THE MENTAL HEALTH BURDEN IN CANCER SURVIVORS

A DANISH POPULATION-BASED STUDY

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WCE
WORLD CONGRESS OF EPIDEMIOLOGY 2024

BACKGROUND

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RESEARCH YEAR STUDENT, MEDICAL STUDENT

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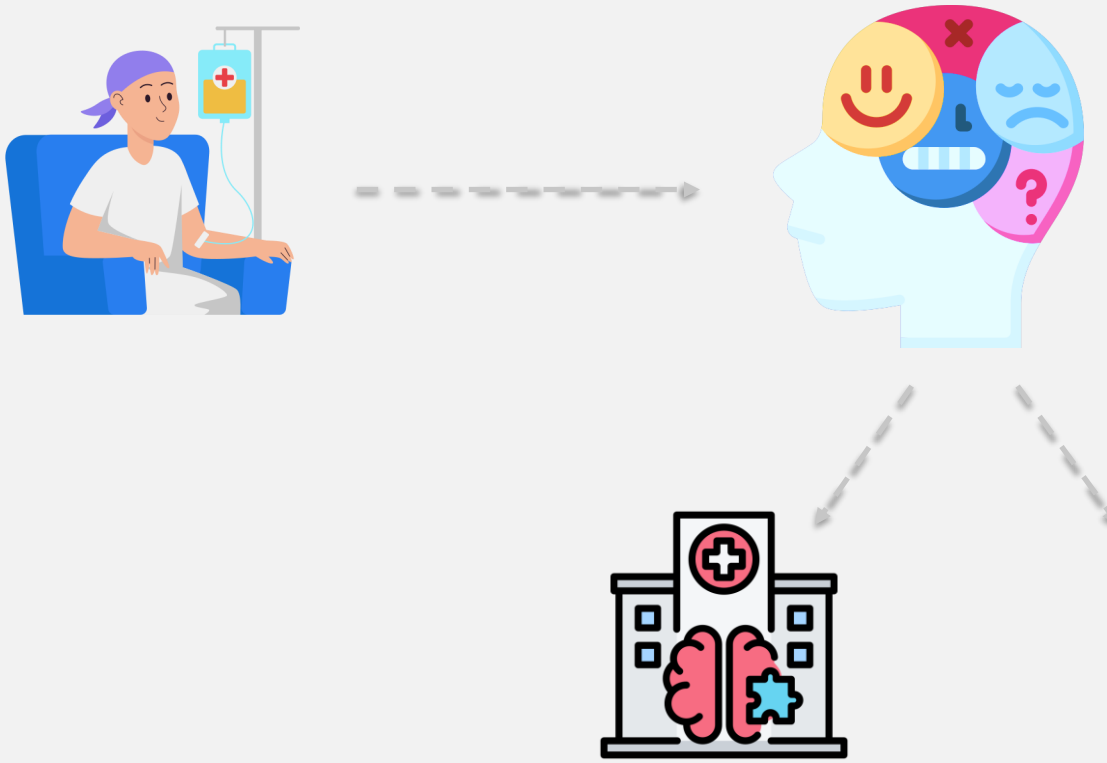

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To compare the prevalence of depressive symptoms, perceived stress, and poor mental health in cancer survivors with individuals without cancer

METHODS

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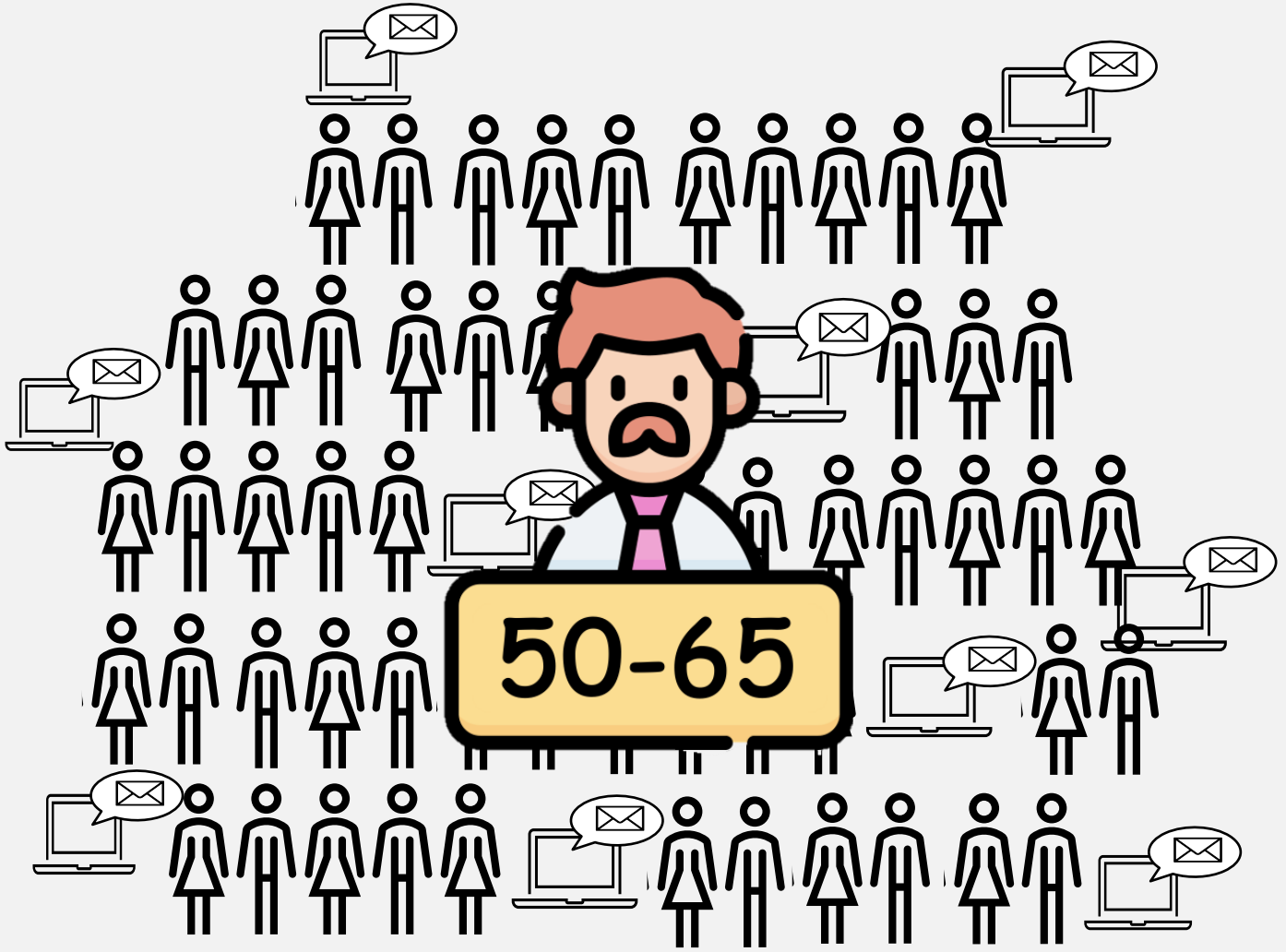

