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ORIGINAL RESEARCH

Facilitators and Barriers to Multidisciplinary Teamwork in Adolescent and Young Adult Oncology Care: A Descriptive Qualitative Study

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Purpose: This descriptive qualitative study aims to deepen the understanding of the teamwork processes employed by multidisciplinary healthcare professionals caring for adolescent and young adult cancer patients and identify the facilitators and barriers influencing these teamwork activities.

Patients and Methods: Semi-structured interviews were conducted with 13 healthcare professionals working with adolescent and young adult patients with cancer in a major hospital in South Korea. The data were thematically analyzed using NVivo software (14.0), with two researchers independently coding the interview transcripts.

Results: The oncology multidisciplinary team process was identified as comprising three phases: (1) establishing teamwork during admission; (2) strengthening teamwork during active treatment; and (3) concluding teamwork and sustaining connections during care transitions. Key facilitators of teamwork included a positive team atmosphere, enhanced interdisciplinary communication, and a strong workforce. Barriers to effective teamwork were identified at the interpersonal, institutional, and national levels, including inadequate information sharing, role ambiguity, hierarchical communication structures, and limited resources.

Conclusion: Effective care for adolescents and young adults with cancer requires addressing their psychosocial needs through a well-resourced multidisciplinary team. Future research should focus on applying identified facilitators and overcoming barriers to enhance teamwork. This study emphasizes the critical role of nurses in achieving high-quality, patient-centered care.

Keywords: healthcare crew resource management, health personnel, adolescent patient, qualitative research

Introduction

Adolescents and young adults (AYA) with cancer have distinct needs compared to patients in other age groups, which can often go unrecognized and unaddressed by healthcare providers.[1] The National Cancer Institute (NCI) defines AYA with cancer as individuals diagnosed between the ages of 15 and 39 years,[2] with survivors being those who live from the time of diagnosis onward.[3] Globally, an estimated 1,300,196 new cancer cases were reported among AYAs in 2022, with an age-standardized incidence rate of 40.3 per 100,000. Among Asian countries, South Korea recorded the highest AYA cancer incidence, with an estimated rate of 65.0 per 100,000.[4] The relatively low numbers of AYAs with cancer compared to the total cancer population may contribute to the limited attention given to their specific needs. Additionally, a systematic literature review highlights insufficient progress in AYA cancer research, particularly in care coordination.[5]

AYA are at a critical stage in their physical and mental development,[6] and receiving a cancer diagnosis and treatment during this period can profoundly impact their lives. These individuals are often focused on academic achievement, career exploration, marriage, and family formation[7] while also managing the physical and emotional demands of living with a chronic illness.[8] With these pressures, AYA with cancer often experience social isolation, diminished independence, and feelings of uncertainty about their future.[9] According to the National Comprehensive Cancer Network's distress management

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guideline, a significant proportion of AYA with cancer, ranging from 20% to 62%, experience intense psychosocial stress.[10] AYA cancer survivors also face greater psychological distress, and a higher risk of psychiatric disorders compared to other cancer survivors and healthy individuals, with this distress affecting their quality of life even more than the type of cancer or treatment they receive.[11] Given the unique developmental characteristics and psychosocial stress experienced by the AYA population, it is crucial to consider their specific needs and symptoms when providing treatment and care. The limited resources available in many healthcare settings further highlight the importance of implementing AYA-dedicated programs that can foster patient-centered, age-appropriate approaches to treating AYA with cancer.[12,13]

Pediatric oncology clinics typically adopt a family-centered approach, involving both families and caregivers in the treatment plan, while adult oncology centers more on the patient as the decision maker.[1,12] Healthcare providers are beginning to recognize that existing care models may not fully address the complex needs of AYA patients; instead, a novel, patient-focused multidisciplinary approach is required.[1] Several studies have documented the establishment of programs and clinics specifically designed to the unique medical, psychosocial, and supportive care needs of the AYA population.[14,15] In the US, team-based AYA cancer care models emphasizing collaboration between pediatric and adult oncology teams have demonstrated improvements in patients' quality of life.[16] Another model focusing on care coordination among team members highlighted its positive impact on patient outcomes.[17] Additionally, Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS™),[18] is a systematic approach, an initiative by the Agency for Healthcare Research and Quality, has been successfully implemented in various hospital units, including intensive care, improving communication and teamwork.[19] Compared to pediatric or adult oncology clinics, AYA clinics have demonstrated improved outcomes for patients with distinctive and complex care needs.[7]

In addition to establishing AYA-specific programs, strong collaboration among multidisciplinary healthcare teams is essential for effectively caring for AYA with cancer.[8] Strong teamwork is particularly crucial in developing comprehensive survivorship care plans for this population. Although maintaining robust multidisciplinary team collaboration is key to addressing the complex clinical and psychosocial needs of AYA with cancer,[8] few studies have examined teamwork-based care for this population, and those that have provided only limited perspectives. There has been a growing interest in interprofessional education (IPE) in South Korea.[20–22] Initially developed in 1909 to foster cooperation between healthcare and social work professionals, IPE now includes physicians, nurses, pharmacists, dentists, and other healthcare professionals.[23] Despite the increased emphasis on multidisciplinary education at healthcare universities,[20,21] research on effective multidisciplinary teamwork in clinical practice remains limited.

South Korea's healthcare system is supported by universal health coverage under the National Health Insurance (NHI) program, which covers 97% of the population with cost-sharing ranging from 5% to 30%.[24] In policy level, Korea's Ministry of Health and Welfare has implemented initiatives such as the National Cancer Control Plan and the Regional Cancer Center Project to improve accessibility and infrastructure for pediatric and adolescent cancer treatment. However, there are no standardized protocols for long-term follow-up (LTFU) care for childhood cancer survivors (CCSs), with approaches varying widely based on clinicians' discretion.[25] This highlights the need for LTFU guidelines tailored to the Korean healthcare context.

