oncology patients on project-related wards received IN interventions as supportive care during their hospital stay within the scope of counseling.

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Results: After analyzing the data separately, the sub-study results will be integrated and triangulated to generate meta-inferences. The recruitment phase was initiated in October 2023. As of March 2025, the data collection is ongoing, and data analysis has not yet commenced.

Conclusion: The present article expounds upon a mixed-methods research protocol aimed to elucidate the implementation of IN in a university hospital setting. The study's results will offer a theory-based contribution to the implementation of IN for inpatients. The study will also examine its

initial effects at the patient level.

Trial registration: The trial was registered with the German Trials Register (DRKS): DRKS00032318.

Introduction

Oncological patients show a significant demand for complementary and integrative medicine (CIM), which involves both traditional and complementary approaches [1, 2]: The prevalence of CIM use among cancer patients varies globally from 16.5% to 93.4%, with an average prevalence of complementary and alternative medicine use of 41.1% in Germany [1]. This trend is further substantiated by a survey conducted in German university hospitals: Every second patient surveyed (48%) stated that they had previously or currently used CIM in relation to their disease [3].

Integrative nursing (IN) uses CIM therapies on a regular basis [4–6], for instance, as part of integrative oncology (IO) programs [5]. Consequently, nursing interventions involving external application, such as compresses and embrocations, were frequently utilized as non-pharmacologic interventions at the Hospital Havelhöhe, as part of the IO [7]. Ben-Arye et al. (2022) highlighted the positive impact of nurse involvement in guiding patients to self-administering IO treatments [8].

IN interventions include a range of naturopathic, non-pharmacological nursing interventions, such as compresses, embrocations, and therapeutic baths and washes [4, 9, 10]. These nursing interventions aim to prevent and manage symptoms and side effects associated with conventional treatment [4, 11]. A substantial growing body of research and evidence synthesis has emerged on IN interventions in general [12–14] and for specific symptoms such as mucositis [15], pain [16], or chemotherapy-induced peripheral neuropathy [17].

In addition, there are research projects in Germany to implement IN interventions in healthcare, with a focus on the outpatient setting [18–20] and pediatric inpatients [21–23]. Recent studies demonstrated the considerable potential of IN interventions to support oncology patients, in

managing cancer-related symptoms and enhancing their quality of life [19, 24]. However, research on the feasibility, implementation and evaluation of IN for (oncology) inpatients remains limited in Germany.

In relation to this context, the IMPLEMENT-UKU project (“Implementation of IN at the Ulm University Hospital”) provides an IN consultation service for inpatients on wards that are participating in this project. The IN project serves a supportive complementary care approach that utilizes external naturopathic nursing interventions to supplement conventional therapy based on the patient's needs. The project will undergo a scientific evaluation that will consider the perspectives of patients, their relatives, and hospital staff.

This article presents a mixed-methods research protocol that aims to make a theory-based contribution to the implementation of IN for inpatients and to examine its initial effects at the patient level.

Methods

Purpose of the study

This evaluation study is part of the IMPLEMENT-UKU project. The implementation of IN will be the subject of an accompanying scientific research study. The evaluation study will address the following questions:

1. Can IN be realized and implemented in the wards as intended?
 - a. Implementation of the IN (e.g. number of IN consultations, IN interventions).
 - b. Acceptance and perception by patients, relatives, and nurses/medical staff (e.g. evaluation of the IN, perceptions of the application)
2. What are the key contextual factors for implementing IN?
 - a. Identification of key contextual factors and assessment of implementation (e.g., barriers and

facilitators).

3. What are the indicators of possible effects of IN at the patient level?

- a. Focus on patient-reported outcomes (e.g. well-being, quality of life, self-efficacy and symptom burden).

The present study will address the research priorities outlined in the “German Research Agenda for Nursing Oncology”, including disease-related symptoms and side effects of therapies, as well as quality of life during health and disease phases [25].

