

# The Effects of Education on Anxiety Levels in Patients Receiving Chemotherapy for the First Time: An Integrative Review

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Anxiety is one of the most common symptoms experienced by patients receiving their first chemotherapy treatment. Improper prevention and management of anxiety can lead to poor psychosocial outcomes, dissatisfaction with care, and decreased adherence to treatment. A review of the literature was conducted to analyze the effectiveness of patient education at decreasing anxiety. Consistencies were found throughout the literature regarding patient education for this population. Information regarding side effects of treatment, side-effect management strategies, and orientation to the infusion center are the most important topics of education that reduce anxiety. In addition, education performed by nurses before the first chemotherapy infusion in a quiet environment is most effective. Integration of effective patient education programs improves holistic care by increasing emphasis on psychosocial aspects of oncology.

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Cancer affects millions of people in the United States each year, leading many to face the difficult road of chemotherapy. When patients are ill-prepared for chemotherapy treatments, they “often tend to envision the worst-case scenarios, possibly making the anticipation more difficult than the event itself” (Borsellino & Young, 2011, p. 311). They experience anxiety about the unknowns of chemotherapy and its side effects. The incidence of anxiety in patients with cancer is as high as 47% (National Comprehensive Cancer Network [NCCN], 2013).

Anxiety can cause patients to feel a loss of control over their disease, which is associated with poor psychosocial outcomes such as depression (Leighl, Gattellari, Butow, Brown, & Tattersall, 2001). Patients experiencing depression are less capable in performing self-care behaviors, which are necessary to manage common side effects of chemotherapy (Williams & Schreier, 2004).

Oncology nurses educate patients about chemotherapy side effects; however, most patients receive only written information during their first chemotherapy treatment (Keller, 2006;

Malone, 2007; Sheldon, Swanson, Dolce, Marsh, & Summers, 2008; Williams & Schreier, 2004, 2005). The purpose of this integrative review is to synthesize the current literature regarding the effectiveness of patient education at decreasing anxiety levels in patients receiving chemotherapy for the first time.

## Methods

A literature search was performed to answer the clinical question, “What are the most effective interventions for anxiety in patients beginning chemotherapy?” Six databases were examined: CINAHL®, MEDLINE® via PubMed, ProQuest Nursing and Allied Health Source, Joanna Briggs Institute Clinical Online Network of Evidence for Care and Therapeutics, Cochrane Collaboration and Library, and National Guidelines Clearinghouse using the key words of *patient education*, *health promotion*, *education intervention*, *chemotherapy*, *cancer*, *anxiety*, *treatment management*, and *prevention*. Articles were included if they were English language, had an adult population, were peer reviewed, and were published

from 2003–2013. Exclusion criteria included patients receiving radiation therapy, oral chemotherapy, prevention of cancer, and foreign study participants.

Ten articles were found pertinent to the clinical question and were appraised for quality and methodologic rigor using standardized assessment tools. The Appraisal of Guidelines for Research and Evaluation (AGREE II), Critical Appraisal Skills Programme (CASP), Joanna Briggs Institute–Meta Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI), and the Joanna Briggs Institute Narrative, Opinion, and Text Assessment and Review Instrument (JBI-NOTARI) were used to critically appraise the evidence (see Table 1).

## Results

Nine studies have shown patient education is effective in decreasing anxiety in patients newly diagnosed with cancer who are receiving chemotherapy (Jacobsen & Jim, 2008; Malone, 2007; Mann, 2011; NCCN, 2013; Prouse, 2010; Sheldon et al., 2008; Stephenson, 2006; Traeger, Greer, Fernandez-Robles, Temel, & Pirl, 2012; Williams & Schreier, 2005). Five consistencies were identified within these articles.

- Specific education topics that decrease anxiety include information about treatment, side-effect management, and a brief orientation to the chemotherapy setting.
- Education is most effective in preventing and managing anxiety when performed prior to the initiation of chemotherapy.
- Format of patient education is important to maximize retention of information.
- Education is most effective when performed in a quiet environment that supports learning.
- Oncology nurses in the primary oncology setting are effective providers of patient education.

## Psychoeducation

Psychoeducation is a term used by many authors to describe the delivery of information aimed at decreasing uncertainty and increasing knowledge of a specific subject (Jacobsen & Jim, 2008). Many authors have found specific educational topics that are more beneficial than others, most commonly side-effect management and orientation to the staff and facility (American Society of Clinical Oncology [ASCO]/Oncology Nursing Society [ONS], 2012; Jacobsen & Jim, 2008; Malone, 2007; Prouse, 2010; Sheldon et al., 2008; Stephenson, 2006; Williams & Schreier, 2005).

