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Affordances for agency in a nature-based outdoor activity program: a qualitative study of 'Nature school' for childhood critical illness survivors and next of kin

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ABSTRACT

This study aimed to explore the experiences of a nature-based outdoor activity program for children and adolescents who have survived a serious illness like cancer, as well as their siblings. The study utilised individual semi-structured interviews (N=10) and focus group interviews (N=8) to investigate the experiences of participants, parents, and program leaders. Data was analysed using interpretative phenomenological analysis (IPA), resulting in two main themes: 1) What nature affords, and 2) Influence on the child. The various affordances in nature influenced the child in multifaceted ways: mastery experiences, autonomy, motivation, awareness, stress reduction and affect regulation, belongingness and social support. These categories are connected to the main agentic features: intentionality, forethought, self-reactiveness and self-reflectiveness. The Nature school contributes to the development of agency within children. They become more capable of self-care, and there are examples of the children transferring this knowledge to other aspects of their daily lives.

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Children; cancer survivors; nature; outdoor activity program; agency

Introduction

Advancements in research and treatment have contributed to higher survival rates among children with cancer in Europe. However, challenges such as late effects, psychological distress, and reintegration into normal life persist (Gatta et al., 2005; Pritchard-Jones et al., 2013). Concurrently, there is a growing emphasis on the quality of life for these children and adolescents following the successful completion of cancer treatment (Eilertsen et al., 2012; Erdmann et al., 2021). Many survivors encounter physical, psychological, and social difficulties that impact their quality of life (Gurney et al., 2009; Lee et al., 2023). Nature-based interventions (NBIs) show promise in addressing these challenges, although research in this area among children and adolescents remains limited (Bikomeye et al., 2022). This study aims to explore the lived experiences of children and adolescents who have survived cancer, along with their siblings, participating in the Nature school program (NS). NS involves weekly outdoor trips/excursions over twelve weeks, providing self-directed nature-based experiences and activities aimed at promoting well-being and mastery among young cancer survivors and their siblings. Furthermore, the study seeks to understand how NS contributes to the

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development of agency among participating children and adolescents, empowering them to make choices aligned with their needs and values in their daily lives.

Cancer in children and adolescents

The experience of being diagnosed with a serious illness like cancer, and undergoing intensive treatment at a young age can be both distressing and traumatic, potentially impacting the child's physical, psychological, and social health and development (Boles & Daniels, 2019; Peikert et al., 2018). After completing treatment, many individuals experience relief and a strong desire to resume their normal everyday lives. However, the transition back to life after cancer can present significant challenges. Many are at risk for late effects, which are recognized as health issues stemming from cancer and its treatment. These issues may manifest as somatic, mental, cognitive, or social difficulties (Barrera et al., 2005; de Fine Licht et al., 2017; Erdmann et al., 2020; Gurney et al., 2009; Lee et al., 2023). Gurney et al. (2009) discovered that long-term survivors were more likely to require special educational support and exhibit social struggles compared to sibling controls. Similarly, Barrera et al. (2015) noted that young survivors, faced educational and social hurdles, including special education needs and difficulties forming close friendships. Childhood cancer diagnoses often disrupt schooling and social interactions, impacting academic and social development. Which in turn can affect children's quality of life (Eilertsen et al., 2012). Lee et al. (2023) revealed heightened levels of depression and anxiety post-diagnosis in children and young adults with cancer, both acutely and over time (up to two years after diagnosis), however, the symptoms tended to decrease after 12 months. In contrast, post-traumatic stress symptoms remained elevated throughout the follow-up period. Many studies highlight post-traumatic stress reactions or symptoms also in family members (Alderfer et al., 2010; Alderfer et al., 2023; Kaplan et al., 2013; Pöder et al., 2008). The cancer experience can deeply affect both the child and their family, leading to physical and emotional trauma, unmet needs, and psychological stress (Alderfer et al., 2010; Houtzager et al., 1999; Long et al., 2018; Wilkins & Woodgate, 2005).

One of the most prevalent late effects of cancer is cancer-related fatigue (CRF), characterized by a subjective feeling of tiredness or exhaustion that persists despite rest or sleep. Late effects might become evident months, years, or even decades after completing treatment (de Fine Licht et al., 2017). CRF, in addition to late effects in general, can considerably diminish the child's functioning and quality of life (Meeske et al., 2007; Tomlinson et al., 2016; van Deuren et al., 2020; Zeltzer et al., 2009). Young cancer survivors experiencing late effects have been found to report a lower quality of life compared to healthy peers, even numerous years after going through cancer and its treatment (Eilertsen et al., 2012). These findings underscore the importance of long-term follow-up care and support for young cancer survivors, in addition to their siblings.

Numerous studies have demonstrated social challenges and lower levels of self-esteem and psychological well-being for children and adolescents surviving cancer (von Essen et al., 2000; Wakefield et al., 2009). However positive psychosocial outcomes have also been reported post-treatment, such as improved mental health and higher self-worth (Wakefield et al., 2009). The latter can be understood in the context of post-traumatic growth (Rajandram et al., 2011). Social support is one of the factors associated with increased psychological growth and subjective well-being and may thus play a crucial part in coping with cancer and trauma (Rajandram et al., 2011; Siedlecki et al., 2014). Not all traumatic experiences lead to growth. Negative effects of cancer diagnosis at a young age seem to persist for years post-treatment completion (Winzig et al., 2023), and research in this field often highlights the need for ongoing support and targeted interventions. Similarly, siblings of children diagnosed with cancer are shown to be at psychosocial risk, reporting lower quality of life compared to healthy peers, although findings are somewhat mixed (Alderfer et al., 2010; Houtzager et al., 2003; Long et al., 2018).

Meanwhile, follow-up care in Norway and many other countries typically remains confined to regular medical check-ups post-treatment completion. Consequently, this translates to a scarcity of

psychosocial follow-up care for children and adolescents surviving cancer, in addition to their potential siblings.

