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Reproductive and sexual health care in oncology: current practice and challenges

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Chapter 1

General introduction and thesis outline

GENERAL INTRODUCTION

Cancer and sexuality

Being confronted with a cancer diagnosis of any kind is a life-changing event, with significant impact on well-being, quality of life and couple relationships (1). Cancer treatments and outcomes have dramatically improved in recent years but have the potential to impair endocrine, reproductive and sexual function (2-5).

Sexual function alterations

Sexual functioning is a central aspect of human being, according to the World Health Organization, and involves several aspects like desire, activity, gender identity, sexual orientation, pleasure, intimacy and reproduction (6, 7). Also, for most cancer patients, sexual function is a proven, important aspect of quality of life, regardless of age and type of cancer (8-14). Among 41.2% of patients with one of the ten most commonly occurring cancers, sexual dysfunction is a concern approximately one year after being diagnosed (12). Cancer diagnosis and treatment regimens may have a severe impact on sexual function, both functional as well as emotional effects (15-17). Sexual side effects are wide-ranging and go beyond cancer treatment of solely the pelvic or breast organs (9, 18-20). Alterations in sexual function of cancer patients and survivors are complex, and several circumstances may lead to changes in physiologic, psychological and social dimensions of sexuality, as displayed in Figure 1 (21, 22). Not only direct effects may alter sexual function, also symptoms like fatigue, pain, incontinence, depression, but anxiety and disfigurement may interfere with patients' and their partners' perception of perceived sexual appeal (19, 23, 24). Correspondingly, a patients' partner status has to be considered (single, partnered or widowed). Couples' relationships could be impacted by illness when communication with the partner is poor (25). Unpartnered patients may have substantial concerns about changes in body image and how to notify a new partner about the cancer and its' consequences.

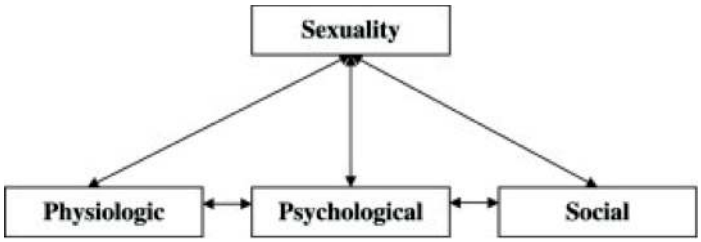

Figure 1. Dimensions of sexuality.
Source Tierney DK. Sexuality: A Quality-of-Life Issue for Cancer Survivors. Seminars in Oncology Nursing. 2008;24(2):71-9. (21).

Treatment characteristics

Surgery is frequently part of cancer treatment but may lead to sexual dysfunction resulting from nerve damage, temporary or permanent body deformation, changes in bowel or bladder function and physical weakness (26-28). Body image, for its part, plays a substantial role as a part of mental health and sexual function (29, 30). Radiation effects can deteriorate sexual function due to connective tissue fibrosis (e.g. vaginal stenosis), skin changes and tenderness, (chronic) pain, nerve damage, lymphedema, altered bladder and bowel function, fatigue, ovarian failure, erectile dysfunction due to small-vessel injury and ejaculatory issues (31-37). Furthermore, radiation can have a negative impact on long-term cosmetic outcomes in breast cancer (38, 39). Chemotherapy has the ability to cause mucositis, which induces vaginal irritation, lubrication issues and pain with intercourse (40, 41).

Furthermore, short and long term effects like nausea, fatigue, hair loss, erectile dysfunction and premature menopause may also result in altered sexual function (42-44). In women, antihormonal therapy is associated with a lower frequency of sexual activity, less satisfaction and more discomfort during sexual activity (45, 46). As for men, typical side effects like hot flashes, gynecomastia, loss of libido, erectile dysfunction and fatigue may occur from androgen deprivation therapy (47, 48).

Sexual health care needs

Due to the increase in the number of cancer survivors, attention for cancer survivorship is increasing correspondingly. For most patients, cancer survivorship includes maintaining a satisfactory quality of life, along with the ability to function appropriately sexually (49). However, sexual function is not only an issue for patients treated with curative intent. Palliative patients unanimously agreed that care should include the counselling of the impact of their illness on sexual function and are often even more affected than other cancer patients (50-52). Nonetheless, for various reasons, sexual function is frequently omitted and underreported by oncology health care professionals (53-60). Patients and their partners may find it challenging to initiate questions about sexual function, although a significant group would be interested in receiving sexual counselling (61, 62). Few cancer patients recall discussing possible sexual side effects before commencing their treatment. Neither do they remember discussing treatment options for sexual issues after treatment (26, 56). Coping with sexual concerns during and after cancer treatment seems to remain a delicate business for health care professionals, patients and their partners. A surge of literature has come up in the past decade highlighting the importance of sexual function in cancer patients. To which amount consideration is paid to sexual concerns of cancer patients in the Dutch oncology practice remained unidentified so far and hence the incentive for this thesis.