Studies have explored several aspects of teamwork, such as the care needs of AYA cancer survivors,[26,27] fertility concerns,[28,29] and the different perspectives of physicians and nurses regarding this population.[30,31] Other studies have examined the impacts of shared care programs[32] and clinical guidelines for teamwork in cancer care.[33] However, there is a notable lack of research focusing on effective teamwork from the perspective of various healthcare professionals involved in AYA cancer care. Additionally, few studies have identified the facilitators or barriers to effective teamwork in this context. This study aimed to address these research gaps by exploring current collaborative teamwork both during hospitalization and after discharge as well as identifying facilitators and barriers to effective teamwork across the continuum of care.

Methods

Design

This study employed a qualitative descriptive method, a commonly used approach in healthcare studies for obtaining in-depth information and identifying strategies for improving interventions.[34] To ensure clarity and comprehensiveness of the methods and findings, this study follows the Consolidated Criteria for Reporting Qualitative Studies (COREQ).[35]

Setting and Sample

Data were collected at a large general hospital in the capital area of Seoul, South Korea. As the largest hospital in the country, it has 2700 beds and managed approximately 13,850 outpatient visits per day in 2022. The hospital includes a pediatric hematology-oncology inpatient unit, an outpatient unit, and a palliative care team dedicated to serving AYA with cancer. Approximately 20 diverse healthcare providers participate in team activities across the pediatric hematology-oncology outpatient clinic, inpatient unit, and palliative care services. A multidisciplinary team is established at the time of diagnosis in the hospital and continues to provide care after discharge, ensuring continuity of support through outpatient services. The palliative care team, which operates as a cooperative department centered on pediatric hematology-oncology. In South Korea, palliative care typically begins at diagnosis, regardless of disease type or timing. For instance, the X Hospital's palliative care team (Sunshine Tree), recognized under the 2021 Pediatric and Adolescent Palliative Care Pilot Project by the Ministry of Health and Welfare, offers integrated services. Their multidisciplinary team manages pain and symptoms while providing counseling, mental health support, discharge planning, and bereavement care, focusing on improving quality of life for adolescents and their families.[36]

Thirteen healthcare professionals were recruited from the hospital, representing about 65% of the relevant staff, based on recruitment numbers from previous related studies.[31,37] These participants were professionals involved in providing treatment or care to AYA with cancer (cancer diagnosed between ages 15 and 39). The inclusion criteria were: (1) professionals currently working at the study hospital where team activities are ongoing; (2) professionals in related fields who have provided treatment and nursing services to AYA with cancer (eg, physicians, nurses, pharmacists, nutritionists, social workers, rehabilitation therapists, radiology teams, and palliative care teams); and (3) participants who have collaborated with other healthcare professionals in the relevant field. Participants were selected using a snowball sampling technique, which enables the identification of individuals with sufficient knowledge and experience related to the study topic.

Data Collection

Data were collected through in-depth, semi-structured individual interviews by the first author, a female registered nurse with a PhD in Nursing. She has extensive clinical experience in pediatric oncology and has conducted qualitative research multiple times. The research purpose was explained to the participants prior to the study. Each interview began with open-ended questions, such as "Can you describe your experience in providing care for AYA patients with cancer?" Additional questions were guided by participant responses and the interview guide, including prompts like "What challenges have you encountered in multidisciplinary teamwork?" and "What factors do you believe facilitate effective collaboration in your team?" Exploratory questions such as "Can you elaborate on that?" or "When you mention…, what do you mean?" were used as necessary to deepen the discussion. The study was not pilot tested.

Due to varying participant availability, 11 interviews were conducted in person, while two were conducted online to accommodate scheduling conflicts. In the study design, we referenced literature suggesting a sample size encompassing approximately 70% of professionals in a specific field.[31,37] At X hospital, 20 professionals work with AYA cancer patients, and 65% (n=13) participated. Although some key team members (eg, physician, resident, social worker, nutritionist, pharmacist) were represented by a single respondent, data saturation was achieved. Additionally, the snowball sampling technique enabled us to identify participants with deep expertise relevant to the study.

Each interview lasted between 30 and 40 minutes, depending on the participant's willingness to continue. Only one interview was conducted per participant, with no repeat interviews. Interviews were audio-recorded and transcribed verbatim. Researchers also documented reflexive observations and took detailed notes on participants' nonverbal communication during the interview. Recruitment and data collection continued until data saturation was achieved, defined as the point at which no new information was emerging and further data collection became redundant.[38] Once data saturation was reached, data collection concluded. All participants who completed an interview were included in the study. One participant declined to take part due to insufficient time for the interview, and none withdrew from the study.

Ethical Considerations

This study was approved by the Institutional Review Board at Ewha Womans University. (No. ewha-202302-0012-01). Prior to the interviews, a preliminary meeting was held with each participant—either via telephone or in person—to explain the study's purpose, set the interview time, address questions, and obtain verbal informed consent. Participants signed and dated two identical consent forms at the beginning of the interview, with one copy retained by the participant and the other by the researcher. Participation was entirely voluntary, and participants were informed that they could withdraw from the study at any point during or after the interview without any repercussions. The interviews were conducted at locations and times chosen for the convenience of the participants. Several interviews were conducted in hospital conference rooms during the participants' lunch breaks or after their working hours had concluded. Only the participant and interviewer were present during the study, with no other individuals involved. During each interview session, the study information was reiterated, emphasizing the confidentiality of the data and the participant's right to withdraw from the study at any time without consequences. To protect participant anonymity, all names were replaced with pseudonyms and codes in the interview transcriptions and any subsequent reporting of findings. The audio recordings, transcripts, field notes, and personal information were securely stored on an encrypted, password-protected hard drive, which was kept in a locked cabinet accessible only to the primary researcher.

Data Analysis

Following each interview, two researchers (HS, JS) independently coded the interview transcripts using NVivo software (14.0). The thematic analysis began with the identification of initial codes, which formed the foundation for the coding tree. These initial codes were then collaboratively organized into broader categories that capture related concepts and patterns across the data.[39] Subsequently, these categories were synthesized into overarching themes, representing the core findings of the study. The coding tree provided a structured framework for systemically organizing and interpreting the interview data, during the entire analysis process.

