Motivation for Parenthood After Cancer: A Review

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Research on the psychosocial aspects of parenthood after cancer is just beginning. Because of delayed childbearing and increasing success of cancer treatment, more young adults are experiencing infertility related to their past cancer treatment. Pilot surveys of 132 young men and women in one sample and 201 men in a second indicate that for a majority of cancer survivors, their illness increases the value they place on family ties. Nevertheless, 17% of women had unrealistically high anxiety about pregnancy causing cancer recurrence, and even greater percentages of survivors feared that their children would be at high risk for birth defects or cancer. More research is needed with large and diverse samples of cancer survivors to create educational and supportive interventions for those interested in becoming parents after cancer. [J Natl Cancer Inst Monogr 2005;34:2–5]

The demographics of cancer survivorship and delayed childbearing ensure that increasing numbers of patients will have their family building disrupted by cancer treatment. The gradual successes of cancer treatment, particularly for malignancies that affect young people, such as pediatric leukemia, testicular cancer, and Hodgkin Disease, also have yielded a large population of cancer survivors who may still wish to have children. According to the National Health Information Survey of 2001 (1), 2.2% of adults aged 18–44 years in the United States have been diagnosed with cancer. Using statistics for this age group from the United States 2000 Census (2), approximately 2.5 million adults of childbearing age are cancer survivors. Not all cancer treatments impair fertility, but a majority of these men and women were probably treated with gonadotoxic chemotherapy, with smaller numbers having had surgery or radiation therapy affecting the reproductive system.

At the same time, childbearing has become increasingly delayed in American families. Birth rates for women in their thirties have been climbing steadily, reaching a high in 2001 of 95.6 per 1000 women aged 30–34 years and 41.4 per 1000 women aged 35–39 years (3). Births to women aged 40–44 years have more than doubled since 1981, to 8.1 per 1000 women. According to the United States Census report for 2000, the percentage of women who remain childless has jumped from 19.8% in 1980 to 28.1% in 2000 for women aged 30–34 years and from 12.1% in 1980 to 20.1% in 2000 for women aged 35–39 years (4). When these women seek medical care in preparation for conceiving, some will receive the unwelcome news of a malignancy. Data on paternal age are not readily available, but in 1995 in the United States, men at marriage were on the average 2.7 years older than their brides (5), so men, too, would be more at risk of having cancer diagnosed when they had not yet completed their families.

Infertility related to cancer treatment is not the only barrier to parenthood after cancer. Some young survivors may be burdened by medical bills, be denied affordable medical or life insurance, or have difficulty attracting a partner because of their medical liabilities. Cancer treatment may also interrupt career development, further decreasing financial resources. Young survivors face a heightened risk of second malignancies and other late effects of cancer treatment, and they may not have optimal levels of energy and vitality (6).

Motivation to Have Children After Cancer

How does the experience of cancer affect survivors’ desire to have children? Do the continuing stress and uncertainty about the future, even after apparently successful cancer treatment, discourage many from becoming parents? Perhaps infertility seems less salient and distressing in the face of a life-threatening illness. Only a few surveys have addressed these issues, and most focus on women. Contrary to such expectations, for younger women the loss of fertility may be almost as painful as the confrontation with cancer itself (7,8). Qualitative studies with younger survivors of breast cancer reveal several themes: women want to achieve their goal of parenthood, to feel normal again, and to rejoin the healthy world of motherhood. Women also worry about the health of their children, the potential for pregnancy to cause a cancer recurrence, and living to see their children grow up. Women wish to meet similar peers who have experienced pregnancy after breast cancer (8–11). Although infertility is often seen as a “women’s issue,” a retrospective survey of 153 testicular cancer survivors indicated that distress about infertility is also prevalent among men, particularly among those who are childless and who have cancer treatments that are likely to severely impair fertility (12). A small, qualitative study of men with diverse cancer sites confirmed that infertility can cause long-term distress (13).

