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A Pilot Study to Test the Effects of Art-Making Classes for Family Caregivers of Patients With Cancer

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Purpose/Objectives: To test the effects of an art-making class (AMC) on reducing anxiety and stress among family caregivers of patients with cancer.

Design: A pretest and post-test quasi-experimental design.

Setting: A residential care facility near tertiary treatment centers in the southeastern United States.

Sample: The convenience sample of 69 family caregivers was aged 18–81 years (\bar{X} = 48 years) and predominantly Catholic. Most had at least a high school education. Two-thirds were daughters, wives, or mothers of patients with cancer.

Methods: Participants completed a demographic data survey and a Beck Anxiety Inventory (BAI). Researchers collected a saliva sample from each participant to measure salivary cortisol, which indicates stress levels. Following pretesting, a two-hour AMC was delivered. Post-tests included a repeat BAI and a second saliva sample.

Main Research Variables: Anxiety and stress.

Findings: Anxiety was significantly reduced after AMC. Stress was reduced.

Conclusions: The AMC appeared to reduce anxiety and stress. The addition of a control group and replication with larger numbers are suggested. The physiologic cortisol measure corroborated BAI findings but was difficult to obtain from some cultural groups and was expensive to analyze.

Implications for Nursing: Family caregivers may benefit from participation in art-making interventions. Nurses should continue to investigate the use of creative approaches to promote holistic care.

Key Points . . .

- Family caregivers of patients with cancer are receptive to art-making activities.
- For family caregivers in a strange and unfamiliar environment, participation in an art-making class reduced anxiety and stress, provided diversion, promoted creativity, and enhanced communication.
- Some cultural groups are fearful of salivary cortisol (saliva) collection.

During times of extended patient treatment, family caregivers have feelings of extreme loneliness and isolation (Blanchard, Albrecht, & Ruckdeschel, 1997; Carter et al., 1998; Pasacreta et al., 2000; Walsh, Estrada, et al., 2004). When stays extend from days to weeks, family caregivers who are housed in residential care facilities may be receptive to activities they might not consider under usual circumstances. Family members are

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In today's complicated healthcare delivery system, family caregivers assume major responsibilities for the care of patients with cancer (McMillan & Moody, 2003). As a result, family caregivers become increasingly burdened as patient treatment shifts to outpatient care (Carter, Nezay, Wenzel, & Foret, 1998). Although interventions to reduce the stress of family caregivers are needed, caregivers do not have the interest, time, or resources to participate in self-care activities because their major focus is on patients (Pasacreta, Barg, Nuamah, & McCorkle, 2000; Schultz et al., 2003; Walsh, Estrada, & Hogan, 2004).

accessible at such locations, giving healthcare professionals the opportunity to offer them stress-relieving interventions (Walsh, Estrada, et al.). The purpose of the current pilot study was to measure the effects of an art-making class (AMC) on the anxiety and stress of family caregivers of patients with cancer. Hypotheses were that anxiety and stress would be lowered in family caregivers following participation in AMC.

Literature Review

Informal caregiving by family members saves the healthcare system billions of dollars annually (Schultz et al., 2003). However, caregiving activities take their toll, and 20%–30% of family caregivers are highly stressed (Blanchard et al., 1997). The welfare of family caregivers has become a major concern of healthcare professionals (Kozachik et al., 2001; Pasacreta et al., 2000). Researchers have reported that psychological, rather than physical, symptoms are overwhelming to family caregivers (Chan & Chang, 1999; McGrath, 2001; Teno et al., 1997). Stress reduction is needed (Carter et al., 1998; McCrea, 2000), especially because family caregivers feel the burden of care and continue to take on additional roles and responsibilities, often becoming ill themselves (Walsh, Estrada, et al., 2004; Walsh & Schmidt, 2003). Suggestions found throughout the literature call for new methods to reach family caregivers (Carter & Chang, 2000; Chan & Chang; Wyatt, Friedman, Given, & Given, 1999). Taking art activities to residential sites where family caregivers are accessible was suggested as a practical and realistic way to offer interventions to a difficult-to-reach population (Walsh, Martin, & Schmidt, 2004; Walsh & Weiss, 2003).

