

# Breast Cancer Incidences in Indonesia Continue to Increase

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Cancer is a major public health challenge in the world which is increasing every year. In Indonesia, cancer incidence cannot be identified nationally because there has not been a national cancer registry. In 1994, of 12 cancer registration centers in Indonesia there were as many as 23,310 new cases of cancer with breast cancer the second largest (2,743 patients) after cervical cancer (4,126 patients).

"The incidence of breast cancer tends to increase and it is expected to be the cancer case most found in Indonesia," Samuel Johny Haryono said, defending his dissertation entitled Familial Breast Cancer: Inherited Predisposing Genes Search and Risk Calculation, in the doctoral examination at Auditorium of the Faculty of Medicine UGM, Monday (12/3).

Samuel described the proportion of breast cancer cases in young age is associated with mutations in two predisposing genes, BRCA1 and BRCA2. The contribution of two genes' mutation in breast cancer incidence population in younger age ranges from 5-10% in the general population but can rise much higher in specific populations that have mutation from their ancestors, including the 20% in the Ashkenazi Jewish population and the people of Iceland.

He said the possibility of familial breast cancer in family members who have not been affected (proband) at a certain age can be calculated. Today, a plenty of model calculations have been made. Generally, each model combines a variety of identified risk factors such as age, menarche age, age of first childbirth, and family history of breast cancer.

"After the discovery of susceptible genes BRCA1 and BRCA2, a number of risk prediction models are also developed to predict the likelihood of someone carrying mutations of genes BRCA1 and BRCA2 (carrier) and the risk of occurrence of cancer during their lifetime," the man born in Yogyakarta, July 1, 1952 said.

Research on familial breast cancer done by Samuel started with breast cancer patients who came to Dharmais Cancer Hospital, Dr. Sardjito Hospital and Sanglah Hospital from year 2000 to 2010 amounting to 1246 cases. Eventually, the sample in this study consisted of 210 patients, 95 people

with family history of breast cancer and 112 without breast cancer history.

Samuel added, as well as the specific mutation and modifier genes, environmental factors and lifestyle also influence the risk and penetrate BRCA mutation. Age is an important risk factor in carriers of BRCA mutations. The cumulative risk for a BRCA1 mutation carrier to have cancer is 65%, while BRCA2 mutation carrier is 45%.

"Although the risk of BRCA 1 mutation carrier is greater, the risk will tend to fall with age," the doctor in Dharmais Cancer Hospital Jakarta said.

From the search result of familial breast cancer genes through genetic testing of BRCA1, BRCA2, the researcher found 10 results of mutation with eight missense mutations and two nonsense mutations. The researcher previously reported 30 mutations of BRCA1, BRCA2 with 17 missense mutations and only 6 of them passed the Grantham table called as the unclassified novel.

In his doctorate exam, Samuel also recommended the development of a familial cancer clinic for comprehensive management of familial cancer, both breast cancer and other cancers. In addition it is necessary for further study on inherited predisposing genes based on linkage analysis in other chromosomes as well as SNP and other genes except BRCA1 and BRCA2.

"This is basic research for the advancement of cancer genetics in Indonesia. Further efforts include the establishment of a forum involving multidisciplinary science researchers," Samuel who passed the exam with honors said.

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