De Regge *et al. BMC Palliative Care* (2024) 23:250
https://doi.org/10.1186/s12904-024-01585-2

BMC Palliative Care

RESEARCH **Open Access**

Addressing integration in the organization of palliative care in Belgium: a multilevel ecosystems approach using the analytic hierarchy process (AHP) method

Melissa De Regge[1,2*†], Paul Gemmel[1†], Leen Ackaert[1], Let Dillen[3], Peter Pype[4], Nele Van Den Noortgate[3,5], Bert Meijboom[6] and Kristof Eeckloo[2,4]

Abstract

Background Palliative care is becoming an essential component of healthcare, but there is insufficient research on how integration across different levels of care (micro, meso, and macro) is realized in practice. Without such integration, care may become fragmented, leading to suboptimal patient outcomes. While many studies have explored palliative care models, there is a gap in understanding how priorities for integrated care align across these levels within healthcare ecosystems. Specifically, it is unclear whether key actions at each level are shared, coordinated, and supported effectively, making it difficult to implement sustainable, cohesive care strategies. Our study aims to explore the extent to which important goals (i.e., priorities) are shared across the micro, meso, and macro levels of the palliative care ecosystem in Flanders, Belgium.

Methods We applied a multimethod study using the analytic hierarchy process method (AHP). This consists of three sequential steps: a broad literature search and interviews with Belgian stakeholders ($n = 12$) to determine the criteria for the organization of integrated care; focus groups ($n = 8$) with patients, their relatives and caregivers to establish the completeness and relevance of the criteria; and prioritization of the criteria using a questionnaire among 305 Flemish participants (patients, relatives, caregivers and policy makers).

Results Our findings revealed that integration is imbalanced, with priorities being most emphasized at the micro level (57%), followed by the meso (29%) and macro (14%) level. Functional enablers dominate at the macro (80%) and meso organizational level (67%), while normative enablers are emphasized at the meso professional (67%) and micro level (75%). Effective palliative care requires vertical coordination of these enablers: for instance, transparent communication with patients at the micro level depends on cross-organizational information exchange at the meso level, supported by a unified data system at the macro level.

[†] Melissa De Regge and Paul Gemmel contributed equally to this work.

*Correspondence:
Melissa De Regge
Melissa.deregge@ugent.be

Full list of author information is available at the end of the article

Conclusion Achieving integrated palliative care requires deliberate alignment of priorities across all levels of the ecosystem. While each level plays a unique role, palliative care is comprehensive and effective only by sharing both functional and normative enablers across micro, meso, and macro level.

Keywords Palliative care, Ecosystem, Integrated care, Analytic hierarchy process (AHP) method

Introduction

Healthcare systems around the world face a growing need for palliative care [1]. The World Health Organization (WHO) acknowledges the importance of early initiation and accessibility of palliative care for any patient with a life-threatening condition [2]. Research recommends best practices with solid evidence [3]. Despite these well-documented best practices, many palliative care systems remain fragmented, leading to gaps in care delivery, miscommunication among care providers, and diminished patient outcomes [4].

To address the challenge of fragmentation, integrated care is most valued since it offers a comprehensive and multifaceted framework aimed at enhancing the coordination of healthcare services to meet patients' needs effectively. Raak et al. (2003) define integrated care as "a coherent and coordinated set of services which are planned, managed and delivered to individual service users across a range of organizations and by a range of co-operating professionals and informal carers" [5]. By addressing fragmentation in healthcare delivery, integrated care facilitates more cohesive and continuous palliative care, ensuring that patients receive timely and appropriate support throughout their journey [6–9]. However, a key challenge lies in translating these principles into practice within the existing and future ecosystem of palliative care.

Ecosystems have a multilevel nature, from the micro to the meso and macro level. These levels are embedded in each other, where at each level various actors interact [10]. This ecosystem lens aligns with the notion that healthcare organizations do not operate in isolation but in a large network with multiple actors [11] at the macro, meso and micro level. Valentijn et al. (2013, 2015) describe integration as encompassing coordination activities across three levels in their Rainbow Model of Integrated Care: micro (individual), meso (population), and macro (system) [12, 13]. This integration spans four key domains: (1) clinical coordination, which involves the delivery and coordination of treatments and services to patients; (2) professional coordination, referring to collaboration among healthcare professionals; (3) organizational coordination, which addresses collaboration between healthcare organizations; and (4) system coordination, comprising the implementation of new policies and regulations. This framework emphasizes the need for multi-level coordination to achieve effective integrated care. It is important to understand the different perspectives of each level involved. Specifically, it is essential to effectively align the organizational (meso) and policy (macro) levels with the best practices implemented at the clinical (micro) level. Achieving this alignment ensures that integrated care frameworks are successfully adopted and that they deliver meaningful improvements in patient outcomes [14].

From the ecosystem perspective, each level functions with its own set of rules and practices, both functional (e.g., shared information systems and coordination mechanisms) and normative (e.g., shared cultural norms and values) [12, 13]. Functional (technical competence) enablers and normative (cultural competence) enablers are essential for achieving system-wide cohesion across the micro, meso, and macro levels [12, 13]. Functional enablers connect financing, information, and management methods to optimize system value, coordinating support functions like financial management, human resources, and information management. Normative enablers, though less tangible, ensures consistency and collaboration by aligning values, service organization, and clinical practices across all levels of the system. To guarantee effective connectivity across different levels, it is crucial that functional and normative rules and practices are aligned and shared [12, 13]. These shared rules and practices are essential for achieving an integrated care that functions effectively at each level. At the micro level, clinical integration occurs through direct interactions with patients, ensuring coordinated care at the operational level. At the meso level, professional and organizational integration enables effective support and management within the local health system. Finally, at the macro level, system integration assures alignment with the wider policy framework and enables coherent governance at the policy level [12, 13]. This can be illustrated with the following example: transparent communication with patients, their loved ones, and informal caregivers can be achieved through effective communication among professionals and organizations (e.g., sharing relevant information between different levels of care and disciplines within and across organizations) at the meso level, and should be supported by a unified system for data and information exchange at the macro level. These rules and practices not only influence the actions and behaviors of actors but also create structures that can encourage or inhibit certain behaviors. There is little clarity on how functional enablers (e.g., information systems, management practices) and normative enablers (e.g., shared values, collaborative culture) should be coordinated across levels to ensure effective integrated care.

Indeed, for citizens with care and support needs in which different actors at the micro, meso and macro levels are involved, like in palliative care, it is necessary that the actions are coordinated not only within a certain level but also vertically, i.e., between the three levels [12, 13]. Without such coordination, there is a risk of fragmented care, with different actors working in isolation, leading to gaps in care, miscommunication and potentially suboptimal patient outcomes. Rules and practices at each level can have an impact on other levels. For example, Van Houdt et al. (2013) argue that policies made at the macro (system) level impact how professionals cooperate within and across organizations (meso level), as well as how they act toward patients and their families (micro level) [15]. Likewise, a recent study concluded that Belgian government entities (macro level) should play a facilitating role in promoting interprofessional, interorganizational, and intersectoral collaboration at both the micro and meso levels to enhance integrated care [16]. Van der Weert et al. (2022) emphasize the importance of employing this multilevel perspective on the governance and structure of healthcare networks [14]. The lack of alignment across micro, meso, and macro levels poses a significant challenge to achieving integrated palliative care that is comprehensive and patient-centered. Each level plays a unique role—policies at the macro level shape professional and organizational practices at the meso level, which in turn influence patient care at the micro level [15, 16]. Failing to align priorities across these levels can result in fragmented care, leaving patients and families unsupported during critical stages of their journey.

In sum, palliative care integration requires that the priorities—meaning the most important goals or actions identified at each level—are vertically aligned. This means that the key objectives established at one level should support and reinforce those at other levels [17]. Additionally, decisions made at each level should be communicated and coordinated within a broader, more comprehensive ecosystem to ensure cohesive and effective care. Our study addresses this gap by exploring the priorities for functional and normative integration at the micro, meso, and macro levels of palliative care in Flanders, Belgium. We also examine the extent to which these priorities are shared across levels, contributing to the literature by offering insights into how multi-level coordination can be enhanced for better patient outcomes.

Methods

Setting

This study was conducted in Flanders, Belgium. Palliative care in Belgium is a holistic approach aimed at improving the quality of life for patients with serious, life-limiting illnesses. It focuses on relieving symptoms, managing pain, and addressing emotional, social, and spiritual needs, while providing support to families and caregivers. This care is provided alongside curative treatment and is tailored to the individual's needs and preferences. Eligibility for palliative care generally involves having a terminal illness with a prognosis of limited time and a need for intensive symptom management.

Palliative care is a right enacted by law ("Wet betreffende Palliatieve Zorg" - June 14th 2002). This law guarantees that all patients, regardless of their location in the country, have access to appropriate end-of-life care.

The care is provided in various settings. Many patients receive palliative care at home, supported by their general practitioner, home care nurses, and specialized palliative care teams, a preferred approach due to the comfort and familiarity of the home environment. The care providers are trained to offer basic palliative services and coordinate with specialized teams when needed. Specialized palliative care teams, composed of physicians, nurses, psychologists, social workers, and other trained professionals, support primary care providers and manage more complex cases. These teams operate in various settings, including hospitals, community care, and residential care facilities. Hospitals also provide palliative care through inpatient units or consultation teams for patients with complex symptoms or those requiring intensive care. Residential care facilities, such as nursing homes, offer palliative care (with the support of specialized teams). Additionally, palliative day centers provide daytime care and support for patients, offering respite for their informal caregivers while allowing patients to remain in their home environment. Hospitals can also have a palliative care unit. However, in some regions, particularly where resources are limited, palliative care may not be as uniformly regulated or may be delivered informally, which can lead to variations in care quality and availability.