The use of creative activities to provide help for family caregivers is based on the philosophical assumption that art-making is an innate characteristic (Ziesler, 1993) and that creative activities strengthen psychological health (Benner, 1996). Because creative activities have been suggested as a method to promote amusement, pleasure, and distraction from worry (Councill, 1993; Graham-Pole, 2001; Young-Mason, 2000), researchers offered AMC in the current study as a creative approach that might reduce stress and anxiety in family caregivers.

Descriptions of art activity approaches in healthcare settings can be found in the literature (Bailey, 1997; Walsh & Weiss, 2003; Young-Mason, 2000). In a hospital-based initiative, Graham-Pole (2001) established a comprehensive arts-in-healthcare program at a children's hospital. Creative art programs in which patients and family members participate actively in hands-on art experiences are a growing trend in health care (Lane, 2005; LeVasseur, 1999; Pardue, 2005; Samuels & Lane, 2000; Wainwright & Williams, 2005; Young-Mason). In 2005, the administration at South Miami Hospital in Florida adopted an arts-in-healthcare philosophy and established the availability of art-making activities throughout the hospital by artist-in-residence teams (K. Sparger, personal communication, October 16, 2005).

Investigators have reported art making as a stress reliever among family caregivers and professional caregiver groups (Walsh, Chang, Schmidt, & Yoepp, 2005; Walsh, Martin, et al., 2004; Walsh & Weiss, 2003). Significant effects ($p < 0.01$ – 0.001) were found in expected directions on instruments measuring anxiety, depression, stress, and emotions following art activities with family caregivers (Walsh, Martin, et al.).

During the hospital-based study, family caregiver participants requested that art activities be extended to the residential care facility where many of the caregivers were housed during patients' treatment. The requests led to the current investigation at an adjoining site where family caregivers could be reached for extended, uninterrupted periods of time. Although other investigators have described art as a therapeutic intervention with children and adolescents (Driessnack, 2004; Graham-Pole, 2001; Morgan & White, 2003), the AMC intervention in the current study is the first art activity intervention to be reported with family caregivers at a residential facility.

Methods

Design

A quasi-experimental design was used to test changes in family caregiver pretest scores (as a baseline measurement) and post-test scores (as the outcome variable) following the AMC intervention.

Procedures were reviewed and approved by the appropriate institutional review boards, with informed consent obtained by researchers from interested family caregivers prior to data collection and the AMC. Signed consents were separated from data, and only numbers that correlated to signed consents were used to identify information on the anxiety scale, the demographic information sheet, and the cortisol collection tubes. Only researchers had access to all data, which were stored in locked files in the principal investigator's office. The numbered cortisol samples were stored in designated freezer space at a nearby medical school laboratory according to guidelines for storing human body fluid.

Participants

A convenience sample of 69 family caregivers from various ethnicities was recruited from a residential care facility for family members of patients. Inclusion criteria for family caregiver research subjects consisted of the following: The family caregiver was the person with major responsibility for the care of the patient at home, could speak and read English or Spanish, was not enrolled in another family caregiver study, was not a smoker (because of the effects of smoking on cortisol results), and was 18 years of age or older. Included in the sample were family caregivers who were staying in the facility and others who were housed in nearby homes or hotels. Enrollment was capped at 69 when one researcher relocated to a distant city and another changed jobs. The remaining grant was insufficient to recruit and train new researchers.

Additional AMC participants (but not research subjects) included interested hospital staff members who had seen AMC flyers and asked to attend the classes. Researchers were delighted with the opportunity for family caregivers and staff to participate in the AMC together and allowed open attendance at classes for interested individuals. Children younger than age 18 also were welcomed into the classes. As a result, AMC participants became a heterogeneous mixture of family caregivers who agreed to participate as research subjects, family caregivers who wanted to participate in the AMC but refused to participate in the research, children of family caregivers who were participating in classes (adults supervised children), and interested hospital staff. All participants included in the statistical analysis ($N = 69$) completed pretests and post-tests. Potential subjects who refused to have a cortisol sample taken

(n = 10) were not enrolled as subjects and did not participate in data collection but took part in the AMC.

