

COS PROJECT: PARTICIPATING CENTRES

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THE EUROPEAN COMMISSION
MANAGEMENT COMMUNITY RESEARCH



QUALITY OF LIFE AND
OF LIVING RESOURCES

EU PROJECT CASE ONLY STUDY (COS)
on the interaction of diet and genetic predisposition
in the occurrence of breast cancer in young women.



Eu Project COS towards the prevention
of hereditary breast cancer

European Project, Quality of Life, Key Action 1
Health Food and Environment, QLK1-2000-466-COS

Perspectives for prevention of hereditary breast cancer

Heritable breast cancer accounts for 5 to 7% of all breast cancers, and about half of these is related to BRCA1 or 2 gene mutations. Such mutations confer very high lifetime risks of developing breast cancer, and most of the cases already occur at young ages. However, not all mutation carriers develop BC or develops it only late in life. The penetrance of the genetic trait, in fact, may be regulated by other genetic or non-genetic factors.

The COS project is a case-only study aiming at:

Identifying dietary and other life-style changes that may prevent or postpone breast cancer in women belonging to high-risk families.



Developing primary preventive recommendations for high risk families and strategies for long term dietary intervention trials.



Developing and validating a software for classifying subjects (and families) as for the opportunity of genetic testing for high penetrance mutations of BRCA genes

Main Results

3123 European breast cancer patients younger than 40, agreed to participate into the study in 9 centers of 7 European countries (Estonia, France, Germany, Israel, Italy, Scotland, Slovenia). They were classified in terms of their probability of carrying BRCA mutations on the basis of their family history of breast and ovarian cancer, and we compared the frequency of several hypothesized etiologically relevant exposure in participant with high and low probability of mutation. Different frequencies indicate **a gene-environment interaction**, i.e. that the factor under study affects the incidence of genetic cancer by a greater (or lesser) magnitude than the incidence of sporadic cancer.

Options currently available for women carrying a BRCA deleterious mutation include surveillance programs, prophylactic mastectomy, and prophylactic ovariectomy. COS results indicate for the first time that susceptible women have further options for reducing their breast cancer risk.

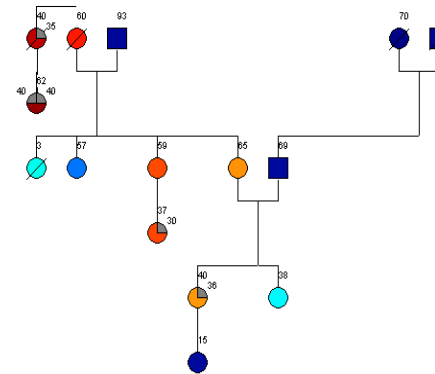
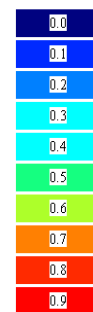


These include sustainable dietary modification as simple as avoiding the consumption of cow milk and increasing the consumption of cruciferous vegetables, such as broccoli, cabbage, cauliflower and brussel sprouts.

Further studies are needed to control these results. In the meanwhile, however, it would be prudent to implement the above recommendations, which are simple, sustainable, and safe.



Another major outcome of the project is the COS software developed for estimating the probability that a woman carries a mutation predisposing to breast cancer on the basis of her family history. It requires entering dates of birth, death and diagnosis of breast and ovarian cancer for all members of the family (up to 4th degree relatives), can incorporate genetic test results, and provides mutation probabilities for each family member with different colours as highlighted in the following output tree.



Family probability of mutation: 0.686

The COS software is available free of charge to researchers interested to share their experience to improve its performance.



Visit COS website: www.istitutotumori.mi.it [follow the above image]