Beneficial outcomes of nature interaction

Several systematic reviews have been conducted to investigate the influence of nature on children and adolescents. The findings demonstrate that children's contact or interaction with the natural environment is associated with a multitude of beneficial outcomes encompassing physical, social, cognitive, and emotional aspects (Chawla, 2015; Gill, 2014; McCurdy et al., 2010; Tillmann et al., 2018). For instance, exposure to nature has been found to enhance children's attention, cognitive performance, and mood (Lindemann-Matthies et al., 2021; Norwood et al., 2019), improve their cognitive, affective, and behavioural self-regulation (Weeland et al., 2019), and potentially boost prosocial behaviour (Putra et al., 2020). The restorative potential of nature is frequently cited in discussions regarding the psychological benefits of the natural environment. While the restorative effects for adults are well-documented, there has been comparatively less research conducted on children and adolescents (Moll et al., 2022). In their systematic review, Moll et al. (2022) found benefits relating to five restorative outcomes for children and adolescents after exposure to nature: cognitive, emotional, behavioural, social and complex outcomes. Immersion in and engagement with nature has also demonstrated positive effects on self-esteem, self-efficacy, and resilience, in addition to benefits related to academic and cognitive performance (Mygind et al., 2019). A systematic review by Roberts et al. (2020) explored the impact of nature activities and found well-being benefits for younger age groups consistent with the results of Mygind et al. (2019), such as improvements in self-esteem and confidence and resilience, in addition to social benefits like improved social skills.

Research has also shown that nature exposure, spending time outdoors and engaging with nature can positively impact young individuals affected by cancer (Albers et al., 2021; Blaschke, 2017; Ray & Jakubec, 2014; Timko Olson et al., 2023). For instance, Blaschke (2017) investigated cancer patients' nature-based experiences with the aim of understanding the role of nature in the lives of these individuals, finding that nature may serve as a 'secure base' for them to navigate the challenges associated with cancer. Participants found value in connecting with nature to fulfil various needs, such as feeling a sense of normalcy and control, finding social support, gaining new perspectives, and creating meaning (Blaschke, 2017). Still, most of the research exploring the impact of nature on individuals affected by cancer concerns cancer patients and not survivors (Timko Olson et al., 2023).

Research focusing on children and nature often includes elements of play. Unstructured and risky outdoor play is associated with positive health impacts and beneficial physical and cognitive development in children, relating to physical activity, motor skills, emotional regulation, and sense of autonomy (Brussoni et al., 2015; Dankiw et al., 2020). Both challenge and risk are common elements in Forest schools (FS) (Harper, 2017), adventure therapy and wilderness therapy programs (M. Jong et al., 2021).

Nature-Based Interventions (NBI) for cancer survivors

NBIs share the common goal of utilizing natural environments to promote health and well-being, but differ in their approach, focus and practice (Shanahan et al., 2019). Forest therapy, nature-based mindfulness, adventure therapy and wilderness therapy are all examples of approaches that may be utilized. NBIs are effective in reducing or alleviating the adverse effects related to cancer and help survivors cope with challenges associated with their diagnosis and treatment (Bikomeye et al., 2022). In their scoping review addressing nature-based interventions, Timko Olson et al. (2023) concluded that interacting with nature, through indirect, incidental, and intentional ways, also seems to be

beneficial for cancer survivors, offering benefits to fatigue, anxiety, depression, stress, connectedness and more, enhancing their well-being.

Victorson et al. (2021) explored the outcomes of a nature-based programme for young adult cancer survivors in addition to caregivers, comprising mindfulness-based treks in a remote wilderness location. The results showed improvements in various domains, such as reduction in symptoms of anxiety, depression, and sleep disturbance, in addition to reports of feeling more connected to nature, peers and themselves (Victorson et al., 2021). Zebrack et al. (2017) evaluated another outdoor adventure program involving young adult cancer patients and survivors, finding that the week-long program contributed to improved self-efficacy over time. They also found that participants with symptoms of psychological distress experienced a greater increase in social support and fewer distress symptoms compared to participants with mild or no distress symptoms. Similar benefits are also reported outcomes of wilderness experiences and programs targeting young cancer patients or survivors, such as increased self-confidence and peer connection in adolescents facing cancer (Lown et al., 2023) and feelings of being able, and developing trust in one's own capabilities in childhood, adolescent, and young-adult cancer survivors (Jong et al., 2024). In their study reporting on experiences with the WAYA programme, Jong et al. (2024) found that the participants gained support and felt more connected to others, became more confident in themselves, felt more relaxed and capable of handling stress, and experienced personal growth.

Together, these findings suggest that nature may be a valuable setting for children and adolescents to experience a sense of autonomy, co-determination, and room for individual initiative, and increase their well-being. Although research suggests that nature-based programs may have positive effects when it comes to cancer-related outcomes, such as cancer-related quality of life (QoL) (Bikomeye et al., 2022), it is worth noting that most studies include adolescents or adults, and there is limited research in this area among children and young adolescents.

The Nature school

To contribute with psychosocial follow-up care for children and adolescents surviving cancer, the Nature school (Norwegian: Naturskolen) was established through cooperation between the Norwegian Childhood Cancer Society in Oslo along with Akershus, 'Confident by nature' (Norwegian: Trygg av natur) and Department for children and adolescent mental health in Hospital at Oslo University Hospital. The Nature school (NS) is an outdoor activity program situated in Oslo, Norway, with the objective of enhancing the well-being and mastery of everyday life of children and adolescents who have survived cancer as well as the well-being of their siblings. Given its organized structure, and that the main objective of the program is to enhance well-being through nature-based experiences together with others, NS may be considered a nature-based intervention (NBI).

The NS program in Oslo bears resemblance to wilderness therapy programs, sharing components like challenge/risk activities, free time/leisure activities, experiential learning, and physical movement, as identified by Jong et al. (2021). The WAYA programme is one example of a wilderness programme with the aim of supporting the health and well-being for adolescent and young adult cancer survivors. WAYA consists of an eight-day wilderness expedition experience, including challenging activities like hiking, climbing and sea kayaking in addition to mindfulness exercises (M. Jong et al., 2024). Among the similarities between the programs are the purpose of these, the target group and the use of nature. The differences are related to the structure of the programme. While WAYA includes planned group and structured activities, NS include less structured activities and greater freedom of choice for the participants to decide on the content of the trips/programme. Both programs involve a smaller group size (up to ten participants), but WAYA includes more facilitators per participant than NS. Additionally, NS includes children and young adolescents, while the WAYA programme target AYA cancer survivors aged 16 to 39 years (M. C. Jong et al., 2022).

