

Lifestyle and Breast- and gynaecologic cancers

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Introduction

Lifestyle takes into account many dimensions involving the physical, mental, social, economic and spiritual aspects. The diagnosis of cancer for any individual therefore affects some or all of the dimensions involved with lifestyle. Almost 13 million people worldwide are diagnosed with cancer each year and about 8 million will die from the disease. However, with advances in the detection and treatment, it is estimated that over 25 million people are alive with a past diagnosis of cancer.^{1,2}

Treatment and efforts aimed at prevention of cancer largely focus on pharmacological therapies and these are known to have side effects which can result in future morbidity, as well as mortality. Lately, most studies are shifting focus and are aimed at methods that can improve quality of life and also offer health benefits to cancer survivors. Several life style factors play a significant role in determining an individual's risk of developing gynaecological cancers. Many of these could be modified to ameliorate an adverse effect or to protect against the development of cancer. Diet, physical activity and weight have each been linked to cancer outcomes, particularly in cancer survivors.

A) Breast cancer

Breast cancer accounts for nearly 1 in 3 female cancers. It is the most frequently diagnosed cancer in women. Nulliparity and delayed child bearing are associated with an increased breast cancer risk for oestrogen receptor positive rather than negative tumours.³ Breast cancer mortality has been declining in recent years, a trend that has been attributed to early diagnosis and improvements in treatment. Increased improvement in the detection and treatment options of breast cancer has also resulted in the survival rates reaching peaks of between 77-90%. Despite the improvements in options available for detecting and treating breast cancer, the incidence has remained relatively stable. The current 5 year survival rate is nearly 90%.⁴ This has resulted in a need to look at options available in reducing breast cancer incidence and recurrence. Several factors have shown promise in reducing breast cancer incidence; among them being life style choices

especially, changes in the diet. Therefore, lifestyle modification can be an empowering and effective way to boost physical and mental health in breast cancer survivors and possibly improve outcomes.

General lifestyle behavioural guidance to promote health and prevent disease, is the cornerstone of public health policies. Nutritional and physical activity guideline recommendations for prevention of cancer are consistent with recommendations for chronic disease prevention. These include the following:

i) Diet

Diet appears to affect the risk of gynaecological cancers. Fruit, vegetables and antioxidants protect against the development of gynaecological cancers. The Green diet seems to be more protective because of mechanisms involving antioxidant activity, changes in cellular signalling pathways, induction of apoptosis, modulation of endogenous hormones and increase in metabolising enzymes.^{3,5}

A meta-analysis of 21 case control and 5 cohort studies, found that high consumption of vegetables exhibited a significant protective effect on breast cancer whereas, fruit consumption was not associated with breast cancer risk.⁶

ii) Weight and Obesity

Obesity is a serious public health problem that is reaching epidemic proportions in many developed and developing countries. It is also a significant contributory factor to the development of many gynaecological cancers. Weight is one of the nutritional factors that is constantly associated with mortality. Findings from Pierce and colleagues⁷ suggested that physical activity may be more important than weight in conferring a survival advantage. Weight gain after diagnosis of breast cancer is a common occurrence, though undesirable. Weight gain negatively affects the quality of life, predisposes women to other chronic medical conditions and adversely affects the disease-free survival. In a study by Kroene and colleagues, breast cancer survivors who increased their body mass index by 0.5-2 units had a relative risk of 1.40(95% CI, 1.02-1.92) for breast cancer recurrence; and those who gained more than 2.0 BMI units had a RR of 1.53(95% CI 1.54-2.34).⁸ A large European study showed that weight, BMI and hip circumference were all positively correlated with breast cancer risk. Obese post-menopausal women (BMI more than

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30) had a 31% excess risk, compared to those women with a BMI less than 25. Some preliminary evidence suggests that lifestyle changes may improve the prognosis of individuals with early stage cancer.

iii) Physical activity

A positive link between exercise and breast cancer survival has been observed. In 2010, the American College of Sports Medicine reported on a review that included data from 85 randomized trials. It concluded that exercise could safely be performed in both the adjuvant and post treatment settings apart from cancer specific outcomes such as, quality of life and fatigue. In the Nurses' Health Study which included a cohort of 2987 women diagnosed with stage I-IIIa breast cancer, after 96 months of follow up, those patients who were active (walking at the average pace for 3hrs /week) had a 50% lower risk of breast cancer recurrence, death and all-cause mortality than women who were inactive (engaged in less than an hour of recreational activity/week).^{9,10,11,12}

iv) Sexual health

Following chemotherapy and hormonal therapy after breast cancer, menopausal symptoms may result. This may lead to dyspareunia and less sexual enjoyment and fulfilment. Psychological effects and bodily image changes, following the diagnosis and treatment of breast cancer, may also result in relationship and sexual problems. Psychotherapy and other measures, such as vaginal dilators, lubricants and counselling may be of assistance to patients suffering from sexual problems. The use of vaginal oestrogen creams and tablets is controversial, especially in patients with a history of hormone receptor positive breast cancer.^{13,14}