Belgium is divided into several palliative care networks, typically one per province, which are responsible for coordinating and ensuring the continuity of care across different services and regions. These networks not only organize and deliver palliative care services but also provide training to healthcare professionals and promote awareness of palliative care. Above that, the Federation of Palliative Care acts as an overarching entity that unites various associations, healthcare professionals, and stakeholders within the field. Its primary mission is to harmonize efforts, disseminate knowledge, and advocate for the provision of high-quality palliative care throughout the healthcare system. By integrating these diverse groups, the Federation amplifies the collective influence of the palliative care community, thereby ensuring that the needs of patients and their families are addressed with compassion and professionalism.

Following the Rainbow Model for integrated care of Valentijn et al. (2013, 2015) [12, 13] clinical care at the micro level is organized in a horizontal manner in the palliative care setting care. The care package offered, which includes multiple services and disciplines, is optimally organized and integrated to meet the real needs of the patients. For the meso level we distinguish among organizational and professional integration. The integration of organizations refers to the extent to which services are produced and delivered in a linked way in order to combine skills and knowledge of different organizations. Professional integration refers to partnerships among professionals. At macrolevel, integration comprises a tailored combination of structures, processes and techniques to meet the needs of individuals and populations. Specifically, this concerns aligning regulatory frameworks and the political, social and economic environment [12, 13].

Design

This study applies a multimethod design using the analytic hierarchy process (AHP) method from Saaty [18–20]. The AHP allows us to determine and prioritize objectives and criteria at different hierarchical levels [21]. It addresses decision-making problems in complex situations where uncertainty exists, multiple decision makers are involved, and multiple considerations—both subjective and objective—are important [21]. As the AHP allows for the active participation of stakeholders and provides managers with a rational basis for making decisions [22], the method is applied in a wide variety of situations, for example, in government [23], business [24], industry [25], education [26] and healthcare [27]. The AHP was chosen because of the possibility to set priorities for a future framework in a more objective way and thus transcend subjective discussions. To reveal these priorities, the AHP Process passes through multiple sequential steps using different methods (see Table 1).

AHP process

Step 1: Structure the problem into a hierarchy

The hierarchical structure should be a complete representation of the priorities with all applicable criteria and subcriteria. At the top of the hierarchy is the goal—or that which is sought to be achieved—in this study the goal is: integrated palliative care. At the second level are the criteria that are important for achieving the goal. In this research, we base this on three levels of integration (cf. Rainbowmodel Valentijn et al., 2013, 2015)) [12, 13], namely, the macro (system), meso (organization and professional) and micro (clinical) levels. In addition, the distinction is made between functional enablers (i.e., regulative) and normative enablers, in other words, hard preconditions (such as data management, funding and information systems), and soft preconditions (such as a shared vision, shared norms and values). In our case, the subcriteria for functional and normative enablers are the priorities put forward by the stakeholders to achieve integrated palliative care at each level.

Firstly, a comprehensive literature review was conducted to gather all relevant international information on integrated (palliative) care. We systematically searched the Web of Science, Google Scholar, PubMed, and Embase databases using a combination of keywords related to integrated care, palliative care, and organizational recommendations (see also Appendix 1) to map relevant international information regarding integrated palliative care and recommendations for future organization of this care. This search was not restricted by publication date, ensuring the inclusion of both foundational and recent studies. The identified articles were screened for relevance, and the key findings were systematically tabulated in Excel. This process allowed us to synthesize the literature, identify key themes, and selected a well-established framework to guide our research. The findings also formed the basis of our interview guide, ensuring that it was aligned with the best practices and recommendations found in the literature.

Table 1 Different phases of the study

Steps	Description	Output	Methodology
Step 1 *Structure the problem into a hierarchy*	Inventory Theme list	(1) Gaining understanding of the different themes in organization of integrated (palliative) care (2) Identifying current and future stakeholders (3) To draw up a criteria list for the subsequent phases Validating the criteria list from phase 1 in preparation for the next phase	Literature search Interviews with representatives of micro and meso level
Step 2 *Validation and selection of criteria and subcriteria*	Member check	Validation and subsequent selection of criteria	Focus groups with representation from the micro and meso level
Step 3 *Combine the pairwise comparisons to derive weights for hierarchical elements*	Prioritization	An objective and broadly supported prioritization of the criteria on the basis of the importance for integrated palliative care	A broad survey of all stakeholders at the micro meso and macro level based on principles of the AHP method

Secondly, based on the results of the literature search, 12 semi structured interviews were conducted with stakeholders. Stakeholders were defined based on their roles and experience within the (palliative) care continuum. At the micro level, stakeholders were identified as individuals with direct, hands-on experience in providing patient care, such as frontline healthcare professionals (e.g., nurses, physicians, social workers) who interact directly with patients and their families. Patients and family members were not included as stakeholders in this part of the study because their perspectives were considered less comprehensive regarding the organizational aspects of palliative care compared to other stakeholder groups. At the meso level, stakeholders were those involved in the management, coordination, or organization of care services, including roles such as department heads, care coordinators, or administrators who oversee care delivery across populations or within healthcare organizations. The participants were purposively sampled based on their expertise in the sector and contacted via email. These inclusion criteria ensured that our interviewees had relevant and practical insights into both the delivery and organization of palliative care. The interviews took place during the months of June, July and August 2020 and were conducted via Microsoft Teams due to COVID-19 measures. The interviewer, who holds an MSc in Health Care Management and Policy, has substantial experience in qualitative research and a background in nursing, ensuring a strong affiliation with the sector. On average, an interview lasted 60 min. The interviews aimed to validate and complete the literature search (see Appendix 2 for the interview guide). Specifically, criteria per level were further inquired about, and the content was formed for the subsequent focus groups.

For the deductive analysis, we relied on the interview transcripts combined with the notes taken during the interviews. All interviews were recorded via Microsoft Teams or I-talk, transcribed, and analyzed using NVivo by the interviewer and a second researcher (Phd), who is employed as psychologist in the palliative care sector. Transcriptions were checked for criteria that already emerged in the literature search and to add new relevant criteria extracted from the interviews.

The proposed codes and resulting hierarchical tree structure —based upon the framework of Valentijn et al. (2013,2015) [12, 13]— were regularly discussed by the steering committee. This committee comprised three healthcare professionals from palliative care: a geriatrician specializing in palliative care, a professor who is also a practicing general practitioner in primary care, and a psychologist with expertise in palliative care. All three of them also have affiliations with umbrella organizations advocating for the interests of the patient and scientific research groups. Additionally, three scholars from the fields of organizational science and healthcare operations management participated, two of whom also hold a degree in nursing.The purpose of these meetings was to critically review the obtained interview codes and juxtapose them with the recommendations or criteria from the literature search. The criteria in the steering committee discussion were (1) correctness of the codes, (2) clarity or intelligibility of the codes, and (3) whether the interview codes were redundant with the information found in the literature.

Step 2: Validation of and selection of criteria and subcriteria

For this step, six focus groups were organized. Recruitment was conducted via mailing through palliative care networks, professional associations, patient organizations (targeting both patients and caregivers), and hospitals. The focus groups were designed to include representatives from all relevant stakeholders—such as patients, family members, informal caregivers, professional caregivers, volunteers, and care managers—across the different levels of care. Each focus group involved a diverse mix of stakeholders to ensure that multiple perspectives were represented. Two focus groups were conducted for each level of care—macro (system level), meso (organizational and professional level), and micro (individual level)—to address the complexity and diversity of the criteria at these levels. Additionally, the discussions at each level covered both functional and normative enablers, further highlighting the need for comprehensive integration [12, 13]. By organizing the focus groups this way, we ensure that the specific needs and perspectives of each group are thoroughly explored and adequately represented in our findings. We built on the criteria obtained from the literature search and interviews during these focus groups. The purpose of these focus groups was to arrive at clear and unambiguous criteria. Following a brief introduction to the project and the current research phase, the forms and levels of integration were described. The focus group then concentrated on a specific level of integration, where both functional and normative enablers were presented for evaluation. The central questions in the focus groups were as follows: “What do you understand by the criteria?” (cf. criteria clarity), “Did we forget any criteria?” (cf. criteria completeness), and “What are the most important criteria for this particular level?” After the analysis of these six focus groups, an additional round of focus groups was scheduled for the meso and micro levels as advised by the steering committee. These two focus groups questioned the criteria that were reformulated as a result of the first round.

As part of the security measures due to COVID-19, all the focus groups took place online via Microsoft Teams. The duration of the focus group averaged 2 h. At least two members of the research team were present at each focus group. The researchers alternated in terms of presentation, observation and notation. All four involved researchers have affiliation with the healthcare sector and are familiar with conducting qualitative research.

The content of the focus groups was based on the composition of the hierarchical tree structure. For the analysis, the four researchers involved in the project relied on the recordings combined with the notes taken during the focus groups. We generated a document containing a table with the findings and examples provided by the participants, level-by-level for each criterion. Thus, we provided an overview of the criteria intelligibility, clarity and completeness.

