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European Code against Cancer 4th Edition: Breastfeeding and cancer☆

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ABSTRACT

Breast cancer is the most frequent cancer in women, and incidence rates have been rising in European Union (EU) countries over recent decades due in part to a sharp decline in breastfeeding practices. Evidence for a protective association between breastfeeding and the risk of breast cancer at all ages is convincing, and modest protective relationships between breastfeeding and the risk of endometrial and ovarian cancers have been suggested. The reduction in breast cancer risk is estimated at 2% for an increase of 5 months of lifetime breastfeeding. The longer women breastfeed, the more they are protected against breast cancer. In addition, breastfeeding is associated with several health benefits for both the mother and the breastfed child. Taking all this evidence into account, the 4th edition of the European Code against Cancer recommends: "Breastfeeding reduces the mother's cancer risk. If you can, breastfeed your baby".

1. Introduction

Breast cancer is the most frequent cancer in women; it shows growing incidence rates together with a levelling towards decreased mortality across European Union (EU) countries. The increasing incidence over subsequent generations is also related to the increased prevalence of breast cancer risk factors such as later age at first pregnancy, decreased parity and breastfeeding. Breastfeeding for at least 5–6 months has a protective effect on the risk of developing breast cancer and possibly endometrial and ovarian cancers [1]. Breastfeeding is also associated with a more rapid return to pre-pregnancy weight and lower incidence of the metabolic syndrome for the mother, and with lower incidence

Abbreviations: IARC, International Agency for Research on Cancer; WHO, World Health Organisation; EU, European Union; RR, Relative Risk.

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Box 1. European Code Against Cancer.

EUROPEAN CODE AGAINST CANCER

12 ways to reduce your cancer risk

1. Do not smoke. Do not use any form of tobacco
2. Make your home smoke free. Support smoke-free policies in your workplace
3. Take action to be a healthy body weight
4. Be physically active in everyday life. Limit the time you spend sitting
5. Have a healthy diet:
   - Eat plenty of whole grains, pulses, vegetables and fruits
   - Limit high-calorie foods (foods high in sugar or fat) and avoid sugary drinks
   - Avoid processed meat; limit red meat and foods high in salt
6. If you drink alcohol of any type, limit your intake. Not drinking alcohol is better for cancer prevention
7. Avoid too much sun, especially for children. Use sun protection. Do not use sunbeds
8. In the workplace, protect yourself against cancer-causing substances by following health and safety instructions
9. Find out if you are exposed to radiation from naturally high radon levels in your home; take action to reduce high radon levels
10. For women:
    - Breastfeeding reduces the mother's cancer risk. If you can, breastfeed your baby
    - Hormone replacement therapy (HRT) increases the risk of certain cancers. Limit use of HRT
11. Ensure your children take part in vaccination programmes for:
    - Hepatitis B (for newborns)
    - Human papillomavirus (HPV) (for girls)
12. Take part in organised cancer screening programmes for:
    - Bowel cancer (men and women)
    - Breast cancer (women)
    - Cervical cancer (women)

The European Code Against Cancer focuses on actions that individual citizens can take to help prevent cancer. Successful cancer prevention requires these individual actions to be supported by governmental policies and actions.

of respiratory tract infections and later obesity for the breastfed infant [2,3]. Taken together, the 4th edition of the European Code Against Cancer (Box 1) [4] advocates action-oriented recommendations for the general public. The Code recommends breastfeeding babies in order to decrease the risk of breast cancer and to gain several short- and long-term health benefits.

1.1. Breastfeeding trends in Europe

The World Health Organisation (WHO) has developed a common set of breastfeeding definitions to help standardise the assessment of breastfeeding practices in the global context [5]. The WHO defines *ever breastfeeding* as the baby having *ever* been put to the breast, even if only once, and *exclusive breastfeeding* as the baby having received *only* breast milk during a specific period of time. Yet defining breastfeeding rates on the basis of WHO indicators remains challenging, and methods of breastfeeding data collection vary greatly between countries (Fig. 1) [6–8]. In European countries, where data are available, rates of *ever* breastfeeding at age 3 months range from 22.7% to 97.6%, while averages are lower and range from 16% to 96.5% by the time infants are 6 months old [8,9]. EU breastfeeding data on infants *exclusively* breastfed for the first 6 months of life place Germany as having the developed world's highest known breastfeeding rates (22%), according to the WHO standard; Finland, Ireland, Switzerland and Austria in the higher breastfeeding category (15%, 15%, 14%, and 10%, respectively); and France, Scotland and Belgium ($\leq$1%) as having far lower rates than the other EU countries [10]. Overall, the incidence of exclusive breastfeeding and its duration tend to be higher in countries that support long maternity/parental leave, such as Germany, the Nordic countries, Hungary and the Czech Republic. Other determinants of the breastfeeding practice include infant characteristics and societal and cultural norms of the feeding choice [11].

A 'Global Strategy for Infant and Young Child Feeding' is endorsed by the WHO member states and the United Nations Children's Fund (UNICEF) Executive Board [12]. However, breastfeeding rates and practices in EU countries fall short of WHO/UNICEF recommendations, and different areas need implementation, including public health policy, legislation formulation, adoption of the WHO code of breast-milk substitutes, marketing issues, and information on infant feeding. Adequate information, education and communication are crucial to promote, protect and support breastfeeding in countries where formula feeding (food substitutes used to replace breastfeeding) has been considered the norm for several years/generations.

1.2. Breast cancer incidence in Europe

Breast cancer (International Classification of Diseases: C-50) [13] is the second most common cancer in the world and by far the most frequent cancer in women, with an estimated 1.67 million new cancer cases (representing 25% of all cancers) diagnosed in 2012 [14]. The International Agency for Research on Cancer (IARC), in collaboration with the European Network of Cancer Registries [15], provides estimates of the EU cancer burden from 25 years ago [16,17]. Breast cancer incidence is strongly related to age, and European rates rise steeply from around age 30–39 until the menopause, when the increase slows down or remains stable, subsequently increasing to reach an overall peak in the 80+ age group [17]. In 2012, breast cancer was the leading cancer in women in all EU countries, with an estimated 500,000 (28.6%) new breast cancer cases distributed in a clear geographic pattern (Fig. 2). Incidence rates vary nearly three-fold across EU regions and attain nearly 96 per 100,000 population in Western Europe. Higher incidence rates are estimated in Belgium (147), Denmark (143) and France (137), followed by Iceland (131), the United Kingdom (129) and Finland (121). In comparison, incidence rates in Eastern European countries such as the Ukraine and Moldova are much lower (54 and 53, respectively) [17]. This variability may reflect the extent and type of mammographic screening activities, as well as a variance in the prevalence and distribution of known breast cancer risk factors (*e.g.* family history, reproductive factors, consumption of alcoholic beverages [1,18]) across European countries.

UNICEF estimates that an increase of 16% in the proportion of women who breastfeed for 6 months could lead to 1.6% of expected breast cancer cases being avoided each year. The scenario with the greatest benefit (2.9% of breast cancer cases avoided) would follow if the number of women who never breastfed were to be halved and the breastfeeding rates for 18+ months were doubled [19].

2. Association with cancer

There is abundant epidemiological evidence from both cohort and case–control studies that a longer duration of breastfeeding is linearly correlated with a lower risk of both premenopausal and postmenopausal breast cancer [1,20], in addition to a modest protective association with risk of endometrial and ovarian cancers. To estimate the long-term effects of breastfeeding on the risk of cancer, we report on studies which compared women who breastfed for less than a given number of months to those who breastfed for longer periods; those studies comparing ever- to never-breastfeeding will tend to underestimate any association.