Instruments

All instruments were provided in English and Spanish. Although researchers anticipated that translations into Creole might be necessary, they were never required. Saliva collection for cortisol was added as a physiologic measure to validate the self-report anxiety inventory.

Demographic data form: Information on race, cultural origin, gender, age, relationship to patient, length of time as a caregiver, educational background, religious preference, and previous art experience was collected.

Beck Anxiety Inventory (BAI): The BAI (Beck & Steer, 1993) contains 21 items describing symptoms associated with anxiety. Scores range from 0–63, with lower scores reflecting lower anxiety. Internal consistency has been reported at 0.92 and 0.94. Test-retest reliability correlation has been reported at 0.75 ($p < 0.001$). Concurrent validity of the BAI with the Hamilton Anxiety Rating Scale–Revised (Hamilton, 1959) and the anxiety subscale of the Cognition Check List (Beck, Brown, Steer, Eidelson, & Riskind, 1987) was 0.51 ($p < 0.001$). The BAI takes five minutes to complete. In the present study, results of Cronbach's alphas were 0.88 for the pretests and post-tests.

Salivary cortisol: Cortisol, a hormone secreted by the adrenal cortex in response to perceived or actual stressors, is released into plasma, and the major portion (approximately 90%) immediately binds to circulating proteins, such as albumin and corticosteroid-binding globulin. The remaining 5%–10% circulates as a free form. The free form of cortisol, which is bioactive and available to various tissues for use, also diffuses into saliva and undergoes circadian changes parallel to adrenal activity and plasma cortisol levels during a 24-hour period (Antonini, Jorge, & Moreira, 2000). The normal range of baseline salivary cortisol as well as plasma cortisol levels varies with age and the time of the day. However, in all age groups, salivary and plasma cortisol values are higher in the morning (8–10 am) and decrease gradually during the day to the lowest levels from 8–10 pm. Morning and evening salivary cortisol values are reported to be 0.09–1.15 mcg/dl and 0.01–0.4 mcg/dl, respectively (Kirschbaum & Hellhammer, 1994; Kumar, Solano, Fernandez, & Kumar, 2005). Salivary cortisol is used as a marker for plasma or serum-free cortisol to assess the activity of the hypothalamic-pituitary-adrenal (HPA) axis in response to stressful stimuli (Brien & Hingerty, 1975; Umeda et al., 1981). A recent study using ovine corticotrophin-releasing hormone in healthy humans provided further evidence for the efficacy of salivary cortisol as a reliable method of choice for evaluating the HPA axis function (Kumar et al.).

In the present study, salivary cortisol was measured as a marker for stress reduction in family caregivers of patients with cancer who were using the AMC as a therapeutic intervention. Saliva was collected from caregivers before and after the AMC. Before saliva collection, participants were asked to rinse their mouth to exclude any food particles or other extraneous materials and were offered sugarless gum to stimulate saliva production. A sterile cotton swab was placed under the tongue for two minutes to adsorb 1–2 ml of saliva. The cotton swab was placed into salivette tubes (specifically designed for collecting saliva for the assays of free-circulating hormone). Saliva samples collected in salivettes were centrifuged, and

the supernatants were frozen until the end of data collection, when all samples were analyzed in the same batch.

Cortisol in the saliva samples was measured using a radioimmunoassay kit (Diagnostic Systems Laboratory, Webster, TX). The assay was carried out according to the instructions provided by the manufacturer. The frozen supernatants were thawed and used for the assay. Intra- and interassay coefficients of variance with this method are 2.3%–5.4% and 4.8%–6.29%, respectively; sensitivity of the assay is 0.005 mcg/dl.

