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## How is complementary medicine discussed in oncology? Observing real-life communication between clinicians and patients with advanced cancer

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### Abstract

*Objective:* This study aims to examine the structure of communication about complementary medicine (CM) between patients with cancer and clinicians during oncology consultations.

*Methods:* Previously, consultations between 29 clinicians and 80 patients with advanced cancer were recorded in six hospitals in the Netherlands. The present study considers a secondary analysis. References to CM during the consultation were coded using a self-developed observational coding scheme.

*Results:* At least one reference to CM was observed in 35 out of 80 consultations (44 %), with a total of 73 references. In most cases, CM was initially referred to by patients. Clinicians often did not elaborate on the subject of CM. Relevant aspects related to CM (e.g., safety, effectiveness) were infrequently discussed. Both patients and clinicians showed predominantly neutral to positive attitudes towards CM.

*Conclusions:* This study shows that patients are still the main initiators of discussions about CM and the topic is not consistently discussed in daily oncology practice.

*Practice implications:* If exploration of patients' interest in CM or its use became routine in oncology practice, it may relieve patients of the burden of introducing the topic,

decrease potential risks of CM use and increase access to evidence-based CM for all patients with cancer.

## 1. Introduction

Almost half of all patients with cancer use complementary medicine (CM) [1,2], especially in advanced disease stages [3,4]. CM refers to interventions outside conventional medical care but delivered alongside it [5], such as mind-body therapies, natural products and lifestyle alterations. Some CM modalities can interact with anti-cancer treatment, for instance antioxidant supplements with chemotherapy [6]. Other CM modalities have been proved safe and effective for symptom management in patients with cancer, such as acupuncture for cancer pain and chemotherapy-induced peripheral neuropathy [7,8] or meditation and yoga to reduce anxiety [9,10]. Evidence-based CM practices are now recommended in oncology guidelines [11,12], or have even become integrated into conventional oncology care programs (i.e. integrative oncology [13,14]).

Patients' interest in CM or its use were found to be infrequently discussed during oncology consultations and both patients and clinicians perceive barriers against doing so. In previous studies, discussions about CM were noted in 11%–34% of oncology consultations, mainly initiated by patients [15–19]. Only up to 16% of patients with cancer say that they consulted their clinician for information about CM [20] and in this respect, patients' information and decision-making needs are often not met [21]. Up to 77% of patients with cancer do not even disclose CM use to their clinician [22]. Reasons given by patients for not disclosing CM use include clinicians' lack of inquiry, anticipated disapproval or inability to provide information [22]. Although there are discrepancies in the attitudes of clinicians towards CM, previous studies showed that the limited education and knowledge cause reluctance and discomfort in discussing CM with patients [21,23].

When the topic of CM remains undiscussed during oncology consultations, clinicians remain unaware of potential harmful interactions and less assertive patients remain uninformed about potentially supporting, evidence-based CM. Despite the importance of discussing patient CM use in oncology, in-depth analyses of actual conversations about CM between clinicians and patients with cancer are scarce. However, insights into the content and structure of these conversations are useful for developing tools to assist patients and clinicians in discussing CM. As far as we are aware, this study is the first in a European country aiming to examine how CM is discussed during oncology consultations by observing how the topic is introduced, how often and by whom, what aspects related to CM are discussed, and what the attitudes of patients and clinicians towards CM use are.

## 2. Materials and methods

### 2.1. Study design

The present study considers a secondary analysis of audio/video recordings of consultations between patients with advanced cancer and clinicians, recently collected in six hospitals as part of two previous studies [24,25]. The main purpose of the previous studies were: 1) to examine Shared Decision Making (SDM) between patients with advanced cancer and clinicians in practice, and assess clinicians' perspectives on their own SDM [24]; 2) to provide insight into how often and how clinicians use expectancy- and empathy-expressions in consultations with patients with advanced cancer [25]. In the current study, transcriptions of the recorded consultations were coded with a self-developed observational coding scheme for communication about CM. This study is part of a larger mixed-methods research project titled 'COMMON', aiming 1) to explore communication about CM in oncology and 2) to enhance communication about CM by developing and implementing a toolbox for patients with cancer and clinicians [26].

## 2.2. Participants and procedure

### 2.2.1. Inclusion criteria of the two previous studies

The first previous study consisted of 45 test result consultations that were audio-recorded in two hospitals (one general and one specialized cancer hospital) in the Netherlands in 2018. Patients' eligibility criteria were 1) advanced, incurable breast cancer, 2) age  $\geq 18$ , 3) sufficient command of Dutch, and 4) cognitively able to provide consent and complete a questionnaire. Eligible patients were contacted by the hospital and, if interested, phoned by the research team. Written informed consent and patient characteristics were obtained preceding the consultation [25].