The final hierarchical structure was limited to a maximum of 6 criteria per level taking into account the prioritization in the focus groups with the use of mentimeter, which was followed by consultation of the steering committee. The higher the number of criteria, the more pairwise comparisons are needed (see step 3). With 6 criteria, 15 pairwise comparisons are to be made. This ensures that the subsequent questionnaire is not too long and thus increases the response rate.

Step 3: Combine the pairwise comparisons to derive weights for hierarchical elements

In this final step all elements are compared in pairs regarding their importance for the organization of integrated palliative care through an online questionnaire. Participants were asked to start by comparing elements across different hierarchical levels: macro-meso, meso-micro, and macro-micro. Next, they contrasted the meso-organizational level with the meso-professional level. Following this, they evaluated the balance between functional and normative enablers within each level. Finally, participants compared the subcriteria within each level to determine their relative importance in achieving integrated palliative care. A nine-point scale was created for this purpose (see Fig. 1) with the following statement: "*We would like to ask you to indicate in each case to what extent 1 of the 2 aspects is more important for achieving integrated palliative care.*")

Each set of comparisons is subsequently entered into a comparison matrix using the software program Super Decisions [21].

A digital questionnaire in REDCap® [28] (an electronic data capture tool hosted at Ghent University Hospital) was created and completed by 305 different stakeholders. These included people with professional experience at the different levels (e.g., health care providers, regional policy staff, research staff, etc.) and people with personal experience at the micro level (e.g., incurable patients and their relatives, informal caregivers, etc.) in palliative care. Additionally, related organizations (such as hospitals, home care and education) were involved.

Recruitment was conducted using two methods. The first method involved utilizing REDCap. Through REDCap, emails were sent out containing an invitation to participate in the survey along with a direct link to the questionnaire hosted on the REDCap platform. Email addresses were collected through extensive online research targeting institutions and individuals involved in palliative care, cancer patient care, chronic care, and related fields. The second method involved reaching out to organizations. Various organizations were contacted via email or phone and asked to distribute our flyer (which included a link to the questionnaire and a QR code for easy access) to relevant stakeholders. The flyer was distributed exclusively in digital format. Due to COVID-19 restrictions, no physical flyers were permitted in public places or waiting rooms during this phase of the study.

The questionnaire started by collecting demographic data from the respondents. A distinction was made between people with professional experience in palliative care (group A) and people with only personal experience in palliative care, i.e., as patient or as relative or informal caregiver (group B). Group B only made pairwise comparisons at the micro level, as the macro and meso levels require some insight into the organization of palliative care. Next participants had to prioritize the different criteria.

Using the software program Super Decisions, the results of the pairwise equations are converted into relative weights for the decision elements [21]. These

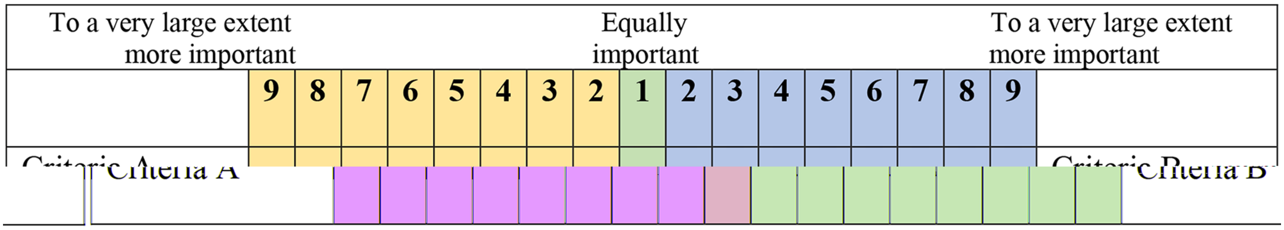

Fig. 1 Double sided nine-point scale. Legend: The numbers represent the following degree of importance: 1 = The two criteria that are opposite each other are equally important; 3 = One criteria is slightly exceeds the other criteria; 5 = One criteria is more important than the other criteria; 7 = One criteria is more important than the other criteria to a great extent; 9 = One criteria is more important than the other criteria to a very strong degree

weights are more than a ranking. It is a ratio scale that we can use to divide among the different criteria. In this way, we can calculate how important a particular criterion is than another criterion. Based on the pairwise comparisons and the determined geometric mean values of the respondents, the program generates weights for the different criteria and consequently prioritizes them. We refer to Saaty's work around the method for more detailed information [18–20]. Because people are often unpredictable in their judgments, the AHP method assumes that each comparison matrix contains inconsistencies. A check for judgement consistency is a routine part of the AHP weighting method [21]. Here, the principle of a consistent answer applies if A > B and B > C; then, it is logical that A > C.

Ethical considerations

This study was approved by the ethics committee of Ghent University Hospital (project BC-07391). All participants were informed orally and in writing via informed consent. Data were pseudonymized throughout the research process to ensure confidentiality. The (Dutch) data and questionnaire are available upon reasonable request with the corresponding author.

Results

Development of objectives and criteria (step 1–2)

The literature search revealed relevant (international) information regarding integrated (palliative) care and recommendations to organize such care (see also Table 2) from Belgium [29–32], the Netherlands [12, 33, 34], , Spain [35], Hungary, the United Kingdom, and Germany [36], Canada [37, 38], Australia [39], Ireland [40] and New Zealand [41].

Individuals from different settings (such as home care, hospitals, networks, residential care centers, umbrella organizations and education) as well as different disciplines (such as physicians, management, coordinators, and nurses) were interviewed with the intention of providing a broad picture of possible success factors for integrated palliative care. The interviewees' experience in palliative care ranged from 7 to 30 years.

Based on the combination of insights from the literature and data from interviews with 12 stakeholders in palliative care, we distinguished 44 criteria related to the organization of integrated palliative care. Table 2 illustrates these criteria generated from this step.

This list of (sub)criteria per level (macro, meso, and micro) and level of integration (functional versus normative) was the basis for the focus groups. A total of 35 people, including 7 men and 28 women, participated in the focus groups. Twenty-seven participants were caregivers and represented different organizations. The other 8 participants were patients and informal caregivers.

However, through a thorough process of review and refinement, the number of criteria was reduced to 35. This reduction was driven by several factors: first, we identified and addressed overlaps among the criteria to ensure that each remaining criterion was distinct and contributed uniquely to the overall framework. Second, the prioritization process during the focus groups provided critical insights into which criteria were considered most essential by the participants, leading to the elimination of less relevant or redundant items. Lastly, the steering committee, composed of stakeholders with clinical, academic, and organizational expertise, provided additional guidance. They carefully evaluated the criteria based on their relevance, feasibility, and potential impact, resulting in a more streamlined and coherent hierarchical structure of 35 criteria. This iterative process ensured that the final set of criteria was both comprehensive and focused, reflecting the consensus of all involved stakeholders.

Fig. 2 presents the final validated list with the 35 selected criteria for use in the questionnaire, divided by level (macro, meso, micro) and by forms of integration (functional or normative).

Prioritizing (step 3)

Demographics

A total of 305 respondents completed the questionnaire, which is higher than the average of 109 participants in AHP studies in medical decision making.

87% (n = 265) of the respondents were professional stakeholders from the different levels of the ecosystem, and 13% (n = 40) were patients, family members or informal caregivers. In both categories, there was a significantly greater percentage of female respondents (77% in both groups). The average age was 49 years, with a minimum age of 22 and a maximum age of 78.

Professional stakeholders can be divided into nurses (52%), physicians (16%), paramedics (15%), policy makers (7%), volunteers (2%) and others (5%). These respondents had an average of 21 years of experience in healthcare and 12 years and 11 months in palliative care. 39% of these respondents worked in a hospital, 23% in a residential care center, 13% in home care and 6% in palliative care networks. Additionally, a wide diversity of other organizations are represented in this sample.

The other group included 5 patients, 15 relatives and 6 informal caregivers. The relatives and informal caregivers had accumulated an average of 6 years and 8 months of experience in palliative care, mainly through caring for their parents. In addition, 14 other participants were not included in one of these groups (e.g., pharmacist, sociologist, teacher, technologist) as their involvement was limited to indirect exposure through their work or environment.