Statistical Tests

Descriptive statistics were used to describe the sample. Statistical tests included paired-samples *t* tests and chi-square to evaluate whether the AMC reduced anxiety (as measured by the BAI) and stress (as measured by salivary cortisol). Using G*Power (n.d.), a priori power analysis cannot be done for paired *t* tests (Buchner, Erdfelder, & Faul, 2001). Therefore, a post-hoc power analysis for a paired *t* test with a medium effect size (0.25), alpha at 0.05, and *df* of 68 produced a power of 0.5348. Results of the post-hoc analysis will be used to guide sample selection (at least 101 for a power of 0.80) in future studies.

Field Notes

Field notes were kept informally, with artist-interventionists and researchers making entries (tracking attendance) and recording verbatim comments from participants. In the field notes, researchers noted why (if stated) potential subjects refused to participate in the research. However, the individuals who refused study participation often wished to take part in the art activities. The researchers could not ethically refuse to allow individuals to participate in open, on-site classes. Therefore, the individuals were welcomed and encouraged to join the AMC, but they were not research subjects.

Procedures

After receiving approval from the university and hospital-based ethics institutional review boards, the research plan was introduced to the staff at the residential site. Each AMC was advertised throughout the residential facility and also at nearby hospitals to increase awareness of the opportunity for AMC participation, promote attendance, and enhance recruitment of family caregivers as subjects for the research component. The classes were offered as one arm of an already established art program and were open to the public so that family caregivers who were staying in other community facilities (e.g., hotels, private homes) might attend. Because the target population for the funded research was family caregivers, only family caregivers signed consents to participate in research and completed measures. One of the researchers explained the research plan to potential subjects at the residential facility each week or whenever potential subjects made inquiries. Names of researchers and contact information were included on all public advertisements.

The AMC began with a discussion of the research protocol, and family caregivers who agreed signed consents and completed self-report instruments (i.e., the demographic questionnaire and BAI). A saliva sample also was obtained for cortisol testing. The two-hour AMC was implemented, and, for research participants, post-tests (the BAI and a second saliva sample) were completed at the end of the session.

Interventionist Training

A theoretical framework based on the End-of-Life Phase (ELP) of the Experiential Theory (Hogan, Morse, & Tason, 1996; Walsh, Estrada, et al., 2004; Walsh & Weiss, 2003) was part of the training for the artist-interventionists who implemented the AMC. The ELP describes four processes that occur in caregivers during treatment of patients with serious illnesses. The first process, “getting the news,” is accompanied by caregiver feelings of shock, followed by calculating the odds of what might happen. As patient treatment progresses, caregivers experience the second process, “dedicating resources,” when family caregivers focus solely on accommodating the daily activities for the patient. During the third ELP process, “negotiating treatment,” family caregivers fight for the patient’s life, endure stress, shut out negative feelings, and maintain hope. The fourth and final ELP process, “losing the battle,” occurs when family caregivers or patients want the patient’s suffering to end. Artist-interventionists were taught that the processes would be present as they interacted with family caregivers and were aware of the likelihood that family caregivers might refuse participation in the AMC because their sole focus was on patients’ health and welfare (Walsh, Estrada, et al.; Walsh, Martin, et al., 2004). In the current study, family caregivers were expected to be in the second (dedicating resources) or third (negotiating treatment) ELP process (Walsh & Weiss). Either caregivers were staying in the facility during patient hospitalization or caregivers and patients were housed in the facility during the patients’ outpatient treatment. Because classes were advertised in nearby hospitals and open to the public, artist-interventionists anticipated that some caregiver attendees also could be in the first or fourth processes of the ELP.

Art-Making Classes

The AMC contained art-making activities tested in previous intervention studies with suicidal adolescents (Walsh, 1993), hurricane survivors (Walsh & Hardin, 1994), adolescent mothers (Walsh & Webb-Corbett, 1995), student nurses (Walsh et al., 2005), and former psychiatric patients (Walsh & Minor-Schork, 1997) and in the hospital at patients’ bed-sides (Walsh, Martin, et al., 2004). A two-hour AMC was delivered twice a week by volunteer artist-interventionists in a residential facility. A Spanish translator (a bilingual research assistant) was available during classes. Activities offered depended on the talents of the artist-interventionists. Because previous research suggested that artists were more enthusiastic about activities they had designed (Walsh, Martin, et al.), artist-interventionists who conducted classes for the present study were encouraged to offer new art-making ideas. Although most classes were designed from previously tested activities described in a workbook^a, some artists modified or suggested new activities. The researchers approved any new ideas before implementation. One or more research team members attended every class. The creative aspect of classes remained a focus, with artists and researchers encouraging the interchange of creative ideas and conversation among AMC participants. Some of the most popular activities were the creation of cards using a monoprint technique