**Side-effect management:** Sheldon et al. (2008) identified chemotherapy side-effect education as recommended practice in the prevention and management of anxiety. That guideline divided psychoeducation into three categories: (a) treatment facility, staff, and community resources; (b) cancer diagnosis and treatment; and (c) self-care and side-effect management. Self-care and side-effect management involve educating patients on the management of long- and short-term side effects of chemotherapy (ASCO/ONS, 2012).

Prouse (2010) found that patient education about chemotherapy side effects can decrease anxiety. The author analyzed six randomized, controlled trials (RCTs) that examined patient comprehension of chemotherapy-related side effects and the

use of self-care behaviors to treat or prevent chemotherapy side effects. Thomas, Daly, Perryman, and Stockton (2000) found that the use of a 20-minute preparatory video in addition to written and verbal information reduced anxiety compared to written and verbal information alone.

Williams and Schreier (2005) also found psychoeducation to be effective. Their RCT ( $N = 71$ ) involved random assignment to an experimental group ( $n = 38$ ) in which participants received the standard of care and a 20-minute audiotope describing evidence-based strategies (exercise and relaxation) to manage fatigue, sleep disturbances, and anxiety. The control group ( $n = 33$ ) received the standard of care, which consisted of verbal and written information from nurses about chemotherapy side effects, but no discussion of side-effect management strategies. Anxiety, measured using the State Trait Anxiety Inventory (STAI), was assessed before the first chemotherapy treatment, one month post-treatment, and three months post-treatment. A higher percentage of participants in the control group ( $n = 16$ ) reported anxiety at one month post-treatment as compared to the experimental group ( $n = 10$ ). A statistically significant ( $p = 0.001$ ) decrease in anxiety occurred between the first and second self-care diary (SCD) for the experimental group. In addition, STAI scores were higher in the control group at all three measurement times as compared to the experimental group, although the results were not statistically significant. The STAI scoring ranges from 20 (low anxiety) to 80 (high anxiety).

Malone (2007) found similar results as Williams and Schreier (2005) in a pilot study involving a one-hour educational intervention that involved verbal instruction along with hand-written materials about chemotherapy side effects and management strategies. Results from open-ended questions on the survey indicated that the class helped reduce patients' anxiety.

Stephenson (2006) provided expert opinion on psychoeducation through self-regulation theory, which assumes that patients respond to disease through objective (functional) or subjective (emotional) mechanisms. Subjective responses include anxiety, which can lead to feelings of vulnerability or distress. The nurse should help redirect patients' energy from the emotional response to the functional response to foster increased involvement in their own care. This theory posits that information given to patients should be derived from four concrete variables: (a) description of symptoms that may be experienced from treatment, (b) description of the environment, (c) description of the physical experiences during the event, and (d) the duration of the event.

**Orientation:** Unfamiliarity with the treatment environment may increase anxiety. Some researchers (Jacobsen & Jim, 2008; Sheldon et al., 2008; Stephenson, 2006) found that a brief orientation to the infusion center and staff was effective at reducing uncertainty and in preventing anxiety.

Self-regulation theory (Stephenson, 2006) supports orientation as well. Temporal and environmental characteristics of an event (i.e., chemotherapy) have a significant impact on anxiety. Describing the typical routine during chemotherapy infusion and exposing patients to the infusion area before treatment reduces uncertainty and allows patients to redirect emotional responses, such as anxiety, toward functional responses. Functional responses improve coping and increase patient involvement in his or her care (Stephenson, 2006).