v) Fertility and Pregnancy

Following the diagnosis of breast cancer, infertility may occur as a result of chemotherapy related gonadotoxicity or, due to a delay in child bearing for women on hormonal therapy. Women falling pregnant with a history of breast cancer do not compromise their survival. In a meta-analysis conducted in 2011 of 14 case-controlled studies, evaluating the impact of pregnancy on the overall survival of women with breast cancer, a subsequent pregnancy did not appear to compromise survival, compared to women who did not get pregnant. In another study presented at the European Breast Cancer Conference in 2012, pregnancy after breast cancer is safe, regardless of oestrogen receptor status.¹⁵

vi) Contraception

Some women, after being diagnosed with breast cancer, may want to delay falling pregnant while others may not wish to fall pregnant again. Apart from barrier methods for contraception, hormonal contraception has not been well studied in women with breast cancer apart from levonorgestrel-releasing intra-uterine contraceptive device for endometrium protection, in patients receiving Tamoxifen. The WHO guidelines for contraception use suggests avoiding hormonal contraception in women with current or past history of breast cancer.¹⁶

vii) Alcohol

Alcohol is considered by many as part of socialising. Although limited, evidence suggests that alcohol increases the risk of

breast cancer recurrence and possibly of cervical and mucinous ovarian cancer but reduces the risk for endometrial cancer. A meta-analysis of 53 studies comprising 58515 women with invasive breast cancer suggested a 7.1% increased risk for each additional unit of alcohol per day (95% CI 5.5-8.7).^{17,18,19}

viii) Smoking

Smoking is generally known to be carcinogenic and in relation to the lower genital tract neoplasia, it is probably the most important co factor. In an analysis of case-controlled studies done by IARC, evaluating the role of smoking for persistent HPV infection and cervical neoplasia, the excess risk of developing cervical carcinoma in women having ever smoked, indicated an odds ratio of 2.17.³

Smoking has also been shown to affect ovarian carcinogenesis. In a pooled analysis of 10 American studies, a positive association of smoking and mucinous ovarian cancer risk was observed.³

B) Endometrial Cancer

Endometrial cancer, like breast and ovarian cancer, is most common after the menopause. It can be classified as either as oestrogen-dependent (Type 1) - being the most common, or non-oestrogen dependent (Type 2) - being less common. Type 1 tumours are low grade and have a good prognosis, whilst type 2 tumours are more aggressive, tend to be diagnosed in late stages and have a poor prognosis.

Child birth decreases the risk of endometrial cancer, although the effect diminishes with increasing time since the last birth.³

The link between obesity and endometrial cancer is well established. A meta-analysis of 23 cohort studies conducted by WCRF/AICR, found that endometrial cancer risk increases by 52% per 5kg/m² increase in BMI. Data from two other cohort studies, namely EPIC and AARP diet and Health study, suggested that waist circumference greater than 88cm and increased waist to hip ratio are associated with increased endometrial cancer risk, independent of body mass status.

Even though a strong association of endometrial cancer with obesity exists, intentional weight loss of more than 20kg in the IWHS was associated with a non-significant reduction of only 4% among participants.

i) Dietary composition

Although a strong association between endometrial cancer and obesity exist, less research is available related to specific dietary components and risk for endometrial cancer development. Dietary fat intake and carbohydrate intake have not been associated with endometrial cancer. Especially with type 2 endometrial cancer, dietary intake or supplementary intake of folate, methionine and vitamin B2, B6 and B12 were associated with increased risk in the IWHS study.

ii) Alcohol

Although alcohol use has been shown to be associated with elevated levels of circulating oestrogen and reduced progesterone, a meta-analysis found no association between alcohol intake and endometrial cancer risk among cohort and case-control studies.

C) Ovarian cancer

Despite having a relatively low incidence, ovarian cancer is the most lethal of the gynaecological cancers. Early stages of this cancer are asymptomatic and therefore, women are diagnosed at an advanced stage of the disease. Risk factors for ovarian cancer include: older age (more than 50yrs), low parity, never having used oral contraceptives and a family history of breast or ovarian cancer. Prevention strategies for women at risk include oral contraceptive use, tubal ligation and prophylactic oophorectomy. An analysis of postmenopausal women, linked obesity to ovarian cancer risk in those not using hormone therapy. In the Nurses' Health study, there was no association between recent BMI and ovarian cancer risk; while in the Australian case-control study there was an increased risk in ovarian cancer in women with a BMI of over 29. In a systematic review of 34 studies, obesity was associated with a 40% increased risk of ovarian cancer (OR 1.4, 95% CI 1.2-1.6).³

i) Nutritional risk factors

No evidence exists linking nutritional factors with ovarian cancer. No association was found between fat intake and ovarian cancer. A report from the NHS found that women who consumed 2.5 servings of vegetables and fruit as adolescents, have a 46 % reduction in the risk for ovarian cancer. Adult vegetable and fruit intake was found to be unrelated to ovarian cancer risk. Increased intake of vegetables was associated with significant survival after ovarian cancer diagnosis.²⁰

Conclusion

Evidence exists confirming a direct relationship between diet, lifestyle and risk of cancer development. Cancer requires a major lifestyle change and if people adopt healthy patterns consistently throughout their life, this could decrease likelihood of cancer onset. Positive effects of physical activity on lowering the incidence of tumour and even reducing recurrence in patients with cancer already treated, like in breast cancer, have been beneficial in cancer patients.

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