Table 2 Criteria obtained from the literature search and interviews

	Literature	Interviews
Macro level		
An integrated system for information exchange	den Herder-van der Eerden et al., 2017 [34]	X
Availability of sufficient (financial) resources	Payne et al., 2019 [36]	X
Palliative care as a mandatory component in healthcare training programs	Payne et al., 2019 [36] Goodwin et al., 2013 [8]	X
Requiring local interdisciplinary quality groups	Lyngso et al., 2016 [42] https://www.inami.fgov.be	0
Palliative care should be included in chronic care pathways	Lynn & Adamson, 2003 [43] Payne et al., 2019 [36] Goodwin et al., 2013 [8]	0
One single organization is in place for advocating for palliative care at the policy level	Payne et al., 2019 [36]	X
Governmental policy on palliative care concentrated at one governmental level	0	X
A policy framework for sharing resources and personnel within and between organizations	Goodwin et al., 2013 [8]	X
A policy framework for quality of palliative care	Gomez-Batiste et al., 2018 [25] Khayal, 2019 [44] Huitema et al., 2018 [45]	X
Raising public awareness	New Zealand Palliative Care Strategy, 2001 [41] Canada Health, 2007 [37] Integrate project, 2019 [32]	X
A knowledge center for exchanging information between organizations	Payne et al., 2019 [36]	0
Developing or recognizing specialist palliative care	Department of Health and Children Ireland, 2010 [40]	0
Exchanging the right information to all levels	0	X
Allocating resources in a socially responsible manner	0	X
A clear vision of what integrated palliative care is	Integrate project, 2019 [46]	X
Meso level organisation		
Sharing information within and between organizations	Payne et al., 2019 [36] Gomez-Batiste et al., 2018 [35] Huitema et al., 2018 [45]	X
A database containing descriptions of expertise and equipment region by region	Saurman & Lyle, 2019 [47]	X
Communication between organizations	De Rycke & Gemmel, 2017 [48]	X
Implementing quality policy	Payne et al., 2019 [36] Partridge et al., 2014 [49]	X
Promoting coordination between organizations	Popp et al., 2015 [50] den Herder-van der Eerden et al., 2017 [34]	X
Networks for patients and informal carers in their own environment and with their own customs and culture	Abel, 2018 [51]	X
A diversity policy for caregivers and care recipients	Byock et al., 2006 [52] Gatrad et al., 2003 [53]	X
Sharing appropriate information between different healthcare disciplines	0	X
Involving experts by experience	0	X
Knowing one's own limits in knowledge and being open to expertise from other professionals	0	X
Recognise that care is realised in a network of organisations	den Herder-van der Eerden et al., 2017 [34]	0
Building a bridge between palliative and acute care culture	Scheerens, 2019 [54] Mistiaen, 2017 [29] Hermans et al., 2019 [55] Gomez-Batiste et al., 2018 [35]	0
Meso level professional		
Communication between healthcare professionals	Integrate project, 2019 [46] Gomez-Batiste et al., 2018 [35]	X

Table 2 (continued)

	Literature	Interviews
Sharing information between healthcare professionals	Gomez-Batiste et al., 2018 [35] Cohen et al., 2014 [55] Huitema et al., 2018 [45]	X
Aligning different care disciplines	Gomez-Batiste et al., 2018 [35] Scheerens, 2019 [54]	X
Basic knowledge of palliative care	Het palliatief debat, 2020 (https://www.komoptegenkanker.be/sites/default/files/media/2021-04/2104_Eindrapport-Palliatief%20debat.pdf)	X
Bridging differences between professionals from different disciplines	0	X
Empathy and trust between healthcare professionals	0	X
Balancing work and personal life	Bodenheimer & Sinsky, 2014 [56]	X
Micro level		
Continuity of care	den Herder-van der Eerden et al., 2017 [34]	X
Involving patients in informed decision-making in their own journey	Gomez-Batiste et al., 2018 [35]	X
Transparent communication to patient and informal carer	Luckett et al., 2014 [57]	X
Systematic consultation moments involving all stakeholders	Gomez-Batiste et al., 2018 [35]	X
One care plan for patient and one for informal carer	Gomez-Batiste et al., 2018 [35]	X
Family as part of the care team	Luckett et al., 2014 [57]	X
Empathy and trust between healthcare providers, patients and family	0	X
Respect for the informal caregiver (e.g., family member or friend)	0	X
Providing patients with information to co-determine their own care	Luckett et al., 2014 [57]	X
Show respect for the patient and/or informal carer in all their diversity	0	X

X = present, 0 = not present

General results

The consistency rate was less than one, indicating good consistency of the results [20]. The criteria are listed in the hierarchical structure (Fig. 2) and are arranged from top to bottom according to importance. The micro level is perceived as the most important level for organizing integrated palliative care (57%). The meso level (or the level of the organizations and professionals) ranks second (29%). The macro level is rated the least important (14%). A comparison of the percentages reflects the relative importance of the levels. Specifically, the micro level is 2 times more important than the meso level and 4 times more important than the macro level. The meso level is 2 times more important than the macro level. At the meso level, we distinguish professional and organizational integration. The former is perceived as 3 times more important than the latter.

For each of the three levels, we also addressed normative and functional integration. At the macro level, functional integration (80%) is weighed 4 times more important than normative integration (20%). At the meso organizational level, functional integration (67%) is considered 2 times more important than normative integration (33%). At the meso professional level it is the opposite, normative integration (67%) is 2 times more important than functional integration (33%). At the micro level, normative integration (75%) is considered 3 times more important than functional integration (25%). To summarize, functional integration is considered more important at the macro and meso organizational levels, whereas normative integration is more important at the meso professional and micro levels.

Results of the criteria per level

As shown in Fig. 2, the analysis revealed key criteria for both functional and normative integration across macro, meso, and micro levels in the organization of integrated palliative care. At the macro level, the most critical functional criteria were ‘palliative care as a compulsory component in healthcare training programs’ and ‘sufficient financial resources,’ each accounting for nearly one-third of the importance scores. For normative integration, ‘allocating resources in a socially responsible manner’ emerged as the most significant criterion, receiving half of the total score.

At the meso-organizational level, ‘encouraging continuity of care’ was the most valued functional criterion, while ‘building a bridge between palliative and regular care culture’ was prioritized in normative integration. For meso-professional integration, the criterion ‘all healthcare providers have competencies and skills for the basics of palliative care’ was notably more important than others, while normative criteria showed minimal variance, with ‘bridging differences between disciplines’ scoring slightly lower.

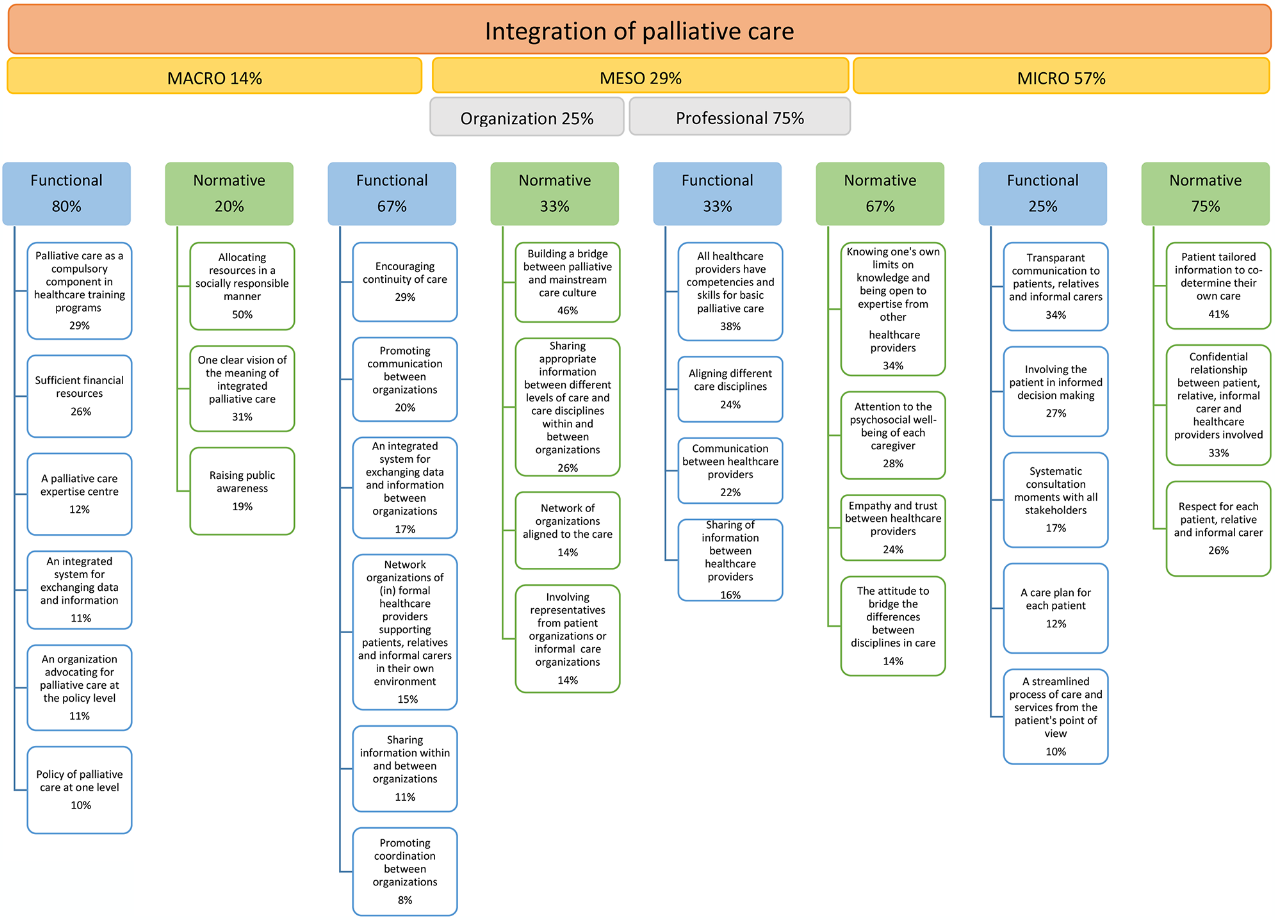

Fig. 2 Prioritized criteria in the palliative ecosystem

At the micro level, the functional criteria ‘transparent communication to patient, neighbor, and family caregivers’ and ‘involving the patient in informed decision-making’ were emphasized. Among normative criteria, ‘patient-tailored information to co-determine their own care’ was slightly more valued, although scores were generally similar across criteria.

Comparison of results by discipline (nurses, physicians, paramedics and policy makers)

Across all disciplines, the micro level is considered the most important level for integrated palliative care in the future. The macro level was rated higher for importance among policy makers (22%) and paramedics (22%) than among nurses (11%) and physicians (10%). The meso level is rated much less important among policy makers (15%) than among the other disciplines (26–32%).