Our own research over the last several years includes two surveys demonstrating that having children is a very important part...
of quality of life for younger cancer survivors (14,15). The first questionnaire was completed by men and women from the tumor registry of the Cleveland Clinic Foundation who were diagnosed before age 35 years, were currently at least age 14 years, and were free of disease at last follow-up (14). The second focused in detail on sperm banking and was only sent to men from the registries of the Cleveland Clinic Foundation and the University of Texas M. D. Anderson Cancer Center (15). Other eligibility criteria were identical to those for the first study, except that diagnosis could have occurred up to age 40 years. Table 1 compares the characteristics of the two samples. In the first survey, no gender differences were found in the wish to have children after cancer or in attitudes about parenthood after cancer. Seventy-six percent of survivors who were childless at the time of the survey wanted children in the future, as did 31% of those who already had at least one child (14). Results in the second survey were almost identical: 76% of childless at the time of the survey wanted children in the future, as did 31% of those who already had at least one child (14). Having cancer decreased the wish to have a child in only 6% of childless survivors in the first survey and 13% in the second sample, compared to the cancer increasing the wish for a child in 19% and 24% of the samples, respectively. Table 2 illustrates that for the great majority of both samples, the experience of cancer increased the value placed on parenthood and family ties, and that only a small minority of respondents perceived ill health as a barrier to becoming a parent. Biological parenthood was still an important goal for most survivors. A quarter to a third of respondents worried at least a moderate amount about their fertility, but adoption was considered an acceptable path to parenthood by over twice as many survivors as would contemplate having a child conceived with a donated gamete. This line of research is just beginning, and future surveys of survivors should include not only much larger samples but more diversity in terms of ethnicity and socioeconomic status.

**Anxiety About the Health of Offspring**

Table 2 also demonstrates that cancer survivors are concerned about potential health problems for their children. In both surveys, less than half of respondents had discussed these issues with a health care provider (14,15). One concern is that a parent’s past cancer treatment could lead to their having a child with a birth defect or genetic abnormality. No study has thus far documented an excess rate of birth defects in children born after one parent’s cancer treatment (16,17). In the largest studies to date that examine pregnancy outcome after treatment for childhood cancer, 4029 pregnancies in female participants in the Childhood Cancer Survivor Study were documented (18), as well as 2323 pregnancies in partners of the males in the study (19). Women’s past treatment with chemotherapy was not associated with adverse outcomes, but those who had previous pelvic irradiation were more likely to have low–birth weight infants. More voluntary pregnancy terminations were observed than anticipated, recalling our survey’s findings that some women chose sterilization because of anxiety about the safety of pregnancy or the health of potential children (14). In the male cohort, the rate of live births (69%) was significantly lower than that for pregnancies conceived with brothers of the cancer survivors (19).

About a third of cancer survivors in our surveys believed their children would have unusually high risks of cancer themselves (14,15). Again, these fears may be exaggerated. A Scandinavian study used registry data to assess cancer risk in the offspring of people who had survived childhood malignancies. The only increased cancer rates were seen in a few families with known, autosomal-dominant pediatric cancer syndromes, such as retinoblastoma (20).

Most offspring born to childhood cancer survivors who have been followed thus far were conceived long after the parent’s active treatment. More studies of survivors treated in adulthood are needed. Concern remains that using assisted reproductive technology to treat cancer-related infertility may allow conception to occur with genetically damaged gametes. It is noteworthy, however, that some types of chemotherapy can be administered to pregnant women in the second and third trimesters without causing fetal malformations (21), although subtle, cognitive impairments may perhaps remain undetected with current follow-up methods (22).

Although only a small percentage of young adults carry a known genetic mutation that increases lifetime cancer risk, the advent of genetic testing for inherited cancer syndromes creates a new set of dilemmas for those who want to become parents. For example, women with BRCA mutations increase their risk of breast cancer by having a pregnancy before age 40 years (23) but are often advised to have children early, followed by prophylactic oophorectomy when they are around 35 years old (24). Technologies such as prenatal diagnosis and preimplantation genetic diagnosis are also available to identify known autosomal dominant mutations responsible for hereditary cancer syndromes (25). Few couples have used these tests to avoid having a child at risk for inherited cancer, but with other genetic disorders, couples may prefer coping with the stress and low success rates of preimplantation...
genetic diagnosis to conceiving naturally and having to choose pregnancy termination if the fetus carries the undesirable genetic mutation (26).

