



# The therapeutic potential of bedside art observation in hematologic cancer inpatients: a randomized controlled pilot study

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## Abstract

**Purpose** Prior research has suggested that art-based interventions may reduce anxiety in cancer patients and enhance dialogue in the healthcare setting. Through implementing *Art at the Bedside*, an art-based hospital visitation program, we sought to examine whether dedicated art observation sessions, and varying formats (with and without guided discussion), could have therapeutic effects on cancer patients' mental wellbeing.

**Methods** This randomized controlled pilot study evaluated the effects of bedside art observation on anxiety in a sample of 73 hematologic cancer inpatients. We compared state anxiety, as measured by an abbreviated form of the Spielberger State-Trait Anxiety Inventory (STAI Y-6), across three groups (participants who observed an electronic selection of artwork with and without guided discussion, and a control group that did not engage in either dedicated art observation activity).

**Results** We found that mean anxiety scores were significantly lower among those who participated in guided art observation, compared to those who did not (8.92 versus 12.1, scored on a scale of 6 to 24,  $p=0.009$ , with a medium effect size ( $\eta^2=12.7$ )). The majority of participants who engaged in art observation felt that the activity provided positive distraction (85.7%) and decreased boredom (79.6%), and many noted that it reduced feelings of anxiety (46.9%) and depression (24.5%).

**Conclusion** These findings suggest that bedside art observation, particularly with guided discussion, may be a promising complementary therapy for reducing cancer-related anxiety and improving the patient experience in the inpatient hematology/oncology setting, and would benefit from further inquiry.

**Keywords** Anxiety · Art · Cancer · Hematologic neoplasms · Inpatients · Oncology

## Background

*Art at the Bedside*, a hospital visitation program initiated at the University of Rochester Medical Center (Rochester, New York), lies at the intersection of hospital chaplaincy and museum education. Distinct from the decorative placement of artwork in hospital rooms and hallways, *Art at the Bedside* was designed to utilize artwork as a springboard for conversations with patients [1]. The *Art at the Bedside* experience is highly individualized, inspiring responses ranging from silent observation to the sharing of personal reflections,

and sometimes, exploration of difficult topics through a metaphorical lens. Anecdotal impressions of the program have suggested that it may confer a range of benefits to patients: diversion, distraction, an antidote to boredom, reminiscence, and facilitation of patient communication about illness [1]. Given its flexibility as a therapeutic tool that promotes the exploration and expression of patients' various emotional needs, the program has been applied in various hospital settings, including acute inpatient rehabilitation [2]. Of note, this program is distinct from the practice of *art therapy*, which is an art-making process facilitated by professional therapists with distinct treatment goals [3].

Bearing in mind the emotional consequences of a cancer diagnosis, we elected to implement the *Art at the Bedside* program with cancer inpatients. The benefits of art therapy in improving quality of life, anxiety, depression, and fatigue in cancer patients have been well described [4, 5], and there is long-standing evidence that *art viewing* can improve mood and promote wellness in various patient populations

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[6, 7]. Prior studies demonstrated that art installations may improve cancer patients' perceptions of the hospital environment [8] and reduce anxiety and depression [9]. Similarly, art observation therapy has been shown to prevent increasing fatigue during the course of cancer radiotherapy and promote patient expression of emotions [10]. Despite these associations, there remains limited research surrounding the therapeutic potential of dedicated art observation sessions, and particularly, their impact on anxiety in cancer inpatients.

The health benefits of discussions surrounding artwork have been better described in healthcare settings outside of cancer treatment. Quaker educator Parker Palmer initially described a propensity for emotional vulnerability and self-awareness when discussing topics metaphorically, through embodiments (such as poems, pieces of music, or artwork) he termed "third things" [11]. This pedagogical approach of using images as conversational mediators has been successfully applied in various medical teaching settings, and has been shown to promote dialogue between healthcare providers and enhance providers' understanding of patient illness [12–14]. When researchers in France brought reproductions of artworks from the Louvre Museum to patients hospitalized on rehabilitation, geriatric, and palliative care services, they found that small group guided art discussions decreased patients' anxiety, with many expressing a desire to continue the experience with a caregiver [15].