Another key distinction between NS and wilderness programs lies in the duration; wilderness programs tend to extend over several weeks, involving an extended separation from daily life. NS comprises weekly school day trips, spanning twelve weeks, potentially making it more feasible to integrate into everyday life, especially for children and adolescents in school. This aligns the NS approach with Forest School, an outdoor education program inspired by the Scandinavian education system (Manner et al., 2020). Forest school aims for holistic development through nature experiences (Tiplady & Menter, 2020) involving regular sessions in natural settings like urban parks, natural playgrounds or woodlands. Forest schools are typically centred around a single natural space, while NS employs a variety of settings, chosen with participant input (see [Figures 1, 2 and 3](#) for illustrations).

Research questions

Although nature-based programs and interventions have shown promising effects for cancer-related outcomes, research focusing on the experience of such programs, and the in-depth meaning of these nature experiences for young cancer survivors, remains limited (Jong et al., 2021). The present study aims to contribute to the literature by analysing the experiences of a nature-based outdoor activity program for children and adolescents who have survived a serious illness, such as cancer.

An integral aspect of the methodology adopted by Safe by nature, is the commitment to voluntary participation in the NS-program. It is emphasized that children and adolescents should be encouraged to exercise self-direction as much as possible. This approach is aimed at fostering a sense of autonomy, co-determination, and room for individual initiative. The core principle is 'learning by doing,' allowing participants to experience the consequences of their choices and actions through involvement in decision-making processes. NS aims to enable them to gain a clearer understanding of their own needs, values and sources of joy, while also building confidence in implementing choices in their everyday lives that align with this. Hence, NS serves as a platform that nurtures participants' sense of agency, which may be of particular importance to this group,



Figure 1. Photo by: Confident by nature.



Figure 2. Photo by: Confident by nature.



Figure 3. Photo by: Confident by nature.

consisting of childhood cancer survivors and siblings. This study therefore has two research questions:

- (1) *How do the involved participants, parents, and trip leaders experience Nature school for children and adolescents affected with cancer?*
- (2) *How does Nature school contribute to the development of agency in the participating children and adolescents?*

Given the diverse natural settings utilised within the NS approach, a broad definition of nature was deemed appropriate for this study. Van den berg et al. (2013, p. 58) have described the natural environment as 'any kind of environment, place, or setting where vegetation and other natural elements (such as water) are dominantly present.' In this context, 'nature' refers to outdoor environments or settings characterized by the presence of natural features such as vegetation and water. As a result, spending time in 'nature' might include contact with a range of settings, including gardens, urban parks, wetlands, and forests.

Theoretical lens

Affordances

The concept of affordances has its origins in the pioneering work of James J. Gibson (1977, 1979) and his perspective on the dynamic interplay between an animal and its environment. According to Gibson (1979, p. 127), 'the affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill.' The nature of what the environment offers, or 'affords' the individual is contingent upon the environmental properties; specifically, the range of action possibilities and how these are perceived by the individual. For example, a vast field suggests that movement like running, and tumbling is possible, while a tree may present opportunities for climbing, hiding, or constructing a makeshift shelter. Consequently, affordances can be viewed as functionally significant properties that invite actions within specific environmental contexts (Heft, 1988). Simultaneously, affordances possess a relational nature, as their functional possibilities also depend on the individual's attributes, encompassing their capabilities and, crucially, their intentions (Heft, 1988). As a result, a given environment may offer distinct affordances to different individuals.

Bandura's theory of human agency

Affordances are the functional attributes of the environment that individuals can use, as such they are the foundation for taking an active role and interacting with the environment.

Children who are inpatients at hospitals seem to experience reduced self-determination and lack of autonomy (Coyne, 2006). Various approaches to self-regulation and autonomy exist, with 'agency' serving as a comprehensive classification that encompasses the relevant aspects of self-regulation and autonomy (Bandura, 2006). Arguably, this approach is better suited for a holistic exploration of the impact of Nature school in terms of enhancing the quality of life and preventing future mental health problems.

The research question focuses on how NS influences the development of agency in the participants. From a social-cognitive perspective, human agency can be understood as an individual's capability to exert control over their own life through intentionality: 'to be an agent is to influence intentionally one's functioning and life circumstances,' reflecting the view that 'people are contributors to their circumstances, not just products of them' (Bandura, 2006, p. 164). Bandura identified four core features or properties of agency: intentionality, forethought, self-reactiveness and self-reflectiveness. Collectively, these features facilitate self-development, adaptation, and change (Bandura, 2001). Intentionality pertains to the formation of intentions that encompass strategies and action plans for their realization. Forethought is described as a form of anticipatory guidance,

and concerns the ability to envision the future, and the use of these cognitive representations to guide and motivate behaviour. Self-reactivity encompasses the ability to construct appropriate courses of action and regulate one's behaviour, while self-reflectiveness concerns an individual's metacognitive capability to reflect on their own functioning and capabilities. Bandura emphasizes that efficacy beliefs play a pivotal role in human agency.

A sense of agency includes concepts such as mastery and autonomy (Bandura, 2006). As demonstrated, Mygind et al. (2019) found that nature immersion and engagement with nature enhance aspects of agency. Additionally, Ray and Jakubec (2014) discovered that nature-based interventions, such as adventure therapy and camp programs, can have a positive influence on the self-concept of young cancer survivors, boosting their self-esteem and improving their coping skills. This aligns with a scoping review conducted by Jong et al. (2021), which identified several mental health benefits among young cancer survivors participating in wilderness-related programs, including increased self-esteem, self-confidence and self-efficacy.

The theories of affordance and agency emphasize different aspects of being in the world, the first has more to do with perception, and the second more with cognition. To see what is possible in the world and exert control over the environment, we require both. Affordances are the foundation for agency, but we also need agency to utilize affordances. Multiple affordances with low specificity give more opportunities for exercising free will. For example, urban environments often contain very specific affordances, limiting what is possible to do.

Methods

Research design and the case study of the Nature school

This study employed a single case study design to facilitate an in-depth exploration of the experiences associated with the NS-program and the significance of nature within it. The study incorporates the perspectives of multiple groups of informants constituting embedded cases (Yin, 2014). To delve into the informants' experiences, semi-structured interviews were conducted and subsequently analysed using interpretive phenomenological analysis (IPA) (Smith & Shinebourne, 2012).

Participation in the NS-program is entirely voluntary, and families are required to complete a written application form to enrol. Within the NS setting, participants have the opportunity to engage in a variety of activities, play, and share their nature-related experiences with peers who have gone through similar life experiences. When comparing both similarities and differences with similar programs and contexts, the study findings may be analytically generalized.