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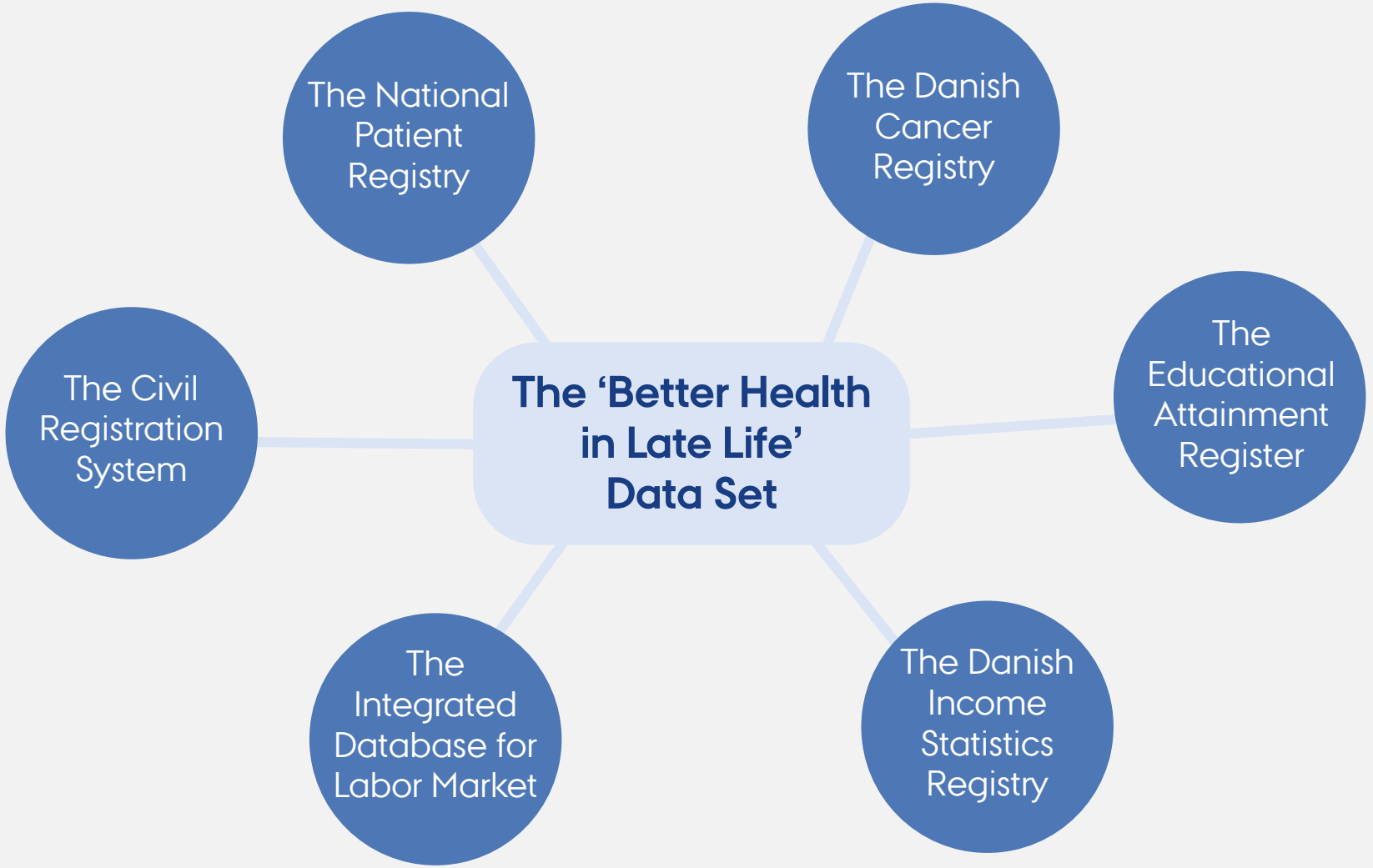
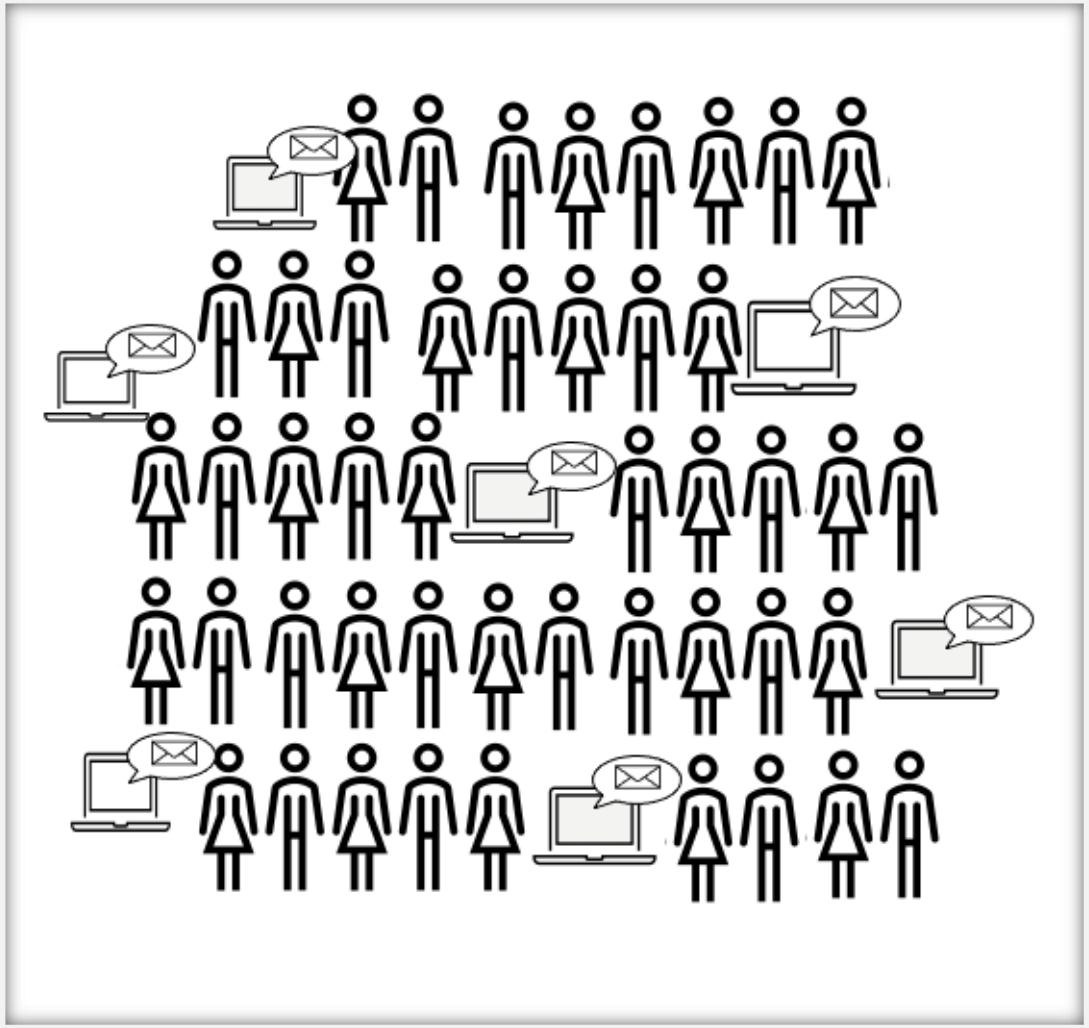