In light of evidence suggesting that art-based interventions may reduce anxiety in cancer patients and facilitate productive conversations about illness, we speculated whether the therapeutic effects of art viewing could be enriched with guided discussion—as intended in the original *Art at the Bedside* program. To address this research gap, we designed a randomized controlled pilot study to assess patients' experiences observing an electronic selection of artwork and evaluate whether there is an association between art observation and anxiety. We hypothesized that art observation with guided discussion would be associated with lower anxiety compared to independent art observation, and that both interventions would be associated with lower anxiety compared to no art intervention.

## Methods

### Participants and setting

Study participants included adults aged 18–89 who were inpatients on a Blood and Marrow Transplant Unit at a comprehensive cancer center in Western New York. Study eligibility included a diagnosis of a hematologic malignancy (e.g., leukemia, lymphoma, multiple myeloma, or myelodysplastic syndrome) and permission to see visitors by nursing staff based on isolation status. This study was approved by

the Institutional Review Board at the University of Rochester Medical Center (STUDY00005403) and was conducted from October 2020 through April 2021.

### Procedure

In preparation for the current study, an electronic collection of artwork was curated (by author SD) from Artstor (a database of artwork for educational and academic use) and subsequently organized into eight themes based on subject matter: angels, animals, childhood, clouds, flowers, seasons, trees, and water.

Following recruitment and informed consent, participants were randomized into one of three groups (guided observation, independent observation, control group) via an online research randomizer tool (randomizer.org). Participants assigned to the guided observation group engaged in a guided discussion format characteristic of the *Art at the Bedside* program. In a 30-min session, participants perused the image library on an iPad, with a facilitator (author EG) guiding them in observation of artwork. At the start of each session, participants selected one of eight themes to begin viewing, which produced a library of related images. There between 8 and 22 images per theme, with a total of 123 images available for potential viewing (cited in Online Resource 1). Sessions followed each participant's preferred pace, and participants were free to choose other themes at any point. The facilitator asked open-ended questions and followed participants' lead, encouraging them to share what they noticed about each artwork, as well as emergent thoughts, emotions, and memories.

Program implementation was facilitated by a student physician with an art interest but no formal art history education. The facilitator did not undergo formal training in preparation for the current study, but rounded with a chaplain with an art history background who regularly employed the *Art at the Bedside* program in the context of hospital-based spiritual care [2]. The facilitator shadowed the chaplain for ten 30-min encounters over a 1-month period and received brief didactic training about the process. The present study reframed this practice in a secular context.

Participants assigned to the independent observation group were provided with an iPad containing the same selection of artwork, as well as instructions on navigating the image library. Participants were given 30 min to peruse the artwork without any guidance. Participants in both groups (guided observation and independent observation) were asked to complete an anxiety survey (Online Resource 2) and a program evaluation survey (Online Resource 3) following the 30-min sessions. Participants randomized to the control group did not participate in either art observation activity, but completed an anxiety survey following consent.

## Measures

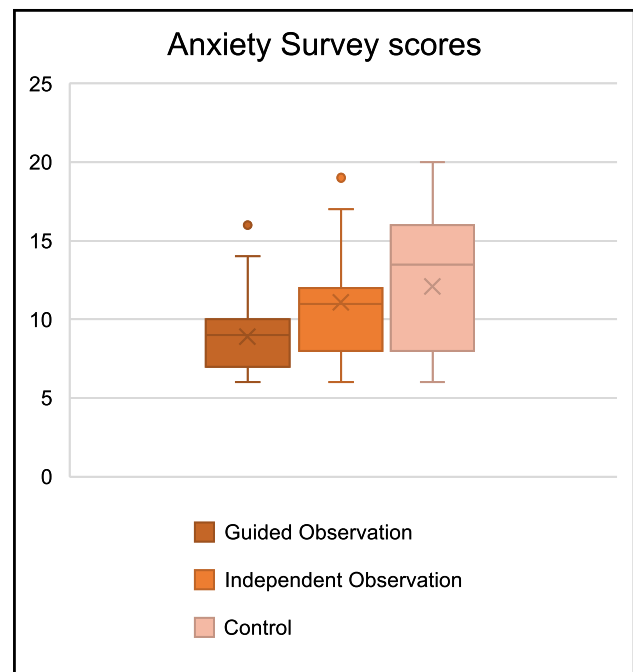
We measured anxiety with a tool modeled after the six-item short form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI) [16]. The widely utilized STAI Y-6 [17] estimates state anxiety, or how someone is currently feeling (compared to trait anxiety, or anxiety proneness), and was selected for its brevity, previously established reliability, and evidence of validity. The survey contained three anxiety-present statements and three anxiety-absent statements, which participants rated according to their feelings at time of survey completion. Responses were scored on a 4-point Likert scale, yielding a total score ranging from 6 to 24, with higher scores indicating greater anxiety. For participants assigned to the two experimental groups (guided and independent observation), we also administered a program evaluation survey (Online Resource 2) that asked questions surrounding perceptions of the activity, whether participants would engage in the activity again, and the types and number of artwork themes viewed. Participants were also given an opportunity to provide narrative comments about their experience.