Project “IMPLEMENT-UKU”

As part of the IMPLEMENT-UKU project, oncology patients on project-related wards receive IN interventions as supportive care during their hospital stay within the scope of counseling. Nursing and medical staff refer patients to the IN consultation if they present relevant symptoms, such as restlessness, pain, or cancer-related side effects that indicate the need for non-pharmacological interventions. Patients referred for IN undergo an initial IN consultation and subsequent visits with IN interventions. The patients receive accompaniment throughout their hospital stay, and different IN interventions are offered in addition to routine care, based on the patient's symptom burden and preferences. The IN catalog, which focuses on cancer-related symptoms, is used as a reference for offering these IN interventions.

IN interventions are carried out by a nurse, who is specially trained in integrative nursing: These nurses have received three years of vocational training and extensive professional experience. They have also received training in CIM and hold an additional qualification in the field of external, naturopathic interventions.

Study design

A mixed-methods research design is conducted utilizing a convergent parallel mixed-methods design [26, 27]. The decision to utilize the mixed-methods approach was made to facilitate the triangulation of quantitative and qualitative data, thereby offering a more comprehensive perspective. In the domain of nursing, mixed methods are also essential for addressing implementation research questions, in addition to single-method approaches [28]. In this convergent parallel approach, both types of data are collected simultaneously and with equal priority. They are then evaluated independently, and subsequently compared, related, and merged after analysis. This enables the identification of areas where the results converge or diverge, which can be further discussed during the interpretation phase. This protocol is based on the “Good Reporting of A Mixed Methods Study” [29].

The present study will utilize the Consolidated Framework for Implementation Research (CFIR) as its theoretical framework [30, 31]. The CFIR is a comprehensive framework for the implementation of complex interventions in healthcare settings [32]. The updated CFIR considers five core domains for the analysis of the implementation process [31]: innovation, outer setting, inner setting, individuals, and implementation process. These domains interact with each other and thus have an impact on the effectiveness of implementation processes [30]. However, it is important to note that relying solely on the factors of the CFIR is not recommended. It is crucial to maintain an open mindset during the implementation process to avoid overlooking other influential factors [32].

In order to address the primary objectives of the study and the multilevel evaluation approach, five interrelated sub-studies will be conducted. These sub-studies are presented in Table 1 and incorporate three different perspectives: patients, relatives, and nursing and medical staff.

Table 1. Study design of the mixed-methods approach, comprising five interrelated sub-studies.

Sub-study	Aim	Method		Participants
1	To identify perceptions and changes in patient-reported outcomes	Single-arm questionnaire	pre-post	Patients
2	To understand how patients experience the IN	Semi-structured interviews		Patients
3	To understand how relatives regard the IN	Cross-sectional survey		Relatives
4	To identify facilitators and barriers to the implementation	Semi-structured interviews		Nursing and medical staff
5	To demonstrate the feasibility and implementation	Project-related documentation		-

Setting and intervention

The IMPLEMENT-UKU project and the evaluation study are being carried out in a monocentric manner at the University Hospital Ulm. Fig 1 presents a flow chart delineating the patient course in the project. Patients will be referred to the initial IN consultation by nursing and medical staff from the wards that participated in the study. The rationale for the request will be based on pertinent and acutely distressing symptoms and problems, such as restlessness, pain, or cancer-related side effects, which are relevant to care and indicate the need for non-pharmacological nursing interventions as supportive care. Subsequent to the referral, patients undergo an initial IN consultation with the integrative nurse to provide information about IN, the entire project, and the ongoing evaluation study. During this initial consultation, the integrative nurse will recruit patients for study participation who meet the participation criteria and voluntarily sign the informed consent form. The initial IN intervention will be conducted in a consecutive manner to this consultation. Patients will receive support with IN visits throughout their hospital stay, which may result in a variable number of IN interventions per patient.