Further elaboration on the results can be found in Appendix 3. The analyses by discipline reveal several differences in terms of prioritization. However, the criteria in Table 3 are important priorities for all disciplines. Criteria were considered important priorities if they ranked in the top two for all groups, or in the top three for no more than one group, with a score for the item higher than 15%.

Discussion

The aim of our study was to identify the prioritized criteria in terms of functional and normative enablers at the micro, meso and macro level, including an exploration of the extent to which these criteria are shared between the levels of the palliative care ecosystem.

This study was innovative because of the application of the AHP multimethod design [58] and the deployment of an ecosystem perspective [17, 59]. From this perspective, it can be argued that the ‘integration’ of care encompasses not only organizing care around the patient’s journey but also establishing connections among all actors at the micro, meso, and macro levels. Thus, integration among all actors is closely related with organizing care around the patient journey, as emphasized in Valentijn’s Rainbow Model of Integrated Care [12, 13]. As demonstrated at the top part of Fig. 2, the micro level scored highest in terms of importance for integrated palliative care. Respondents considered the micro and meso professional levels more important than the meso

Table 3 Important priorities for all disciplines

Level	Functional	Normative
Macro	Palliative care as a compulsory component in healthcare training programs Sufficient financial resources	Allocating resources in a socially responsible manner One clear vision of the meaning of integrated palliative care
Meso Organization	Encouraging continuity of care	Building a bridge between palliative and mainstream care culture Sharing appropriate information between different levels of care and care disciplines within and between organizations
Meso Professional	All healthcare providers have competencies and skills for basic palliative care Aligning different care disciplines	Knowing one's own limits in knowledge and being open to expertise from other healthcare providers Attention to the psychosocial well-being of each caregiver
Micro	Transparent communication to patient, relatives and informal carers	Patient tailored information to co-determine their own care Confidential relationship between patient, relative, informal carer and healthcare providers

organizational and macro levels. We find that the importance of the macro level in particular is underestimated. However, as fewer participants at the macro level were included, we should be cautious about this statement; at the same time, even macrolevel representatives acknowledge that the micro level is most important. The macro and meso levels should create a framework that enhances the conditions for integrated palliative care at the micro level [14, 60] Like for the climate movement, the responsibility for the organization of integrated palliative care cannot be placed entirely on the shoulders of the individual citizen [61].

Each level comprises functional, normative and cultural-cognitive enablers [15]. The functional enablers are the formal rules regulating and enabling or constraining the behavior of actors, for example, financing systems, information systems or legislation. The normative enablers consist of norms and values such as person-centeredness. The cultural cognitive enabler is related to the actors' perception of reality in a specific cultural context, for example, the curative versus palliative mindset in case of terminally ill patients.

Our findings suggest that functional and normative enablers are distributed across different levels of care in distinct ways. Specifically, we observe that functional enablers—such as data management, financing, and information systems—are more prominent at the macro and meso-organizational level, where operational preconditions for integrated care are managed. In contrast, normative enablers—including shared values, goals, and the development of care culture—are more emphasized at the micro and meso-professional levels, where actors work closely with patients and focus on fostering collaboration and commitment.

These patterns align with existing literature. Angus & Valentijn (2018) argue that integrated care initiatives in Australia tend to emphasize normative enablers at the micro level but place less focus on functional enablers at the macro level [62]. This would imply that as care moves closer to the patient, normative aspects—such as shared vision, norms, and care culture—become more critical. Our results similarly indicate that the development of shared values and goals, as well as a palliative care culture, becomes increasingly important at lower levels of care, where professional interaction and patient-centered approaches are prioritized. At the meso level, Windle et al. (2023) emphasize the importance of both internal and external factors in primary healthcare planning [63]. They align internal factors, such as organizational structure and capacity, with functional enablers—focusing on practical and operational aspects. In contrast, external factors—such as policy settings and ideology—align with normative enablers that emphasize values, governance, and alignment across stakeholders. This supports our observation that meso-organizational levels focus primarily on functional aspects, while meso-professional levels are more engaged with normative elements. Finally, Treapleton et al. (2017) provide additional support for distinguishing between functional and normative enablers [64]. Their findings show that operational components—such as care continuity, case management, and multi-disciplinary services—are aligned with functional enablers concerned with practical aspects of service delivery, including coordinating services and ensuring smooth transitions. Conversely, components such as shared values, governance, and person-centered care align with normative enablers, focusing on vision, culture, and principles that foster collaboration. They also highlight that both operational and normative enablers are necessary across all levels of care delivery, with macro-level policies supporting system-wide alignment and micro-level engagement ensuring practical collaboration and shared vision in patient care.

Thus, our findings contribute to this body of research by highlighting that functional preconditions are typically handled by higher organizational levels, while normative preconditions emerge from professional interaction and patient care processes at micro and meso-professional levels. Together, these insights underscore the importance of balancing both functional and normative elements across all levels to achieve effective integration in care delivery [65].

For example, the most important criterion at the micro level concerns patient information tailored to enhance shared decision making. These micro level normative criteria should be considered by macro level actors when initiating the development of 'an integrated system for exchanging data and information' being an important functional criterion at the macrolevel. Importantly, whether actors at each level perceive criteria as normative versus functional may hamper the vertical sharing. The cognitive element represents the actors' perception of reality, which in this case is formed by the emphasis on either normative or functional integration. This is illustrated in our results, where 75% of the variance at the micro level is attributed to normative integration, while only 20% is attributed to the macro level.

Another aspect of the cultural cognitive element is the professional discipline of the respondents. Our results revealed differences in perceptions of reality between policymakers and paramedics, and between nurses and physicians. Moreover, policymakers rate the meso level (15%) markedly lower than other professional disciplines (26–32%). This again shows that the relative importance of the levels is unequivocally perceived by the different stakeholders.

Further elaborating on the relationship between the levels, the findings show that certain criteria in the hierarchical structure (see Fig. 2) recur at different levels. For example, communication is a criterion at the micro level as well as the meso organizational and professional levels. It could be argued that communication between organizations and professionals is a prerequisite for transparent communication to patients, their relatives and caregivers, since patients are often located in complex networks of healthcare actors. Similarly, one could argue that at the macro level, there needs to be one clear vision of what integrated palliative care is to align palliative and curative care culture at the meso organizational level. This alignment must then also form a basis to create an attitude to bridge the differences between the disciplines of care and thus create a streamlined process of care and service provision from the point of view of the patient. This requires interactions between the micro, meso and macro level [14].

Interactions between the micro, meso, and macro levels will not spontaneously emerge. We posit that in a complex network of actors, effective collaboration requires the creation of shared frameworks to guide interactions [66]. In the ecosystem literature, intermediary platforms are proposed as a way to structure these interactions [67–69]. Such platforms can take different forms—for example, a coordinator, a digital platform, or a coordinating organization.

However, we argue that stakeholders at different levels (micro, meso, and macro) may view the purpose and function of such platforms differently. For instance, some stakeholders may focus primarily on functional criteria (e.g., the efficient exchange of data), while others prioritize normative aspects (e.g., alignment with patient-centred care). These differences in priorities could result in fragmented or misaligned initiatives, ultimately impeding the platform's ability to effectively coordinate and integrate care across the ecosystem.

To achieve integrated palliative care in the future, not everything can be taken into account. The clear prioritization of the criteria provides a guidance to which criteria are most important in the eyes of the respondents and which criteria must be on top of the agenda to enhance integrated palliative care in the future.

Future research in integrated palliative care could benefit from longitudinal studies that assess the long-term effects of implementing integration models across different levels of the ecosystem. Such studies would provide valuable insights into how integration evolves over time and impacts patient outcomes. Additionally, comparative studies across various regions or countries could identify best practices and contextual factors that influence the effectiveness of integration efforts. Understanding stakeholder perceptions is also crucial; thus, further exploration of how different stakeholders, including policymakers, healthcare providers, and patients, view the importance of normative and functional criteria could inform targeted interventions to enhance collaboration.

Another promising area of research is the role of technology in facilitating communication and data sharing among micro, meso, and macro level of palliative care. Investigating the effectiveness of digital platforms and tools in promoting integrated care could yield beneficial insights. Furthermore, exploring the cultural factors that influence integration efforts can provide a deeper understanding of potential barriers and facilitators. This could involve qualitative studies capturing the narratives of various stakeholders to uncover how cultural perceptions of palliative care affect integration. Research could also focus on the design and effectiveness of intermediary platforms, assessing how these platforms can be tailored to meet the unique needs of different levels within the palliative care ecosystem.

Our empirical research lead to results with valuable managerial implications. Specifically, we derived a clear prioritization of criteria for an agenda to enhance integrated palliative care. Patients, families, informal caregivers, healthcare professionals, policy makers, paramedics and volunteers were involved throughout different phases of this study. Moreover, we believe that we do not need to reinvent palliative care from scratch but that existing structures, organizations and providers can continue to work, paying increased attention to integrating factors.

The development of training and education programs for healthcare professionals is essential. These programs should emphasize the importance of both normative and functional aspects of integrated care, fostering a shared understanding and commitment to integration at all levels. Additionally, creating a framework that outlines roles and responsibilities for actors at the micro, meso, and macro level would enhance communication and collaboration. This framework should include guidelines to facilitate the integration of care.