Informants and procedure

This study incorporated three distinct groups of informants to capture different perspectives on the Nature school: 1) individual interviews with children and adolescents actively participating at NS, 2) focus group interview with the NS-program participants, 3) individual interviews with parents of the participants, and 4) a focus group interview with the trip leaders overseeing the NS-program. One rationale for including parents in the study was to gain insight into their perspectives regarding their children both before and after their participation in NS. On the other hand, trip leaders offered a distinct perspective based solely on their observations during the trips. Furthermore, adults, including parents and trip leaders, have the ability to provide a more comprehensive meta-perspective in a different terminology than the children.

The participants in NS were recruited from two separate programs conducted in mid-2020 and the beginning of 2021. The majority of the children and adolescents in the study were female. The first group consisted of five females, aged 11 to 15 years. Four of them had undergone cancer treatment, and one had a parent and sibling affected by cancer. Additionally, interviews were

conducted with the parents of these participants (age range = 45–65). The second group of participating adolescents comprised one male and three females, aged 12 and 14 years. Two had undergone treatment for cancer, while one had a sibling with cancer. One informant was affected by another serious disease, aortic stenosis. Four adults involved in the program were interviewed as well, with ages ranging from 45 to 50 years. In total, the study involved 18 informants. The first group of participants, and the trip leaders were recruited by students who contacted the participants directly, while an employee at the Norwegian Childhood Cancer Society played a role in the recruitment process for the second group of children.

Table 1 provides an overview of the informants and the type of interview conducted. It illustrates that the participating children and adolescents represented a diverse group in terms of age, type of illness, and duration of treatment, with an average age of 12.6 years. Most participants were involved in the program for one semester, though three adolescents from the first group participated for two semesters due to the initial round of NS being conducted partially digitally due to the COVID-19 pandemic. No two rounds of NS are identical, primarily because there is no fixed program structure. Instead, participants actively contribute to decisions on activities and destinations, encouraged to exercise self-direction. This approach allows for considerate flexibility in program outcomes. Additionally, seasonal transitions significantly influence activity possibilities. For instance, the initial group engaged in activities during the fall/winter period, which included skiing, ice fishing and dog sledging. Conversely, the subsequent group, participating during spring/summer months, focused more on water-related activities such as swimming, canoeing and constructing a bridge across a river. Still, it is noteworthy to emphasize that a key activity, regardless of the season, is gathering at a favorable natural location, a base, to prepare and share meals, often around a campfire or a tent stove. Furthermore, primary activities often compass ‘low-threshold’ activities such as setting up camp, carving, relaxing in a hammock, and simply being in nature. Another notable distinction is observed in the mode of interaction: the first group conducted half of their sessions digitally, with children independently exploring local natural sites, later sharing their experiences with the group. In contrast, the second group experienced these activities collectively. Nonetheless, both interventions comprised weekly trips over a twelve-week period, incorporating diverse activities in nature.

Table 1. Summary of informants and interview type.

Type of interview	Gender and age	Characteristics of the group
Participants 1/ first group	1. Female (12 years) 2. Female (15 years) 3. Female (11 years) 4. Female (12 years) 5. Female (12 years)	1. Osteosarcoma (OS), approx. 1 year. 2. Philadelphia chromosome-like acute leukaemia (Ph-like ALL), approx. 4 years. Including one relapse. 3. Next of kin to sibling and mother affected by cancer. 4. Acute lymphoblastic leukaemia (ALL), approx. 2.5 years. 5. Leukaemia, approx. 2.5 years. Participant 3, 4 and 5 participated in the program two times. All interviews were conducted digitally, with one parent present during the interview.
Participants 2/ second group	1. Female (13 years) 2. Male (14 years) 3. Female (12 years) 4. Female (12 years)	1. Acute lymphoblastic leukaemia (ALL), approx. 2.5 years. 2. Aortic stenosis (heart disease). 3. Next of kin to sibling with cancer. 4. Acute Myeloid Leukaemia (AML), approx. 1 year. This interview was done in an outside setting at the end of a NS trip.
Parents	1. Woman (45-50) 2. Woman (60-65) 3. Woman (45-50) 4. Man (45-50) 5. Man (50-55)	This group consists of parents to children and adolescents in the first group of participants; parent 1 is the mother of participant 1 etc. The interviews were conducted digitally, about their experiences with their children's participation in the program
Trip leaders	1. Woman (45-50) 2. Man (45-50) 3. Man (45-50) 4. Man (45-50)	The interview was done digitally, about their experiences with NS for the participants. All informants had attended a trip with NS

Semi-structured interview guides were developed to encourage flexibility and dialogue between the researcher and the informant. Questions were intentionally open-ended, allowing participants to express themselves freely about their experiences with the program. The interview guide was adjusted by taking into account various informant groups and types of interviews. Furthermore, questions were tailored to accommodate the age and unique circumstances of each child or adolescent interviewed. These guides encompassed inquiries concerning program activities, well-being, social interactions, and overall sentiments about the program and nature in general. The main questions focused on mastery, well-being, motivation and nature. Children were queried about their sentiments regarding participation in NS-trips, if they had learned something, their approach to overcoming challenges, and their reflections on nature and outdoor activities. Parents were prompted to share their perceptions regarding their child's preferences for NS activities, any changes indiscernible to their child post-NS participation, and their perception on the impact of being in nature together with others. Trip leaders were asked about their observations of participants' mastery experiences, their impressions of group dynamics, the perceived integration of NS experiences into daily life, and the observed impact of being in nature on the participants.

All data were collected during the period between March and July 2021. Interviews with the initial group of children took place in February around one month after their program completion, whereas the interviews with the second group were conducted midway through their participation in June, with around four NS-trips left. Due to the ongoing COVID-19 pandemic, individual interviews were conducted digitally. For the first group, visual aids, specifically two photos from their NS-trips, were utilized as probes during the interview, due to them having completed the program. Individual interviews with adolescents ranged in duration from 18 to 34 minutes, while interviews with parents lasted between 20 to 25 minutes and followed the interviews with their children. A focus group interview was conducted with the second group of adolescents, in person, in an outdoor setting, at the conclusion of an NS trip, lasting 45 minutes. A separate focus group consisting of trip leaders participated in a digital interview, lasting 75 minutes. All interviews were recorded with informant consent and transcribed verbatim by the interviewer.