TABLE 1. Literature Review of Included Evidence

Study	Setting and Sample	Design	Results	Level of Evidence/ Appraisal
American Society of Clinical Oncology/ Oncology Nursing Society, 2012	—	Practice guideline	Before a chemotherapy regimen begins, each patient should receive written information including, at a minimum, information regarding diagnosis, the goals of therapy, planned duration of chemotherapy, information on all side effects, drug-specific effects, and plans for monitoring and follow-up. Patient education materials should be appropriate for the patient's reading level and healthcare professionals should document the patient's understanding of information.	Level I  AGREE II score: 65
Jacobsen & Jim, 2008	14 systematic reviews and meta-analyses that reached conclusions about the efficacy of psychosocial interventions for anxiety and depression	Evidence summary	Psychoeducation, problem-solving therapy, stress management, cognitive therapy, and group cognitive behavioral therapy are evidence-based interventions for anxiety and depression.	Level I  CASP: 85%
Malone, 2007	Men and women aged 25–83 years old with various types of cancer who were scheduled to take their first IV chemotherapy treatment one week after the chemotherapy class at an urban cancer clinic in the Midwestern United States	Pilot study	Eighty-four percent of participants who completed the patient satisfaction survey rated the educational class as “excellent” or “good.” Patients reported that the class helped reduce their anxiety.	Level VI  JBI-MAStARI: 57%
Mann, 2011	Group A patients (intervention group, n = 32) were newly diagnosed with cancer (within two weeks) and were to receive chemotherapy at the outpatient oncology clinic in northern Alabama. Group B (n = 40) consisted of patients who had already received treatment.	Pilot study	Eighty-eight percent of patients in Group A were satisfied with their educational experience, whereas only 1% of patients in Group B were satisfied. All patients in Group A and 10% of patients in Group B found that educational environment supported learning. Eight-one percent of the participants in Group A felt that their quality of life had improved because of the education; 40% of patients in Group B felt the same.	Level VI  JBI-MAStARI: 66%
NCCN, 2013	132 references cited	Practice guideline	The primary care oncology team is equipped to manage mild anxiety. A mutually respectful relationship must be developed so the patient and family can learn about treatment side effects to decrease anxiety. Clinicians should be available for questions.	Level I  AGREE: 89
Prouse, 2010	Nine RCTs published in English since 2000 that examined participants 18 years or older, diagnosed with cancer, and planning to receive chemotherapy treatment	Systematic review	Use of multimedia devices (CD-ROM or video-based education program) showed some moderate benefit in decreasing anxiety. Some correlation was noted between depression and anxiety levels and recall of information.	Level I  CASP: 81%
Sheldon et al., 2008	Studies that focused on adult patients with cancer not receiving end-of-life care; the guideline focused specifically on interventions to prevent and treat anxiety.	Practice guideline	Psychoeducational interventions provide at least some benefits to patients experiencing anxiety related to their cancer diagnosis and are recommended for practice. Evidence supports psychosocial interventions (cognitive behavioral therapy, support groups, and individual counseling) to treat chemotherapy-related anxiety.	Level I  AGREE: 114
Stephenson, 2006	—	Expert opinion	Journaling, participating in support groups, and psychoeducation are interventions that have potential to relieve anxiety. By providing psychoeducation, patients have an increased sense of control over their cancer and treatment. Psychoeducation includes health education, support groups, venting of emotions, and behavioral techniques to deal with illness.	Level VII  JBI-NOTARIA: 81%

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AGREE—Appraisal of Guidelines for Research and Evaluation; CASP—Critical Appraisal Skills Programme; JBI-MAStARI—Joanna Briggs Institute—Meta Analysis of Statistics Assessment and Review Instrument; NCCN—National Comprehensive Cancer Network; RCT—randomized, controlled trial

**Note.** The hierarchy of evidence rating system developed by Melnyk and Fineout-Overholt (2011) was used to organize the evidence: level I, systematic reviews and meta-analyses; level II, RCTs; level VI, single descriptive or qualitative study; and level VII, expert opinion. Agree II scores range from 23–161. Percentage grades were configured for the CASP, JBI-MAStARI, and JBI-NOTARIA. A score of 90% or better was considered an excellent reference, 80%–90% was considered good, 65%–80% was considered fair, and scores below 65% were considered poor.

TABLE 1. Literature Review of Included Evidence (Continued)