Rigor

To ensure the trustworthiness of the findings, the researchers adhered to the criteria of credibility, dependability, confirmability, and transferability.[40] This study's credibility was bolstered by the researchers' substantial knowledge of the topic, their expertise with the AYA population, and their experience in conducting qualitative studies. Dependability was ensured through meticulous documentation of the study procedures, including the interview, coding, and categorization processes. Confirmability was established through intensive discussions between two researchers to verify the accuracy of the findings and codes, and by having two participants review the themes of this study to ensure there were no misinterpretations from the interviews. Finally, transferability was addressed by fully presenting the study's findings, allowing for their potential application in other related contexts.

Results

Participant Characteristics

The study included 13 participants, comprising 12 females and one male (Table 1). Among them, eight were nurses, including two clinical nurse specialists (CNSs), a nurse from the outpatient clinic, a safety nurse, a palliative care nurse, and a nurse manager. The other participants included a physician, a resident, a social worker, a nutritionist, and a pharmacist—all key members of the multidisciplinary care team. Participants' ages ranged from 29 to 53 years, with an average age of 37 years. Their clinical experience spanned five to 30 years (average 14.5 years), and their experience within the hematology-oncology department ranged from 1 to 29 years (average 9.6 years).

Participants provided detailed insights into the multidisciplinary teamwork process, highlighting the roles of essential team members and the factors influencing effective collaboration. The teamwork process in AYA oncology was described in three stages: (1) admission—establishing teamwork; (2) active treatment—strengthening teamwork; and (3) care transition—concluding teamwork and sustaining connections. These findings informed the development of a conceptual model, illustrated in Figure 1, which outlines the key components of the teamwork process. Facilitators of teamwork

Table 1 Participant Characteristics (N=13)

No.	Gender	Age	Job	Total Clinical Experience	Unit Clinical Experience
1	Female	53	Nurse (Clinical Nurse Specialist)	30 years	29 years
2	Female	37	Nurse (Palliative team)	15 years	3 years
3	Female	33	Nurse (Clinical Nurse Specialist)	10 years	5 years
4	Female	32	Nurse (Unit)	9 years	9 years
5	Female	30	Pharmacist	6 years	3 months
6	Female	38	Nurse (Injection room)	14 years	14 years
7	Male	42	Physician (Palliative team/ped. hemato-oncologist)	14 years	8 years
8	Female	28	Nutritionist	5 years	4 years
9	Female	34	Nurse (Outpatient clinic)	12 years	12 years
10	Female	39	Nurse (Safety team)	24 years	10 years
11	Female	50	Social worker	26 years	10 years
12	Female	29	Physician (Resident)	5 years	1 year
13	Female	41	Nurse (Unit manager)	19 years	6 years

Abbreviations: AYA, Adolescents and young adults; CNS, clinical nurse specialist; IRB, Institutional review board; COREQ, the Consolidated Criteria for Reporting Qualitative Studies.

were grouped into three themes: a positive team atmosphere, enhanced interdisciplinary communication, and a strong workforce. Barriers were categorized into three levels: interpersonal, institutional, and national policy. Table 2 summarizes the themes, subthemes, and representative participant quotes. Detailed descriptions of each theme and subtheme are provided in subsequent sections for further context.

AYA Oncology Team Process

Admission: Establishing Teamwork

Participants reported that teamwork efforts begin immediately upon the AYA patient's admission, whether from the outpatient clinic, the emergency department, or a referral from another institution. The multidisciplinary team typically

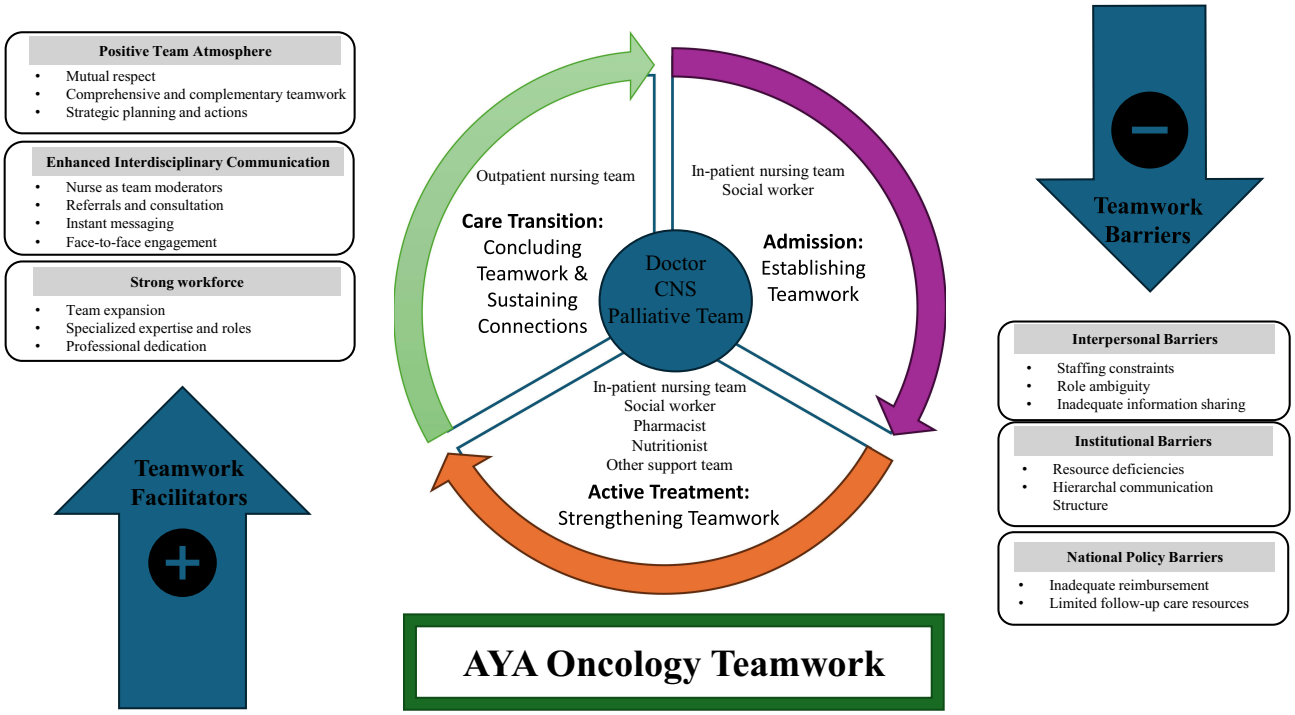

Figure 1 AYA Oncology Teamwork Process Model.