The National Patient Registry
The Danish Cancer Registry
The Civil Registration System
The 'Better Health in Late Life' Data Set
The Educational Attainment Register
The Integrated Database for Labor Market
The Danish Income Statistics Registry

Study cohort

‘Better Health in Late Life’ participants



Study cohort

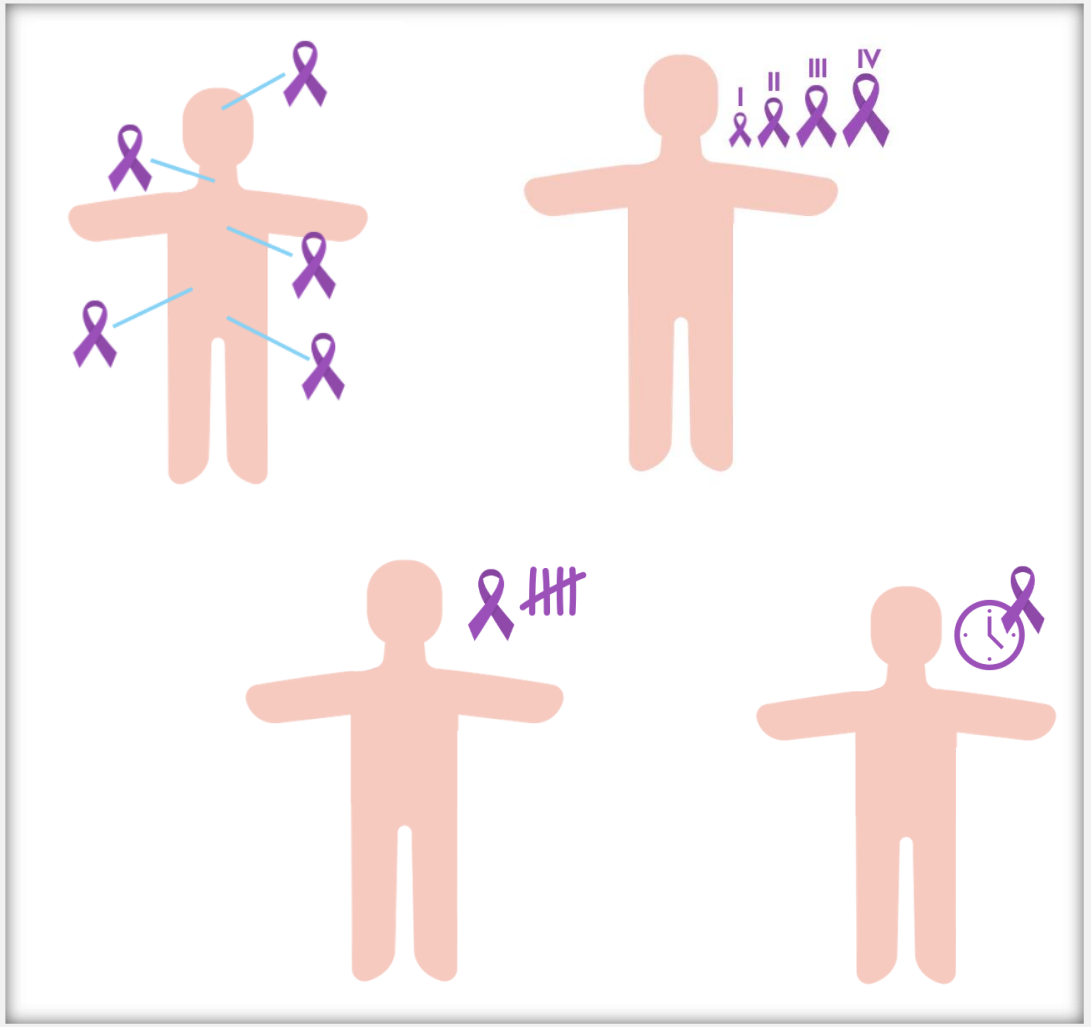
‘Better Health in Late Life’ participants