## Statistical methods

Utilizing analysis of variance and chi-square, we examined potential differences across study groups and compared the effect of the study intervention on participants' anxiety scores. To further test study hypotheses, we used a generalized linear model to examine the effect of study group on anxiety score, adjusting for age and gender. In a subsequent model, we examined the effect of an interaction between study group and gender, comparing models using a likelihood ratio test. All study analyses were performed using Stata version 14.2 (Stata Corporation, College Station, TX).

## Results

Characteristics of the study sample ( $n = 73$ ) are displayed in Table 1. Study participants averaged 56.5 ( $SD = 11.5$ ) years old, and consisted of slightly more females (54.8%). Randomization resulted in the assignment of 24 participants to the guided observation group, 25 participants to the independent observation group, and 24 participants to the control group. The randomized groups were similar in age ( $F(2, 70) = 0.00$ ,  $p = 0.99$ ) and gender ( $\chi^2(2, 73) = 0.50$ ,  $p = 0.80$ ) (Table 1). With respect to anxiety, study participants had a mean score



**Fig. 1** Plot of anxiety survey scores (based on the six-item short form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI Y-6), scored ranging from 6 to 24, with higher scores indicating higher anxiety) among participants in the guided observation, independent observation, and control groups

**Table 1** Sample statistics ( $n = 73$ )

	All participants	Guided observation group	Independent observation group	Control group	$p$
$n$ (%)	73 (100.0)	24 (32.9)	25 (34.2)	24 (32.9)	-
Age (years), mean ( $SD$ )	56.5 (11.5)	56.5 (10.4)	56.6 (11.5)	56.4 (12.9)	.990 <sup>a</sup>
Gender, $n$ (%)					
Female	40 (54.8)	13 (54.2)	15 (60.0)	12 (50.0)	.800 <sup>b</sup>
Male	33 (45.2)	11 (45.8)	10 (40.0)	12 (50.0)	-
Anxiety, mean ( $SD$ )	10.7 (3.7)	8.9 (2.7)	11.1 (3.4)	12.1 (4.3)	.009 <sup>a**</sup>

$SD$ , standard deviation

<sup>a</sup>Chi-square exact test

<sup>b</sup>One-way ANOVA

of 10.6, on a scale of 6 to 24 (Fig. 1). Participants in the guided observation group had a mean anxiety score of 8.9 ( $SD=2.7$ ), those in the independent observation group had a mean anxiety score of 11.1 ( $SD=3.4$ ), and those in the control group had a mean anxiety score of 12.1 ( $SD=4.3$ ) (Fig. 1). The effect of group on anxiety score was significant ( $F(2, 70)=5.08, p=0.009$ ), with a medium effect size ( $\eta^2=12.7$ ) (Table 1). Post hoc analyses revealed that mean anxiety scores in the guided observation group were significantly lower than in the control group ( $F=9.71, p=0.003, d=0.89$ ) and the independent observation group ( $F=4.62, p=0.04, d=0.70$ ). Mean anxiety scores in the independent observation group were not significantly lower than in the control group ( $F=0.99, p=0.32, d=0.26$ ).