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Table 2 Summary of Themes, Subthemes, and Selected Participant Quotes

Themes	Subthemes	Selected Participant Quotes
Admission: Establishing teamwork		"When we first meet, we ask the parents what we should keep in mind during our encounter with the patient. There are times when some parents say 'my kid doesn't know much about this right now, they just think they are here for check-up' and do not want us to mention the diagnosis, or the word 'cancer'. At first, we follow/abide by their request to get closer with the child and build trust with the guardians but for teenagers, it's hard to keep it a secret forever". (#2, Palliative team nurse) "Since pediatric cancer is fundamentally a chronic disease, it requires long-term management. Once a patient is diagnosed, a multidisciplinary team is involved starting from the beginning. However, the entire team does not move all at once. The multidisciplinary team is actively involved during the treatment process". (#1, Clinical nurse specialist)
Active treatment: Strengthening teamwork		"Once a treatment plan is established through collaboration between doctor and nurse specialist, cancer treatment [chemotherapy] begins. There are various social and foundational aspects that need to be carefully considered…Social workers play a crucial role in addressing financial, psychological, and emotional needs, connecting patients with necessary resources. Nutritionists also provide vital support, particularly for dietary adjustments. Their involvement continues throughout treatment, offering guidance on nutrition and diet …" (#3, Clinical nurse specialist) "Participating in the rounds as part of the team activities in the morning allows the professor to ask me questions regarding medications while discussing the treatment direction. This is a big help in understanding the appropriate direction for the patient". (#5, Pharmacist)
Care transition: Concluding teamwork and sustaining connections		"After the treatment, the patients communicate and stay in touch with the CNS very closely, and in a way, they are closer than the professors in the department. They share a lot of situations, even to an extent where patients ask 'when should I go to school', 'what should I do with my classes?'. Things like this". (#13, Unit manager nurse) "At the end of treatment, a lot of teams actually disband. Even after it's been disbanded, the CNS continue to follow up after treatment is over. As I said, cancer requires long-term care, so new problems may arise. Because of secondary complications or things like that.For our hospital, it's possible for medical personnel to keep in touch and care or explain to them or things like that. … We let them know when they do not have to come to the hospital…Identify problems early or avoid unnecessary medical expenses…Having a professional workforce itself enables them to avoid unnecessary and avoidable hospital visits". (#1, Clinical nurse specialist)
Teamwork facilitators		
A positive team atmosphere	Mutual respect	"Opinions can be freely expressed, and discussions can occur among each other". (#7, Palliative team physician) "Even if someone is highly competent, a lack of receptiveness to communication can feel exclusionary, deterring future interactions about patient care. [However], when I feel that the person will really listen to what I have to say, it makes it easier for us to discuss the patient's condition and communicate together". (#4, Unit nurse)
	Comprehensive and complementary teamwork	"Participating in rounds allows the team to discuss treatment directions or ask me about medications, which greatly aids in determining the appropriate direction for patient care". (#5, Pharmacist)
	Strategic planning action	"We deeply consider our team's core values and discuss the necessary activities and areas of focus. Then, each specialty outlines what we will undertake throughout the year". (#7, Palliative team physician)

Enhanced interdisciplinary communication	Nurses as team moderators	"Nurses play a key role in easing potential conflicts or misunderstandings within the team. They often relay information between departments, ensuring everyone is on the same page". (#1, Clinical nurse specialist)
	Referrals and consultations	"Sometimes, referrals come not only from within our team but also from the patients themselves or their families who have heard about our services and request assistance". (#11, Social worker)
	Instant messaging	"If a patient is having a seizure, we can quickly capture and share a video via the messenger, allowing for immediate visual assessment and swift decision-making". (#4, Unit nurse)
	Face-to-face engagement	"We usually discuss and talk regularly, and if necessary, gather opinions to finalize decisions in meetings after all individual assessments [are completed]". (#8, Nutritionist)
A strong workforce	Team expansion	"The roles of this palliative care team have just started. I believe these roles need to be expanded, especially since AYA cancer patients often progress to end-of-life stages". (#10, Safety nurse)
	Specialized expertise and roles	"It's crucial to have someone who can systematically explain life-sustaining treatments and expectations to patients and caregivers, as many healthcare professionals lack comprehensive knowledge of the best approaches". (#13, Unit manager nurse)
	Professional dedication	"When a patient's condition worsens and they urgently need additional tests or consultations, we collaborate extensively, adjusting schedules and involving other teams to ensure the best possible outcome for the patient". (#9, Outpatient clinic nurse)
Teamwork barriers		
Interpersonal barriers	Staffing constraint	"Frequent staff changes mean we are constantly catching up, which is not conducive to maintaining the quality of care". (#2, Palliative team nurse) "Each new staff member needs to start from scratch, which affects the efficiency of our care and the ability to build rapport with patients". (#3, Clinical nurse specialist)
	Role ambiguity	"[The provision of] emotional support often falls between nurses and social workers, making it difficult to define roles strictly". (#2, Palliative team nurse)
	Inadequate information sharing	"Ideally, if we had enough staff and time, participating in discussions would be beneficial, but realistically, it is challenging to make time for such engagements". (#4, Unit nurse)
Institutional barriers	Resource deficiencies	"We have only ten beds, and there are times we run out of space, forcing patients to wait or even receive treatments in chairs". (#6, Injection room nurse)
	Hierarchical communication structure	"Generally, the flow of activities and communication is dictated by one person, making it impossible to have effective team interactions". (#4, Unit nurse)
National policy barriers	Inadequate reimbursement	"The administrative procedures for accessing government subsidies are incredibly complicated, placing additional burdens on our team". (#2, Palliative team nurse)
	Limited follow-up care resources	"Post-treatment, most of what we can do at the physician and nurse level is merely monitoring for treatment-related side effects. Additional support like exercise programs and community services require more robust involvement from local government and related entities". (#3, Clinical nurse specialist)

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includes members from the primary care team (physicians, CNSs, and in-patient nurses), the palliative care team, and additional support staff such as social workers.