Exposure

Cancer

versus

No history of cancer



Study cohort

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Exposure

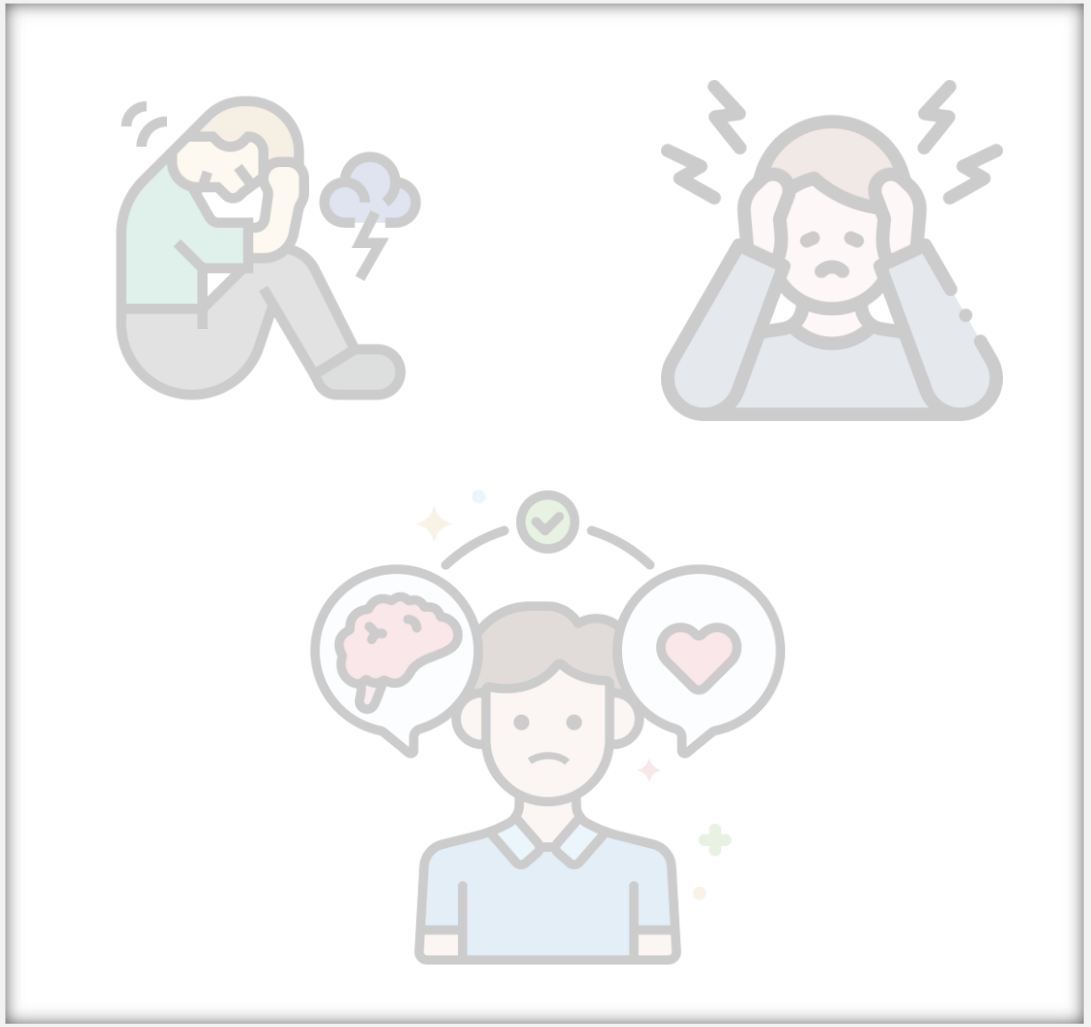
Cancer

versus

No history of cancer

Outcomes

- Depressive symptoms – the Major Depression Inventory (MDI)
- Perceived stress – the Perceived Stress Scale (PSS)
- Poor mental health – the 12-item short form survey (SF-12)



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versus

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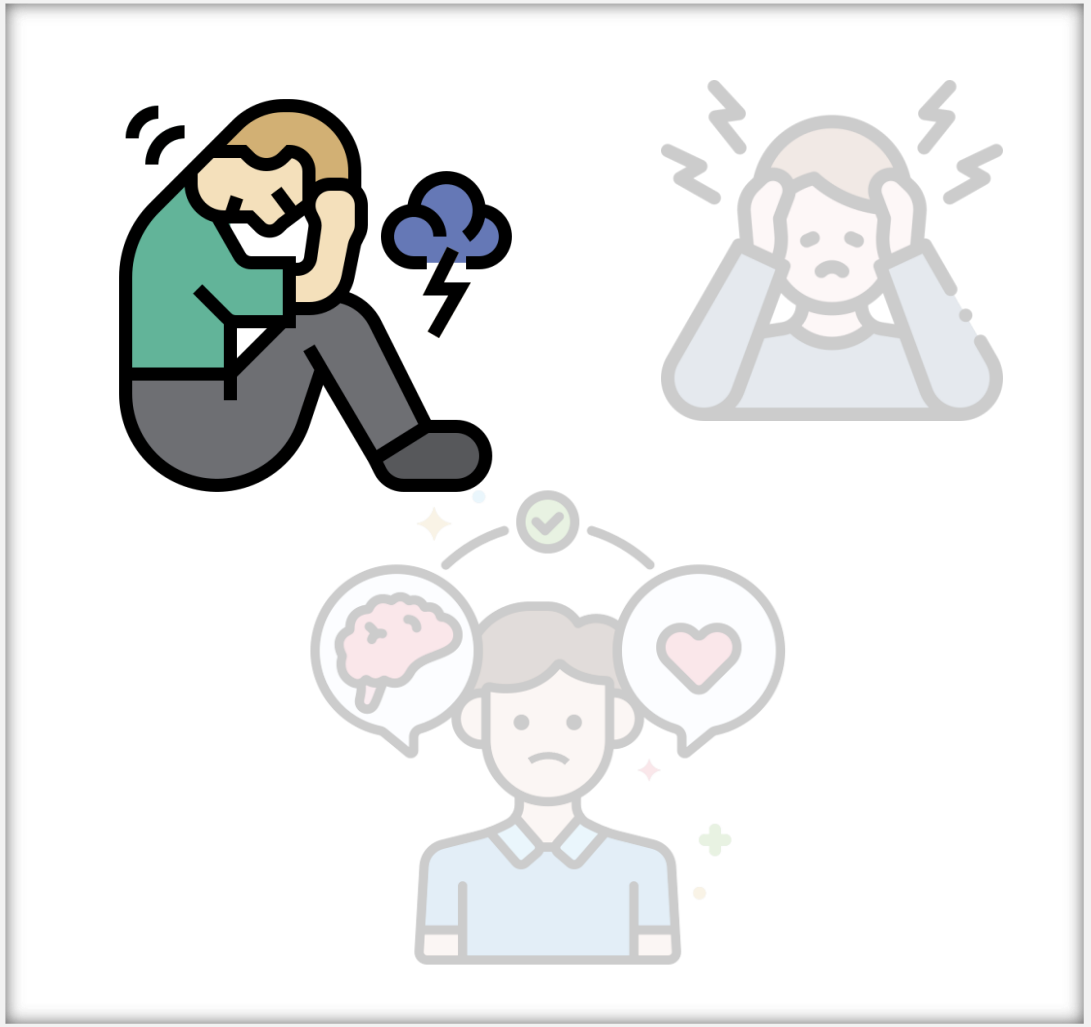