in which different paints were pressed in an abstract design onto premade greeting cards, self-images with photos of one’s head pasted atop predrawn body images and mounted on small decorated posters, and freehand or predrawn images using watercolors as the medium. The most popular classes were repeated often throughout the yearlong study with new subjects (see Table 1). See Figures 1 and 2 for examples of some of the artwork created during sessions.

Findings

Sample

Seventy-one family caregivers agreed to participate in the research during a period of one year. Sixty-nine caregivers completed the protocol, for a 97% completion rate among those who consented. The two noncompleters who signed consents took the pretest but did not complete the AMC and were not present for post-testing. Field notes were kept throughout the 10-month period of data collection (classes

Table 1. Examples of the Most Popular Art-Making Class Activities and Descriptions

Activity	Description
Decorated jewelry boxes	Participants decorated prepurchased compressed wood boxes with a variety of beads, colored paper, yarn, paints, glitter, and whatever was on hand. Participants made them for family members and patients and often took them home as gifts.
Monoprints	A monoprint is a method of creating an abstract design in which three or four hues of liquid watercolors are dropped on acrylic plastic sheets and transferred (mashed down) on thick paper to make greeting cards. Participants also designed greeting cards with stencils, yarn, and glitter. Small abstract monoprints sometimes were framed in a precut mat. The monoprint technique also was used to make bookmarks.
Watercolor paintings	The artist provided stencils of predrawn shapes (e.g., flowers, boats) and demonstrated the use of watercolors with wet-on-wet and dry-brush techniques. Some participants designed their own freehand paintings. Some participants donated their art to the hospital art studio so that it could be sold, with proceeds used to buy art supplies.
Silk scarves or wall hangings	Precut silk scarves were painted with different abstract designs or designed with images from stencils such as flowers, dots, and squares.
Mandela creations	A mandela represents symbolic healing. Participants drew a circle (from a stencil) and drew freehand inside and outside the circle. Watercolors, crayons, or decorations were added and placed inside or outside of the circle.
Mosaic tile trays	Participants designed trays with pieces of cracked ceramic tiles that they glued on the tray surface, grouted, and sealed. The colorful trays often were donated and sold in the hospital art studio, with proceeds used to buy art supplies.
Ribbon gems	Double images cut from stencils were glued on ribbons to use as wall hangings or could be placed on patients’ IV poles.

^a The workbook is available on request from the primary author.



Figure 1. Monoprint Example

were held two to three times a month) with artist-interventionists recording numbers of people attending classes and details about attendees. Twenty family caregivers refused to participate in the research (average of one per session). Caregivers who refused and voluntarily stated reasons for not participating indicated that their refusals were related to salivary cortisol collection. Family caregivers who joined the class after it was in session on an impromptu basis did not participate in the AMC research protocol because consents had not been signed and the opportunity to complete pretests had passed. An average number of five participants attended each session, with an average of three family caregivers and an occasional patient, staff member from a nearby hospital, or visitor from the community. Graduate students who were interested in the research process occasionally attended the AMC as participant-observers. Outside family caregivers (those not staying in the facility) reported that they learned about the classes from flyers posted in the hospitals or by word of mouth. The 69 enrolled subjects were primarily female (80%); 38% were Hispanic, 23% were Islanders (Caribbean), and 20% were Caucasian. Caregivers were aged 18–81 years, with a mean of 48 years ($SD = 14.47$). Two-thirds of the caregivers were daughters, wives, or mothers of patients (see Table 2).