During this initial phase, the team focuses on four key areas: diagnosing and planning treatment, initiating palliative care, addressing the specific needs of AYA patients, and involving the family in the care process. The primary care team prioritizes diagnosis and treatment strategies that align with the patient's initial treatment goals. A family-centered approach is emphasized as crucial for addressing the unique medical and psychosocial needs of AYA patients and fostering strong relationships among caregivers, patients, and families. Typically, a meeting with the patient and family is organized to understand their expectations and collaboratively plan the treatment approach. A palliative team nurse (#2) described the initial meeting among them when I meet with the patient, I start by introducing the team, that I'm a nurse part of it, and who else works for the team. We work to help patients and families adjust to the treatment process through resource links, consultation, and other activities. Then, the moms start talking. Given the patient's age, it is often challenging for patients and their families to accept the diagnosis or the prospect of death, which can hinder cooperation with the treatment plan. Upon a cancer diagnosis and appropriate delivery information to the patient and family, the palliative care team begins working with the patient and family to build a strong rapport, offering support throughout the treatment process.

Active Treatment: Strengthening Teamwork

During the active treatment phase, the team focuses on four objectives: connecting healthcare professionals, facilitating access to resources and information, implementing palliative care interventions, and evaluating hospice needs. While each team member operates autonomously, they collaborate closely to achieve shared treatment objectives, engaging in active discussions through various communication channels. Participants emphasized that multidisciplinary team meetings are essential for making joint decisions and adapting strategies as the patient's needs evolve. The palliative team physician (#7) stated, Primarily regarding patient cases, it is often challenging to establish a treatment plan independently or there may be a need for discussion regarding the diagnosis, particularly in cases where the situation is somewhat unclear. This includes patients for whom decisions about surgical methods or timing of treatment need to be made, and we engage in discussions about such patients collaboratively. The composition of the team is adjusted as needed throughout the treatment process, with additional specialists—such as surgeons, pharmacists, nutritionists, psychiatrists, counselors, fertility preservation experts, and other professionals—brought in through referrals and invites.

The palliative care team works closely with the primary care team to provide comprehensive, personalized support. This support includes resources such as financial aid, play therapy, educational programs, legacy work, wish fulfillment, and emotional support, all aimed at managing the psychological challenges associated with a cancer diagnosis. The team continuously evaluates treatment outcomes and the patient's prognosis to determine the need for hospice care. Each intervention is carefully tailored to the patient's specific conditions and emotional state, ensuring that both the patient and their family receive the most appropriate and compassionate care during this critical time. There were no regular meetings involving all the team members. However, some team members, such as doctors, clinical nurse specialists, and pharmacists, met as needed during patient rounding or consultations to address specific patient care needs.

Care Transition: Concluding Teamwork and Sustaining Connections

Participants noted that as treatment goals are met, multidisciplinary teamwork begins to lessen, with medical involvement decreasing and preparations for hospital discharge starting. A clinical nurse specialist (#1) highlighted this,…In those cases, rather than involving pharmacists, nursing teams, or surgical teams, it is often more about help providing socio-economic support or psychological after treatment. Since these activities are usually conducted on an outpatient basis, the focus shifts from intensive treatment discussions, like during hospitalization, to teams that can assist with daily recovery. This includes palliative care teams or social worker teams that can connect patients with community resources. In this phase, the remaining teamwork efforts focus on four primary aims: supporting reintegration, planning for long-term care, establishing a CNS as a gatekeeper, and monitoring for potential issues and side effects. After discharge, care continues on an outpatient basis, with a team physician, CNSs, palliative care providers, and outpatient nurses. This care team remains actively involved, offering ongoing support through specialized protocols such as outpatient-based

chemotherapy and palliative care services, which address the patient's physical and emotional needs. This continuity of care helps maintain connections between patients and the healthcare team, easing their transition back to everyday life. In oncology care for AYA patients, long-term care planning is crucial to address potential functional impairments and the lifelong psychological impacts of cancer. This was detailed by a pharmacist (#5) "Cancer requires long-term care as mentioned; new issues may arise. This is due to secondary complications that may develop later". Given the rapid physical, psychological, and social development of AYA, it is essential for the care team to strategically plan for their reintegration into the community before their discharge.

Post-discharge patients receiving outpatient-based treatment are closely monitored at an outpatient clinic. The oncology CNS plays a vital role as a gatekeeper, particularly in the post-discharge and outpatient settings. This role is crucial for monitoring patients' conditions, managing side effects, and facilitating communication among care team members. Ultimately, the CNS ensures that patients receive timely and coordinated care, helps prevent unnecessary hospital visits, and address complications early.

Teamwork Facilitators

Positive Team Atmosphere

Mutual Respect

In the complex field of AYA oncology, where diverse specialists collaborate to provide comprehensive care, the team's ability to work seamlessly across disciplines relies heavily on each team member respecting the others' expertise and perspectives. Participants reported that such respect helps cultivate an atmosphere where members feel valued and encouraged to share their insights and knowledge. A palliative team physician (#7) highlighted the importance of a team atmosphere where there is freedom to express opinion. In which "opinions can be freely expressed, and discussions can occur among each other". Team members who respect and trust each other can engage in constructive debates and discussions, enriching their collective understanding and patient care approaches. A gap in competency among members could hinder mutual communication. A respectful environment enhances team dynamics, leading to more thoughtful, informed decision-making processes.

Comprehensive and Complementary Teamwork

Comprehensive teamwork considers all aspects of care, from diagnosis to follow-up. The benefits of collaborative rounds were described as they could direct the best approach for patient care. Complementary teamwork, in addition, leverages the distinct skills of various specialists to enhance the treatment process. An oncology injection team nurse (#6) explained, we often include dispensing and supervising pharmacists when reviewing orders. [Together] we double-check dosages and administration methods, often catching easily missed details, and discuss safety issues. These two teamwork elements not only improve treatment efficacy but also help promote patient safety and satisfaction.

