

# Nutritional, Functional, and Emotional Characteristics Related to Fatigue in Patients During and After Biochemotherapy

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**Purpose/Objectives:** To test Winingham's psychobiologic entropy hypothesis in patients receiving biochemotherapy for melanoma.

**Design:** Descriptive, correlational, cross-sectional study.

**Setting:** Midwest cancer center.

**Sample:** 25 male and female patients who were receiving biochemotherapy or who had completed treatment 6–12 months prior.

**Methods:** Data were collected using a series of questionnaires and diet recall.

**Main Research Variables:** Fatigue, anxiety, depression, distressing symptoms, nutritional intake, and weight.

**Findings:** Moderate fatigue was significantly related to physiologic and psychological symptoms but not to nutrient intake. The sample was overweight, and a significant number of participants were obese. High caloric intakes were evident. Depression was a significant problem.

**Conclusions:** Fatigue was not as severe as expected, but problems with responses to the fatigue scale may explain this. Nutritional status and nutrient intake were not correlated to fatigue in this sample. Activity levels were related to fatigue, and treatment reduced activity. On average, activity returned to pretreatment levels 6–12 months after treatment. Winingham's hypothesis held and will be useful for understanding fatigue in this population.

**Implications for Nursing:** Depression needs to be assessed and treated as a side effect of biotherapy. Assessing the impact of nutrition when patients are overweight or obese is difficult. A scale specifically designed to test Winingham's hypothesis is needed.

## Key Points . . .

- ▶ Fatigue diminished and activity levels resumed 6–12 months after biochemotherapy for a variety of cancers.
- ▶ Depression is a known side effect of biotherapy, and patients need comprehensive assessment and treatment to manage this distressing symptom.
- ▶ The relationship between nutrient intake and fatigue in overweight or obese patients is difficult to establish.

The fatigue resulting from biotherapy has been described, similarly to other cancer-related fatigue, as chronic, characterized by generalized weariness, weakness, exhaustion, and feelings of tiredness (Skalla & Reiger, 1995; Wheeler, 1997).

Biotherapy in combination with chemotherapy has demonstrated significant improvement in the median and long-term survival of patients with melanoma. The toxicities associated with treatment from the initial human trials of recombinant interferon alpha have been described as dose limiting, with fatigue being cited as the most important symptom (Cuaron & Thompson, 1995; Parkinson, 1989; Quesada, Talpaz, Rios, Kuzrock, & Gutterman, 1986). A greater understanding of fatigue in patients with melanoma receiving biotherapeutic agents is imperative because of the improvements in survival.

Donnelly's (1998) study of patients with melanoma receiving high-dose interferon alpha-2b used data from the Eastern Cooperative Oncology Group trial E1684. Patients first received the interferon via IV for four weeks, followed by 48 weeks of subcutaneous injections. A total of 280 patients participated, and fatigue was found to affect 96% of the population; 33% of

**F**atigue is one of the most frequently reported symptoms of cancer and cancer treatment (Balducci & Extermann, 2000; Beach, Siebeneck, Buderer, & Ferner, 2001; Fleming et al., 2003; Stasi, Abriani, Beccaglia, Terzoli, & Amadori, 2003). It can be the first sign of an underlying disease process, and subsequent treatment with surgery, radiotherapy, or chemotherapy can induce or exacerbate feelings of fatigue (Piper, Lindsey, & Dodd, 1987; Smets, Garssen, Schuster-Uitterhoeve, & de Haes, 1993; Wheeler, 1997).

Biotherapy is defined as "treatment with agents derived from biologic sources and/or affecting biologic responses" (Reiger, 1997, p. 574). Specifically, these biologic response modifiers are defined as "agents or approaches that modify the relationship between tumor and host by modifying the host's biologic response to tumor cells with a resultant therapeutic effect" (Mahich & Fefer, 1983, p. 63). Interferon alpha, a prototypical biotherapy agent, causes fatigue in 70% of patients (Stasi et al., 2003). When combined treatment with interleukin and interferon is given, an additive effect of perception of fatigue occurs with almost 100% of patients reporting the symptom (Figlin, Beldegren, Moldawer, Zeffren, & deKernion, 1992; Hirsh et al., 1990).

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Digital Object Identifier: 10.1188/05.ONF.661-667