A paired-samples t test was conducted to evaluate whether the AMC reduced anxiety (as measured by the BAI) and stress (as measured by salivary cortisol). Results indicated that anxiety was reduced significantly after the AMC, with a mean score of 7.28 ($SD = 6.80$) preintervention and a mean score of 2.49 ($SD = 4.50$) postintervention ($t[68] = 7.89$, $p < 0.01$). Although stress was reduced after the AMC, with a mean cortisol level of 0.089 ($SD = 0.05$) preintervention and 0.087 postintervention ($SD = 0.06$), the change was not significant (see Table 3). The paired t test did not show a significant reduction in stress, but chi-square analysis showed that a larger proportion of caregivers (65%, $n = 45$) had lowered stress (as measured by salivary cortisol) after the AMC ($\chi^2 [1] = 6.39$, $p < 0.05$).

Field Notes

Qualitative data with exemplars obtained from field notes taken during each AMC session indicated that once art-making began, participants shared creative efforts, gave suggestions to each other, and became better acquainted as they talked about their art and shared personal stories. A caregiver daughter attended classes with her mother, who had facial disfigurement and speech impairment from her

multiple surgeries. The daughter told researchers that her mother would appear in public only to attend art activity events. During one session, a patient convinced his wife caregiver to participate, saying the classes might lower her stress. After she made a colorful jewelry box, she said, “I’m happy I did it. Bright colors make me happy; life without color could be sad.”

Class participants often laughed and talked among themselves as they created their art. Specific comments included “an enjoyable time today is not what I expected,” “the people back home won’t believe I actually did something artistic while I was here,” and “who would believe that I could actually paint something?”

A young father whose wife was dying saw a flyer about the classes on a hospital bulletin board. He sought relief for himself, his 18-month-old son, and his 4-year-old daughter when he brought them to a class. During the class, he talked about his hope that his wife’s suffering would end soon (indicating that he was in the fourth ELP process [Walsh, Martin, et al., 2004], losing the battle). He also expressed momentary comfort while he and his daughter created a crown for her head and a picture to take to his wife when he remarked, “This is the first time I have felt joy or noticed my children smile in a long time.” Even briefly, the availability of the AMC may have provided the father with additional tools to face life’s challenges.

Discussion

Reed (2003) suggested that creative approaches may promote self-transcendence in the midst of sorrow. A significant reduction in anxiety and stress was noted among family caregiver participants in the current study. Results suggested a number of possibilities to explain why the AMC produced a short-term effect on caregiver anxiety and stress. Even though mean scores on the pretests indicated that family caregivers had low anxiety and stress at the outset, the

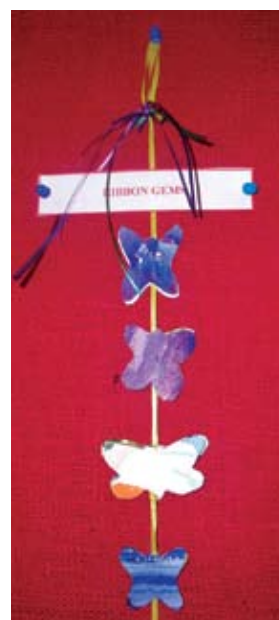


Figure 2. Ribbon Gems Example

Table 2. Sample Characteristics

Characteristic	n	%
Age (years)		
Range = 18–81	–	–
\bar{X} = 48	–	–
SD = 14.47	–	–
Gender		
Female	55	80
Male	14	20
Cultural background		
Hispanic	26	38
Islanders (Caribbean)	16	23
Caucasian	14	20
Other	13	20
Role		
Daughter	19	28
Wife	16	23
Mother	11	16
Other	23	33
Education		
Less than high school	7	10
High school	32	46
Certificate beyond high school	4	6
Associate degree	7	10
Bachelor's degree	9	13
Master's degree	7	10
No response	3	4
Care responsibilities		
Major caregiver of patient	52	75
Significant responsibilities	17	25
Time period for care		
Six months to one year	28	41
Other (< six months or > one year)	41	59
Previous art experience		
None	37	54
Brief experience in the past	32	46
Religious preference		
Catholic	30	44
Protestant	12	17
Jewish	5	7
No religion	4	4
Other	18	28

N = 69

Note. Because of rounding, not all percentages total 100.