**Psychosocial Aspects of Cancer Diagnosed During Pregnancy**

Cancer occurs during 1 in 1000 pregnancies (22). Relatively recently, many women were offered therapeutic abortions if they were diagnosed with cancer during a pregnancy, or they were discouraged from becoming pregnant after cancer treatment, even if they had a good prognosis. Abortion now is rarely suggested unless an ongoing pregnancy would interfere with life-saving cancer treatment (22). Even for breast cancer, diagnosis and treatment during a pregnancy does not appear to confer a survival disadvantage when women are matched on medical factors such as cancer stage and histology (27). An area much in need of study, however, is the psychosocial effect of experiencing cancer during pregnancy and the development of supportive interventions for such women when they have significant distress (28). In our first survey, 17% of women feared that becoming pregnant after cancer could promote a recurrence. One recent investigation found that reproductive concerns remain salient in women who have had gestational trophoblastic disease, and that 75% would have attended support groups if they had been available during treatment (29). An on-line support organization for women who experience cancer during pregnancy is also now available (30).

**Psychosocial Aspects of Choosing Nonbiological Parenthood**

Adoption and third-party reproduction are also paths to parenthood after cancer. Despite worries about the health of their future children, less than 10% of cancer survivors in either of our surveys (14,15) would choose to adopt or use donated gametes as a way to become parents while avoiding the potential health risks of a biological child. Parenting a nonbiological child is more accepted as an option when infertility prevents conception. Although men or women can become parents through adoption; use of donated sperm, oocytes, or embryos; or having a gestational carrier nurture an embryo, most of these choices are only affordable for the most affluent couples. Adoption of a child with special needs from a public agency is not expensive, but independent domestic or international adoption costs range from $8000 to over $30,000 (31). No survey data are available on whether a history of cancer is a barrier to adopting a child. However, anecdotal reports from an on-line discussion group on Yahoo.com, Adoption-after-Cancer (32), indicate that discrimination by agencies or birth mothers is fairly common. Many families do succeed in adopting a child, but most pursue international adoption.

Third-party reproduction does not necessitate the invasion of privacy of submitting to a home study and gives the couple a good deal of control over the genetic heritage of the child and its prenatal care. Yet adoption remains more acceptable than gamete donation to most cancer survivors (14,15). No psychosocial studies are available on families built by third-party reproduction after cancer, but studies of parents unselected for health who have used donor insemination should be relevant. Besides ignoring any lingering social stigma attached to assisted reproductive technologies, parents of children conceived with donor gametes must resolve the dilemma of whether or not to disclose the child’s genetic history. Although mental health professionals and bioethicists believe that openness is best (33), most families do not disclose the use of donor insemination to children. Sweden mandated in 1985 that children born of donor insemination had the right to know the identity of their biological father, but a recent survey with an 80% response rate revealed that 89% of families who used donor insemination to have a child since the law was passed have not informed their children of the circumstances of their conception (34). The largest prospective follow-up of donor insemination children to date documents normal adjustment of children and families as the cohort reaches age 12 years, despite the decision of almost all parents to maintain secrecy with their offspring (35). When gamete donation is used because of a parent’s cancer, however, telling the child may provide reassurance about his or her own lifetime cancer risk.

**Conclusions**

In summary, experiencing cancer as a child or young adult often strengthens the value survivors place on being parents. At the same time, survivors are often unrealistically anxious about the safety of pregnancy and the health risks to their potential offspring. Given that 2.5 million young adults in the United States have survived cancer, we need more research on the psychosocial aspects of parenthood, particularly on developing interventions to provide education and support.

**References**