Generalized linear models adjusting for age and gender confirmed the association between group and anxiety score ( $F(4, 68)=3.83, p=0.007, R^2=0.18$ ), with significant differences observed between the guided observation group and the independent observation ( $b=2.07, p=0.04$ ) and control groups ( $b=3.23, p=0.002$ ) (Table 2, model 1). A subsequent model examining the interaction between female gender and group revealed a statistically significant effect ( $b=4.11, p=0.04$ ) (Table 2, model 2); however, a likelihood ratio test between the two models did not yield an improvement in model fit ( $\chi^2(2, 73)=4.76, p=0.09$ ).

Results of the program evaluation survey are displayed in Table 3. With respect to the program's perceived benefits, 85.7% of participants referenced a positive distraction (91.7% of guided observers, 80.0% of independent observers) and 79.6% noted that it decreased boredom (75.0% of guided observers, 84.0% of independent observers). Decreased feelings of anxiety (54.2% of guided observers, 40.0% of independent observers) and depression (29.2% of guided observers, 20.0% of independent observers) were noted by relatively fewer participants. While guided

observers generally noted more benefits, decreased boredom was more frequently appreciated by independent observers than guided observers.

The majority of participants indicated that they would like to participate in the activity again (87.5% of guided observers, 68.0% of independent observers). Among participants randomized to an experimental group, the most viewed artwork themes were animals (67.3%) and seasons (63.3%). Despite similar theme preferences across the two experimental groups, participants in the independent observation group generally viewed more themes than those in the guided observation group during the 30-min session.

## Discussion

This pilot study demonstrated a positive response to implementing a bedside art observation program on an inpatient hematology/oncology unit. Consistent with our hypothesis and prior work suggesting a therapeutic effect of art viewing [6–10, 15], our study found that bedside art observation with guided discussion was associated with decreased anxiety in a sample of hematologic cancer inpatients. Specifically, participation in the guided art observation intervention was associated with lower anxiety scores compared to the control group. These findings suggest that art observation with guided discussion has the potential to reduce state anxiety in hematologic cancer inpatients, at least in the short term. We suspect multiple mechanisms may contribute to decreased anxiety in the guided observation group: contemplative distraction, reminiscence on positive memories, and connectedness with others—with artworks readily generating topics of conversation.

Interestingly, the act of independently viewing art was not significantly associated with lower anxiety scores compared

**Table 2** Linear regression models examining predictors of anxiety across study groups ( $n=73$ )

	Model 1		Model 2	
	<i>b</i> (SE)	<i>p</i>	<i>b</i> (SE)	<i>p</i>
Age	−0.03 (0.04)	0.44	5.30 (0.69)	0.40
Female	1.62 (0.82)	0.052	−0.61 (1.40)	0.66
Group				
1: Guided observation	-	-	-	-
2: Independent observation	2.07 (0.98)	0.04	0.67 (1.48)	0.65
3: Control	3.23 (1.00)	0.002	1.09 (1.42)	0.48
Group × female				
Independent observation × female	-	-	-	-
Guided observation × female	-	-	2.54 (1.96)	0.20
Control × female	-	-	4.11 (1.97)	0.04*
<i>r</i> -square	0.184		0.235	
BIC	404.4		408.2	

SE, standard error

**Table 3** Descriptive statistics of program evaluation results ( $n = 49$ )

	All participants in experimental groups ( $n = 49$ ) <i>n</i> (%)	Guided observation group ( $n = 24$ ) <i>n</i> (%)	Independent observation group ( $n = 25$ ) <i>n</i> (%)
Benefits appreciated			
Provided positive distraction	42 (85.7)	22 (91.7)	20 (80.0)
Decreased boredom	39 (79.6)	18 (75.0)	21 (84.0)
Decreased feelings of anxiety	23 (46.9)	13 (54.2)	10 (40.0)
Decreased feelings of depression	12 (24.5)	7 (29.2)	5 (20.0)
Would participate again	38 (77.6)	21 (87.5)	17 (68.0)
Perception of alternate activity			
Better	-	1 (4.17)	4 (16.0)
Worse	-	11 (45.8)	2 (8.00)
Same/unsure	-	12 (50.0)	19 (76.0)
Themes viewed			
Animals	33 (67.3)	12 (50.0)	21 (84.0)
Seasons	31 (63.3)	9 (37.5)	22 (88.0)
Water	29 (59.2)	8 (33.3)	21 (84.0)
Trees	28 (57.1)	7 (29.2)	21 (84.0)
Clouds	26 (53.1)	7 (29.2)	19 (76.0)
Flowers	26 (53.1)	2 (29.2)	19 (76.0)
Childhood	26 (53.1)	9 (37.5)	17 (68.0)
Angels	16 (32.7)	2 (8.33)	14 (56.0)

