

# Predicting and Modifying Substance Use in Childhood Cancer Survivors: Application of a Conceptual Model

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**Purpose/Objectives:** To identify factors that predict or modify substance use in childhood cancer survivors and to describe how a risk-counseling intervention reduced young survivors' substance use.

**Design:** Secondary analysis of clinical trial data and primary analysis of medical record data.

**Setting:** Outpatient clinic.

**Sample:** 149 females and 118 males 12–18 years of age whose cancer had been in remission for at least two years were randomly assigned to intervention (n = 132) and standard care (n = 135) groups.

**Methods:** Self-report questionnaires, abstracted medical record data, confirmatory factor analysis, and structural equation modeling.

**Main Research Variables:** Smoking, alcohol consumption, knowledge, risk perceptions, motivation, and worry about cancer and treatment effects.

**Findings:** Three factors directly predicted substance use at baseline: being in a higher grade in school (independent of age), feelings of being more susceptible to late effects of cancer therapy, and worrying more about cancer and its treatment. At follow-up a year later, grade in school and worry predicted increased substance use. In addition, a desire to change health behavior, influenced by the intervention and gender, predicted decreased substance use. The mechanism of influence of the intervention was evident: The intervention led to a need to change, which precipitated a desire to change and ultimately resulted in decreased substance use.

**Conclusions:** Young survivors' worries and concerns about their cancer and treatment-related late effects are a new intervention target. Motivation is sensitive to behavioral change interventions and positively affects risk reduction.

**Implications for Nursing:** Two new intervention strategies to address the impact of survivors' concerns about their cancer and its treatment are implied: (a) Replace substance use with new coping methods to reduce fear and anxiety, and (b) tailor motivation-based interventions to age and gender to communicate graphically and realistically to survivors the personal importance of behavioral change in modifying the risks of late effects.

Five-year survival rates for patients with childhood cancer are 77% (Ries et al., 2002), and an estimated one in every 640 young adults aged 20–39 in the United States will be a childhood cancer survivor by the year 2010 (Hewitt, Weiner, & Simone, 2003). The life-extending therapies credited for the high survival rate, however, are associated with multiple late effects, including cardiotoxicity, second malignancy, organ damage, neurocognitive and psychological impairment, osteoporosis, diabetes, obesity, and

## Key Points . . .

- ▶ Adolescent survivors of childhood cancer who smoke and consume alcohol compound their risks for late effects of treatment.
- ▶ Survivors' worry about cancer exerts a negative and positive impact on behavior: Higher levels of worry predict substance use as well as increase survivors' awareness of the need to change their behavior.
- ▶ Tailoring interventions to gender, age, and individuals' motivation for change likely will be more effective than a traditional knowledge-based health education approach.

related sequelae (Bhatia & Sklar, 2002; Glover et al., 2003; Hoffmeister, Storer, & Sanders, 2004). The late effects of therapy contribute to significant morbidity among survivors and a mortality rate that is 10.8 times greater than the general U.S. population's (Mertens et al., 2001).

Survivors' elimination of health-risk behaviors and participation in health-protective behaviors are the primary defenses against late effects of cancer treatment (Eshelman et al., 2004). Despite the risks, childhood cancer survivors continue to engage in behaviors that threaten their health and well-being significantly (Butterfield et al., 2004; Hollen & Hobbie, 1996; Tao et al., 1998). To modify survivors' risks of

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