Strategic Planning and Actions

Participants noted that strategic planning helped guide the team's care actions. This is followed by discussion of detailed activities within each specialty. This approach ensures that all team activities align with overarching strategic objectives, enhancing patient management focus and efficacy. In practice, robust protocols and efficient communication methods support the strategic framework and are critical to ensuring rapid responses and patient safety. For example, an oncology injection nurse (#6) detailed their structured emergency response protocol, we have a systematic notification process in emergencies, where reports escalate from fellows to professors, [which is] coupled with predefined stages for handling situations like anaphylaxis, [thereby] enabling [an] effective and rapid response. Additionally, participants reported that regular interdepartmental meetings are vital for optimizing operations and patient flow. These meetings ensure ongoing collaboration and strategy adjustment to meet real-time needs and challenges. Through strategic planning and action, these multidisciplinary oncology teams found they could manage care complexities with high safety and efficiency standards.

Enhanced Interdisciplinary Communication

Nurses as Team Moderators

Most team members recognize the various roles nurses, especially CNSs, play in care delivery including acting as moderators, liaisons, facilitators, mediators, and coordinators. These roles emphasize nurses' crucial function in promoting productive interactions within the multidisciplinary oncology team. For example, the CNSs are pivotal in ensuring seamless coordination and communication across treatment phases, keeping all team members well-informed, and integrating the patient's care plan. Additionally, nurses engage with patients and families, explain complex medical procedures and care plans in understandable terms, and provide reassurance during stressful times.

Referrals and Consultations

Whether initiated by a physician or other healthcare team member, referrals and subsequent consultations between professionals enhance patient care. Physicians, typically oncologists, initiate referrals based on clinical assessments and patients' medical needs. For instance, an oncologist might refer patients to the palliative care team for symptom management or to a psychiatrist if they are struggling with the psychological impacts of cancer treatment. In contrast, non-medical referrals often originate from non-physician team members. A nutritionist (#8) said, "Our team screens for patients who might need nutritional management and initiates referrals, even without a physician's suggestion". On some occasions, patients or family requested referral or assistance as they learn about the hospital's service. Participants reported that referrals and consultations help ensure that patients' clinical and holistic needs are met, creating a comprehensive care plan that extends beyond the immediate treatment of cancer.

Instant Messaging

The study hospital has instant messaging systems to promote continuous and efficient communication among team members. These tools are used to share brief updates or report patient progress, significantly speeding up communication and consultations across departments. These tools also support multimedia sharing, which is crucial for reporting urgent patient situations. Instant messaging within the hospital setting ensures that team members are consistently informed, aligned, and prepared to deliver coordinated and timely patient care. The participants also reported that such digital communication facilitates a more connected and responsive healthcare environment, enhancing the multidisciplinary team's overall efficacy.

Face-to-Face Engagement

Despite the convenience of instant messaging, participants still value face-to-face interactions for complex decision-making and nuanced discussions. For example, a palliative care team physician (#7) described their preparatory process: "Initially, we discuss patient-related matters and insights from each discipline during table meetings before rounds". Participants noted that holding regular conferences keeps the team updated, ensures consideration of all perspectives, and promotes a comprehensive approach to patient care across disciplines. Moreover, informal verbal communications, such as hallway conversations or brief updates before and after patient rounds, enhance these structured interactions. While digital tools provide rapid and convenient communication, participants emphasized that the complex nature of oncology care also requires frequent and detailed face-to-face interactions to ensure a thorough understanding of each case and effective interdisciplinary collaboration.

Strong Workforce

Team Expansion

Participants emphasized the need to expand multidisciplinary teams to address AYA patients' needs and characteristics. For example, the formation of a hospital palliative care team—consisting of a nurse, social worker, and physician—represented a significant advance in meeting the complex needs of these patients. Such an expansion is imperative not only to increase the number of healthcare professionals on the team, but also to diversify the roles within the team to offer comprehensive and individualized support. An oncology resident (#12) commented on the need for providers who can offer emotional care, noting, "The emotional touch required for AYA patients with cancers is not easy for someone like me, who does not have much experience".

Specialized Expertise and Roles

Integrating specialized expertise within multidisciplinary teams is essential for effectively managing complex, life-sustaining treatments and institutional policies for AYA patients with cancer. Professionals such as dieticians, therapists, and hospice care professionals are needed to fill this expertise gap to improve patient care. Furthermore, participants recognized the benefits of including professionals to address the needs of younger patients (eg, play therapists and physical therapists). For example, a palliative care team nurse noted (#2), "Therapists' activities greatly help the AYA patients". Including specialized roles not only prevents team member burnout by distributing the workload, but it also helps address knowledge gaps to ensure comprehensive care coverage. Participants reported that this collaborative approach, in which each role is valued, is crucial to forming a resilient healthcare team capable of providing high-quality care at all treatment stages. Finally, participants noted that the hospital offers numerous resources to foster interdisciplinary teamwork and the acquisition of expertise, including human resource development initiatives, educational cost reimbursement, and specialized program implementation.

Professional Dedication

Participants' dedication to their patients extends across various departments helping ensure all patient needs are met swiftly and effectively. The strong willingness to provide the best care for patients reflected in the participant's fast response and extensive collaboration. A unit nurse manager (#13) reinforced this approach, noting, "Whenever we make a request, it is responded to promptly, which gives me confidence that our approach is working well". The participants' dedication not only streamlines patient care but also strengthens the healthcare team's cohesion and efficiency.

Teamwork Barriers

Interpersonal Barriers

Staffing Constraints

The participants reported that the ongoing challenges of understaffing and high staff turnover directly affected their ability to manage patient care effectively. Insufficient staff hinders nurses from allocating time to engage in team discussion. A palliative team physician (#7) noted, ideally, nurses with available time should participate in team discussions. However, realistically, due to insufficient staffing, it is challenging to allocate the necessary time for such engagements. Furthermore, a palliative team nurse (#2) indicated that constant personnel turnover aggravates this issue.