Fertility impairment due to cancer treatment

Cancer treatment may result in impaired fertility and influence family planning in patients of reproductive age (defined by the WHO as 15-49 years) (63). In the Netherlands, close to one in ten cancer diagnoses affects an individual of reproductive age (64). Not only will various cancer treatments alter reproductive potential in groups like testicular cancer and lymphoma patients, but fertility may also already be decreased before treatment has started (65-68).

Treatment characteristics

Systemic chemotherapy targets rapidly dividing cells, and as a result, gonadal function may be impaired after treatment (69, 70). Radiotherapy causes ionising harm to primordial and growing follicles in the ovary, spermatogonia in the testes or the hypothalamic-pituitary-gonadal axis (71, 72). Furthermore, due to total body irradiation or pelvic radiotherapy, the uterus' vascularisation may be harmed, leading to an increased risk of miscarriage, low birth weight infants and premature births (73). Female cancer survivors have 39% less chance of becoming pregnant than the general population, as depicted in Figure 2 (74). Future fertility perspectives are somewhat better in male survivors, with a 26% lower post-cancer pregnancy rate in comparison with the general population (74).

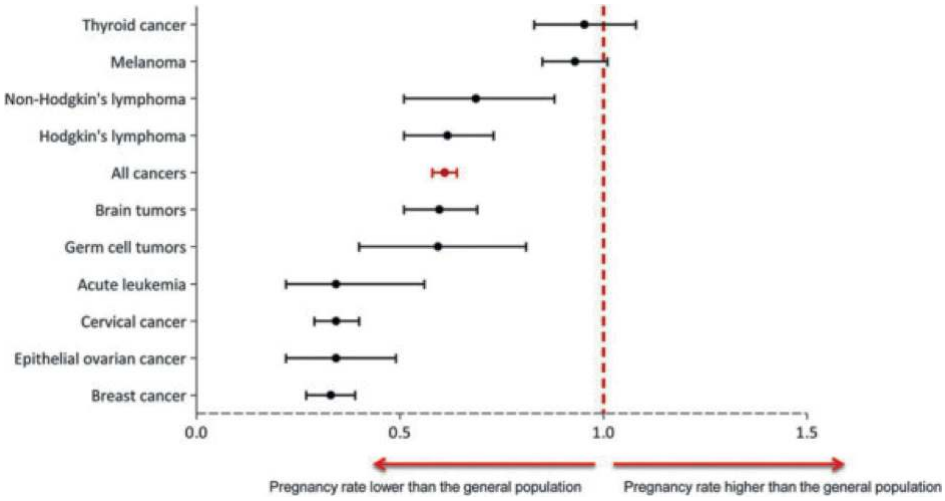

Figure 2. Chances of subsequent pregnancy depend on the type of cancer—analysis adjusted for age, previous parity and level of education. Data adapted from a population-based study from Norway, which included 16 105 female cancer survivors and 85 500 controls (74).

Source Peccatori FA, Azim HA, Orecchia R, Hoekstra HJ, Pavlidis N, Kesic V, et al. Cancer, pregnancy and fertility: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up†. Annals of Oncology. 2013;24:vi160-vi70. (75).

Fertility preservation

A variety of options has come available in the past decades, providing us with rapid and effective methods to cryopreserve gametes, embryos and reproductive tissue for patients about to commence cancer treatment (76). For males who are scheduled for treatments that may affect their chances of future fertility, sperm cryopreservation should be performed before treatment initiation (77). Sperm cryopreservation is considered the most cost-effective strategy for fertility preservation in male cancer patients (78). If sperm cryopreservation is not possible due to sperm abnormalities, testicular sperm extraction (TESE) is available (79). Young women desiring future fertility have embryo or oocyte cryopreservation options as the main available methods to preserve fertility, yet ovarian stimulation may take up to three weeks (80). Freezing ovarian tissue is an alternative without causing cancer treatment delay as it does not require ovarian stimulation but implies two surgical interventions and is still considered experimental (81). In the case of pelvic radiation, ovarian transposition can be considered. However, this does not protect the uterus from radiation-induced damage (82). In some cases, there may be an advantage of combining different preservation approaches (80).

Counselling and decision-making in fertility concerns

Several international guidelines, networks and foundations have been established in recent times, highlighting the importance of timely discussion of potential fertility deterioration resulting from cancer treatments (75, 76, 80, 83). Despite these developments, practice behaviour and attitudes of health care professionals have been reported to vary, influenced by several barriers to discussing this delicate subject with cancer patients of reproductive age (5, 84-86). Among clinicians, knowledge of fertility-preserving options and when they should be offered is suggested to be varying and not always clear (87-89). In a survey among 560 women of reproductive age who received treatments that could potentially harm fertility, 61% was counselled by their oncology health care professionals, 5% by a fertility specialist and 4% performed fertility preservation (90). A review regarding fertility concerns in cancer survivors mentioned a recall for counselling fertility risks ranging from 34 to 72% (86). Fortunately, a positive trend regarding referral for semen cryo-preservation has been demonstrated, as the number of male cancer patients substantially increased during the past decades, as shown in Figure 3 (68).