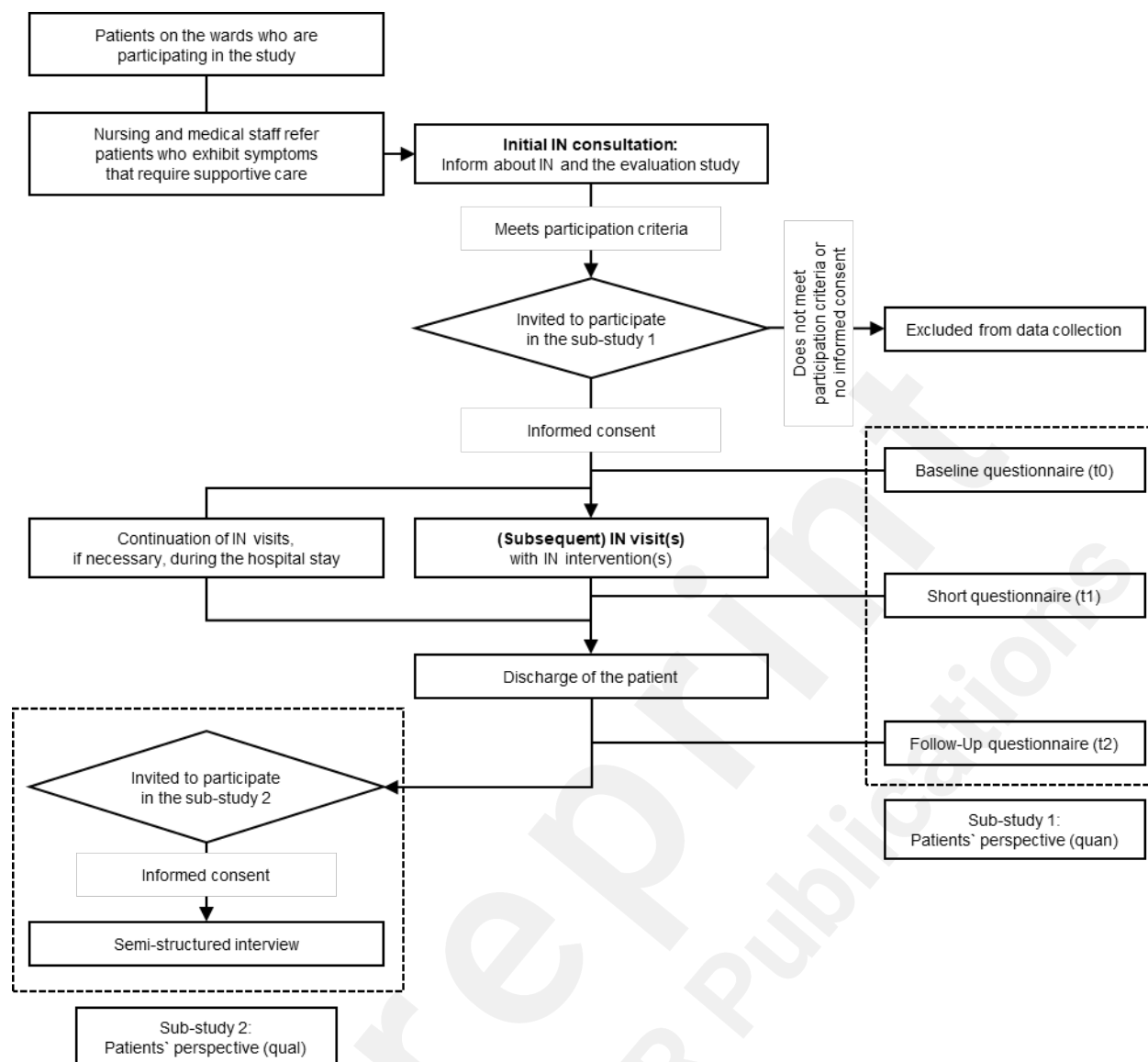


Figure 1. Flow chart of patient course in the project and in the sub-studies 1 and 2.