The second previous study consisted of 59 new or follow-up consultations that were audio or video-recorded in four hospitals (three academic hospitals and one general) in the Netherlands between 2018 and 2021. Patients' eligibility criteria were 1) palliative phase of cancer or COPD, 2) age  $\geq 18$ , 3) command of Dutch, and 4) low level of health literacy based on education level and screening questions [27]. Eligible patients were phoned by the hospital or research team and, if interested, met by the research team preceding the consultation to obtain written informed consent and patient characteristics [24].

### 2.2.2. Inclusion criteria of the current study

The consultations recorded in the two previous studies were included in the current study provided they 1) were recorded in an oncology, radiology or pulmonary department and 2) involve patients diagnosed with cancer. The consultations recorded in a specialized palliative care department were excluded, since they were expected to be not representative of oncology consultations in terms of communication patterns, length and type of clinician. (Fig. 1).

## 2.3. Measures and analysis

In this study, complementary medicine (CM) is defined as approaches outside conventional biomedical cancer treatment, used in addition with the aim of improving a patient's physical, mental or social well-being. This definition includes supportive therapies (e.g., physical therapy, psychological support) and lifestyle changes (e.g., nutrition, exercise). It was decided to exclude the following types of care, since they are either part of conventional care or are simple self-care aids: 1) vitamins and supplements recommended by national guidelines [28–30] and available on prescription by conventional clinicians (e.g. vitamin D for bone fractures), 2) general medical advice regarding nutrition (e.g., drinking enough water when having diarrhea), and 3) common self-care aids without medical claims (e.g., creams, foot baths).

A coding scheme with 16 items was developed for coding communication about CM during the consultations (see Table 2). This scheme was partially based on an existing coding scheme on aspects of patient-clinician communication about CM [15,16] and supplemented with additional items of our interest (e.g. reimbursement of CM, observed patient and clinician attitudes towards CM) based on a content analysis of some of the recordings and research team expertise (M.M., L.v.V., A.T.-B., J.N. and S.v.D.). One researcher listened to all recorded consultations and fragments of conversations referring to CM were transcribed.

### [Table 1], [Table 2]

The topic codes covered how CM was introduced and by whom, what aspects relating to CM were mentioned (e.g., safety, evidence base, costs) and how patients and clinicians verbalized their attitude towards CM (positive, negative, neutral). The coding scheme was pilot-tested by two observers (M.M. and L.v.V.) on a subsample of 3 transcripts of recordings in which CM was discussed at least once. In between coding of each recording, findings were discussed and items were refined

or deleted. The second observer (L.v.V.) independently coded a random 10 % of the transcripts in which CM was discussed at least once ( $n = 4$ , nine instances of CM discussions) with an average inter-rater agreement of 90 %, indicating an excellent level of agreement. Discrepancies between the two observers were discussed until consensus was reached. The main CM (where a type of CM was mentioned more than once in the same consultation, this was coded as one instance). Two weeks after initial coding, the main observer (M.M.) recoded a random 10 % of the transcripts in which CM was discussed for intra-rater purposes ( $n = 4$ , six instances of CM discussions). Average intra-rater agreement was 97 %.

Stata 14.0 was used for descriptive data analyses. The STROBE guidelines [31] were used for reporting the results. To illustrate the findings, quotes obtained from the coded transcripts were used and translated from Dutch to English. The quotes were used as exemplars to support the results of the observational coding. The co-researchers collaborated with the research team in the categorization of the referenced types of CM.

### 3. Results

#### 3.1. Overview

Consultations between 29 clinicians and 80 patients with advanced cancer were included for coding in the current study. Background characteristics of clinicians and patients are provided in Table 1. Each clinician saw on average 2–3 patients ( $SD = 2.08$ ; range = 1–8). In 86 % of the consultations, a companion was present. Most consultations concerned follow-ups, except for two initial consultations. The average consultation duration was 20.24 min ( $SD = 9.95$ ; range = 4.43–53.47).

#### 3.2. References to CM

In 35 out of 80 consultations (44 %), there was at least one reference to CM. In these 35 consultations, 73 references to CM were observed with a mean of 2 per consultation ( $SD = 1.22$ ; range = 1–6). As shown in Table 2, the most commonly mentioned CM modalities were exercise/activation, specific diets/foods, and physical therapy. In more than half of the occasions, the topic of CM was initiated by patients.