wwwto not engaging in either art observation activity. A prior study of a long-standing art installation in a similar patient setting found that artwork was associated with lower levels of anxiety at some, though not all, time points during an inpatient stay [9]. Thus, it is possible that our independent art observation sessions would demonstrate similar results if evaluated longitudinally, though our iPad-based format also carries the advantage of being portable and easy to implement.

In addition to lower anxiety scores, data from both experimental groups in the present study highlight several participant-perceived benefits of bedside art viewing, including reduced feelings of anxiety and depression, and more generally, positive distraction and decreased boredom. Additionally, the majority of participants were enthusiastic about the activity, expressed a desire to continue their engagement with the *Art at the Bedside* program, and often initiated additional conversations with the facilitator regarding which specific artworks left a lasting impression. Participants in the guided observation group generally noted more benefits, had more positive perceptions of their activity, and frequently provided narrative comments highlighting the value of discussion. However, the majority of participants in the independent observation group also expressed satisfaction with their experience. Several mentioned the activity's tranquility, highlighting the value of silent meditation:

“The images really quieted my mind.”

“I enjoyed the independent thinking – admiring, then thinking about each picture's meaning.”

Notably, a handful of participants in each group were markedly less engaged and politely admitted to having little interest in art. One participant's comments suggested that a patient's openness to the activity, as well as the perceived value of it, may be related to the clinical situation:

“The activity came at the perfect time as I am about to engage in my first try with chemo. It was calming and initiated nice memories for me at a difficult time.”

Several participants suggested that their experience with art observation was in some way influenced by their journey as a cancer patient:

“Flowers seemed sterile, which is how I feel about this environment.”

“I may be more sensitive to red with so many blood draws! I liked the calming colors (blues, greens) and softer brush strokes.”

Consistent with prior research indicating that patients feel empowered when allowed to interact with artwork they select [8, 15], participants in our study voiced appreciation for choice. Participants' preferences surrounding theme selection were variable, but our observation of participants'

preferences for images of animals and landscapes (seasons, water, trees) over spiritual imagery is similar to prior findings among cancer inpatients [18]. Participants frequently described pleasant memories when viewing scenes reminiscent of their homes in Western New York, mirroring prior work suggesting the value of art in transporting patients to familiar local landscapes [8]. However, while most participants found solace in the assortment of calming nature scenes, others expressed a desire to reflect on more difficult topics:

“I would have liked to see subjects that are a bit more difficult – images of death, struggles, stuff that makes you uneasy. Once you pass the worst part of your journey here, thinking about those struggles can be meaningful. It brings you back down to reality. For me, that would have been a good experience, but it's very individualized.”

Thus, future efforts should strive to offer a diverse image library with a wide range of artistic styles and themes to better accommodate patients' desires.

Despite statistically significant effects comparing the guided observation group with the other study groups, our study design did not control for the potential impact of social interaction. Although lower anxiety scores may be causally related to the unique benefits offered by guided bedside observation of artwork, reflecting Parker Palmer's notion of a “third thing” [11], we cannot disentangle these results from benefits that may be inherently linked to the process of conversing and socializing with others. The evidence surrounding befriending interventions is limited with a small effect size, but suggests that interactions with trained volunteers may benefit various patient populations, including cancer patients [19]. Thus, future research should strive to ascertain to what extent visiting and conversing with hematologic cancer inpatients is alone beneficial in reducing anxiety, and whether there is something independently beneficial about conversations surrounding artwork.