Depending on the patient's symptom burden and preferences, patients will be offered different patient-tailored IN interventions in addition to their routine care. These interventions will be based on a catalog with IN interventions, including compresses, embrocations, and therapeutic baths and washes (Table 2). The IN catalog was developed using a combination of experiential knowledge and relevant literature [9, 10, 16, 17, 33, 34], and published recommendations from previous projects [20, 35, 36].

Table 2. Catalog of IN interventions in the “IMPLEMENT-UKU” project (as of August 2023).

Symptoms	IN interventions ¹
Appetite loss	• Liver compress with yarrow tea
Respiratory insufficiency, respiratory infections	• Sternum-compress with thyme oil², plantago bronchial balsam³ • Embrocation with thyme oil², solum oil³, plantago bronchial balsam³ • Diaphragm-compress with copper ointment³, thyme oil², solum oil³
Sleep disorders	• Heart-compress with aurum-lavender ointment² • Hand-/foot-bath with lavender bath milk • Sternum-compress with lavender oil³ • Embrocation with lavender oil², solum oil³, mallow oil³ • Liver compress with yarrow tea
Exhaustion, weakness	• Hand-/foot-bath with citrus bath milk, rosemary bath milk • Liver compress with yarrow tea • Therapeutic wash with citrus bath milk, rosemary bath milk, solum oil³ • Embrocation with mallow oil³, solum oil³, rose oil²
Depressed mood	• Embrocation with mallow oil³, rose oil², citrus oil² • Therapeutic wash with citrus bath milk • Liver compress with yarrow tea
Crisis situation	• Hand-/foot-bath with lavender bath milk • Embrocation with rose oil², solum oil³, lavender oil² • Therapeutic wash with rosemary bath milk
Constipation, meteorism, irritable bowel syndrome	• Abdomen-embrocation with fennel-caraway oil², chamomile oil², melissa oil², oxalis ointment³ • Abdomen compress with chamomile oil²
Edema, congestion	• Compress with borago essence³, curd, arnica essence³ • Embrocation with rosemary oil², solum oil³ • Therapeutic wash with citrus bath milk
Polyneuropathy	• Embrocation with aconite oil³, solum oil³,
Pain	• Embrocation with aconite oil³, solum oil³, arnica essence³ • Warm/cool compress
Nausea, vomiting	• Abdomen-compress with fennel-caraway oil², chamomile oil², melissa oil² • Embrocation with fennel-caraway oil², chamomile oil², melissa oil²
Restlessness, anxiety, tension	• Heart-compress with aurum-lavender ointment³ • Liver-compress with yarrow tea • Wrist-compress with citrus oil² • Embrocation with solum oil³, lavender oil², rose oil², mallow oil³ • Sternum-compress with lavender oil², arnica essence³ • Hand-/foot-bath with lavender bath milk

¹ Selected according to the patient's symptom burden and preferences.² Essential oils with a high-quality oil as a carrier.³ Ready-to-use products as anthroposophical products: aconite oil (*Aconitum napellus e tubere ferm 33c Dil. D9 oleos.*, *D-Campher*, *Lavandulae aetheroleum*, *Quarz Dil. D9 oleos.*), arnica essence (*Arnica montana*), aurum-lavender oil cream (*Aurum metallicum praeparatum Dil. D4, Lavandulae aetheroleum, Aetheroleum extractum e floribus recentibus Rosae*

damascenae et centifoliae), borago essence (*Borago officinalis* ex herba LA 20%); copper ointment (*Cuprum oxydulatum rubrum*); mallow oil (*Geranii aetheroleum*, *Malva arborea e floribus* W 5%, *Hypericum perforatum*, *Herba rec.*, *Prunus spinosa e floribus* W 5%, *Sambucus nigra ex umbella* W 5%, *Tilia platyphyllos/cordata e floribus* W 5%), oxalis ointment (*Oxalis, folium*), plantago bronchial balsam (*D-Champher*, *Cera flava*, *Drosera e planta tota ferm 33c Dil. D3*, *Eucalypti aetheroleum*, *Petasites hybridus e radice ferm 33c Dil. D1*, *Plantago lanceolate e foliis ferm 34 c Dil. D1*, *Terebinthina laricina*, *Thymi aetheroleum*), solum oil (*Aesculus hippocastanum e semine* LA 25% sicc., *Equisetum arvense ex herba* LA 20%, *Lavandulae aetheroleum*, *Solum uliginosum*).