#### 3.3. How is CM introduced?

Initial references to CM were mainly incorporated into statements or questions. When a patient introduced the topic by a statement, it was often about using CM or visiting a CM provider:

Patient: “I guess I should say I’ve also started [product], which I got at [drugstore]. And it’s, well, a medicine or – you know – a preparation that purifies the liver.”

Patient: “She’s an oncology physical therapist. She massaged it [the shoulder] but I had a lot more pain after that.”

When patients introduced the topic of CM through a question, they often asked for advice about the potential benefits or risks of particular types of CM:

Patient: “Can I do physio fitness and stuff like that in the meantime?”

When clinicians introduced the topic of CM, it was mainly about nutritional advice or questions related to lifestyle:

Clinician: “It’s better to eat solid foods too, though – not just smoothies. I can get the dietician to contact you again if you want.”

Clinician: “And the smoking: how’s that going?”

Clinicians were not seen to ask questions about a patient’s interest in CM in general or their use of it: the topic was always introduced by mentioning specific CM modalities directly.

### 3.4. Clinician’s response to introduction of CM

The clinicians’ most common response to the introduction of the topic of CM was a statement to answer a question asked by the patient or instances where a patient introduced the topic of CM, the clinician disregarded the topic. In most of those cases, the patient just made a statement about CM use in passing. Clinicians always responded to direct questions about CM asked by patients. The ‘disregarding’ action was coded when the clinician only expanded on the health complaint related to CM use, moved on to another topic or merely responded with “yes, yes”. Only in a minority of the instances, the clinician responded to the introduction of CM with a question. In these instances, clinicians asked for clarification or information about the type of CM:

Clinician: “Not one I know. What’s [supplement]?”

### 3.5. Mentioned aspects that are related to CM

#### 3.5.1. Safety, effectiveness and costs of CM

The safety of a CM modality was mentioned in a small minority of the conversations and was only twice highlighted by a clinician. In most instances, patients directly asked their clinician for reassurance that it was safe to use a particular CM modality in their situation:

Patient: But it’s not, like, an amount [of a calcium supplement] that you’d say shouldn’t be added?

In the following example, a clinician reassures a patient that lymph drainage is safe:

Clinician: “Well, you know, the fact that we’ve now seen a shadow like this by your hip means that some of the cancer was left behind and has spread [...] And lymph drainage there, well, it will have no influence on that.”

Comments about scientific evidence for effectiveness were rare and all observed in the context of nutritional interventions, such as herbs, supplements and specific foods. When discussed, it was mainly patients asking the clinician about evidence for a specific type of CM, to which clinicians responded that scientific evidence was limited (only laboratory) or absent:

Clinician: “Well, certain food products can definitely affect it [cancer]. (...) But it’s not yet very clear yet, or very easy to prove scientifically.”

Clinician: “Studies have been done in laboratories with very high doses of turmeric that inhibit some tumor cells, especially some kinds of blood cancer and lymphoma. Whether it really does. I wouldn’t dare say one way or the other, but it can’t hurt either.”

Overall, aspects related to costs were only observed in three conversations about CM and all revolved around health insurance reimbursement of CM.

### 3.5.2. Purpose and alternative options for CM use

The purpose or goal of CM use was mentioned in most of the discussions, for example:

Patient: "I'm also noticing that my muscles are getting weaker (...), so I just try to keep going swimming twice a week."

Clinician: "Then it's about how to deal with uncertainty. Sure, I can tell you about that from a medical perspective, but I'm not a psychologist and that's who you might actually need for that."

In the majority of these cases, the purpose of CM was to manage specific physical or psychological symptoms (non-curative). However, it was generally unclear whether the symptoms were related to the cancer diagnosis or treatment, or to pre-existing or co-existing conditions. Alternatives for the type of CM discussed were mentioned in a quarter of the cases, mostly suggested by the clinician. These alternatives were other complementary modalities or conventional treatments (e.g., prescribing pain killers or nausea suppressants, or changing anticancer treatment doses).

### 3.5.3. Contact with CM provider, information source and alternative treatment

It was rarely observed that a clinician suggested to refer to, or to contact, a CM provider. On one occasion, an information source was mentioned by a patient who received information from a friend about a specific form of exercise. One time, it appeared from the conversation that a patient had ended conventional treatment and received alternative treatment in a clinic outside the Netherlands. The clinician seemed already aware and asked some in-depth questions about the alternative treatment without expressing an explicitly discouraging or encouraging attitude.

### 3.5.4. Patient choice

Patient choice in deciding whether or not to use CM was emphasized by the clinician in four instances, for example:

Clinician: "Yes, you can do that [supplement your nutrition]. And it's a good thing too, that you see that and feel it and want it yourself."

Clinician: "Whatever you're comfortable with [...]. We can cancel it if you'd rather [appointment with the physical therapist]."