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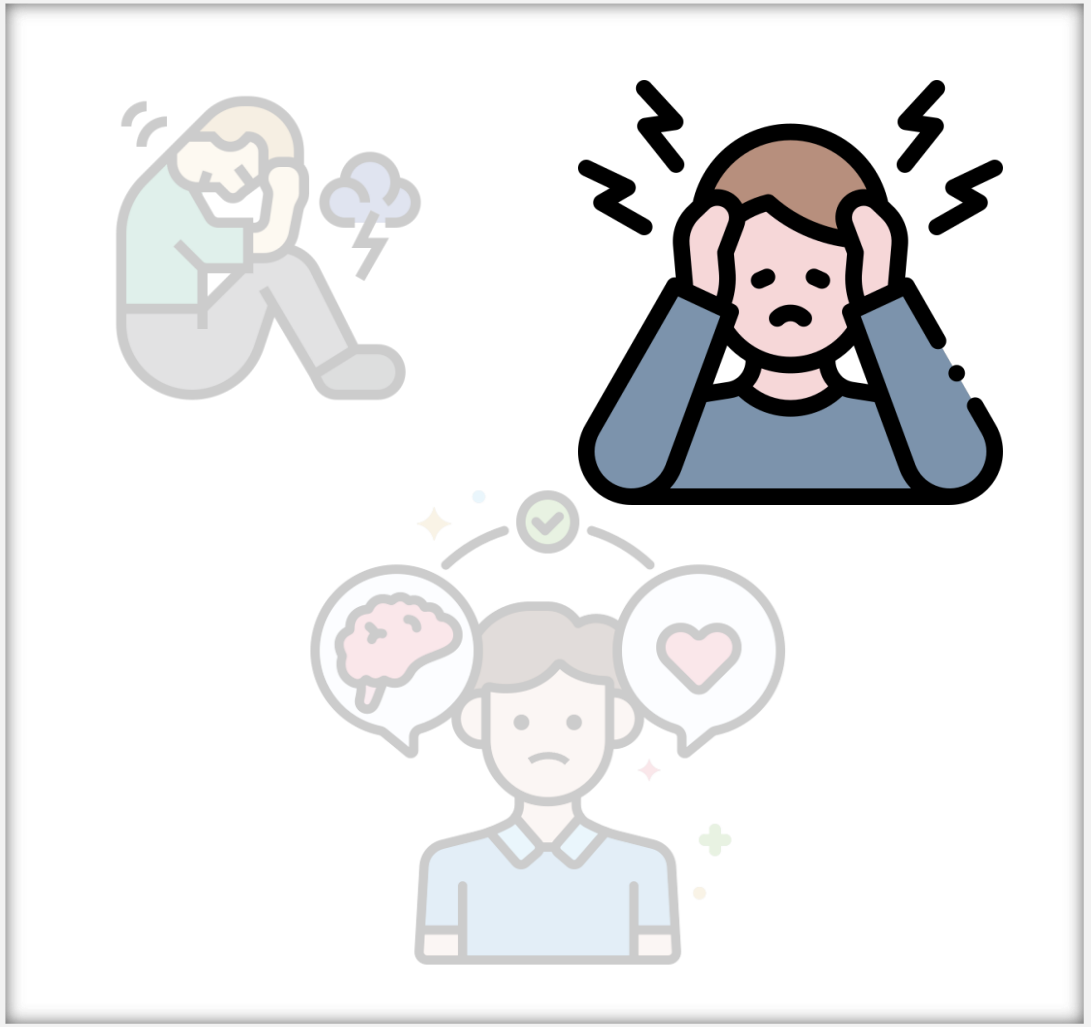

