A Study on Risk of Familial Cancers among Relatives of Patients Utilising the Inpatient and Outpatient Services of Obstetrics and Gynaecology Department, CMC Vellore

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Abstract:
Early identification of familial gynaecological cancers like breast, ovarian, colorectal and uterine can significantly help reduce morbidity and mortality. This descriptive study was done to identify women at risk for familial cancer and lifestyle risk factors contributing to familial cancer and refer them accordingly for treatment. 500 women who were relatives of patients admitted to the postnatal wards of CMC Vellore and those attending the OG OPD of CMC Vellore participated in this study. The Michigan Department of Health and Human Services (MDHSS) hereditary cancer risk assessment for people without cancer form (modified) and the Lifestyle Risk For familial cancer form(along with the demographic form) was used to obtain information regarding familial cancers from the selected women.The cancer risk categorization was done using the Jackson laboratory format. All tools were validated by medical and nursing experts. The study revealed that among the 500 respondents, 73.4% were above 40 years of age, 97.2% were married and 46.2% had given birth to more than 2 children. With regards to BMI, 68.8% of them were overweight/obese. The prevalence of familial cancers was done using the modified MDHSS Hereditary Cancer tool and none of the 500 women had any of the cancers mentioned in the tool. The Lifestyle Risk factors tool associated with familial cancers showed the following results- 98.8% did not consume alcohol, 99.8%did not smoke, 88.4% did not consume red meat, 93.2% did not consume saturated fats and sugars,12.8% were diabetic, 13.8% were diabetic and hypertensive, 3.6% had a sedentary lifestyle, 3.2 % had treatment for infertility among those having children and 3.2% of the family members of the respondents had one of the four familial cancers.The risk calculation showed that 58.2% had no risk, 36% had moderate risk with one or more of the components of the metabolic syndrome and 3.2 % were high risk for familial cancer.

Conclusion: *This high risk population of 3.2% has to be screened as soon as possible and the 36% of those in the moderate risk category need to be attended to help modify their lifestyle practices.*

I. Introduction:

Cancer is a multifactorial disease which results from a combined effect of genetic and environmental factors. A small proportion (5%) of cancers is hereditary. It is important to identify families with possible hereditary cancer types as these families will benefit from early detection and treatment to prevent of cancer formation. It is commonly observed in families with hereditary cancers that several members often inherit the same type of cancer from generation to generation, and that such hereditary cancers usually occur between the ages of 40-50 years in most frequent syndromes like Breast/Ovarian and Colorectal cancers. When a practitioner recognizes one or more of these symptoms within a family, the person concerned could be referred to a Familial Cancer Unit, or otherwise to a Clinical Genetics or Medical Oncology Service. Cancer is the second leading cause of death globally, accounting for an estimated 9.6 million deaths or one in six deaths, in 2018(WHO, Cancer, 2021). The cancer burden continues to grow globally, exerting tremendous physical, emotional and financial strain on individuals, families, communities and health systems.

Significance and need for the study:

According to The World Cancer Report, the estimated cancer burden in India in 2018 was about 1.16 million new cancer cases, 784,800 cancer deaths, and 2.26 million 5-year prevalent cases in India's population of 1.35 billion (The Print, based on WHO Report, February, 2020).The report said that "one in 10 Indians will develop cancer during their lifetime, and one in 15 Indians will die of cancer." The report added that of the 587,000 new cancer cases in women, breast cancer (162,500), cervical cancer (97,000), ovarian cancer (36,000), oral cancer (28,000), and colorectal cancer (20,000) account for 60% of all cases. The burden of cancer types, such as breast cancer and colorectal cancer, associated with overweight and obesity, lower levels of physical

activity, and sedentary lifestyles is increasing. World Health Organization (WHO) has warned that global cancer rates could rise by 60% over the next 20 years unless cancer is taken care of in the low and middle-income countries (The Hindu, based on WHO Report, February, 2020). Incidence rates are also increasing for cancer types associated with overweight and obesity and lower levels of physical activity, such as colorectal cancer, uterine cancer, ovarian cancer and prostate cancer.