Data analysis

The study employed an interpretative phenomenological analysis (IPA) approach to enable an exploration of participants' experiences at NS from their own perspective: the participant making sense of their 'lived experiences' and the researcher trying to make sense of the individual's sense-making (double hermeneutic) (Smith & Shinebourne, 2012). IPA is a participant-centred approach which enables the researcher to develop an in-depth understanding of the participants' lifeworld, and is therefore widely used in healthcare research. One seeks to obtain rich descriptions of individuals' subjective experiences, focusing on their attitudes and reflections about these. Data analysis followed the six stages outlined by Smith and Shinebourne (2012): immersion in the data, initial noting and theme identification, development of emergent themes, searching for connections across themes, repeating the process with the subsequent case, and identifying patterns across cases. This process was carried out for each informant group before seeking commonalities and patterns across the different groups. The software program NVivo 12 was employed to assist in coding and data management. The identification of themes was done through an inductive process, with themes constructed from the descriptions of the participants' experiences and subsequently considered in relation to relevant theory.

Ethical considerations

All participants were provided with digital information and consent forms, ensuring they provided informed consent to participate. Since all children and adolescents were under 16

years of age, parental consent was obtained for their involvement in the research project. Potential interview topics were provided, and participants were given the opportunity to review the interview guide before consenting. Prior to commencing interviews, children were reminded of the voluntary nature of participation and their right to withdraw from the study at any point without repercussions. Age-appropriate explanations of the study's objectives were provided to the children. Ethical approval was obtained from the Norwegian Centre for Research Data (now SIKT) before data collection. The Regional Committee for Medicine and Health Research Ethics (REC) assessed the project and determined that REC approval was not necessary. All data were anonymized, with limited information provided about trip leaders to prevent potential identification based on contextual information.

Research integrity and researcher reflexivity

To ensure the integrity and quality of this study, we have focused on providing comprehensive data and context descriptions. This approach enables readers to understand the results within the specific setting and consider their applicability to familiar settings. Additionally, we have gathered data from various groups, including both adults and children, allowing for multiple perspectives, often referred to as 'multivocality' (Tracy & Hinrichs, 2017). To enhance transparency in our analysis, we have utilized quotes to demonstrate how our findings are rooted in the informants' words.

Qualitative research involves the active participation of the researcher in constructing the results. Therefore, it is essential to maintain research integrity by acknowledging certain aspects of the researchers' backgrounds (Olmos-Vega et al., 2023). The researchers involved in this study have backgrounds in environmental psychology and possess an understanding of the significance of nature for well-being. While this expertise may have influenced our focus during the analysis process, it has also allowed us to identify important details that may have been overlooked by researchers without this specific background. Furthermore, two of the authors have clinical education. One of them works as a therapist for children with cancer and the Nature school. She was not directly involved in the analysis, but her insights were sought and considered in the discussions of themes.

Results and analysis

Analysis of the cases in this study resulted in two overarching themes and twelve subthemes. An overview of these superordinate themes and subthemes is provided before discussing the contributions of the NS-program to the sense of agency in the children and adolescents (see Table 2). Thus, this part addresses research question one, considering how the involved participants, parents, and trip leaders experience NS for children and adolescents affected by cancer, while research question two, regarding how NS contributes to the development of children's agency, is addressed in the discussion section. In the following section, the subthemes are highlighted through the use of italics.

Table 2. Summary of main themes and categories.

What nature affords	Influence on the child
Multiple opportunities for activities	Mastery experiences
Creativity and imagination	Self-confidence
Presence and sensation	Autonomy
Fascination	Awareness
A break from everyday life	Stress reduction and affect regulation
	Motivation
	Belongingness and social support

The experience of Nature school

What nature affords

This main theme relates to Gibson's concept of affordances and refers to what the environment 'offers the animal, what it provides or furnishes, either for good or ill' (Gibson, 1979, p. 127). Fjørtoft (2001) has elaborated on how the outdoor environment provides natural features that act as affordances, enabling and inviting physical movement and play behaviours. Nature, encompassing diverse environments, offers a wide range of affordances. Insights from the interviews demonstrated that nature facilitates a broad spectrum of *activities* not typically available indoors, with many participants noting that nature imposes fewer restrictions, a feature they appreciated. For instance, one participant expressed how nature allows for the possibility to 'scream, shout, and run around.' Participants also relished spending time in nature because it is 'bigger,' yielding more freedom and exciting activities.

The natural environment provided the children and adolescents with opportunities for play, discovery, and exploration, and seemed to foster independence and inspire creative ideas. This was amplified by the unstructured nature of NS and the flexible approach of the trip leaders to the unfolding events, which allowed the children and adolescents to tap into their boundless *creativity and imagination*.

Yes, we are more creative now. Because I feel like if someone says, or that no one, no one can do anything... Then someone has a really crazy idea, and then we're like 'maybe we can make that happen!' We have kind of learnt that, or at least I have, taken that part from the leaders. (Participant 4, second group)

Nature provided materials and elements that afforded multiple uses and seemed to encourage various behaviours. Loose materials like sticks, branches, stones, and cones lack specific directions or rules, providing numerous opportunities for play and interaction compared to items and equipment with more prescribed functions. Trip leaders observed that participants enjoyed engaging with nature and utilizing natural materials for activities such as building huts and crafting. While some children and adolescents appreciated the physical activity opportunities, others, particularly activities like walking, seemed to be less favoured. However, participants described such exertions as 'worth it' when arriving at new locations offering opportunities for play and exploration. Additionally, nature afforded opportunities for risk-taking, involving elements like water, heights, and the potential to get lost, which provide challenges and opportunities to demonstrate competence.

Natural settings allow for a stimulation of multiple senses simultaneously, noted by the trip leaders. The *sensation* of being fully immersed in the environment contributed to increased *presence*, which, in turn, appeared to facilitate a deeper connection with the participants' emotions. The children and adolescents appreciated sensory experiences and expressed *fascination* with both visual and auditory aspects, such as the beauty of sunlight on a waterfall and the ambient 'sounds of nature.' Some participants recounted imaginative experiences related to the places they visited, likening them to the digital game Minecraft, where one can explore various worlds, gather, build, and create, or embark on a journey of discovery and exploration. Several parents noted that NS provided their children with a much-needed *break from everyday life*, highlighting the importance of this respite, especially in light of the demands imposed by school in addition to the various sensory stimuli associated with this setting.