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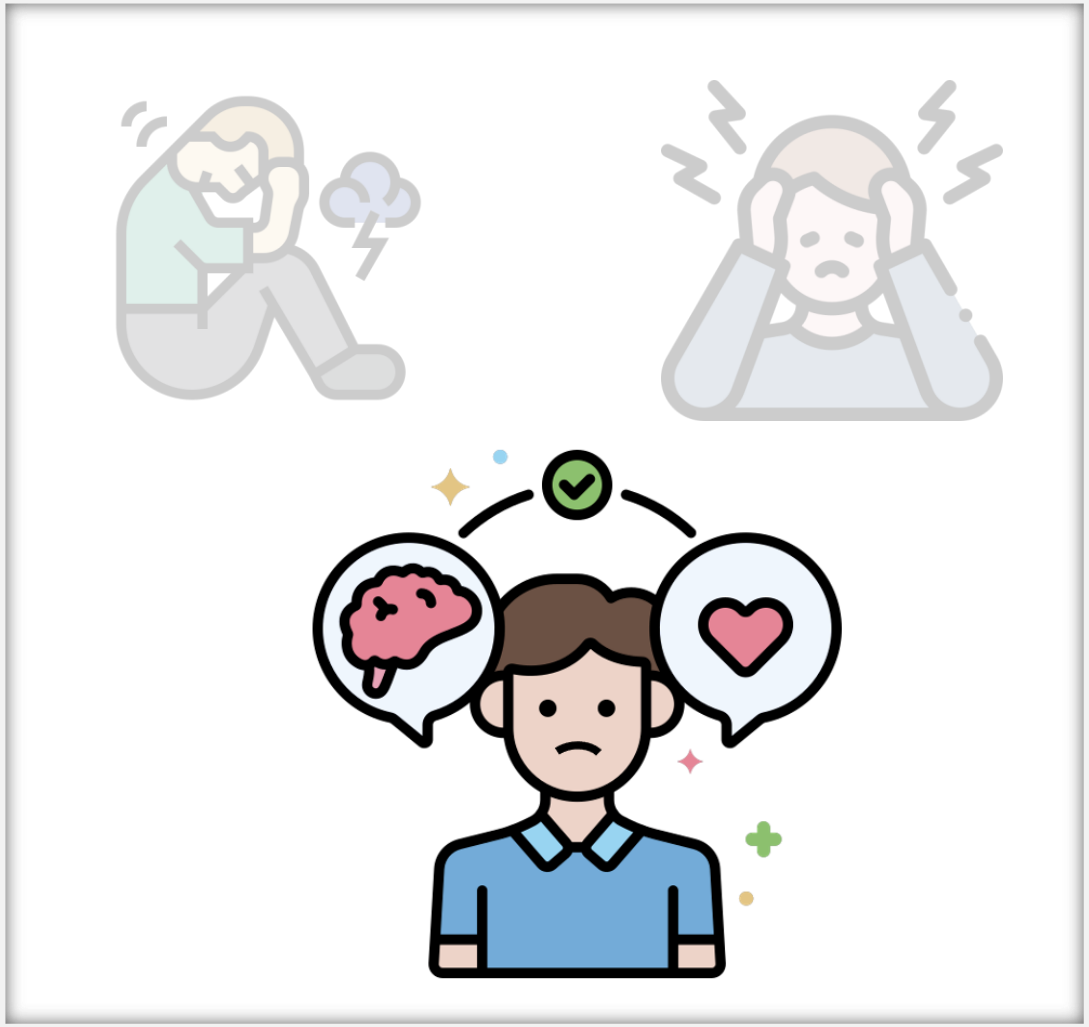
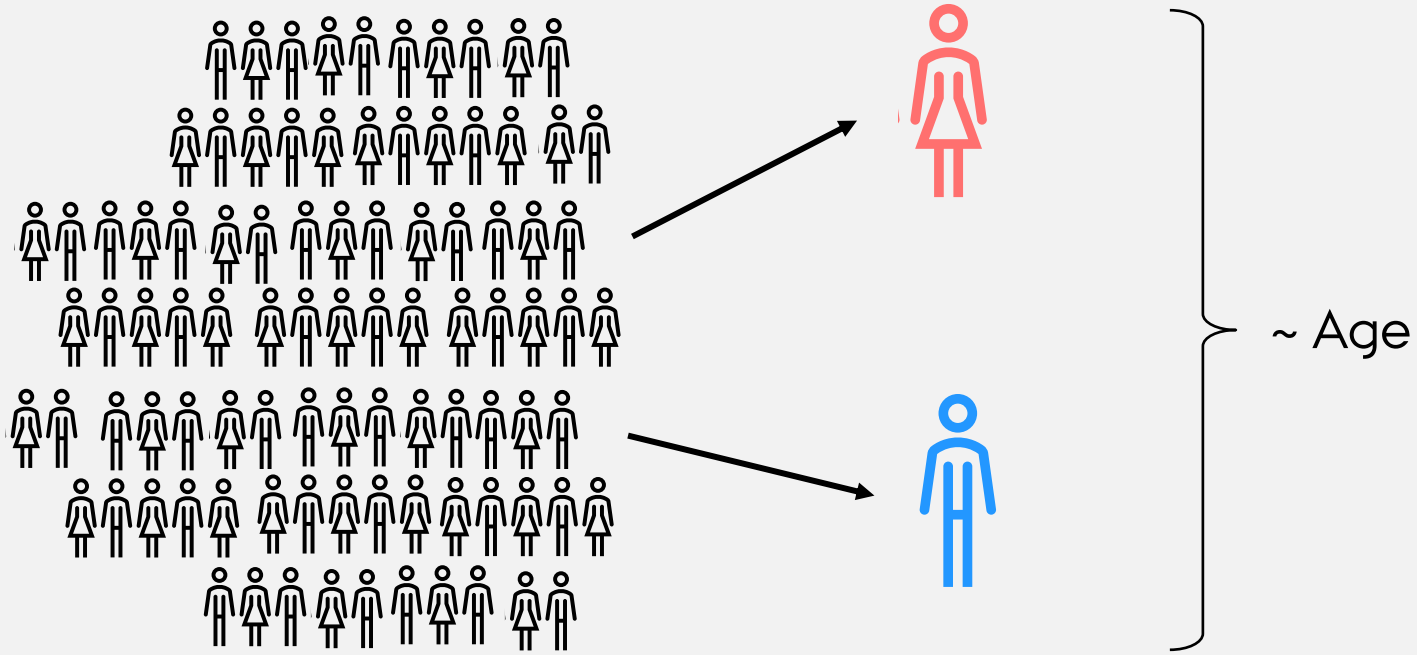


STATISTICAL ANALYSIS

Log-binomial method → prevalence ratios and 95% confidence intervals



COHORT CHARACTERISTICS

Total cohort: 105,400 participants

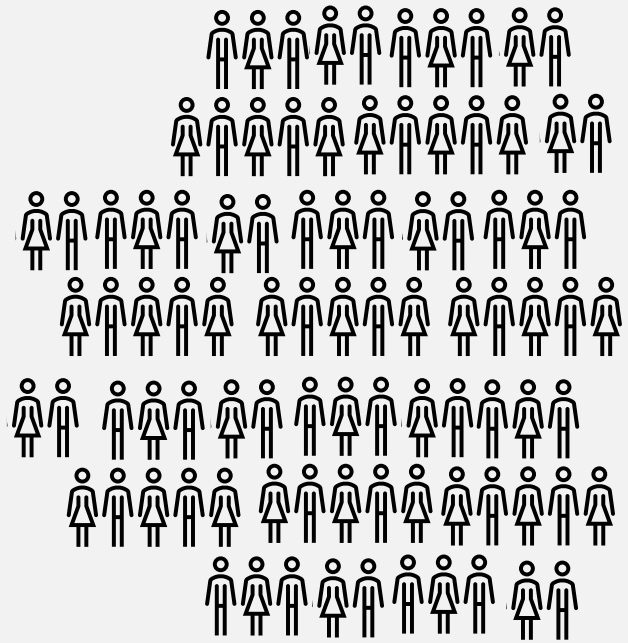
Women: 55%

Median age: 58 years

Male participants:

