JOGNN PRINCIPLES & PRACTICE

Application of the Social Ecological Model in Folic Acid Public Health Initiatives

Lisa A. Quinn, Sharon J. Thompson, and M. Katherine Ott

All women of childbearing age who are capable of becoming pregnant should consume 0.4 mg/400 µcg of folic acid daily. Folic acid decreases the incidence of neural tube defects in newborns. Despite continued public health initiatives, many women still do not consume the recommended daily requirement. This article analyzes the use of the social ecological model in folic acid public health initiatives and emphasizes assessing the outcomes of such initiatives. *JOGNN, 34,* 672-681; 2005. DOI: 10.1177/0884217505281877

Keywords: Folic acid—Neural tube defects—Preconception care—Social ecological model—Women of childbearing age

Accepted: December 2004

Each year, 4,000 pregnancies in the United States are complicated by neural tube defects. The most common preventable neural tube defects are spina bifida, which occurs in 1 in 2,000 births, and anencephaly, which occurs in 1 in 8,000 births. Neural tube defects result in varying degrees of physical disability, ranging from a mild curvature of the spine to incompatibility with life. Neural tube defects account for 14% of infant deaths in the United States each year (Merseraeu, 2000).

Folic acid, or folate, was first discovered to have a connection with neural tube defects in the early 1960s (Centers for Disease Control and Prevention [CDC], 2001; Kadir & Economides, 2002; Rose & Mennutie, 1994). Folate plays a significant role in cell division and cell growth, which links folate deficiency to the incidence of neural tube defects (Perlow, 1999). Folic acid, a component of the vitamin B complex, is the synthesized compound used in dietary supplements and fortified foods. Folate occurs naturally in some foods, such as oranges, dark green leafy vegetables, and liver (Oakley, 1997).

Descriptive epidemiologic studies provided evidence that the occurrence of neural tube defects is linked to inadequate intake of folic acid, both preconceptionally and prenatally (Lewis & Nash, 1997; March of Dimes, 2001; Oakley, 1997; Platzman, 1998). A nonrandomized intervention study conducted in the late 1970s and early 1980s reported a sevenfold reduction in the incidence of neural tube defects among babies born to women who took daily multivitamin supplements containing folic acid (Smithells, Seller, & Harris, 1986). Additional study confirmed these findings, and researchers reported that if women of childbearing age had an adequate intake of folic acid, 50% to 75% of neural tube defects could be prevented (Czeizel & Dudas, 1992; Reifsnider & Gill, 2000; Schartz & Johnson, 1996).

Folic acid decreases the incidence of neural tube defects in newborns, but despite continued public health initiatives, many women still do not consume the recommended daily requirement. This article analyzes the use of the social ecological model in folic acid public health initiatives and emphasizes assessing the outcomes of such initiatives.

Recommendations for Folic Acid Supplementation

In 1992, with support from the National Institute of Medicine, the U.S. Public Health Service recommended that "all women of childbearing age who