Study	Setting and Sample	Design	Results	Level of Evidence/ Appraisal
Traeger et al., 2012	A total of 41 RCTs were analyzed. Twenty-eight focused on psychosocial interventions, whereas 13 focused on pharmacologic management of anxiety.	Literature review	Cognitive and cognitive behavioral interventions, relaxation training, supportive counseling, and education are evidence-based recommendations to prevent or reduce anxiety. Conclusions from RCTs demonstrated that education is most effective for new diagnoses, presurgical, and patients undergoing chemotherapy.	Level II CASP: 68%
Williams & Schreier, 2005	Tertiary medical center in the southeastern United States and a satellite cancer treatment clinic. Seventy-one patients newly diagnosed with breast cancer; all were 18 years or older, English speaking, and had a Karnofsky Performance Scale rating of greater than 70%.	RCT	Patients in the control group experienced statistically significantly higher scores on the State Trait Anxiety Inventory compared to the experimental group at the first recording (1.62 versus 1.5, $p = 0.22$ )	Level II JBI-MAStARI: 81%
<p>AGREE—Appraisal of Guidelines for Research and Evaluation; CASP—Critical Appraisal Skills Programme; JBI-MAStARI—Joanna Briggs Institute—Meta Analysis of Statistics Assessment and Review Instrument; NCCN—National Comprehensive Cancer Network; RCT—randomized, controlled trial</p> <p><i>Note.</i> The hierarchy of evidence rating system developed by Melnyk and Fineout-Overholt (2011) was used to organize the evidence: level I, systematic reviews and meta-analyses; level II, RCTs; level VI, single descriptive or qualitative study; and level VII, expert opinion. Agree II scores range from 23–161. Percentage grades were configured for the CASP, JBI-MAStARI, and JBI-NOTARIA. A score of 90% or better was considered an excellent reference, 80%–90% was considered good, 65%–80% was considered fair, and scores below 65% were considered poor.</p>				

## Format

Standard of care for patient education most often consists of written information (ASCO/ONS, 2012; Mann, 2011; Sheldon et al., 2008). Verbal instruction also is frequently used and was the medium most often added to the standard of care (Malone, 2007; Mann, 2011; Williams & Schreier, 2005). Providing written materials with verbal instruction allows patients to continue learning and review materials after the initial education is performed (Stephenson, 2006).

Researchers used a variety of media to provide information, including audiotapes, pamphlets, PowerPoint® presentations, videos, and interactive computer programs (Malone, 2007; Mann, 2011; Prouse, 2010; Sheldon et al., 2008; Williams & Schreier, 2005). Using multiple types of media with the same patient can be advantageous (Sheldon et al., 2008). However, not all patients have access to the resources required for multimedia interventions. Prouse (2010) found that use of multimedia interventions, in general, did not result in improved information recall related to the side effects of chemotherapy; however, some studies (Olver, Whitford, Denson, Peterson, & Olver 2009; Thomas et al., 2000) in the systematic review found decreased anxiety from the use of multimedia interventions.

Williams and Schreier (2005) used audiotapes to provide education in their study. The audiotapes consisted of calming background music and a female voice providing information about exercise and relaxation to manage anxiety, fatigue, and sleep problems associated with chemotherapy. Patients in the experimental group received the audiotapes in addition to verbal and written information regarding chemotherapy side effects. Patients were instructed to listen to the tapes in their homes 12–24 hours before the start of chemotherapy, or as often as desired. At all measurements of anxiety, patients in the control group experienced more anxiety than those who used

the audiotapes in addition to the standard of care, although results were not statistically significant.

## Timing

Temporal characteristics of patient education are important in decreasing anxiety (ASCO/ONS, 2012; Malone, 2007; Mann, 2011; Stephenson, 2006; Traeger et al., 2012; Williams & Schreier, 2005). ASCO/ONS (2012) guidelines state that patient education should be performed prior to the start of chemotherapy; however, the guidelines do not provide specifications regarding the amount of time prior to chemotherapy. Williams and Schreier (2005) specifically studied the effect of timing in their RCT. They proposed that anxiety levels may be elevated immediately before receiving the first chemotherapy treatment, which may interfere with retention of information (Stephenson, 2006; Williams & Schreier, 2005). Patients in the experimental group received education 12–24 hours before initiation of chemotherapy, whereas patients in the control group received education during the first infusion. As mentioned previously, patients in the control group exhibited higher STAI scores than patients in the experimental group.

In Mann's (2011) study ( $N = 72$ ), the intervention group ( $n = 32$ ) received education prior to the start of chemotherapy, whereas the control group ( $n = 40$ ) received the same education during the first chemotherapy infusion. The author did not state how long before chemotherapy the education was provided. Data from patient satisfaction surveys indicate that 28 patients in the intervention group were satisfied with the education. Of note, 22 participants in the experimental group stated that their anxiety was reduced as a result of the intervention compared to 12 participants in the control group. The control group expressed a desire for information before the first day of chemotherapy.



Malone (2007) provided education about one week before the start of chemotherapy. Findings were obtained using patient satisfaction surveys that addressed the relevance, effectiveness, and organization of the education. Results of the surveys were not explicitly discussed; however, 84% of respondents rated the educational session as “excellent” or “good.” Malone (2007) concluded that information given prior to the start of chemotherapy may increase coping strategies.