### 3.6. Clinician attitude towards CM

Overall, clinicians verbalized either an encouraging or neutral attitude towards the discussed type of CM. Clinicians mainly encouraged CM modalities related to nutritional (specific foods, dietary counseling) and physical interventions (exercise, physical therapy). An encouraging attitude was expressed by means of cheerful words about CM use (e.g., "good" or "beautiful") or by explicit recommendations:

Clinician: "Keep exercising, that keeps your fitness level up and it's important for the overall physical condition."

Three times, CM use was actively discouraged by the clinician for the following reasons: long wait list, lack of safety, or lack of evidence. An example of the latter:

Clinician: “Well, it often doesn’t work in humans, so I don’t recommend it [sodium bicarbonate].”

### 3.7. Patient attitude towards CM

The patients’ verbalized attitudes towards the CM mentioned were predominantly positive or neutral. An example of a patient referencing CM neutrally, without being overtly positive or negative about its use, is:

Patient: “Maybe I can go to a masseur who can massage it [the back pain] away. Isn’t that an option?”

Only a few patients expressed a negative attitude towards CM, by means of doubts, drawbacks or objections to using CM. For instance:

Patient: “Yeah. And the food [organic diet] is, like, very limited.”

### 3.8. Patients’ use of CM

In a majority of the observed conversations about CM, it appeared that the patient already used the type of CM referred to. In five instances, the patient explicitly mentioned an intention to change CM use as a result of the conversation, such as decreasing, stopping or starting the use of CM. For instance, after a clinician told a patient using milk thistle that using that herb can lead to abnormal liver values, the patient stated:

Patient: Right, then I’ll stop.

In the remaining instances, it was not clear from the conversation whether it led to a change in patient CM use.

Table 3 summarizes the results of the qualitative analysis of the observed conversations about CM.

## 4. Discussion and conclusion

### 4.1. Discussion

This study examined how CM is discussed during real-life oncology consultations in the Netherlands. Discussions about CM were mostly patient-initiated and the clinician often did not expand on the topic. This resulted in a minimal information exchange about aspects related to CM, such as safety and effectiveness. A predominantly neutral to positive attitude towards the type of CM discussed was observed in both patients and clinicians.

In the current study, references to CM were observed in a relatively high number (45 %) of oncology consultations, compared to other studies involving patients with cancer (11 %–34 %) [15–19]. This high number might be explained by the study sample consisting of patients with cancer in the palliative phase of the disease, with an overrepresentation of female patients. Advanced disease stage and being female are both found to be positively associated with CM use in patients with cancer [2–4]. In addition, patients with breast cancer and lower-educated patients were overrepresented in the study sample. However, previous studies repeatedly showed a negative association between lower educational levels and CM use and no association between breast cancer and CM use [2].

Another factor contributing to the high number of observed references to CM in the current study, could have been the relative high number of references to lifestyle interventions (e.g., exercise, diet) and supportive interventions (e.g., physical therapy and psychological support). These

CM modalities are not always included in the definition of CM. For instance, diet and exercise are in some studies included in the definition of CM [15], but excluded in others [11]. Physical therapy is seen as part of conventional medicine, but patients in the current sample stated that their physical therapists used techniques usually incorporated in the definition of CM, such as massage, acupuncture and dry needling. What is considered conventional or complementary medicine can thus overlap and shift due to emerging scientific evidence or changing healthcare policy. For instance, programs for integrative oncology (i.e., combining conventional medicine with evidence-based CM [13]) are upcoming in conventional healthcare [14].

The results showed that communication about CM is mainly initiated by patients, which is consistent with findings from previous studies [15–19]. This fits within the reluctance and discomfort reported by clinicians in communicating about CM [21,23]. However, as we only observed a single consultation per patient, it might be possible that the clinician inquired about patient CM use in previous (or future) consultations. Furthermore, most clinicians included in the current study were physicians. Potentially, CM use was discussed with another clinician, such as the nurse. The topic of CM is far more often addressed in nursing literature, although nurses were not found to be more likely than physicians to initiate a conversation about CM or to feel more comfortable in doing so [34].

Comparably to what previous studies showed [15,16,18], clinicians seldom responded to the introduction of the topic by patients or companions with a question and often did not respond at all. As a result, some of the consultations observed included no more than one statement by the patient or companion about CM without further elaboration on the topic. When patients introduced the topic by means of a question, they always received a response from the clinician. This finding implies that patients should be advised to ask direct questions about CM instead of solely mentioning it in passing to their clinician.