Future work should also examine whether facilitator role (e.g., provider, nurse, chaplain, volunteer, caregiver) and inherent qualities or qualifications, including prior relationship with a patient, may account for the perceived benefit. Given the potential for patient mood to vary significantly depending on prognosis and point in treatment course, there may be role for utilizing each patient as their own control. In settings where patients are hospitalized for several weeks and return for subsequent treatment, future work should also explore long-term outcomes and cumulative benefits of engaging in art observation sessions on a frequent basis. In addition to assessing the generalizability of results and examining associations over a longer follow-up period, further study is needed to distinguish the therapeutic benefit of

bedside art observation from other social and contemplative activities that may promote patient wellness.

## Limitations

As discussed prior, our study design did not control for social interactions between the facilitator and study participants, which may attribute to lower anxiety scores in the intervention group. The structure of this study's independent observation group also precluded close monitoring of participants' behaviors. Thus, we were unable to ascertain participants' level of engagement in the activity, including duration of time spent observing artwork. Because many participants in the independent observation group reported viewing all available artwork themes, it is possible that observational experiences were more cursory, thus limiting a greater potential therapeutic benefit. Future efforts should examine whether a dose–response relationship may exist between art viewing and anxiety reduction, controlling for participant engagement and time spent viewing artwork. As guided discussion is central to the *Art at the Bedside* program and our findings, we also acknowledge that the experience may be influenced by facilitator characteristics, including professional background, training, and art knowledge. There is also a possibility that the decision to consent for participation in this study was biased towards individuals with a predilection for art. However, as the consenting process spoke only to the general act of viewing “images” on an iPad, we suspect the impact of this bias was minimal.

## Strengths

Study limitations are balanced by strengths, particularly the randomized controlled design. Although participants' state anxiety could have been influenced by a number of external factors (e.g., prognosis, point in treatment course, preceding events), the randomized design should account for known and unknown confounders. Moreover, the entirety of this project was completed in-person during the COVID-19 pandemic and was feasible in a setting where many patients are immunosuppressed. In addition to abiding by standard hospital guidelines, we ensured that the iPad was protected by a plastic sleeve that was replaced between participants, and there were no materials (papers, pens) shared between participants. During a time when outside visitation was restricted and many patients felt isolated, our efforts held a particularly meaningful role.

## Clinical implications

Through this pilot study, we demonstrated that bedside art observation, particularly with guided discussion, is a promising direction of future investigation in the inpatient

hematology/oncology setting. Our study showed that bedside art observation with guided discussion was associated with significantly lower state anxiety in hematologic cancer inpatients, compared to those who did not participate in a guided art activity. Furthermore, those who participated in the two art-based intervention groups acknowledged numerous benefits, including positive distraction and relief from boredom. To this end, bedside art observation may be an encouraging means of improving the patient experience of cancer inpatients, and potentially reducing cancer-related anxiety. Additionally, all visits in our study were facilitated by a student physician, while past *Art at the Bedside* efforts were implemented by chaplains in the context of hospital-based spiritual care. The positive response to guided art observation in a secular context suggests that art and/or chaplaincy training may not be critical program elements, and individuals can serve as effective facilitators with minimal training. We hope that our study's findings will inform ongoing investigation into art-based interventions at other cancer centers with the goal of offering additional psychosocial support to patients.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s00520-021-06747-z>.

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**Author contribution** Emily Gore: conceptualization, methodology, investigation, formal analysis, writing—original draft, and writing—review and editing. Susan Dodge-Peters Daiss: conceptualization, methodology, resources, and writing—review and editing. Jane L. Liesveld: methodology, supervision, resources, and writing—review and editing. Christopher J. Mooney: methodology, formal analysis, and writing—review and editing.

**Data availability** The dataset supporting this research is available through the Figshare Repository at <https://doi.org/10.6084/m9.figshare.14925180>.

## Declarations

**Ethics approval** The questionnaires and methodology of this study were approved by the Institutional Review Board at the University of Rochester Medical Center (STUDY00005403).

**Consent to participate** Written informed consent was obtained from all participants included in this study.

**Conflicts of interest** The authors have no conflicts of interest to declare that are relevant to the content of this article.

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