AMC, the community atmosphere of the residential facility, and the situation that promoted interaction among participants provided opportunities for residents to create artwork together and lowered anxiety and stress even further. Perhaps the AMC provided the impetus, motivation, and incentive for the group to meet and get acquainted and the art making was secondary. However, the anecdotal qualitative comments indicated that the art making was an integral part of the experience.

Although the AMC was advertised with flyers posted throughout the hospital and distributed via e-mail, family caregivers' attendance and participation in the research were a challenge and classes were not as well attended by family caregivers (potential research subjects) as researchers anticipated. The ELP process, "dedicating resources," may have been present (Hogan et al., 1996). For example, even when a family caregiver showed an interest, if the patient

was present but not interested, the family caregiver often declined. That situation supported previous findings of family caregivers' energy becoming focused completely on patients during the "dedicating resources" process (Walsh, Martin, et al., 2004). Patients also appeared to expect such focused attention, as evidenced by the fact that patients who wanted to participate in the AMC often became quite insistent that family caregivers join them. This hint of "coercion" by patients for family members to join has been noted previously (Walsh, Estrada, et al., 2004; Walsh, Martin, et al.), suggesting that interaction between patients and family members may be a mediating variable that influences outcome variables. Family caregivers' involvement after patients' solicitation for participation also supported the family caregivers' desire to accommodate patients.

Informal recruiting of others sometimes occurred spontaneously after the AMC began. Participants who already were involved in art making displayed their ongoing projects to others and asked those who were nearby (e.g., walking through the area where classes were meeting) to join them. The festive and informal atmosphere promoted participation but was a deterrent to a well-controlled research protocol. The late joiners (after consent procedures and pretesting had occurred) were not enrolled as research participants but participated in the AMC. Their presence often added to the positive atmosphere of the classes.

Additional situations suggest strengths of the AMC. When patients were not present, family members often made art for patients as a surprise gift. Some caregivers gave their creations to be sold in the hospital store, asking that proceeds be designated to buy additional art supplies for future programs. They expressed pride in offering the gifts. During the time when the sole focus of family caregivers appeared to be on patients (Hogan et al., 1996; Walsh, Estrada, et al., 2004; Walsh, Martin, et al., 2004), the AMC provided family caregivers a creative, acceptable method to participate in self-care.

The informal field notes that were taken during the course of the project further supported that art-making activities were a creative and pleasant distraction. During the yearlong study, although only 69 subjects enrolled in the research project at the outpatient site, more than 800 people took part in either the AMC or other similar art-making activities offered informally at a cancer treatment center next to the residential site where the research occurred. Recruiting people who participated in the art-making activities at unscheduled times and for a few minutes only was not feasible, but the large numbers (800+) validated the need for unstructured, brief art-making approaches in healthcare environments. Unfortunately, the needs of attendees, time limitations, and various locations where such people congregate (e.g., waiting rooms, hallways,

Table 3. Paired-Samples T Tests for Beck Anxiety Inventory (Anxiety) and Salivary Cortisol (Stress)

Source	Pretest		Post-Test		df	t	p
	\bar{X}	SD	\bar{X}	SD			
Beck Anxiety Inventory	7.280	6.80	2.490	4.50	68	7.891	0.000
Salivary cortisol	0.089	0.05	0.087	0.06	68	0.380	0.705

cafeterias) also present difficulties for the implementation of a well-controlled research project.

The presence of a strong volunteer system was a major factor in the success of the program. The opportunity for volunteer artist-interventionists to choose and design their own activities was appealing to those creative people. A flexible approach with activities and scheduling for artist-interventionists should be used when possible. The flexibility of the researchers helped to keep artist-interventionists committed throughout the one-year study.

Limitations

The design of the study, using pretests as a baseline measure and not using a control group, was a limitation. Perhaps changes in caregiver anxiety and stress occurred because of the interventionists' attention and not as a result of the AMC. In the future, the design would be strengthened by randomization into experimental and control groups. Yet recruiting and maintaining interest among control subjects continue to be challenging. For example, in a program to determine feasibility of implementing art activities with family caregivers (Walsh & Weiss, 2003), subjects agreed to enroll only if they were assured participation in art-making activities. Generalization of results also is limited because the program took place with a convenience sample at one residential facility.