Although there is potential for interaction effects between anticancer therapy and particular CM modalities, such as supplements and herbs [6,35], the majority of CM modalities discussed in the current study could be considered generally safe to use for patients with cancer. This potentially explains why important aspects related to CM, such as safety and effectiveness, were less frequently discussed than expected based on previous studies [15,16]. Additionally, the observed discussions on safety or effectiveness were mainly initiated by patients. A lack of education and knowledge about CM often reported by clinicians [21, 23] might explain why they do not proactively raise aspects such as safety or effectiveness.

A large proportion of generally safe CM modalities discussed in the current study might also explain why clinicians discouraged patients' CM use less than expected based on previous study results [15,16,18]. In general, clinicians seemed to be encouraging or neutral in their verbalized attitude towards CM use. However, a positive clinician attitude towards CM does not necessarily correlate with clinical practice behaviors towards CM (e.g. referral or prescription) as was shown in a literature review [36].

#### **4.1.1. Strengths, limitations and future studies**

This study is, to our best knowledge, the first to observe real-life CM discussions in oncology in a European country. To complement self-reporting studies, it is important to observe the content and structure of actual communication between patients and clinicians. The observation scheme developed and used in the current study showed promising rates of inter-rater and intra-rater reliability, but needs further assessment on psychometric qualities, such as validity, and transferability to other medical disciplines.

The consultations observed are likely to reflect true communication about CM as participants were blind to this secondary analysis. The likelihood of discussions about CM to arise during the consultations might have been influenced by the fact that most of the analyzed data considered follow-up visits in which test-results were shared with patients. For future research, it would be

interesting to study the impact of consultation content on the likelihood of discussions about CM. Since the consultations had already been recorded, it was not possible to observe nonverbal communication or administer self-reported questionnaires. Future studies could obtain self-reported data about patient needs, expectations, and satisfaction with regard to CM discussions. For instance, previous research has shown that communication about CM is associated with higher visit satisfaction reported by patients and clinicians [17]. In addition, it would be interesting to study the influence of communication about CM on patient(-reported) health outcomes.

The lack of consensus on a definition of CM impacts the generalizability of studies in this field. The line between conventional and complementary medicine is unclear, shifting, and subject to intercultural variation. It therefore seems sensible to assess all health approaches used by patients with cancer and aiming to contribute to physical, mental, or social well-being equally alongside biomedical treatment of the disease.

#### **4.2. Conclusion**

It is important that both patients and clinicians feel comfortable discussing the topic of CM in oncology, given the widespread use and the potential benefits and risks related to it. When it becomes routine practice in oncology to explore patients' interest in and usage of CM, this will minimize the potential risks and maximize the benefits of CM use for patients with cancer. Future studies should investigate the needs and expectations of clinicians and patients with cancer in regard to discussing CM.

#### **4.3. Practice implications**

The results of the current study show that patients are still the main initiators of discussions about CM. When the introduction of CM is left up to patients and not consistently discussed in oncology practice, less assertive patients will remain unaware of evidence-based CM options for symptom management and clinicians cannot monitor potential interactions between CM use and anti-cancer treatment. To provide safe and patient-centered cancer care, it is important for clinicians to be open and attentive to the topic of CM. This means that clinicians do not only respond when patients ask direct questions about CM, but also when the topic is mentioned in passing. However, proactively asking about patient interest in and usage of CM is preferred given the large number of patients with cancer who use CM [1,2], the high rate of patient nondisclosure of CM use [22], the potential risks [6,35] and the evidence base for some types of CM [11,12]. A recently published clinical practice guideline [37] provides useful recommendations and example questions for oncology clinicians to ask when addressing patient CM use. In addition, to improve communication about relevant aspects of CM, such as counseling on safety and effectiveness, oncology clinicians will benefit from more education about CM. Although educational programs about CM for oncology clinicians have been developed and evaluated [38,39], they are not incorporated as standard in medical education.

#### **Statement**

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

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### Policy and ethics

The study was conducted in accordance with the Declaration of Helsinki, and exempted from formal approval under the Dutch Medical Research Involving Human Subjects Act by the Arnhem-Nijmegen Medical Ethics Committee, protocol code 2020–6917, 17 August 2020.

### Informed consent

Written informed consent was obtained from all subjects involved in the study.

### CRedit authorship contribution statement

**Marit Mentink:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Validation, Visualization, Writing – original draft, Writing – review & editing. **Liesbeth van Vliet:** Conceptualization, Formal analysis, Investigation, Methodology, Resources, Validation, Writing – review & editing. **Anja Timmer-Bonte:** Conceptualization, Methodology, Supervision, Writing – review & editing. **Janneke Noordman:** Conceptualization, Investigation, Methodology, Resources, Supervision, Writing – review & editing. **Sandra van Dulmen:** Conceptualization, Funding acquisition, Methodology, Resources, Supervision, Writing – review & editing.