The cancer burden can also be reduced through early detection and management of patients who develop cancer. Prevention offers the most cost-effective long-term strategy for the control of cancer. This assessment will help in identifying women and families who may be at increased risk of developing certain types of familial cancer. (Israel, HCRA, 2013) This is a descriptive study to identify women at risk for familial cancer and also identify the associated lifestyle factors contributing to familial cancer to refer them accordingly for screening and treatment for mitigating morbidity and mortality. (T.Rajkumar, 2015)

Objectives and aims of study
1. To assess familial cancer risk of close relatives of women patients of OG department using the personal and familial cancer risk assessment form
2. To determine the life style risk factors in close relatives of women patients of OG department for familial cancer

II. Methodology

Data collection Procedure: A sample size of 500 women who were relatives of patients admitted in the postnatal wards and OPD patients of OG services in CMC Vellore were selected for the study. The inclusion criteria were female relatives (between 18-60 years of age) of patients admitted on the obstetric wards and visiting OG OPD and who could comprehend English, Tamil or Hindi. Since no studies have been done to date combining all these cancer types, it was not possible to determine the sample size and hence an arbitrary sample size was set at 500 samples. Convenience sampling was used to collect samples. After identifying these women, written informed consent was obtained from them after explaining the study to them. The consenting participants were given the patient information sheet, demographic details form, Familial Cancer Risk Assessment form and the Lifestyle risk assessment form.(Andreas,National Cancer Institute) and guided in filling these. Risk of the cancer was calculated based on cancer history and lifestyle risk factors (Jackson Laboratory, 2021) The women identified with a family history of breast, ovarian, uterine and colorectal cancer with increased degree of risk were referred to the gynecological oncologist for further screening. (Farr.RNezhat, 2017, Maren, 2010))

Protection of Human Rights:
The proposal to conduct the study was submitted to the College of Nursing Research committee and approval was obtained. Permissions were obtained from the Head of the department of Gynae-oncology and Maternity Nursing. Informed written consent was obtained from the subjects prior to data collection and confidentiality of collected information was ensured.
Data Analysis:

Table 1-Demographic Profile of the Respondents (n=500)

Demographic Profile	Items	Frequency	Percentage
Age	Less than 20 years	1	0.2
	21 to 25 Years	8	1.6
	26 to 30 Years	23	4.6
	31 to 35 Years	36	7.2
	36 to 40 Years	65	13.0
	Above 40 Years	367	73.4
Educational Qualification	Illiterate	105	21.0
	Primary	118	23.6
	Secondary	177	35.4

	Higher Secondary	41	8.2
	UG	40	8.0
	PG	19	3.8
Occupation	Home Maker	383	76.6
	Employed	105	21.0
	Self employed	12	2.4
Monthly Income	Below Rs.5000	137	27.4
	Rs. 5001 to 10,000	170	34.0
	Rs. 10,001 to Rs. 15,000	113	22.6
	Rs. 15,001 to 20,000	30	6.0
	Rs.20,001 to Rs.25,000	22	4.4
	Above Rs. 25,000	28	5.6
Marital Status	Married	486	97.2
	Unmarried	14	2.8
No. of Children	No Child	22	4.4
	1 child	49	9.8
	2 children	198	39.6
	More than 2 children	231	46.2
Body Mass Index (BMI)	Less than 25	156	31.2
	25 to 29.9	176	35.2
	30 and Above	168	33.6

Demographic analysis of 500 participants showed that majority (73.4%) are in their 40s, most had not completed higher secondary schooling (35.4+23.6%) with 21% being illiterate, most were homemakers (76.6%), most were receiving a monthly income of less than Rs. 15000 (27.4+34.0+22.6%), most were married (97.2%), most had given birth to two or more children (39.6+46.2%). BMI assessment showed almost equivalent distribution across the categories.