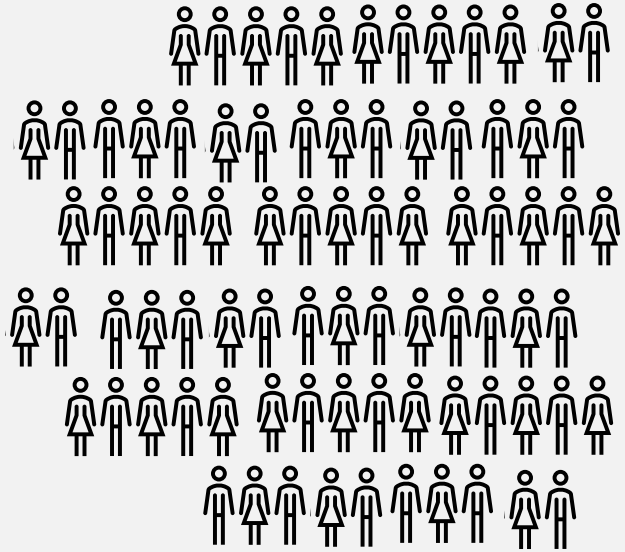
Cancer survivors:

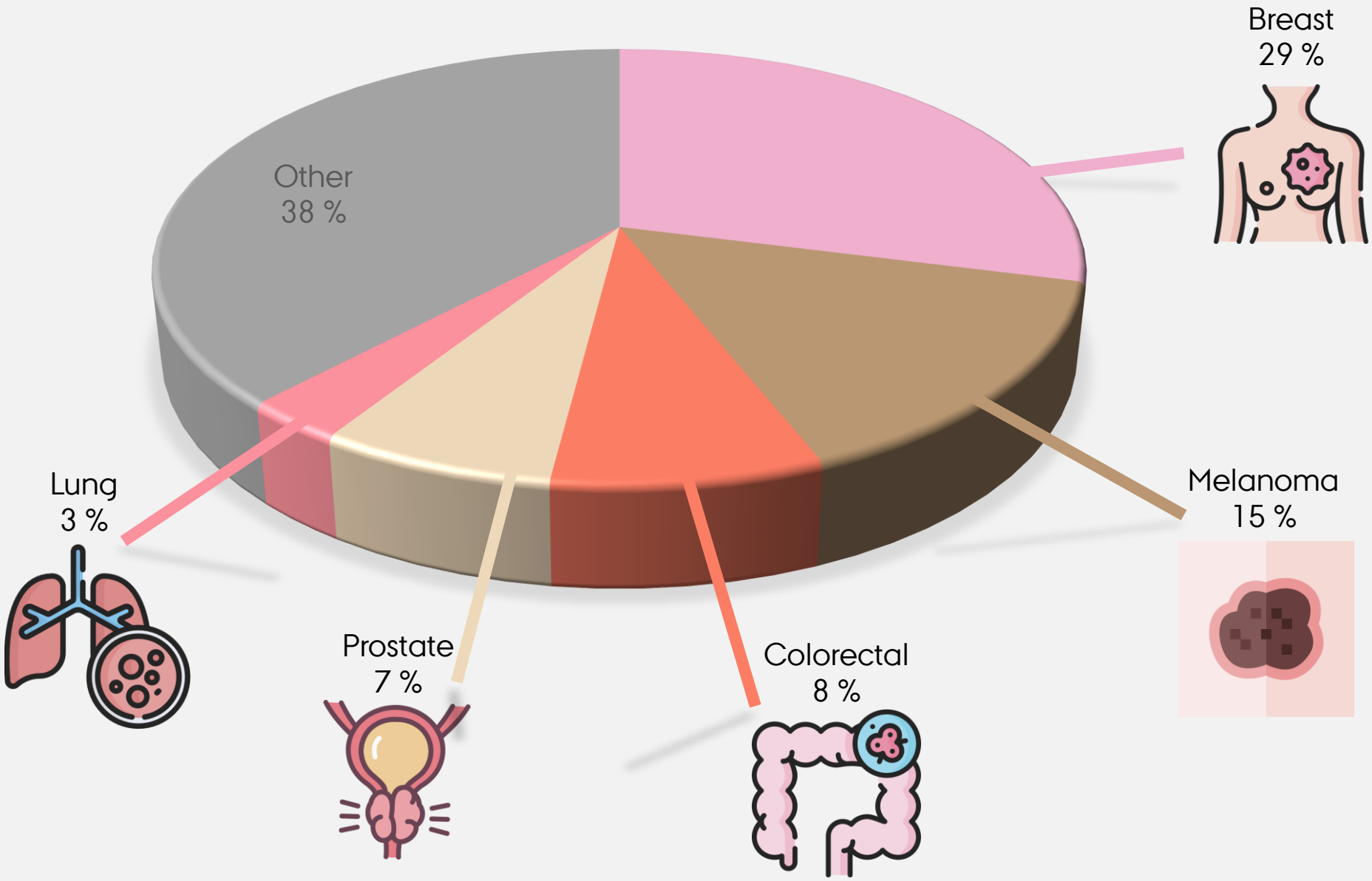
`Better Health in Late Life` cohort
n = 105,400



Cancer survivors
~7%

Cancer-free population
~93%

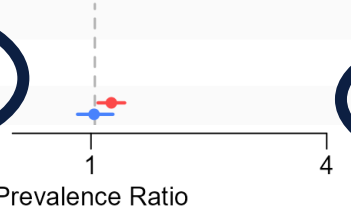



Breast
29 %
Other
38 %
Lung
3 %
Melanoma
15 %
Prostate
7 %
Colorectal
8 %

DEPRESSIVE SYMPTOMS

	N* (%)	Women	Men
Cancer			
No history of cancer (ref.)	3550/94810 (3.7 %)	Ref.	Ref.
Cancer diagnosis prior to participation	280/6900 (4.1 %)	1.21 (1.04, 1.38)	0.99 (0.78, 1.23)

*Total number of men and women with depressive symptoms, within each category. Numbers are rounded to the nearest multiple of 5