### Role of the funding source

The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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### Declarations of interest

None.

### Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.pec.2022.08.007.

## References

- [1] Horneber M, et al. How many cancer patients use complementary and alternative medicine: a systematic review and metaanalysis. *Integr Cancer Ther* 2012;11(3): 187–203.
- [2] Keene MR, et al. Complementary and alternative medicine use in cancer: a systematic review. *Complement Ther Clin Pract* 2019;35:33–47.
- [3] Paltiel O, et al. Determinants of the use of complementary therapies by patients with cancer. *J Clin Oncol* 2001;19(9):2439–48.
- [4] Tautz E, et al. Use of complementary and alternative medicine in breast cancer patients and their experiences: a cross-sectional study. *Eur J Cancer* 2012;48(17): 3133–9.
- [5] West HJ. Complementary and alternative medicine in cancer care. *JAMA Oncol* 2018;4(1). 139–139.
- [6] Ambrosone CB, et al. Dietary supplement use during chemotherapy and survival outcomes of patients with breast cancer enrolled in a cooperative group clinical trial (SWOG S0221). *J Clin Oncol* 2020;38(8):804–14.
- [7] Huang C-C, et al. Acupuncture relieved chemotherapy-induced peripheral neuropathy in patients with breast cancer: a pilot randomized sham-controlled trial. *J Clin Med* 2021;10(16):3694.

- [8] He Y, et al. Clinical evidence for association of acupuncture and acupressure with improved cancer pain: a systematic review and meta-analysis. *JAMA Oncol* 2020;6 (2):271–8.
- [9] Lin K-Y, et al. Effects of yoga on psychological health, quality of life, and physical health of patients with cancer: a meta-analysis. *Evid-Based Complement Altern Med* 2011;2011:659876.
- [10] Würtzen H, et al. Mindfulness significantly reduces self-reported levels of anxiety and depression: results of a randomised controlled trial among 336 Danish women treated for stage I–III breast cancer. *Eur J Cancer* 2013;49(6):1365–73.
- [11] Lyman GH, et al. Integrative therapies during and after breast cancer treatment: ASCO endorsement of the SIO clinical practice guideline. *J Clin Oncol* 2018;36 (25):2647–55.
- [12] Deng GE, et al. Complementary therapies and integrative medicine in lung cancer: diagnosis and management of lung cancer: American College of Chest Physicians evidence-based clinical practice guidelines. *Chest* 2013;143(5):e420S–36S.
- [13] Witt CM, et al. A comprehensive definition for integrative oncology. *JNCI Monogr* 2017;52(52):3–8.
- [14] Yun H, Sun L, Mao JJ. Growth of integrative medicine at leading cancer centers between 2009 and 2016: a systematic analysis of NCI-designated comprehensive cancer center websites. *JNCI Monogr* 2017;52(52):29–32.
- [15] Juraskova I, et al. Discussing complementary therapy use with early-stage breast cancer patients: exploring the communication gap. *Integr Cancer Ther* 2010;9(2): 168–76.
- [16] Schofield PE, Juraskova I, Butow PN. How oncologists discuss complementary therapy use with their patients: an audio-tape audit. *Support Care Cancer* 2003;11 (6):348–55.
- [17] Roter DL, et al. Communication predictors and consequences of complementary and alternative medicine (CAM) discussions in oncology visits. *Patient Educ Couns* 2016;99(9):1519–25.
- [18] Koenig CJ, et al. An exploratory typology of provider responses that encourage and discourage conversation about complementary and integrative medicine during routine oncology visits. *Patient Educ Couns* 2015;98(7):857–63.
- [19] Tilburt J, et al. A Multicenter comparison of complementary and alternative medicine (CAM) discussions in oncology care: the role of time, patient-centeredness, and practice context. *oncologist* 2019;24(11):e1180.
- [20] Truant TL, et al. Complementary and alternative medicine (CAM) use in advanced cancer: a systematic review. *J Support Oncol* 2013;11(3):105–13.
- [21] King N, et al. Surveys of cancer patients and cancer health care providers regarding complementary therapy use, communication, and information needs. *Integr Cancer Ther* 2015;14(6):515–24.
- [22] Davis EL, et al. Cancer patient disclosure and patient-doctor communication of complementary and alternative medicine use: a systematic review. *Oncologist* 2012;17(11):1475.
- [23] Lee RT, et al. National survey of US oncologists’ knowledge, attitudes, and practice patterns regarding herb and supplement use by patients with cancer. *J Clin Oncol* 2014;32(36):4095.
- [24] Roodbeen RT, et al. Shared decision making in practice and the perspectives of health care professionals on video-recorded consultations with patients with low health literacy in the palliative phase of their disease. *MDM Policy Pract* 2021;6(1). 23814683211023472.
- [25] Van Vliet LM, et al. The use of expectancy and empathy when communicating with patients with advanced breast cancer; an observational study of clinician–patient consultations. *Front Psychiatry* 2019;10:464.
- [26] Mentink M, et al. Towards an open and effective dialogue on complementary medicine in oncology: protocol of patient participatory study ‘COMMON’. *BMJ Open* 2021;11(10):e053005.
- [27] Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. *Fam Med* 2004;36:588–94.
- [28] Nederlands Huisartsen Genootschap. NHG-behandelrichtlijnen. 2021 [cited 2021 6 September]; Available from: <https://richtlijnen.nhg.org/#tab-nhgbehandelrichtlijnen/>.