Role Ambiguity

The participants related that the lack of clear role distinctions and specialization among healthcare professionals often hinders effective multidisciplinary teamwork in oncology settings. In other words, overlapping responsibilities blur the lines of distinct professional roles. Additionally, participation in multidisciplinary activities should be more uniformly understood across different professional roles. A palliative team physician (#7) described this issue, saying "It is challenging for nurses to participate effectively in team activities due to unclear roles and limited opportunities".

Conflicts can also arise when team members have divergent care approaches to treatment decisions that can vary significantly based on disease severity and patient prognosis. Moreover, some healthcare providers narrowly interpret the notion of multidisciplinary teamwork, which effectively excludes other providers from decision-making processes. A nutritionist (#8) remarked, "Even when we propose changes to support a patient's recovery better, these suggestions are not always implemented, which can be frustrating". This comment highlights the need for greater respect for and integration of diverse professional insights. Additionally, this issue calls for staff training to enhance their understanding of each team member's role. Summing up this issue, a CNS (#1) noted, there is a real gap in doctors' understanding of what multidisciplinary teams entail, [which] impacts the smooth integration and functioning of such teams across the hospital.

Inadequate Information Sharing

Participants stated that inadequate information sharing significantly challenges effective multidisciplinary teamwork. The

lack of sufficient staff and time for discussion and engagement contributes to inadequate information sharing. Information sharing is also hindered by the fragmented nature of team interactions that often exclude key personnel from critical decision-making discussions. A pharmacist (#5) illustrated this gap noting, "Decisions about medication changes are often made without the presence of those who administer them [nurse], leading to potential errors and oversights". This lack of information sharing can result in incomplete transfers of essential information, complicating patient care and treatment continuity.

Institutional Barriers

Resource Deficiencies

In the context of institutional teamwork barriers, resource deficiencies pose substantial challenges. Many participants commented on a lack of space to provide care. This situation exacerbates privacy concerns, as procedures are often performed at the bedside, shielded only by curtains, making it "difficult for patients, especially with the noise and discomfort from nearby treatments". The lack of private space also hampers confidential consultations, as described by a palliative team nurse (#2): "In a room of six, everyone can hear everything, [which] forces family members to step outside for discussions".

Additionally, scarce resources challenge team-oriented care. An oncology resident (#12) reported, nurses are caring for nearly nine oncology patients each, similar to an intensive care unit level of attention [therefore] our current system does not support [nurses' participating in multidisciplinary teamwork]. This situation contrasts starkly with facilities for adult cancer patients that benefit from a separate hospital system and programs tailored to their needs. Such resources are conspicuously lacking in pediatric and AYA settings.

Hierarchical Communication Structure

A safety nurse (#10) described the hospital environment as "very authoritative, which disrupts the overall team dynamics, especially when one person excessively imposes their will on the team". This top-down communication style limits spontaneous and constructive exchanges among team members. In addition to complicating direct communication, the rigid reporting hierarchy also leads to inefficiencies. An oncology unit manager nurse explained (#13), our reporting system involves multiple steps—contacting the attending or on-call physician multiple times before reaching the fellow and then the professor, which makes direct reporting to the professor infrequent unless initiated by them during rounds. This convoluted process not only delays critical communications but also discourages proactive nursing staff engagement.

National Policy Barriers

Inadequate Reimbursement

Accessing national support, such as administrative procedures, can be complex and time consuming. These complexities are exacerbated by a lack of adequate medical reimbursement, as reported by a CNS (#1), If we had more substantial reimbursements, we could use our workforce more effectively. As it stands, the lack of proper reimbursement forces us to operate with a minimal staff, which is a management issue. She then elaborated, Most consultation and educational fees are so minimal that hospitals have to offer these services almost free of charge, which could be vastly improved if proper tariffs were set. These insights underscore the need for enhanced regulatory support and streamlined administrative processes to support effective multidisciplinary care in AYA oncology.

Limited Follow-up Care Resources

While essential services beyond immediate medical care, such as social and economic support, are crucial for successful patient reintegration, they are currently insufficient. Local governments and related institutions are responsible for providing the support. Echoing this concern, a social worker reported (#11), Once treatment ends, the hospital effectively provides no further services. This area would benefit greatly from formalization, although resource constraints make this challenging. These insights highlight the need for national policies to facilitate comprehensive follow-up care for AYA patients transitioning back to daily life.

Discussion

The findings from this study offer insights into the teamwork practices of healthcare providers caring for AYA patients with cancer in a South Korean hospital. Participants described the steps involved in the AYA teamwork process and identified several facilitators and barriers related to their teamwork activities. These findings enabled the researchers to develop the first model describing the optimal teamwork process from admission to discharge for AYA patients with cancer in South Korea. This model can enhance understanding of this process and inform strategies to improve care for this population. The three components identified in this study align with the IMOI (Input-Mediator-Output-Input) model,[41] a dynamic framework that captures the evolving processes in teamwork. The IMOI model's stages—forming, functioning, and finishing—parallel the phases described in our findings. This adaptive and nonlinear framework offers insights into how ideal teamwork might flow, accommodating the dynamic and changing nature of teamwork in diverse contexts.

The multidisciplinary team in this study included members from primary care, palliative care, and supporting roles. This composition differs from that described Wolfson,[16] which included disease team leads, the oncofertility team, adult and pediatric psychology leads, and a supportive care AYA champion. This difference may be attributed to this study's focus on optimizing AYA survival and enhancing their quality of life. In contrast, Johnson et al[17] described a care coordination teamwork mechanism that facilitates both task work and relational communication, enabling effective team functions. This mechanism is closely related to the function of connecting health professionals to form a cohesive team, as described in the current study.

While the current study did not solely focus on post-discharge provider teamwork, as did Dahlke et al[42] in their development of the After Cancer Care Ends, Survivorship Starts for Adolescent and Young Adults (ACCESS AYA) concept map, it did identify teamwork components and key care transition tasks. These include the reintegration process, planning for long-term care, establishing the CNS as a gatekeeper, and monitoring for potential issues and side effects. Given these initial findings, future studies are recommended to validate the AYA teamwork process during non-treatment phases and after discharge.