However, I believe this break, one day away from school has been really good for her. Like she has had one day a week to look forward to being in nature with this group and wonderful adults who are there. And she knows that she learns something useful, even though it is not something academic. This has given her a nice break during the school week, and it has also given us such a day, we know that we can look forward to this day, this day is coming soon, and then there is only one more day of school before that day and so on. (Parent 1)

Participants expressed that getting a break from school was one of their favourite aspects of the program. School was described as stressful, primarily due to the noise and 'drama' often associated

with it. In contrast, nature was portrayed as a calmer, quieter space that provided opportunities for rejuvenation. One participant remarked that 'making noise outdoors is not tiring.' Another participant mentioned anticipating tiredness before joining NS, but was surprised to find that this was not the case. This was attributed to distractions in the outdoor environment. Another participant added that one can indeed become physically tired at NS, but not 'mentally tired.' Collectively, these observations suggest that the natural environment affords a break from the demands of daily life, offering positive distractions that allow the mind to wander and promote restoration. This is considered to be of specific importance for this group, due to the fact that fatigue is recognized as one of the most prevalent late effects of cancer, affecting children and adolescents' quality of life (Tomlinson et al., 2016).

Influence on the child

This main theme encompasses aspects of how nature's affordances influence the participants. Nature seemed to present natural challenges and activities that the participants learned to master, essentially serving as a setting that fostered mastery experiences. Many of the children and adolescents shared instances where they were challenged, tried something new, or encountered difficulties, such as during dog sledding. These challenges often resulted in feelings of joy and pride when they ultimately succeeded.

Furthermore, an essential aspect of the NS approach is that trip leaders largely encourage participants to try things for themselves, rather than completing tasks for them or steering them in a particular, desired direction. Mastery experiences were particularly significant for this group, many of whom had previously experienced serious illnesses, potentially leading to negative experiences related to their body's health, such as dependence on others or an inability to participate in activities that other youngsters can. NS emphasizes that the children and adolescents are now healthy, aiming to provide them with experiences in line with this, helping them build trust in their bodies and their ability to make assessments and overcome challenges.

But now she sees for herself that her body is capable of coping with a lot outside, despite the physical impairment. So even though she is reminded, perhaps quite often, that it has some limitations, she can see that it still works. (Parent 1)

According to parents, many participants became more confident after participating in NS, indicating that the program supports the development of *self-confidence*. Trip leaders observed expressions of pride in response to the mastery of challenges and outdoor skills, such as building fires, constructing camps, using axes, and crossing rivers on fallen tree trunks. Feelings of pride and confidence were also evident in the participants' statements when sharing their experiences and highlighting what they had learned at NS.

The NS approach is characterized by few limitations and rules, with the intention of gradually fostering *autonomy and independence* among participants. All children and adolescents commented on the absence of strict rules, which they found exciting. At the same time, this was something they were unfamiliar with; in the initial phase of the program, participants often sought help from adults and asked for opinions or permission before engaging in activities, according to both the trip leaders and the participants themselves. However, as the participants were encouraged to act autonomously and given considerable freedom, they gradually became more independent and the trip leaders thus assumed a less active role. NS emphasizes that participants should make judgments based on consideration, prompting them to assess whether their actions are considerate toward nature, themselves, and others. This encouraged the children and adolescents to actively reflect on the consequences of their actions and decisions, revealed in interviews with both the participants and the trip leaders, which resulted in increased *awareness* of consequences within the children and adolescents.

What is different is perhaps that we learned a couple of things there like being considerate of others, and first you must think 'is this considerate of me and is this considerate towards others.' And then I have learned much more about making my own choices, and yeah. (Participant 4, first group)

Participants also appeared to become more aware of their own needs, thoughts, and aspirations, along with gaining an understanding of their personal boundaries, contributing to the development of *self-awareness*. For instance, some trip leaders noticed that participants developed clearer preferences as the program progressed, which seemed to result from actively communicating their feelings, thoughts, and desires, learning to 'check in' with themselves and assess their own needs, in addition to being considerate towards others. Nature appeared to serve as a dynamic learning arena for this purpose, as it presents unforeseen circumstances compared to restrictive indoor settings with limited variation. Spending time in a natural environment necessitates constant assessment and adaptation, such as building shelters or starting fires to stay warm and dry in changing weather conditions. This is described by adults as a form of self-care, allowing participants to become familiar with their surroundings and the needs of themselves and others. Awareness and understanding ones' needs and desires can be thought to help the participants to better handle challenges in everyday life. The participants also expressed that things will be different after NS as a result of everything they have learned. One participant stated that he believed everyday life will be 'much easier' as a result of 'learning to be considerate of oneself.'

Trip leaders reported that nature seemed to positively stimulate participants' senses, leading to lower levels of arousal and fewer negative emotions, indicating *stress reduction*. Many children and adolescents expressed positive emotions when spending time in nature, such as joy, pleasure, and interest. Trip leaders described that participants were motivated going on trips with NS. The trips were often described as the highlight of the week, with participants eagerly anticipating it. Being in nature and engaging in outdoor activities together appears to enhance participants' *motivation*. When asked about their anticipations regarding NS, participants expressed enthusiasm in relation to the activities offered, with descriptions of these being different than 'regular' leisure activities. Their descriptions suggest that the latter are perceived as brief, highly structured, and often individually or competitively oriented. Whereas NS is described as a place that affords ample time and opportunities to do things together, in addition to influence what happens. Some participants perceived a contrast between NS and regular school, especially in terms of excitement and anticipation. One participant added that she enjoyed NS because she could still learn without being at school. Several parents noted that NS trips positively affected their children's moods. One father attributed this to his daughter's break from screens, while a participant believed that she would otherwise spend her evenings on her smartphone, which she found tiring. Many participants, however, believed that spending time in nature was helpful when feeling fatigued, both mentally and physically.