- [29] Federatie Medisch Specialisten. Richtlijndatabase. 2021 [cited 2021 6 September]; Available from: <https://richtlijndatabase.nl/>.
- [30] Gezondheidsraad. Adviezen. 2021 [cited 2021 6 September]; Available from: <https://www.gezondheidsraad.nl>.
- [31] von Elm E, et al. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *J Clin Epidemiol* 2008;61(4):344–9.
- [32] UNESCO, International Standard Classification of Education Fields of Education and Training 2013 (ISCED-F 2013): Detailed Field Descriptions. 2015, Montreal, QC: UNESCO Institute for Statistics. doi:10.15220/978–92-9189–179-5-en.
- [33] National Center for Complementary and Integrative Health. Complementary, Alternative, or Integrative Health: What’s In a Name? 2021 [cited 2021 21 January]; Available from: <https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name/>.
- [34] Hann D, Baker F, Denniston M. Oncology professionals’ communication with cancer patients about complementary therapy: a survey. *Complement Ther Med* 2003;11(3):184–90.
- [35] Lee RT, et al. Prevalence of potential interactions of medications, including herbs and supplements, before, during, and after chemotherapy in patients with breast and prostate cancer. *Cancer* 2021;127:1827–35.
- [36] Sewitch MJ, et al. A literature review of health care professional attitudes toward complementary and alternative medicine. *Complement Health Pract Rev* 2008;13 (3):139–54.
- [37] Balneaves LG, et al. Addressing complementary and alternative medicine use among individuals with cancer: an integrative review and clinical practice guideline. *JNCI: J Natl Cancer Inst* 2022;114(1):25–37.
- [38] Rogge AA, et al. Effects of training oncology physicians advising patients on complementary and integrative therapies on patient-reported outcomes: A multicenter, cluster-randomized trial. *Cancer* 2021;127:2683–92.
- [39] Hayward EN, Watling CZ, Balneaves LG. A pre-post evaluation of oncology healthcare providers’ knowledge, attitudes, and practices following the implementation of a complementary medicine practice guideline. *Support Care Cancer* 2021;29:1–9.

## Tables and Figures

Figure 1 Inclusion of consultations in the current study.

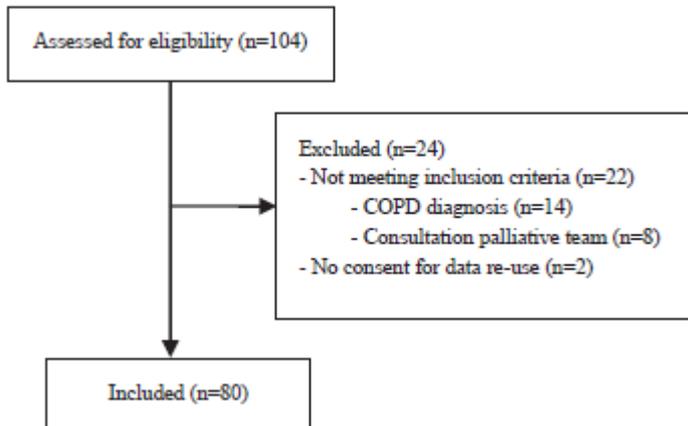


Table 1 Participant background characteristics.