There is also a pressing need for policy recommendations that advocate for changes supporting integrated palliative care. Emphasizing the necessity of a cohesive vision that aligns palliative and curative care will require engagement with various stakeholders to ensure that policies are informed by diverse perspectives. Moreover, healthcare organizations should be encouraged to allocate resources strategically to support both functional and normative enablers, particularly at the micro and meso levels [14, 70] which may involve investments in information systems and training initiatives.

Implementing robust monitoring and evaluation mechanisms is vital for assessing the effectiveness of integrated palliative care initiatives. Such mechanisms would allow organizations to adapt strategies based on performance data and stakeholder feedback.

This study has certain limitations that need to be acknowledged when interpreting the results. First, this study was limited to the region of Flanders in Belgium, thus limiting the generalizability of these results. Moreover, since each country has its own inherent cultural characteristics, it would be interesting to conduct this study in other countries and other (healthcare) settings. Second, this study included palliative patients and their relatives, a population that is relatively difficult to access; as such, the participation of this stakeholder group was rather low. Third, in this methodology, people are forced to make choices, but on the other hand the chosen criteria provide a clear picture of what the priorities are. This was also supported by the larger percentages given to single criteria. Additionally, the methodology does not allow a long list of topics for comparison; during the study, there was a reduction in topics from 44 to 35. This approach limited the number of comparisons for the participants to a maximum of 15 comparisons per level, which reduced the risk of incomplete questionnaires. This as the more items you start comparing the faster the total comparisons add up (e.g., 7 criteria=21 comparisons as n(n-1)/2). Fourth, this study was the first step in exploring vertical connections across different levels to increase the need for integrated palliative care, and following the suggestion of van der Weert et al. (2022) [14], additional multilevel research is needed in healthcare networks focusing on these vertical connections.

Conclusion

Our findings underscore the critical need for a harmonized approach that integrates efforts across the macro, meso, and micro levels in palliative care. While functional enablers are predominantly emphasized at the macro and meso level, and normative enablers are more prominent at the meso professional and micro level, true effectiveness in care delivery hinges on the seamless alignment of all these levels. It is important to acknowledge that each level contributes distinct and indispensable value to the overall system, and overlooking any of these contributions could compromise the quality of care. Achieving priorities at the micro level is contingent upon robust interprofessional and interorganizational collaboration at the meso level, which, in turn, must be underpinned by well-coordinated and supportive systems at the macro level. Only through collective and coordinated efforts at all three levels can we ensure that palliative care is both comprehensive and effective, ultimately meeting the complex needs of patients and their families.

Web Appendix 1. Search string literature review

This step was conducted to develop a conceptual frame of reference for the organization of integrated care for palliative patients in the future. The establishment of themes on palliative care and the conceptual framework will serve as a guide to move to data collection through focus groups and a broad questionnaire survey.

We collected the frame of reference through a process of (1) literature review on organisation and challenges in palliative care and (2) literature review on integrated care.

For the literature. review, the databases Web of Science, Google scholar, Pubmed, Embase were searched to find relevant articles related to our research question. We gathered information and and insights from different countries with our research. In other words, we do not limit ourselves to Belgium only.

For this purpose. we used the following search terms: _‘Healthcare’ ‘Hospice care’ ‘Hospices’ ‘delivery of health care’ ‘integrated’ ‘Community care’ ‘community networks’ ‘Compassionate communities network ’‘Cross sector collaborations’._

‘shared understanding’. ‘shared mental models’ ‘Organization model’ ‘advance care planning’ ‘Advance directives’ ‘Advance directive adherence’ ‘hospices’ ‘delivery of health care’ ‘theoretical model’ ‘economic model’ ‘Community health planning’ ‘Health care reform’ ‘decision making’ ‘organi*ational planning techniques’ ‘health services needs and demand’ ‘healthcare disparities’’Organi*ation networks’ Organi*ation systems’’ Mergers’ ‘Case management’ ‘Consultation model’ ‘Health or clinical networks’ ‘Integrated care’ ‘Liaison model’ ‘Managed Clinical Networks (MCN’s)’ ‘Pop-up model’ ‘Shared Care model’ ‘care coordination’ ‘coordinated care’ ‘Continuity of care’ ‘continuous care’ ‘integrated care’ ‘integrated care’ ‘communication and information’ ‘cooperation’ ‘intersectoral collaboration’ ‘col-

*laboration' 'communication' 'teamwork' 'system integration' 'professional integration' 'organi*ation integration' 'clinical integration' 'cooperative behaviour"sector partnerships&#8217.*

'Life support. Care' 'palliative care' 'palliative medicine' 'refusal to treat' 'terminal care' 'terminally ill' 'treatment refusal' 'withholding treatment' 'Medical futility' 'death' 'bereavement' 'dying' 'end of life' 'final day' 'last day/week/hour' 'Hospice and palliative care nursing' 'Public health palliative care'.

These search terms were used alone or in combination. The boolean operators 'AND' and 'OR' were used for this purpose. We did not strictly use the search term 'Palliative care' and related search terms so as not to exclude general models of care and organisation. We therefore only used 'OR' and not 'AND'. The search was complemented by a secondary search (snowball) in which we went through references, citations and authors of relevant articles to include additional articles.

Web. Appendix 2. Interviewguide

The following interview Questions will be posed to experts at the meso and micro level in palliative care, with the aim of completing our literature review until saturation of themes is achieved.

The model used for framing the interview questions is the Rainbow Model by Valentijn et al., 2013. This model provides a better understanding of the relationships between the different dimensions of integrated care, namely care at the macro, meso, and micro levels. The model serves as a framework for our study, supplemented by additional insights from the literature. The model is illustrated in the figure. It includes the breakdown by level of integration as well as the terms functional and normative integration. The different concepts are described below.

- **System Integration:** This refers to the political and environmental climate, specifically the alignment of regulatory frameworks and the political, social, and economic climate.
- **Organizational Integration:** This involves collaboration between organizations, particularly the extent to which services are produced and delivered in a connected manner.
- **Professional Integration:** This pertains to collaborations among different healthcare professionals or partnerships that arise between professionals within and across different organizations.
- **Clinical and Service Integration:** This is the extent to which services for the patient are coordinated across various professional, institutional, and sectoral boundaries, in other words, the seamless process of care and service delivery.
- **Functional Integration:** This includes technical prerequisites or the coordination of key support functions such as financial management, human resources, strategic planning, information management, and quality improvement.
- **Normative Integration:** This involves informal coordination mechanisms or social prerequisites based on shared values, culture, and goals among all individuals, professionals, and organizations.

Additionally. performance can be measured using the quadruple aim, which includes measuring outcomes, patient experience, population health, and employee well-being.

Rainbow Model for Primary Care Integration, Valentijn et al., 2013

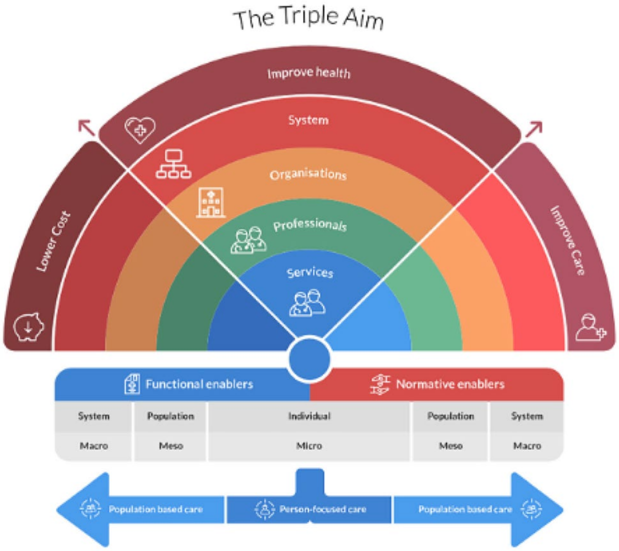

Fig. Rainbow Model of Integrated Care (RMIC). The RMIC describes three categories of integrated care: the scope, type, and enablers of integration, including eight domains. Figure is a graphical reperesentation of the RMIC. The scope entails the person-centeredness and community-centeredness perspective of professionals, eg, focusing on patient needs and abilities instead of the disease (person-centeredness) and meeting a target group's specific healthcare requirements (community-centeredness). The type of integration consists of coordination activities at the micro (individual), meso (population), and macro (system) level and refers to four domains: (1) delivered and coordinated services to patients (clinical coordination), (2) collaboration between healthcare professionals (professional coordination), (3) collaboration between healthcare organizations (organizational coordination), and (4) implementation of new policies and regulations (system coordination). Functional (technical competence) and normative (cultural competence) enablers are needed to establish connectivity between the micro, meso and levels. Technical competence refers to communication tools that can be used by all professionals and organizations in a network, whereas cultural competence refers to the development and maintenance of a common goal or plans for improvement. (The Rainbow Model for Integrated Care by P.P. Valentijin, 2015. Copyright 2017 by Essenburgh Group, Harderwijk, the Netherlands.Palliative care is considered integrated when it is part of a negotiated care plan that provides continuity in the care experience of the resident and their relatives, who take on the role of full partners in the care (Integrate Project, 2019). Coordination and continuity of care are central to this. Coordination involves aligning different caregivers, settings, and organizations, while continuity refers to the perceived coherence of care (by the patient and family) (Den Herder-Van Der Eerden et al., 2017).