## Environment

The environment in which the education occurs impacts its effectiveness. Performing education in an environment that supports learning may increase retention (Malone, 2007; Mann, 2011). Malone (2007) and Mann (2011) performed an educational intervention in a quiet area of a facility, whereas the control group received education in a busy infusion center. Mann (2011) found that 100% of participants in the experimental group reported the educational environment was conducive to learning, whereas only 10% of patients in the control group reported the same. Malone also found similar results. Of the 60% of participants to complete the satisfaction survey, 84% rated the class as “excellent” or “good.”

Williams and Schreier (2005) recorded an audiotape describing side-effect management strategies so patients could receive the information in the comfort of their homes. This also allowed patients to listen to information as often as needed and at an appropriate time. Williams and Schreier (2005) suggested that the treatment setting is distracting and, therefore, not suitable for learning.

## The Role of the Nurse

A consistent theme throughout the literature is the use of oncology nurses as educators. According to the NCCN (2013), the primary oncology team is responsible for developing a mutually trusting relationship with patients to facilitate learning. This also encourages patients to ask questions and can promote security and comfort during infusion (NCCN, 2013; Stephenson, 2006).

Nurses possess the skills to effectively provide patient education. In addition, oncology nurses are knowledgeable about chemotherapy and play an integral role in helping patients manage side effects (Williams & Schreier, 2005). Therefore, they can provide education that assists patients in effectively managing side effects at home (Williams & Schreier, 2005). Nurses are the healthcare professionals who interact with patients most frequently (Mann, 2011); therefore, they are in a prime position to provide education. Nurses provided education in both pilot studies (Malone, 2007; Mann, 2011), which found education effective at reducing anxiety. Providing patient education about expected side effects and self-management strategies may decrease unwarranted hospitalizations, emergency department visits, and telephone calls (NCCN, 2013; Stephenson, 2006).

## Limitations

Additional research is needed regarding the effectiveness of group versus individual patient education sessions. In addition, specific information regarding timing of education before chemotherapy also is important; however, many researchers did not specify the time frame. In addition, finding relevant

## Implications for Practice

- ▶ Screen for anxiety in all patients diagnosed with cancer and scheduled to receive chemotherapy.
- ▶ Promote holistic care by providing education about treatment side effects and self-care behaviors.
- ▶ Provide education before the initiation of chemotherapy in an environment that is quiet and supports learning.

articles was difficult because little research has been published on preventing and managing anxiety related to chemotherapy.

## Implications for Nursing

Since 2007, the Institute of Medicine has considered psychosocial health as an aspect of quality cancer care and states that it should be integrated into routine practice (Adler & Page, 2008). The NCCN (2013) suggests that screening for anxiety should be implemented in community oncology practices. Instituting nursing measures to decrease anxiety related to chemotherapy treatment is one way oncology nurses can integrate psychosocial care into their existing framework. Holistic nursing care includes providing education about treatment side effects and self-care behaviors as a means of reducing anxiety (ASCO/ONS, 2012; Malone, 2007; Mann, 2011; NCCN, 2013; Prouse, 2010; Sheldon et al., 2008; Stephenson, 2006; Williams & Schreier, 2005).

Certain aspects of patient education should be considered for the development or revision of patient education programs. Evidence suggests that RNs are appropriate healthcare providers to lead educational sessions. Nurses must remember that education is most effective when performed before the patient receives the first infusion in an environment that is quiet and supports learning (ASCO/ONS, 2012; Malone, 2007; Mann, 2011; Stephenson, 2006; Traeger et al., 2012; Williams & Schreier, 2005).

As leaders of change, nurses should advocate for holistic care and encourage the use of education as a means to improve psychosocial health of patients. The role of the nurse can be expanded in oncology to include nurse educators who dedicate their career to properly educating patients throughout the journey of cancer. Nurses must engage in continuing education regarding new chemotherapy medications and evidence-based strategies to manage side effects to remain effective educators.

## Conclusion

When done appropriately, patient education is effective at preventing and reducing anxiety in patients receiving chemotherapy for the first time. Adequate time with a nurse discussing side effects of treatment and management strategies before the first chemotherapy infusion helps ease worry. A brief orientation to the infusion center and expectations for the treatment day greatly decreases fear of the unknown. As integration of psychosocial care into practice progresses, mechanisms for increasing quality of life and improving psychosocial outcomes are of increasing importance to nurses (NCCN, 2013).

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