Facilitators of effective team activities identified in this study include fostering an atmosphere of mutual respect, understanding the basics of multidisciplinary team activities, and implementing strategic plans to maintain a positive team environment. Ricadat et al[37] also noted that successful teamwork is characterized by open-mindedness, flexibility, and trust among members. In addition to a positive team atmosphere, the role of nurses' acting as mediators can significantly improve interdisciplinary communication. Similarly, Lea et al[43] highlighted that nurses often play a central role in the care of AYA patients, acting as care coordinators among team members. AYA teamwork-based care involves various specialties, each bringing essential expertise to patient care. However, the distinct perspectives and priorities of each specialty can create confusion and a lack of clarity regarding what information should be shared.[33] In addition to the teamwork process currently practiced in the ward, participants proposed a multidisciplinary care team model led by a CNS, with clearly defined roles for all members, to address the identified challenges.

Effective communication and cooperation are essential elements of the teamwork care process for AYA patients with cancer, as they help sustain collaborative relationships among caregivers.[27] Technologies such as instant messaging systems and cooperative referral and consultation services can enhance team interactions. Leaders of multidisciplinary teams should consider clearly defining and expanding specific roles for each member, including specialists in endocrinology, oncology, reproductive endocrinology, surgery, nuclear medicine, integrative medicine, palliative care, psychiatry, fertility, psychology, and child life issues. Supporting this, Dobrozsi et al[44] emphasized that clearly defined roles within the team are crucial for managing AYA patient care.

Effective communication among healthcare providers and with patients is vital for delivering high-quality care. Miscommunication among team members can lead to confusion and place a burden on patients.[27] In contrast, clear communication and collaboration between primary care clinicians and specialists can improve survivorship care coordination, enhance the quality of care, and reduce costs.[45] This study also identified several issues that hindered team activities. At the interpersonal level, staffing constraints, role ambiguity, and inadequate information sharing were found to impede teamwork processes. At the institutional level, resource deficiencies and hierarchical communication

structures were significant barriers. Finally, at the national policy level, inadequate reimbursements and limited follow-up care resources hindered effective teamwork.

While many facilitators and barriers identified in this study are common across various healthcare departments, some are unique to the AYA context. For example, participants highlighted the need for team expansion specifically in the AYA setting, driven by the necessity for comprehensive and patient-centered care. The expansion of palliative care services and the specialized expertise required to address unique aspects of AYA care, such as oncofertility, were identified as critical. These findings underscore the importance of tailoring teamwork to the developmental tasks and psychosocial needs specific to AYA patients, which distinguish their care from that of other populations.

In this model, mutual trust and respect among specialties are vital for successful collaboration, which could help mitigate the problems associated with hierarchical communication structures. Additionally, the 4R Oncology model (the Right information and Right care for the Right patient at the Right time)[46] offers clear guidance on the information that should be discussed among members of a high-functioning AYA care team. Finally, the mediating role of nurses is essential for providing effective, collaborative team-based care. Oncology nurses acting as mediators can strengthen the connections between patients and healthcare providers, both during and after treatment. Additionally, policymakers should implement stronger regulatory support to enhance care delivery. This includes increased reimbursement for services, resources for follow-up care, and allocation of additional healthcare workers to reduce staff burden. While this study focuses on AYA cancer care, the identified teamwork processes—such as clearly defined roles, structured communication systems, and systematic care phases—are adaptable to other wards or illnesses. These elements can enhance teamwork and patient care across diverse healthcare settings.

Limitations

While this study provides practical insights into the teamwork processes of healthcare providers caring for AYA patients with cancer in a South Korean hospital, several limitations should be acknowledged. First, the study was conducted at a single major hospital in South Korea, which may limit the transferability of the findings to other settings or populations, particularly in different cultural or healthcare contexts. The specific characteristics of this hospital, including its resources and organizational structure, may not reflect those of smaller or less specialized healthcare facilities.

Second, the use of snowball sampling, while effective in recruiting participants with relevant experience, may introduce selection bias. This approach may have led to a sample that predominantly reflects the perspectives of those more actively engaged in teamwork activities, potentially overlooking the views of healthcare providers who are less involved or may hold differing opinions. Also, one person from a professional, such as a social worker, cannot stand for the whole social worker team; it could limit the result. As a result, the findings might not fully encompass the diversity of experiences present in the broader population of healthcare providers.

Third, although the study's qualitative design allows for an in-depth exploration of teamwork dynamics, the absence of detailed demographic data limits the ability to fully contextualize the findings. Understanding how factors such as age, years of experience, and professional background influence teamwork processes could have provided additional insights into the variation in perspectives among different healthcare professionals.

Fourth, the study primarily focused on the treatment and care transition phases, which means that teamwork dynamics during the pre-treatment or long-term survivorship phases were not extensively explored. Future research could benefit from examining these phases to offer a more comprehensive understanding of teamwork in AYA cancer care. Finally, while the qualitative nature of the study offers rich, detailed insights, it does not allow for the quantification of the impact of identified barriers and facilitators on teamwork outcomes. Future studies could complement these qualitative findings with quantitative research to assess the extent to which these factors influence teamwork effectiveness and patient outcomes across various settings.

Conclusion

Providing care for AYA patients with cancer is inherently complex and demands a multidisciplinary team that can address their unique psychosocial needs with a comprehensive range of resources. This study has clarified the teamwork process involved in delivering care to AYA patients, identifying both the facilitators and barriers to effective

collaboration. Key facilitators of effective teamwork include fostering a positive team atmosphere, enhancing interdisciplinary communication through technology, and maintaining a strong, well-coordinated workforce. Practical steps include regular team meetings to discuss patient care, clearly defined roles and responsibilities, and providing training to strengthen communication and collaboration. Despite these efforts, challenges such as limited resources, inadequate medical reimbursements, and unclear team roles continue to impede effective teamwork. To enhance teamwork for this population, further research is necessary to implement these facilitators in clinical practice and to explore strategies for overcoming the national, institutional, and interpersonal barriers to effective collaboration.

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