It is kind of like an open place to be that does not really set such high ambitions or demand much from you, I would almost say. Which means that you can be a bit open and curious and come up with things on your own. It is not so performance driven, unlike many other settings. There is something about it that makes it very... Firstly, because all the senses are getting pleased, you know, such as sounds and smells and... Which actually calms the body, and makes you feel quite good, I think. (Trip leader 1)

The interview data indicated that participants employed various *affect regulation* strategies, including distraction, withdrawal, socialization, and engaging in enjoyable activities. Several reported engaging in distracting activities if they felt sad or angry during an NS trip, such as taking shelter under a tarp or jumping on a trampoline, or simply redirecting their thoughts and thinking about something else. Most children and adolescents expressed a need for some alone time if feeling down, however some sought comfort from others, indicating that NS and its surroundings offer flexibility for interaction. One participant described that she would disengage from the situation and choose to spend time with the dog, finding it a source of considerable joy. Several participants employed regulation strategies that involved interacting with their physical surroundings, which in this study implies various natural settings. Research has demonstrated that exposure to nature can

potentially influence the regulation of emotions, such as facilitating an increase in positive emotions while diminishing negative ones (Johnsen, 2011). These findings align with the insights of the trip leaders, one of whom observed that nature appeared to make it easier for the participants to get in touch with their feelings, and even served as a means of distraction when negative emotions arose. Some described how the participants engaged with the environment to regulate their emotional state, such as sitting on a rock to reflect in private before rejoining the group.

In addition to appreciating the outdoors, the social aspect was highly valued and emphasized by parents, trip leaders, and participants alike. A consistent finding was that sharing nature experiences and being part of a group were significant for the children and adolescents, contributing to a sense of community and being 'equal.' Several parents pointed out that cancer had affected their child's social life due to their absence from social events during treatment, and difficulties in returning to such activities after extended periods of absence. Some experienced limitations due to late effects like fatigue, while others faced challenges in social participation due to missed developmental milestones. One father highlighted social challenges as the primary hurdle following his daughters' illness, attributing this difficulty to her early diagnosis, which necessitated prolonged periods at home or in the hospital, adhering to strict protocols and procedures. This separation from peers in kindergarten impeded her ability to develop interpersonal skills. One of the children recounted prior struggles in the classroom, resulting in her withdrawal from peers at school. However, she experienced that her situation improved through NS participation, where she received assistance with overcoming difficulties, such as problem-solving discussions. This observation is echoed by both parents and trip leaders, who emphasize NS's role in fostering social competence in participants, including the cultivation of self-esteem, empathy, assertiveness, and prosocial behaviour. Here, the flexibility provided by the environment and the nature of the program seems to be a strength, giving the participants the opportunity to figure things out on their own.

So, what we feel about Nature school, is firstly, that she has become part of a group, and she has been feeling equal. Also, she has become skilled at, yes, playing with others and even taking on leadership roles and yes. Resolving conflicts. (Parent 4)

Participants and their parents also emphasized the importance of being together with others who shared similar experiences, as they could relate to and understand one another, fostering feelings of *belongingness and social support*. One girl described this as a special bond among them, while another noted that the friendships formed during NS would endure even after completing the program. Meeting others with comparable experiences can facilitate participants in articulating and validating their emotions while also normalizing them. Peer connections are forged through interactions with others who have undergone similar adverse life events. Many participants emphasize the sense of community and interpersonal relationships as the most appealing aspects of NS. NS appears to evolve into a supportive social network where participants feel comfortable discussing their own circumstances and engaging in collective projects and activities. Simultaneously, NS serves as a 'sanctuary' where the children and adolescents can divert their thoughts, live in the moment, and temporarily set aside everyday worries.

Discussion

The primary aim of this study was to investigate the experiences of Nature school (NS) as a program for children and adolescents affected by a serious illness, in this case mainly cancer. To achieve this, the perspectives of the participants, their parents, and the trip leaders were included. To summarize, the affordances of nature support creativity and imagination, provide multiple opportunities for activities, experiences of presence, sensation and fascination, and offer a much-needed break from the demands of everyday life. These affordances, combined with the NS approach, appear to facilitate mastery experiences, self-confidence, autonomy, self-awareness, motivation, stress reduction and affect regulation, in

addition to a sense of belonging and social support among the participants. Our findings suggest that NS is perceived as a respite from everyday life and stresses associated with the burdens of cancer, and nature as a calmer space where the body relaxes, and positive emotions occur. This supports previous research describing nature as providing opportunities for stress reduction, relaxation, rejuvenation and self-reflection (Albers et al., 2021; Timko Olson et al., 2023).

Similar to the findings of Blaschke (2017), our results suggest that nature may be used to fulfil various needs associated with cancer, such as feelings of normalcy and control and social support. Like several other nature-based programmes, the social aspect is highlighted, with outcomes like an increase in social support, peer connection, and improved social skills (Lown et al., 2023; Victorson et al., 2021; Zebrack et al., 2017). In our study, programme participation was found to promote a deeper connection to oneself and others, similar to the findings of Victorson et al. (2021), which is found to be helpful in coping with the challenges associated with cancer (Bikomeye et al., 2022; Timko Olson et al., 2023). Other common outcomes of nature interaction and NBIs are improvements in self-esteem, self-confidence and self-efficacy (M. Jong et al., 2024; Lown et al., 2023; Zebrack et al., 2017), also identified in our study. Similarly to the results by M. Jong et al. (2024), we found that through the freedom to explore, be challenged and take risk in nature, the children learned how to trust themselves, developing an understanding of their competencies and capabilities, ultimately gaining a sense of self-confidence. An important difference between NS and most other nature-based programs is nevertheless the unstructured nature of the former, where emphasis is placed on acting autonomously and self-directed while the trip leaders aim to intervene as little as possible. We believe this to be an important part of the program that contributes to the development of agency in the participants, and that this is of specific significance for children affected by cancer, that may have previous experiences with reduced self-determination and lack of autonomy from being hospitalized (Coyne, 2006). Taken together, our results suggest that NS is a promising approach to supporting the needs and well-being of young cancer survivors. In this study, we have also attempted to delve deeper into the analytical details compared to previous research, by analysing how NS contributes to various components of agency. The next part will address research question number two, by discussing how NS contribute to the development of agency in the participating children and adolescents.

Nature school's contribution to the development of agency

We found that several of the subcategories within the main category 'Influence on the child' relate to the four components of agency identified by Bandura (2001, 2006); intentionality, forethought, self-reactiveness, and self-reflectiveness. The data material provides examples of how nature is used to develop the children's agency. We will further discuss each of these properties through which, according to Bandura, human agency is exercised.

Intentionality

Intentionality entails forming intentions that encompass strategies and action plans to realize them (Bandura, 2001). Nature seems to stimulate participants to be independent and proactive, due to the unstructured nature of the outdoor environment which offers a wide range of possibilities compared to more organized indoor settings. Similarly, the NS approach, with its minimal restrictions, provides participants with flexibility and the opportunity for spontaneous activities. Beyond mere involvement in decision-making, children and adolescents are encouraged to make independent choices and decisions, eventually making most assessments and decisions on their own. At the beginning of each trip, the group discusses their goals for the day; what they want to do or want to achieve, necessitating active participation and the formation of intentions and action plans.