Participants

The evaluation study will include diverse study populations, such as patients requiring IN, their relatives, and nursing and medical staff, thereby employing a multilevel approach that incorporates a variety of perspectives on the project. The involvement of nursing and medical staff is pertinent for mapping the implementation processes, in addition to the primary target group of patients who have received IN interventions. Additionally, relatives are considered relevant stakeholders with whom to discuss the possibility and necessity of transferring low-threshold parts of these IN interventions to the home environment. The selection of the study populations will be primarily based on convenience sampling.

Inclusion and exclusion criteria

The following inclusion criteria were established for participation: age of majority (18 years or older), capacity to give consent, and presence of informed, written consent. Non-inclusion criteria include the presence of pronounced cognitive deficits, imminent dying process, survey not possible due to limited ability to communicate (e.g. lack of language skills), and contraindications that exclude the use of IN.

Data collection

The data collection includes five distinct sub-studies (Table 1).

Sub-study 1: Patients' perspective (quan)

A single-arm, pre-post study with multiple measurement points will be conducted, with data collected from the time of the first IN consultation until discharge (Figure 1). During the study period, all patients in the project will be invited to participate in the study on a voluntary basis. At the

initial IN consultation, the nurse will inform the patient about the study and review the inclusion and exclusion criteria. Should the patient agree to participate, they will complete the baseline questionnaire (t0). A brief questionnaire (t1) will be administered after each subsequent visit with IN interventions. Following discharge, the patient will be asked to complete the follow-up questionnaire (t2). Concurrent with the ongoing visits with IN interventions, project documentation of the applied IN interventions will be conducted (sub-study 5).

The outcome parameters include well-being, life satisfaction, health status, symptoms, psychological burden, self-efficacy, previous use of, and interest in using CIM, and perception of and satisfaction with the IN. These parameters will be measured at three different time points as outlined in Table 3. Due to the exploratory nature of this sub-study, a formal sample size calculation was not performed. The number of study participants will be determined by the participation rate of patients in the project during the study period. It is imperative to obtain a sample size of at least 50 study participants to ensure the attainment of substantial results.

Table 3. Outcomes and assessments utilized in the quantitative pre-post-study with the patients (sub-study 1).

Outcomes	Instrument	Items	t0 Baseline	t1 After each IN visit	t2 Follow-up
Well-being	WHO-5	4	x		x
Life satisfaction	L-1	3	x		x
Health status	*	2	x		x
Symptoms	NRS	15	x		x
Psychological burden	PHQ-4	4	x		x
Self-efficacy	SES6G	6	x		x
Previous use of CIM	*	7	x		
Interest in using CIM	*	7	x		
Perception of vitality, warmth, strengthening, coming to rest	NRS	4		x	
Satisfaction with the IN	*	6			x
Further comments	open-ended question	1	x	x	x
Sociodemographic data		6	x		

* The items were developed based on a pilot study and surveys conducted by the Robert Koch Institute, Germany. WHO-5: WHO-Five Wellbeing Index; L-1: Short Scale Life Satisfaction; NRS: Numeric Rating Scale; PHQ-4: Patient Health Questionnaire-4; SES6G: Self-Efficacy for Managing Chronic Diseases 6-item Scale.