Table 2- Lifestyle risk factors associated with familial cancers (n=500)

Life Style risk factors	Response	Frequency	Percentage
Alcohol consumption	Yes	1	0.2
	No	499	99.8
Smoking	Yes	1	0.2
	No	499	99.8
Heavy consumption of red meat	Yes	58	11.6
	No	442	88.4
Consumption of saturated fats and sugars	Yes	34	6.8
	No	466	93.2

Obesity	Yes	344	68.8
	No	156	31.2
Diabetes mellitus	Yes	64	12.8
	No	436	87.2
Diabetes and hypertension	Yes	68	13.6
	No	432	86.4
Sedentary lifestyle	Yes	18	3.6
	No	482	96.4
Any infertility Treatment	Yes	16	3.2
	No	484	96.8

Lifestyle assessment of 500 participants showed that majority neither smoked nor drank alcohol (99.8%), majority did not consume red meat (88.4%), over two thirds were obese (68.8%), about one tenth were diabetic (12.8%), about one tenth had hypertension along with diabetes (13.6%), majority had an active lifestyle (96.4%) and majority had not undergone any infertility treatments (96.8%).

Table 3- Prevalence of familial cancer among the respondents- modified MDHSS Hereditary cancer tool (n=500)

Prevalence of various types of cancer among the relatives of the respondents	Options	Frequency	Percentage
Two or more breast cancers on the same side of the family, 1 under age 50	Yes	0	0
	No	500	100.0
Three or more breast cancers on the same side of the family, at any age	Yes	0	0
	No	500	100.0
Multiple breast cancers in the same person (in the same breast or in both breast)	Yes	0	0
	No	500	100.0
Male breast cancer	Yes	0	0
	No	500	100.0
Triple negative breast cancer	Yes	0	0
	No	500	100.0
Pancreatic cancer with breast or ovarian cancer on the same side of the family	Yes	0	0
	No	500	100.0
BRCA Mutation in the family	Yes	0	0
	No	500	100.0
Have you had uterine (Endometrial) or colorectal cancer before age 50	Yes	0	0
	No	500	100.0
Two or more colon cancers or uterine cancers on the same side of the family, 1 under age 50	Yes	0	0
	No	500	100.0
Three or more colon cancers or uterine cancers on the same side of the family at any age	Yes	0	0
	No	500	100.0

Familial cancer assessment of 500 participants using the tool showed 100% negative responses for all questions.

Table 4 – Prevalence of Familial Cancer among the family members of the respondents (n=500)

Close Relatives	Frequency	Percentage
None	484	96.8
Father Sister	1	0.2
Grand Mother	1	0.2
Grandmother	2	0.4
Great Grandmother	1	0.2
Maternal Cousin	1	0.2
Mother	6	1.2
Self	1	0.2
Sister	3	0.6
Total	500	100

Assessment of familial cancer among family members of the 500 participants showed negligible familial history of cancer (96.8%). Cancer incidence was mainly in the mother (1.2%) with incidence in other family members being less than 1%.

Table 5 – Cancer incidence in close relatives of patients (n=500)

Close Relatives	Frequency	Percentage
No familial Cancer	484	96.8
Cancer Breast	7	1.4
Cancer Colon	1	.2
Cancer Uterus	8	1.6
Total	500	100

Assessment of familial cancer in close relatives of the 500 participants showed negligible familial history of cancer (96.8%). Cancer incidence was nearly equal for breast (1.4%) and uterine cancers (1.6%).

Table 6 – Risk analysis of familial cancer (n=500)

Risk Level	Frequency	Percentage
No risk	291	58.2
Average risk	13	2.6
Moderate risk	180	36.0
High risk	16	3.2
Total	500	100.0

Risk assessment of the 500 participants showed that nearly one third were at moderate risk of developing cancer (36.0%) and a very small number were at high risk (3.2%) of developing cancer.

Nursing Implication:

Adequately educated nurses can play vital roles across the cancer control continuum. Nurses' knowledge of patient populations makes them active partners with oncology specialists to address the increasing public health burden of this group of diseases. They are uniquely positioned to successfully identify risk factors and have the communication and teaching skills to work with individuals, families, and communities to change behaviors to promote health and reduce risk factors related to familial cancers and can implement preventive interventions at both the individual and the community level. (Julia et al, Journal of global oncology ,2016)

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