Forethought

Forethought, as described by Bandura (2001), involves the ability to make thoughts about the future and allowing these cognitive representations to guide and motivate behaviour. In addition to forming intentions related to their NS experiences, participants are encouraged to reflect and visualize their everyday lives, including their goals and how to achieve them. Trip leaders note that the sensory impressions in nature make it easier for participants to connect with their emotions and envision their life goals and desired changes because all senses are activated. Participants are also prompted to reflect on their action plans during trips, such as starting a fire in dry conditions or crossing a frozen lake. Active engagement and an awareness of consequences further allow for an understanding of behavioural outcomes.

Self-reactiveness

Self-reactiveness, according to Bandura, encompasses the ability to construct appropriate courses of action and regulate one's behaviour. It involves engaging in something that bring satisfaction, enjoyment, and a sense of self-worth while avoiding things that lead to feelings of shame and guilt (Bandura, 2001). Participants experienced being more present outdoors, which not only made it easier to get in touch with their own feelings, but also improved their ability to express, communicate, and regulate these. They also became increasingly aware of their preferences and personal boundaries. Being aware of what brings contentment may facilitate the management and regulation of appropriate courses of action. Thus, self-regulation is an essential part of this agentic property.

Participants were not restrained or controlled by trip leaders or the environment: they exercised self-control and adjusted their behaviour as they saw fit. One participant drew a comparison between NS and more structured activities and organized programs, expressing that 'in sports and such, there is a program that must be followed, whereas here, it is more about asking ourselves, "what do we want to do?"' Another added that at NS, they enjoyed the freedom and opportunity to actively shape the course of events. This differs from more organized settings, and further seemed to contribute to a sense of ownership of their actions and decisions: they began to feel more in control. This sense of ownership contributed to their growing sense of control and confidence. Both nature itself and the nature of the program supported flexibility in interactions with the physical environment and the group, promoting self-reactiveness. Self-reactiveness may also be developed through the participants' experience of being able to engage in affect regulation strategies and stress reduction activities, because it makes it easier to recall such strategies in other situations in life.

Self-reflectiveness

Self-reflectiveness is described as the individual's metacognitive capability to make reflections about their functioning and capabilities (Bandura, 2001). Trip leaders aim not to intervene but rather allow participants to take initiative, make decisions, and gain mastery experiences. This approach means that most of what transpires at NS arises from the ideas and choices of the children and adolescents themselves. This empowerment fosters feelings of competence, control, and confidence in their ability to influence the course of events. Trip leaders observed an enhancement in participants' self-efficacy during the trips, as they gradually gained more confidence in themselves, their skills, and their knowledge. For example, with an axe, participants who were initially unsure of its use, soon began independently gathering logs and splitting firewood.

While they are encouraged, to a significant extent, to express their opinions and ideas, less focus is placed on prompting participants to reflect on their own functioning concerning the events occurring during trips. Instead, the emphasis is on enabling them to 'own' their moments and emotions. Rather than providing feedback or commenting on their behaviour, the trip leaders aim to convey recognition in other ways, such as through non-verbal cues like body language. While they do not explicitly encourage participants to engage in self-reflection regarding their functioning during trips, both parents and the children and adolescents themselves expressed that their mastery experiences at NS positively impacted their everyday lives.

Discussion of limitations

The voluntary nature of the NS-program, implies that only children who have an affinity for nature and a desire to spend time outdoors are more likely to apply for participation. Consequently, the perspectives of children who lack experience with or interest in nature, and spend more time indoors, may be underrepresented. Additionally, the children participating in this study had varying levels of prior exposure to nature, with some being entirely new to the natural environment. Other limitations pertain to the interview guides, which did not include questions addressing negative aspects of experiences in nature or at NS. Furthermore, the trip leaders, who served as informants in this study, are also involved in the implementation and development of the NS initiative. This dual role may introduce a potential bias, as they might have a vested interest in receiving positive evaluations of the program.

It remains unclear which components of NS are responsible for the beneficial effects observed in this study. Both the natural environment and the program's methodology, along with the trip leaders' approach, may contribute to the participants' experiences. It is essential to recognize that nature is just one of the elements influencing the participants, and a question arises as to whether similar outcomes could be achieved in a different setting, such as hiking with family members.

Conclusions

Main conclusions

The main objectives of this study were: 1) to examine the experiences of NS as a program for children and adolescents affected by cancer, and 2) to focus on how participation affects their sense of agency. Both the NS-program's approach and the natural setting itself seem to provide the time, space, and freedom for participants to act in an agentic manner. The data reflect examples of all four components of agency according to Bandura (2001): intentionality, forethought, self-reactiveness, and self-reflectiveness.

Experiences of agency stand in contrast with times of illness and a lack of control over one's body and circumstances, including hospital admissions, procedures, and treatment. Through minimal adult intervention and experiences with mastery and independence in an environment that provides less structured affordances, NS contributes to a sense of agency and control. Participants encounter increased freedom in nature, where multiple affordances allow for diverse interactions. The ever-changing nature of the environment prompts the children and adolescents to adapt, assess situations, and ultimately trust their judgment and that their bodies are healthy and capable. The emotional affordances of nature facilitates introspection and interpersonal communication, making it easier for participants to connect with their own feelings, as well as communicate with others. Consequently, they develop a heightened awareness of their desires and needs. This enhanced sense of agency and control enables them to focus on their current health status and their capacity to influence and achieve desired outcomes.

Further research

While this study focuses on NS as a program for childhood critical illness survivors and their next of kin, the initiative originally targeted all children and adolescents seeking change, joy, and motivation in their daily lives. Therefore, future studies may benefit from including comparison groups of individuals without cancer to explore similarities and differences. Additionally, studies could incorporate follow-up programs conducted in indoor or urban settings as control groups to investigate the impact of the physical environment.

NS for young critical illness survivors and next of kin is relatively new, and the groups included in this study were either recently completed with the program or in the midst of it

during the interviews. Consequently, larger-scale studies will only be possible in the future but may provide valuable insights into experiences and understanding of long-term outcomes resulting from participation.

Note

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No potential conflict of interest was reported by the author(s).

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