Researchers had difficulty obtaining subjects for saliva collection. When potential subjects verbalized fear of the saliva collection, some residents of the same culture also refused to participate. One potential subject expressed disdain and fear about giving his bodily secretions to strangers, whereas another expressed suspicion because the saliva would be frozen and housed in a strange place until analysis could take place. A third potential subject said that unless salivary cortisol results could be received immediately (that day), he would not agree. One patient, the husband of a family caregiver, listened to the researcher's explanation about the salivary cortisol and told his wife not to participate, although no explanation was given. A daughter caregiver agreed to participate, but after the cortisol collection procedure was explained (putting a cotton swab into her mouth), she immediately said, "No, no, no. Don't place anything in my mouth." She participated in the classes but declined to be a research participant. Later, she spoke of her mother, who had cancer of the mouth, and said that the location of her mother's cancer caused her reluctance. "I was afraid for you to put anything in my mouth," she said. Although the use of saliva collection supported the self-report findings, pre- and postintervention testing of saliva was expensive (\$36 per subject) for a small study.

The variety of class activities offered was a limitation and strength of the AMC. The artist-interventionists liked the ability to offer one activity per class that they had devised. Yet, in a previous investigation (Walsh, Martin, et al., 2004), family caregivers' choice from several activities was a recruitment incentive. Advertised class activities (e.g., making greeting cards) and the possibility that some potential subjects may not have liked particular activities may have decreased participation.

Implications for Nursing

Participants in a previous study (Walsh, Martin, et al., 2004) expressed desire to have art-making activities offered at an adjoining residential care facility. The residential site

provided additional access to family caregivers for uninterrupted periods of time. However, potential participants in the current study often chose not to attend classes because of competing activities or interests. In addition, based on anxiety scores, the participants in the current study were less anxious than caregivers who participated at the bedside (Walsh, Martin, et al.). Although the AMC provided family caregivers a pleasurable distraction during times when few opportunities for socialization or self-care were available, the time and effort of artist-interventionists may be better spent at hospital-based sites where caregivers congregate (e.g., waiting rooms). Such classes may provide an impetus for groups of family caregivers to become acquainted through creative activities and may promote additional stress relief during the hospitalization experience.

Lack of funds for creative approaches continues to be a challenge, and funding from outside sources may be needed to sustain such programs. Salaries dedicated for arts-in-healthcare personnel are needed to ensure leadership and provide direction for ongoing volunteer training. The integration of arts programs into healthcare facilities requires a philosophical and monetary commitment from healthcare administrators.

Within hospital settings that have adopted similar programs, nurses who refer patients and family caregivers to arts-in-healthcare activities find such programs extremely beneficial (Driessnack, 2004; Graham-Pole, 2001; Lane, 2005; B. Vaughn, personal communication, October 16, 2005; K. Sparger, personal communication, October 16, 2005). The positive interactions noted between family caregivers and patients during the AMC suggest that creative activities in a group environment may promote physiologic changes, such as pain relief, and warrant further investigation in inpatient settings. Because the use of salivary cortisol testing was expensive and threatening to some subjects, the use of blood pressure measurements or other noninvasive physiologic measures before and following art-making interventions may be better alternatives that would not be as likely to cause question or distress in potential participants. Art activity workbooks might be sent home with patients or family members along with kits of art-making supplies; if so, the effects of art making following hospitalization should be measured longitudinally.

Results from the current study, field notes, and continued participation from family caregivers and patients whenever any type of art activity or AMC is offered support the hypothesis that such activities relieve caregivers' and patients' anxiety and stress at least momentarily. Similar activities also may be useful for family caregivers and patients long term. As healthcare professionals continue to expand such programs at different sites with different populations, researchers should use a variety of quantitative and qualitative methods to investigate the use of arts to promote holistic health care.

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