Sub-study 2: Patients' perspective (qual)

This sub-study will utilize a qualitative approach. Semi-structured interviews will be conducted to determine perceptions, experiences, and satisfaction with the implementation of IN. Patients who receive IN interventions during their inpatient stay will be interviewed post-discharge. The interview guideline was developed based on research interests, following the principle of “collecting, checking, sorting, subsuming” [37], and with consideration of the CFIR [31]. The interview guideline will address the following four main topics: 1) previous experience and use of CIM and IN, 2) perception and experience with the IN (physical and psychological level), 3) satisfaction with the implementation of IN and 4) future implementation of IN (e.g. in everyday life). Participants will also be invited to provide additional comments at the end of the interview.

Purposive sampling will be used to identify and select cases that are rich in information [38]. The study aims to conduct a minimum of 12 interviews [39]. After providing informed consent, interviews will be conducted either online, by phone, or in person, depending on the participant's preference. The interviews will last approximately 45 minutes and will be audio recorded. The interviewer will take notes using an interview protocol to record relevant aspects of the interview for later analysis. For the sample description, the following variables will be recorded: age, sex, number and type of IN intervention.

Sub-study 3: Relatives' perspective

A quantitative cross-sectional survey will be conducted with the relatives of inpatients receiving IN. The aim of this sub-study is to examine the perspectives of relatives regarding the use, attitudes, and interests in CIM, as well as the perceptions of IN for inpatients. On the one hand, the personal views of the individual will be considered; on the other hand, the perception of the implementation of IN for their hospitalized relatives will be included. The nurses involved in the project will approach the relatives to participate, and information flyers will be provided to the patients' relatives. Participation in the survey is possible with a paper-based questionnaire or a web-based questionnaire.

The questionnaire includes the following domains: sociodemographic data (2 items), nursing support

(3 items), definition of CIM (2 items), previous use of CIM (12 items), interest in using CIM (12 items), perception of the IN in the hospital (5 items), involvement of relatives in project implementation (2 items), and further comments (1 item).

Sub-study 4: Medical and nursing staffs' perspective

The objective of this qualitative sub-study is to explore the facilitators and barriers to implementation. For this purpose, semi-structured interviews will be conducted with the nursing and medical staff of the wards participating in the study, as well as the nurses who carry out the IN interventions. The interview guideline was developed as described in study part 2. The semi-structured interview with the nursing and medical staff will address the following key topics: 1) the way of implementation the IN project, 2) perception and experience with IN on the ward, 3) support and enabling factors, 4) impediments and barriers to implementation and 5) proposed adjustments for future implementation. There will be also an opportunity for additional comments at the end.

Purposive sampling will be utilized to identify and select cases that are rich in information [38]. The study aims to conduct a minimum of 12 interviews [39]. The interview procedure corresponds to sub-study 2. The sample description will include the recording of age, gender, professional group, and length of employment.

Sub-study 5: Project-related data

This sub-study focuses on feasibility and implementation factors, including the acceptance rate, the study participation rate, and the number of IN visits and interventions performed. The parameters shown in Table 4 will be collected during the study period. The sample will include all requests for IN consultations that are made through the wards participating in the study.

Table 4. Collection of project-related routine data (sub-study 5).

Variable Group	Variables
Sociodemographic and clinical data	Sex, age group, ward, diagnosis group
IN consultation and subsequent visit(s)	Number, reason for the request, duration and notes of the consultation and visits, patient symptoms, number of rejected IN offers (acceptance rate)
IN intervention(s)	Number, duration, location, type, used substance, perceived, and reported changes after the IN intervention, side effects
Study participation	Participation rate, reason for non-inclusion of patients

Data analysis

Quantitative data analysis

Descriptive statistics, including the mean, standard deviation, median, and mode, will be used to characterize the sample and assess the outcomes. Both relative and absolute frequencies will be calculated. The t-test for paired data or the Wilcoxon-test, as a non-parametric alternative, will be utilized to estimate differences between baseline scores and follow-up scores. Additionally, exploratory subgroup analyses will be conducted, incorporating gender, age groups, and prior experience with IM. The statistical significance of the findings will be determined by a p-value less than 0.05. The analysis will be conducted using IBM SPSS.