Clinician characteristics	n = 29
Sex	
Female	19
Male	10
Profession <sup>a</sup>	
Medical oncologist	13
Radiation oncologist	9
Pulmonologist	6
Nurse practitioner	1
Patient characteristics	n = 80
Age	
Mean (sd)	61 (12.5)
Range	31–89
missing	n = 10
Sex	
Female	59
Male	21
Highest education <sup>b</sup>	
Low	34
Intermediate	24
High	17
missing	5
Type of cancer	
Breast	44
Lung	15
missing	21

<sup>a</sup> 3 out of 9 radiation oncologists and 3 out of 6 pulmonologists were residents

<sup>b</sup> classified according to ISCED-F 2013 [32]

*Table 2 Quantitative description of results of analyzed conversations about complementary medicine (CM) in oncology consultations.*

CM modalities discussed <sup>a</sup>	Category	n = 73	%
Nutritional	Specific diets or foods	13	18
	Dietary counseling	8	11
	Vitamins, herbs, supplements (oral)	7	10
Physical	Exercise or activation	15	21
	Physical therapy	13	18
	Massage	2	3
	Acupuncture	1	1
Psychological	Psychological support	4	5
Other	General health or lifestyle <sup>b</sup>	5	7
	Cutaneous application with medical claim	4	5
	Oncological revalidation program	1	1
<b>Coding scheme themes</b>			
<b>Items</b>			
1. Who introduced CM?	Patient	45	62
	Clinician	22	30
	Companion	6	8
2. How is CM introduced?	Statement	42	58
	Question	20	27
	Answer to indirect question	11	15
3. First response of clinician to CM	Statement	23	32
	Topic disregarded	19	26
	Question	9	12
4. Safety or risks of CM discussed	N/A, clinician initiated	22	30
	Yes	10	14
5. Scientific evidence of CM discussed	Yes	6	8
6. Costs of CM discussed	Yes	3	4
7. Purpose of CM use discussed	Yes	52	71
8. Alternative options for CM discussed	Yes	17	23
9. Information sources about CM discussed	Yes	1	1
10. Clinician contact with CM provider	Yes	3	4
11. Patient quit conventional treatment	Yes	1	1
12. Clinician encouraged patient choice	Yes	4	5
13. Attitude of clinician towards CM	Encouraging	28	38
	Neutral	26	36
	Discouraging	3	4
	Topic disregarded	16	22
14. Attitude of patient towards CM	Positive	33	45
	Neutral	30	41
	Negative	5	7
	Indistinct	5	7
15. Patient already used CM	Yes	53	73
16. Discussion changed patient's CM use	Yes	5	7

<sup>a</sup> National Center for Complementary and Integrative Health (NCCIH) classification [33]

<sup>b</sup> general healthy lifestyle or stopping alcohol/smoking

*Table 3 Qualitative description of results of analyzed conversations about complementary medicine (CM) in oncology consultations.*

Theme	Patient	Clinician
Introduction of the topic of CM	<ul style="list-style-type: none"> <li>• Patients introduced the topic of CM in most cases</li> <li>• Patients introduced the topic by making statements or asking questions about CM</li> </ul>	<ul style="list-style-type: none"> <li>• Clinicians introduced mainly lifestyle-related CM modalities, such as nutrition or exercise</li> <li>• Clinicians often disregarded statements about CM made by patients, but not questions</li> </ul>
Safety and effectiveness of CM	<ul style="list-style-type: none"> <li>• Patients mainly initiated the discussion of aspects related to safety or scientific evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Clinicians provided information about scientific evidence mainly in the context of nutritional interventions</li> </ul>
Costs of CM	<ul style="list-style-type: none"> <li>• Rarely discussed, all about health insurance reimbursement</li> </ul>	
Purpose of CM	<ul style="list-style-type: none"> <li>• The purpose of CM use was mentioned in most instances, mainly by patients</li> </ul>	
Alternative options for CM		<ul style="list-style-type: none"> <li>• Clinicians suggested alternative options for CM, such as adding or changing conventional treatment</li> </ul>
Contact with CM provider		<ul style="list-style-type: none"> <li>• Clinicians rarely suggested referral to or contact with a CM provider</li> </ul>
Information source	<ul style="list-style-type: none"> <li>• On one occasion, a patient mentioned receiving information about CM from a friend</li> </ul>	
Alternative treatment	<ul style="list-style-type: none"> <li>• On one occasion, a patient mentioned ending conventional treatment</li> </ul>	
Patient choice		<ul style="list-style-type: none"> <li>• Clinicians seldom explicitly emphasized patient choice in using CM</li> </ul>
Attitude towards CM use	<ul style="list-style-type: none"> <li>• Patients mainly verbalized a positive or neutral attitude</li> </ul>	<ul style="list-style-type: none"> <li>• Clinicians mainly verbalized an encouraging or neutral attitude</li> <li>• Clinicians seldom discouraged CM use</li> </ul>
Patient use of CM	<ul style="list-style-type: none"> <li>• Patients mentioned in most cases that they already used CM</li> </ul>	