The questions for the experts focus solely on the premise or function of palliative care as integrated care. For each level, we will ask four general open-ended questions to the experts, comparing their responses with our literature findings. We will continue this process until no new themes can be added to the literature review. More specific questions related to the different levels will be reserved for the focus groups.

Questions related to organizational integration at the meso Level

- How is integration at this level currently realized?
- How is the collaboration and coordination of care between organizations proceeding?
- What is working well? What could be improved or done differently? What is currently missing?
- What are the success factors for achieving organizational integration in palliative care at the meso level?

Questions related to collaboration among healthcare professionals (meso level) in palliative care

- How is the integration of care among providers and professionals currently realized?
- How is the collaboration and coordination of care between different providers proceeding?
- What is working well? What could be improved or done differently? What is currently missing?
- What are the success factors for achieving integration among healthcare professionals in palliative care?

Questions related to integration of palliative care at the macro level

- How does the macro level currently ensure that care integration is achieved?
- What is working well? What could be improved or done differently? What is currently missing?
- What are the success factors for achieving effective support from the macro level for organizing palliative care in the future?

Questions related to integration of palliative care at the micro level

- How is the integration of care at the micro level currently realized?
- How is the collaboration and coordination of care at the patient level proceeding?
- What is working well? What could be improved or done differently? What is currently missing?
- What are the success factors for achieving clinical integration of palliative care in the future?

We will send the experts the framework by Valentijn and colleagues in advance, noting that this framework will be used to structure the interview. It is not expected that they prepare for the interview or review additional information. They can review the model beforehand, and a brief explanation will be provided at the start of the interview.

Web appendix 3. Results of the AHP per discipline

Regarding functional integration at the macro level, the criteria ‘an organization advocating palliative care at the policy level’ is rated twice high and twice low on importance: low among policy makers (7%) and physicians (6%), high among nurses (19%) and paramedics (13%). ‘An integrated system for exchanging data and information’ scores low among nurses (9%) but higher among the other three disciplines (physicians 16% policy makers 14% and paramedics 15%).

Regarding the integration of organizations at the meso level, the criteria ‘an integrated system for exchanging data and information between organizations’ is considered less important by nurses (13%) while the other three disciplines rate this criteria higher on importance (physicians 21%; policy makers 20% and paramedics 19%).

At the micro level, functional criteria, ‘a care plan for each patient’ is rated twice high and twice low in terms of importance, with physicians and nurses rating this criteria high (22% and 23%). Policy makers and paramedics rate this criteria low (9% and 12%). Then again, the policy makers rate the criteria ‘a streamlined process of care and services from the patient’s point of view’ as more important than the other disciplines.

When comparing the results of the non-caregivers (group B) with all participants (group A en B) on micro level it is notable that for the functional criteria, ‘a care plan for each patient’ scores lower (12% vs. 7%) and ‘a streamlined process of care and services from the patient’s point of view’ scores higher (10% vs. 16%). For the normative criteria, ‘Confidential relationship between patient, relative, informal caregiver and healthcare providers involved’ scores highest (41% vs. 33%) and ‘Patient tailored information to participate in their own care’ comes in second (37% vs. 41%).

Abbreviations

AHP	Analytic Hierarchy Process
COVID-19	Coronavirus disease 2019
WHO	World Health Organization

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12904-024-01585-2.

Supplementary Material 1

Acknowledgements

We would like to thank Nadine Boesten for her help with the focus groups. Published with the support of the Belgian University Foundation.

Author contributions

PG and MDR conceived the original idea, the study design and obtained funding. PG developed the theory. LA and PG worked out the technical details. LA, PG and MDR contributed the implementation of the research. LA collected the data and performed the analytic calculations. LA, MDR and PG analysed the results. MDR, PG and BM wrote the manuscript with input from all authors. All authors came together regular to discuss the project status and validity. All authors discussed the results and contributed to the final manuscript.

Funding

This study was funded by 'Kom op tegen Kanker' (KOTK, https://www.komoptegenkanker.be/) at Flanders, Belgium. KOTK is an independent non-profit organization that raises its own resources to subsequently support initiatives that offer added value for cancer patients and/or their close ones. The project was an answer to the call of KOTK in 2019 for: "The palliative patient of tomorrow: how to offer him which quality care framework? The funding body played no role in the design of the study, data collection, analysis, interpretation of the data, nor authorship of this article. Published with the support of the Belgian University Foundation.

Data availability

The datasets used and/or analyzed during the current study are not publicly available due to the ethical and privacy reasons around the sensitive nature of the material but are available from the corresponding author (MDR) on reasonable request.

Declarations

Ethics approval and consent to participate

This study was approved by the ethics committee of Ghent University Hospital (project BC-07391). All participants were informed orally and in writing via informed consent. Pseudonymity and confidentiality were assured throughout the research process. Informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Department of Marketing, Innovation and Organization, Faculty of Economics and Business Administration, Ghent University, Tweekerkenstraat 2, Ghent B-9000, Belgium
[2]Strategic Policy Unit, University Hospital Ghent, Corneel Heymanslaan 10, Ghent B-9000, Belgium
[3]Department of Geriatrics and Palliative Medicine, University Hospital Ghent, Corneel Heymanslaan 10, Ghent B-9000, Belgium
[4]Departement of Public Health and Primary Care Department, Faculty of Medicine and Health Care, University of Ghent, Corneel Heymanslaan 10, Ghent B-9000, Belgium
[5]Department of Internal Diseases and Pediatrics, Faculty of Medicine and Health Care, University of Ghent, Corneel Heymanslaan 10, Ghent B-9000, Belgium
[6]Department Tranzo, Tilburg University, Warandelaan 2, Tilburg 5037 AB, The Netherlands

Received: 19 March 2024 / Accepted: 23 October 2024

References

1. Sepúlveda C, Marlin A, Yoshida T, Ullrich A. Palliative care. J Pain Symptom Manag. 2002;24:91–6.
2. World Health Organization. Strengthening of Palliative Care as a component of Integrated Treatment throughout the Life Course. J Pain Palliat Care Pharmacotherapy. 2014;28:130–4.
3. Hui D, Bruera É. Integrating palliative care into the trajectory of cancer care. Nat Reviews Clin Oncol. 2016;13:159–71.
4. Aldridge MD, Hasselaar J, Garralda E, van der Eerden M, Stevenson D, McKendrick K, et al. Education, implementation, and policy barriers to greater integration of palliative care: a literature review. Palliat Med. 2016;30(3):224–39.
5. Raak A, Mur-Veeman I, Hardy B, Steenbergen M, Paulus A. Integrated care in Europe: description and comparison of integrated care in six EU countries. Maarssen: Elsevier Gezondheidszorg; 20036.
6. Gawande AA. Quantity and quality of life duties of care in life-limiting illness. JAMA. 2016;315:267.
7. Shaw S, Rosen R, Rumbold B. What is integrated care. London: Nuffield Trust; 2011. pp. 1–23.
8. Goodwin N, Sonola L, Thiel V, Kodner D. Coordinated care for people with complex chronic conditions: key lessons and markers for success. The King's Fund; 2013. www.kingsfund.org.uk/publications
9. Dalkin SM, Jones D, Lhussier M, Cunningham B. Understanding integrated care pathways in palliative care using realist evaluation: a mixed methods study protocol. BMJ Open. 2012;2(4).
10. Lusch RF, Vargo SL. An introduction to service-dominant logic. Cambridge: Cambridge University Press; 2014.
11. Provan KG, Kenis P. Modes of network governance: structure, management, and effectiveness. J Public Adm Res Theory. 2008;18(2):229–52.
12. Valentijn P, Schepman S, Opheij W, Bruijnzeels M. Understanding integrated care: a comprehensive conceptual framework based on the integrative functions of primary care. Int J Integr Care. 2013;13.
13. Valentijn P. Rainbow of chaos: a study into the theory and practice of integrated primary care. Print Service Ede; 2015.
14. Van Der Weert G, Burzynska K, Knoben J. An integrative perspective on interorganizational multilevel healthcare networks: a systematic literature review. BMC Health Serv Res. 2022;22.
15. Van Houdt S, Heyrman J, Vanhaecht K, Sermeus W, De Lepeleire J. Care pathways across the primary-hospital care continuum: using the multi-level framework in explaining care coordination. BMC Health Serv Res. 2013;13.
16. Lambert A-S, De Beeck O, Herbaux, Macq, Rappe S, et al. Towards Integrated Care in Belgium: stakeholders' view on maturity and avenues for further development. Federaal Kenniscentrum voor de Gezondheidszorg; 2022.
17. Vargo SL, Akaka MA. Value Cocreation and Service systems (re)formation: a Service ecosystems view. Service Sci. 2012;4:207–17.
18. Saaty TL. A scaling method for priorities in hierarchical structures. J Math Psychol. 1977;15:234–81.
19. Saaty. Decision making—the Analytic Hierarchy and Network Processes (AHP/ANP). J Syst Sci Syst Eng. 2004;13:1–35.
20. Saaty TL. The Analaytic Network Process (ANP) for dependence and feedback. In: Decision making in complex environments. 2016. pp. 64–72.
21. Dolan. Isselhardt, Cappuccio. The analytic hierarchy process in medical decision making: a tutorial. Med Decis Making. 1989;9:40–50.
22. Dey PK, Subramanian H, Clegg B. Measuring the operational performance of intensive care units using the analytic hierarchy process approach. Int J Oper Prod Manage. 2006;26:849–65.
23. Lin M-I, Lee Y-D, Ho T-N. Applying integrated DEA/AHP to evaluate the economic performance of local governments in China. Eur J Oper Res. 2011;209:129–40.
24. Oblak L, Barčić AP, Klarić K, Kuzman MK, Grošelj P. Evaluation of factors in buying decision process of furniture consumers by applying AHP method. Drvna Industrija. 2017;68:37–43.