Qualitative data analysis

The audio files will be initially transcribed according to the simple transcription rules proposed by Dresing & Pehl [40]. Any statements that can be traced back to specific individuals will undergo anonymization. The analysis will be conducted using qualitative content analysis, as proposed by Kuckartz [41]. The data will be coded using a deductive (e.g. category system based on the CFIR domains) and an inductive category system. The coding will be conducted through consensus among the research team. The data analysis will be performed computer-assisted with the software MAXQDA. Upon completion of the data analysis the audio files will be deleted.

Mixed methods analysis

After analyzing the data separately, the sub-study results will be integrated into meta-inferences. The ensuing discussion will include the examination of areas of convergence, divergence, complementarity, and the relationships between the quantitative and qualitative findings. The interpretation will be grounded in comparisons and correlations [26, 42]. Additionally, the analysis will center on the relationship to the CFIR as theoretical framework [31]. Integrative data analysis will employ joint displays to present and draw further conclusions [43]. These displays will generate new insights and conclusions that will extend beyond the results of the sub-studies and will serve as a structure for discussion and exchange.

Ethical Considerations

The evaluation study was conducted in accordance with the Declaration of Helsinki and received ethical approval from the Ethics Committee of the University of Ulm, Germany (144/23). Participants will receive detailed verbal and written information about the project and study objectives as part of the free, voluntary, and informed consent process. Informed consent will be obtained from all participants, who can withdraw at any time for any reason.

Results

First, the results will independently be assessed for each sub-study. Thereafter, they will be integrated and triangulated with the findings of the other sub-studies and the overall quantitative and qualitative results for meta-inferences. The recruitment phase was initiated in October 2023. As of March 2025, the data collection is ongoing, and data analysis has not yet commenced. Preliminary results are expected to be available in September 2025.

Discussion

This article outlines the protocol for a mixed-methods research to understand the implementation process of IN in a university hospital. It is anticipated that this research endeavor will make a substantial contribution to the implementation of IN as an offer for inpatients. The results will contribute to the German Research Agenda for Nursing Oncology and the establishment of scientific oncology nursing [25].

The findings of this study will initially be shared with the interdisciplinary IMPLEMENT-UKU Steering Committee. It is expected that the results of this study will be suitable for publication in a peer-reviewed journal and presented at national and international conferences. The results will also be disseminated to the general public through patient forums, information sessions and the project website. In addition, the findings will be used to redesign and improve the implementation of the IMPLMENT-UKU project. Moreover, the results are also relevant for future research strategies in the field of IN research.

Limitations

The monocentric approach may limit the generalizability of the findings, as the results are specific to the implementation of the project at the Ulm University Hospital. As participation in this study is voluntary, there is a potential for recruitment bias and simultaneous selection bias. The data will be mainly based on self-report measures, which introduces the possibility of response bias, recall bias, and social desirability bias. Furthermore, sub-study 1 will utilize a pre-post design without a control group, making it difficult to contextualize the data. Due to the patient-centered and multimodal approach and the clinical setting with inpatients, the offer of IN is not fully structured and varies between patients based on the IN catalog.

At the same time, this mixed-methods approach provides a more comprehensive perspective from multiple viewpoints, incorporating the CFIR.

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Authors' contribution

Study conception and design: KK, LR, JT; project administration: LR; initial draft manuscript preparation: LR; critical revision, review, and editing: KK, LR, BSS, JT. All authors have read and approved the final version of the manuscript.

Conflicts of Interest

None declared.