The long-term emotional impact of not being able to conceive a child is a severe source of distress to people treated for cancer during childbearing age (91). Loss of fertility is the most distressing long-term outcome of cancer treatment and linked with reduced quality of life and mental health issues (91, 92). Although literature demonstrated that future fertility is a major concern for men and women diagnosed with cancer, insufficient knowledge and attitudinal barriers among health care professionals may prevent patients from receiving the required care and referral to a fertility specialist (86).

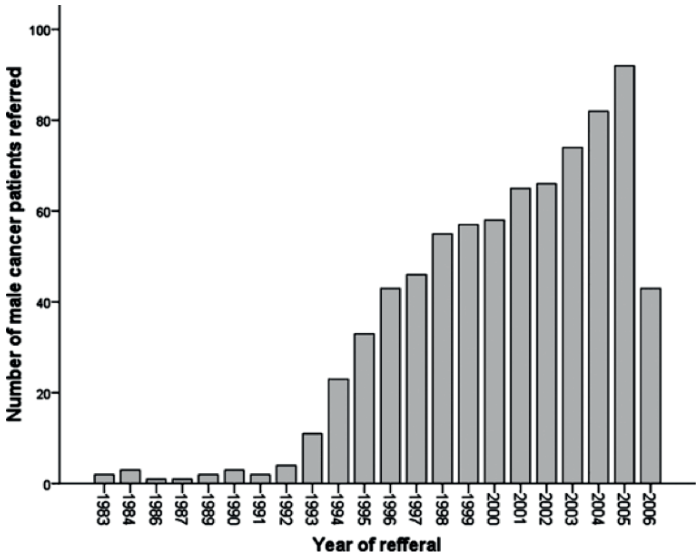

Figure 3. The number of men referred for semen cryopreservation according to the year of referral.
Source van Casteren NJ, Boellaard WP, Romijn JC, Dohle GR. Gonadal dysfunction in male cancer patients before cytotoxic treatment. International Journal of andrology. 2010;33(1):73-9. (68).

Considering the significant consequences of losing reproductive opportunities, health care professionals should be knowledgeable about fertility impairment associated with cancer treatment and proactively counsel fertility and preservation options with all patients of childbearing age (93). Counselling about reproductive loss and fertility preservation by the treating physician and a fertility specialist is associated with less regret and greater quality of life for cancer survivors (90). Oncology clinicians play an essential role in future reproductive abilities by working closely with fertility specialists, providing patients with extensive information about fertility preservation options before the start of cancer treatment.

The intention emerged to investigate whether patients are well informed about infertility risks and fertility preservation options and if sufficient support is provided for guiding them in their reproductive decision-making before treatment. By assembling this knowledge from the perspective of both doctors, nurses and patients, recommendations can be composed for improvements in clinical care for this vulnerable group at risk of losing their reproductive capability.

OUTLINE OF THIS THESIS

This thesis is divided into two parts. **The first part** focuses on discussing the effects of cancer and its treatment on sexual functioning by oncology health care providers. The main research questions concerned to what extent concerns regarding sexual function are discussed and per-

ceived barriers to the consultation of sexual function. Other objectives included determining the responsibility for discussing sexual function and potential problems, present knowledge and interest for additional training. Quantitative, nationwide evaluations have been performed among oncology health care professionals in pursuance of addressing these research questions. We evaluated Dutch oncology nurses, surgical oncologists, radiation oncologists, medical oncologists, urology residents and plastic reconstructive surgeons. Furthermore, urology and radiation departments have been approached in order to investigate the current information provision and counselling with regards to sexual function and prostate cancer treatments.

Following the assessment of the discussion of sexual function, the question arose regarding the management of fertility issues in oncology practice. For this reason, **the second part** of this thesis focuses on the counselling of altered fertility due to cancer treatment. We aimed to investigate both patients' and health care professionals' perspectives on fertility-related issues. Data displayed in the second part have also been collected using questionnaires among both health care professionals and testicular cancer patients. We assessed the current practice of oncology nurses and medical oncologists in the counselling of impaired fertility with their patients. Furthermore, the current level of knowledge regarding the influence of cancer drugs on reproductive and sexual function was examined among medical oncologists.

Finally, **in part three**, the findings of the work presented in this thesis are discussed and placed in a broader perspective. Moreover, future perspectives are represented. Summaries of the studies reported in this thesis are provided in both English and Dutch.

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