25. Petruni A, Giagloglou E, Douglas ES, Geng J, Leva MC, Demichela M. Applying Analytic Hierarchy process (AHP) to choose a human factors technique: choosing the suitable human reliability analysis technique for the automotive industry. Saf Sci. 2019;119:229–39.
26. Dorado R, Gómez-Moreno A, Cruz-Peragón F, López-Alba E. An AHP application to select software for engineering education. Comput Appl Eng Educ. 2014;22:200–8.
27. Hariharan S, Dey PK, Chen DR, Moseley HS, Kumar AY. Application of analytic hierarchy process for measuring and comparing the global performance of intensive care units. J Crit Care. 2005;20(2):117–24.
28. Harris PA, Taylor RJ, Minor B, Elliott V, Fernández M, O'Neal L, et al. The REDCap consortium: building an international community of software platform partners. J Biomed Inform. 2019;95:103208.
29. Mistiaen P, Van den Broeck K, Aujoulat I, Schmitz O, Friedel M, Genet M et al. Passende zorg in de laatste levensfase. KCE rapport 296As. 2020.
30. Cohen J, Smets. Pardon, Deliens. Palliatieve Zorg. Meer Dan stervensbegeleiding. Leuven, Belgium: Uitgeverij Lannoo Campus; 2015.
31. Keirse M, Beguin C, Desmedt M, Deveugele M, Menten J, Simoens S et al. Organisatie van palliatieve zorg in België. *Health Services Research* (HSR). 2009.
32. Integrate project. Aanbevelingen voor een betere palliatieve zorg. Memorandum Integrate Project, VUB, Universiteit Gent, KU Leuven met ondersteuning van het Agentschap Innoveren en Ondernemen. 2019.
33. Hasselaar J, Payne S. Integrated Palliative Care: INSUP-C. Nijmegen, Netherlands: Radboud University Medical Center; 2016.
34. Den Eerden H-VD, Hasselaar M, Payne J, Varey S, Schwabe S, Radbruch S. How continuity of care is experienced within the context of integrated palliative care: a qualitative study with patients and family caregivers in five European countries. Palliat Med. 2017;31:946–55.
35. Gómez-Batiste X, Mateu S, Serra-Jofre S, Molas M, Mir-Roca S, Amblàs-Novellas J, et al. Compassionate communities: design and preliminary results of the experience of Vic (Barcelona, Spain) caring city. Annals Palliat Med. 2018;7:S32–41.
36. Payne S, Hughes S, Wilkinson J, Hasselaar J, Preston N. Recommendations on priorities for integrated palliative care: transparent expert consultation with international leaders for the InSuP-C project. BMC Palliat Care. 2019;18.
37. Canada Health. Canadian Strategy on Palliative and End-Of-Life Care-Final Report of the Coordinating Committee. 2007.
38. Dudgeon D, Vaitonis V, Seow H, King S, Angus H, Sawka C. Ontario, Canada: using networks to integrate Palliative Care Province-wide. J Pain Symptom Manag. 2007;33:640–4.
39. Commonwealth of Australia. Supporting Australians to live Well at the End of Life National Palliative Care Strategy. 2010.
40. Department of Health and Children. Report of the National Advisory Committee on Palliative Care. Ireland: Dublin; 2010.
41. New Zealand Ministry of Health. New Zealand Palliative Care Strategy. 2001.
42. Lyngsø A, Godtfredsen N, Frolich A. Interorganisational integration: healthcare professionals' perspectives on barriers and facilitators within the Danish healthcare system. Int J Integr Care. 2016;16(1):1–10. https://doi.org/10.5334/ijic.2449.
43. Lynn J, Adamson DM. Living well at the end of life: adapting health care to serious chronic illness in old age. Santa Monica, CA: Rand Corp; 2003.
44. Khayal IS. A systems thinking approach to designing clinical models and healthcare services. Systems. 2019;7(1):18. https://doi.org/10.3390/systems7010018.
45. Huitema AA, Harkness K, Heckman GA, McKelvie RS. The spoke-hub-and-node model of integrated heart failure care. Can J Cardiol. 2018;34(7):863–70. https://doi.org/10.1016/j.cjca.2018.04.029.
46. Integrate project. (2019) Aanbevelingen voor een betere palliatieve zorg. Memorandum Integrate project, VUB, Universiteit Gent, KU Leuven met ondersteuning van het agentschap innoveren en ondernemen. Maart, 2019.
47. Saurman E, Lyle D. A mapping study to guide a palliative approach to care. Rural Remote Health. 2019;19:4625. https://doi.org/10.22605/RRH4625.
48. De Rycke R, Gemmel P. Strategisch management voor de gezondheids- en welzijnssector. 4th ed. Tielt: Lannoo; February; 2017.
49. Partridge A, Seah DSE, King T, Leighl NB, Hauke R, Wollins DS, et al. Developing a service model that integrates palliative care throughout cancer. J Clin Oncol. 2014;32:3330–6. https://doi.org/10.1200/JCO.2013.54.8149.
50. Popp J, Milward B, MacKean G, et al. Inter-organizational networks: a review of the literature to inform practice. Washington, DC: IBM Center for the Business of Government; 2015. pp. 93–6. https://doi.org/10.1016/j.ssci.2017.05.007.
51. Abel J. Compassionate communities and end-of-life care. Clin Med. 2018;18(1):6–8. https://doi.org/10.7861/clinmedicine.18-1-6.
52. Byock I, Sheils J, Merriman M, Collins K. Promoting excellence in end-of-life care: a report on innovative models of palliative care. J Palliat Med. 2006;9(1):137–46. https://doi.org/10.1089/jpm.2006.9.137.
53. Gatrad AR, Brown E, Notta H, Sheikh A. Palliative care needs of minorities. BMJ. 2003;327:176–7. https://doi.org/10.1136/bmj.327.7408.176.
54. Scheerens C. Integration of palliative home care early in standard care for end-stage COPD [dissertation]. Ghent: Ghent University; 2019.
55. Hermans S, Sevenants A, Declercq A, Van Broeck N, Deliens L, Cohen J, Van Audenhove C. Integrated palliative care for nursing home residents: exploring the challenges in the collaboration between nursing homes, home care, and hospitals. Int J Integr Care. 2019;19(2). https://doi.org/10.5334/ijic.4186.
56. Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. Ann Fam Med. 2014;12(6):573–6. https://doi.org/10.1370/afm.1713.
57. Luckett T, Phillips J, Agar M, Virdun C, Green A, Davidson PM. Elements of effective palliative care models: a rapid review. BMC Health Serv Res. 2014;14:136. https://doi.org/10.1186/1472-6963-14-136.58.
58. Schmidt K, Aumann I, Hollander I, Damm K, von der Schulenburg JMG. Applying the Analytic Hierarchy process in healthcare research: a systematic literature review and evaluation of reporting. BMC Med Inf Decis Mak. 2015;15:1–27.
59. Brodie RJ, Ranjan KR, Verreynne ML, Jiang Y, Previte J. Coronavirus crisis and health care: learning from a service ecosystem perspective. J Serv Theory Pract. 2021;31(2):225–46.
60. Brodie RJ, Fehrer J, Jaakkola E, Conduit J. Actor Engagement in Networks: defining the conceptual domain. J Service Res. 2019;22:173–88.
61. Voigt C. State responsibility for climate change damages. *Nordic Journal of International Law*. 2008;77:1–22.62.
62. Angus L, Valentijn PP. From micro to macro: assessing implementation of integrated care in Australia. *Aust J Prim Health*. 2018;24(1):59–65.
63. Windle A, Javanparast S, Freeman T, Baum F. Factors that influence evidence-informed meso-level regional primary health care planning: a qualitative examination and conceptual framework. Health Res Policy Syst. 2023;21(1):99.
64. Threapleton DE, Chung RY, Wong SY, Wong E, Chau P, Woo J, et al. Integrated care for older populations and its implementation facilitators and barriers: a rapid scoping review. Int J Qual Health Care. 2017;29(3):327–34.
65. Koskela-Huotari K, Edvardsson B, Jonas JM, Sörhammar D, Witell L. Innovation in service ecosystems—breaking, making, and maintaining institutionalized rules of resource integration. J Bus Res. 2016;69(8):2964–71.
66. D'amour D, Ferrada-Videla M, San Martin Rodriguez L, Beaulieu MD. The conceptual basis for interprofessional collaboration: core concepts and theoretical frameworks. J Interprof Care. 2005;19(suppl 1):116–31.
67. Thomas LDW, Autio E, Gann D. Architectural leverage: putting platforms in context. Acad Manage Perspect. 2014;28:198–219.
68. Pauli M, Marx M, Dunzer S, Matzner S. Modelling platform ecosystems. *CEUR Workshop Proceedings*. 2020;2716.
69. Parker GG. Platform revolution: how networked markets are transforming the economy and how to make them work for you. New York: WW Norton & Company; 2016.
70. Lund S, Richardson A, May C. Barriers to advance care planning at the end of life: an explanatory systematic review of implementation studies. PLoS ONE 2015;10(2).

Publisher's note