Abbreviations

CIM: Complementary and integrative medicine

IN: Integrative nursing

IMPLEMENT-UKU: Implementation of Integrative Nursing at the Ulm University Hospital

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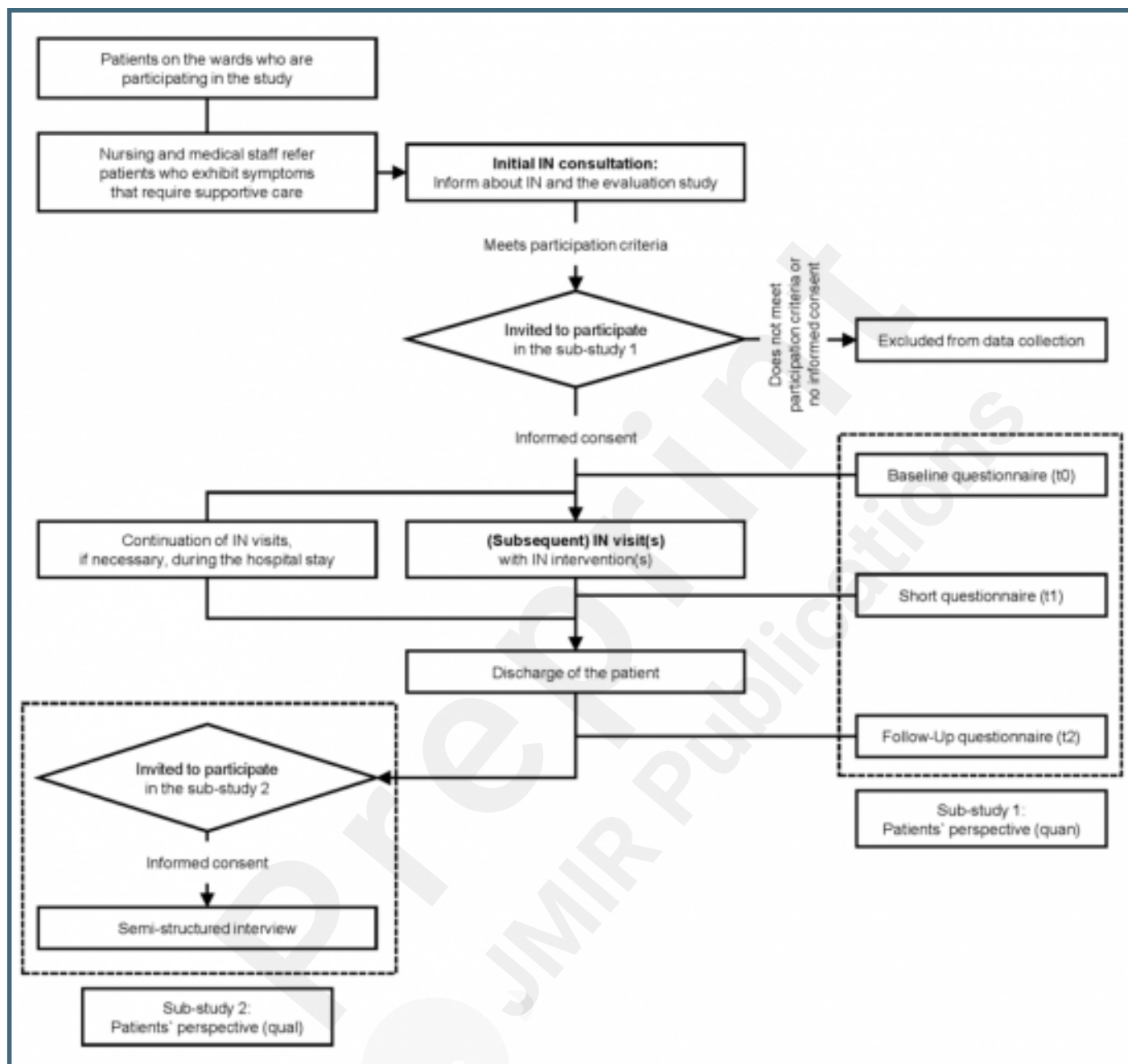
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Supplementary Files

Figures

Flow chart of patient course in the project and in the sub-studies 1 and 2.



CONSORT (or other) checklists

Good Reporting of A Mixed Methods Study (GRAMMS) checklist.

URL: <http://asset.jmir.pub/assets/c341f1c9a07b81df43a8107c256dd1d3.pdf>

