Package 'cbcrisk'

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Type Package

Title Contralateral Breast Cancer Risk Prediction Tool

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Description Predicts the chance of developing contralateral breast cancer for a woman diagnosed with unilateral breast cancer.

License GPL-2

Depends R (>= 3.5.0), stats (>= 3.3.0), survival (>= 2.39.2)

NeedsCompilation no

R topics documented:

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cbcrisk-package   *Contralateral Breast Cancer Risk Prediction Tool*

Description

Predicts the chance of developing contralateral breast cancer for a woman diagnosed with unilateral breast cancer.

Details

This package contains a function called 'cbcrisk' for calculating the absolute risk of contralateral breast cancer (CBC). The function predicts the chance of CBC for women who are affected with unilateral breast cancer.

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cbcrisk   *Predicts the risk of contralateral breast cancer of a woman.*

Description

cbcrisk is used to predict the chance of developing contralateral breast cancer for a woman whose current age (i.e., age at counseling) is within 18-89. This function gives the predictions starting at the current age (start.age) and then in increments of a specified number of years (pred.year) up to age 89.

Usage

```
cbcrisk(race, profile, start.age, pred.year, print.output = T)
```

Arguments

race
: race of the woman: all or unspecified race (1); non-Hispanic Black (2).

profile
: a vector containing the values of 8 variables for all or unspecified race or a vector of 4 variables for non-Hispanic Black patient. The variables and their possible values (categories) are listed below in the Details section.

start.age
: current age (i.e., age at couselling) of the woman. It must be equal to or greater than the age at first breast cancer diagnosis.

pred.year
: increments (in years) at which the predictions will be made, starting at start.age up to age 89. e.g; 2, 5, 10, ... The default is 5 years.

print.output
: a logical indicating whether the output should be printed on R console. Defaults to TRUE. Setting it to FALSE suppresses the output.

Details

The cbcrisk function needs a vector of length 8 as a patient profile for a patient with unspecified race. The elements of the patient profile vector must consist of the numerical codes of the categories (noted in parentheses below) of the following risk factors:

Age at first BC diagnosis: <30 (1); 30-39 (2); 40+ (3).

Anti-estrogen therapy: Yes (1); No (2); Unknown (3).

1st degree family history of BC: Yes (1); No (2); Unknown (3).

High Risk Preneoplasia: Yes (1); No/Unknown (2).

Breast density: Extreme dense (1); Heterogeneously dense (2); Scattered (3); Almost Entirely fat (4); Unknown (5).

ER status: Negative (1); Positive (2); Unknown (3).

First BC type: Pure DCIS (1); Mixed (2); Pure Invasive (3).

Age at first birth: <30/Nulliparous (1); 30-39 (2); 40+ (3); Unknown (4).

The cbcrisk function needs a vector of length 4 as a patient profile for a non-Hispanic Black patient. The elements of the patient profile vector must consist of the numerical codes of the categories (noted in parentheses below) of the following risk factors:

Breast density: Scattered or Almost Entirely fat (1); Heterogeneous or Extreme dense (2); Unknown (3).

1st degree family history of BC: Yes (1); No (2); Unknown (3).

Tumor size: T0/T1/T2 (1); T3/T4 (2); TIS (3); Unknown (4)

Age at first BC diagnosis: <40 (1); 40+ (2).

Value

cbcrisk returns a list of three objects— the patient profile provided by the user, the current age of the woman provided by the user, and the contralateral breast cancer risks until age 89.

profile   the patient profile containing information about the variables discussed above.

current.age   current age of the Black woman.

risk   the risks of contralateral breast cancer up to age 89.

Author(s)

Marzana Chowdhury, Ibrahim Hossain Sajal

References

1. Chowdhury, M., Euhus, D., Onega, T., Biswas, S. and Choudhary, P. K. (2017) A model for individualized risk prediction of contralateral breast cancer, Breast Cancer Research and Treatment, 161, 153-160.

2. Chowdhury, M., Euhus, D., Banu, A., Umbricht, C., Biswas, S. and Choudhary, P. K. (2018) Validation of a Personalized Risk Prediction Model for Contralateral Breast Cancer, Breast Cancer Research and Treatment, 170, 415-423.

3. Chowdhury, M., Euhus, D., O'Donnell, M., Onega, T., Choudhary, P. K. and Biswas, S. (2018) Dose-Dependent Effect of Mammographic Breast Density on the Risk of Contralateral Breast Cancer, Breast Cancer Research and Treatment, 170, 143-14.

4. Sajal, I. H., Chowdhury, M., Wang, T., Euhus, D., Choudhary, P. K. and Biswas, S. (2022) CBCRisk-Black: a personalized contralateral breast cancer risk prediction model for black women, Breast Cancer Research and Treatment, 194, 179-186.

Examples

```
## The profile vector
patient_profile_1= c(3, 2, 1, 2, 3, 2, 1, 2)
patient_profile_2= c(2, 2, 1, 2)

## install packages "survival" (if not already installed)
## install the "cbcrisk" package

library(cbcrisk)

## risks of a patient of any or unspecified race at every 5 years (by default) starting at age 55
cbcrisk(1, patient_profile_1, 55)

## risks of a black patient at every 5 years (by default) starting at age 55
cbcrisk(2, patient_profile_2, 55)

## risks of a black patient at every 10 years starting at age 55
cbcrisk(2, patient_profile_2, 55, 10)
```

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