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Cancer site			
Breast cancer	80/1990 (4.0 %)	1.06 (0.84, 1.31)	
Prostate cancer	10/510 (2.0 %)		0.74 (0.39, 1.27)
Melanoma	20/1065 (1.9 %)	0.68 (0.42, 1.02)	0.17 (0.03, 0.51)
Colorectal cancer	20/560 (3.6 %)	0.99 (0.50, 1.72)	1.30 (0.68, 2.21)
Lung cancer	15/185 (8.1 %)	2.89 (1.58, 4.68)	2.02 (0.64, 4.50)
Other	130/2585 (5.0 %)	1.61 (1.29, 1.96)	1.22 (0.90, 1.61)

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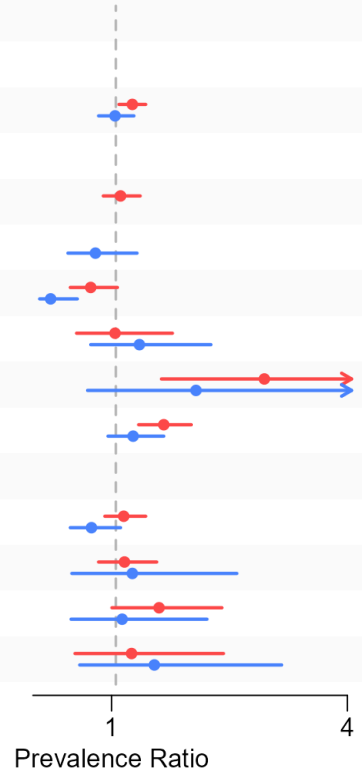
Other	130/2585 (5.0 %)	1.61 (1.29, 1.96)	1.22 (0.90, 1.61)
Cancer stage			
I	85/2450 (3.5 %)	1.10 (0.86, 1.38)	0.69 (0.42, 1.06)
II	40/930 (4.3 %)	1.11 (0.78, 1.52)	1.21 (0.44, 2.54)
III	25/495 (5.1 %)	1.55 (0.95, 2.35)	1.08 (0.43, 2.16)
IV	10/240 (4.2 %)	1.20 (0.48, 2.37)	1.49 (0.54, 3.11)



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IV	10/240 (4.2 %)	1.20 (0.48, 2.37)	1.49 (0.54, 3.11)
Number of diagnoses			
1	265/6545 (4.0 %)	1.20 (1.03, 1.38)	0.96 (0.75, 1.21)
2+	15/355 (4.2 %)	1.37 (0.74, 2.26)	1.52 (0.55, 3.20)
Length of cancer survivorship, years			
<5	125/2550 (4.9 %)	1.49 (1.20, 1.82)	1.20 (0.86, 1.62)
5 to <10	80/1880 (4.3 %)	1.26 (0.97, 1.59)	1.01 (0.62, 1.53)
10+	75/2470 (3.0 %)	0.90 (0.69, 1.15)	0.70 (0.42, 1.08)

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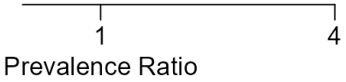
PERCEIVED STRESS

	N* (%)	Women	Men
Cancer			
No history of cancer (ref.)	10335/96540 (10.7 %)	Ref.	Ref.
Cancer diagnosis prior to participation	870/7005 (12.4 %)	1.17 (1.08, 1.26)	1.15 (1.01, 1.30)
Cancer site			
Breast cancer	260/2020 (12.9 %)	1.09 (0.97, 1.22)	
Prostate cancer	40/520 (7.7 %)		0.90 (0.65, 1.20)
Melanoma	90/1080 (8.3 %)	0.81 (0.64, 1.01)	0.64 (0.41, 0.94)
Colorectal cancer	65/575 (11.3 %)	1.22 (0.90, 1.59)	1.08 (0.73, 1.53)
Lung cancer	35/185 (18.9 %)	1.39 (0.89, 2.03)	2.80 (1.73, 4.10)
Other	380/2625 (14.5 %)	1.42 (1.26, 1.60)	1.34 (1.14, 1.56)
Cancer stage			
I	290/2480 (11.7 %)	1.07 (0.94, 1.22)	1.16 (0.94, 1.42)
II	135/945 (14.3 %)	1.26 (1.06, 1.47)	1.22 (0.70, 1.91)
III	70/505 (13.9 %)	1.21 (0.91, 1.56)	1.45 (0.96, 2.07)
IV	35/240 (14.6 %)	1.69 (1.16, 2.32)	1.07 (0.55, 1.81)
Number of diagnoses			
1	815/6645 (12.3 %)	1.16 (1.07, 1.25)	1.12 (0.98, 1.27)
2+	55/360 (15.3 %)	1.35 (0.98, 1.77)	1.81 (1.12, 2.70)
Length of cancer survivorship, years			
<5	365/2585 (14.1 %)	1.32 (1.17, 1.48)	1.38 (1.16, 1.62)
5 to <10	245/1915 (12.8 %)	1.19 (1.03, 1.35)	1.16 (0.90, 1.46)
10+	260/2505 (10.4 %)	1.01 (0.88, 1.14)	0.85 (0.65, 1.08)



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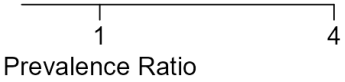
POOR MENTAL HEALTH

	N* (%)	Women	Men
Cancer			
No history of cancer (ref.)	11145/96735 (11.5 %)	Ref.	Ref.
Cancer diagnosis prior to participation	855/6935 (12.3 %)	1.07 (0.99, 1.16)	1.12 (0.99, 1.26)
Cancer site			
Breast cancer	255/2000 (12.8 %)	1.04 (0.92, 1.17)	
Prostate cancer	45/515 (8.7 %)		0.96 (0.71, 1.25)
Melanoma	105/1090 (9.6 %)	0.82 (0.65, 1.01)	0.81 (0.56, 1.12)
Colorectal cancer	60/560 (10.7 %)	1.01 (0.72, 1.35)	1.04 (0.70, 1.45)
Lung cancer	35/180 (19.4 %)	1.32 (0.83, 1.94)	2.86 (1.81, 4.11)
Other	355/2590 (13.7 %)	1.25 (1.10, 1.41)	1.21 (1.03, 1.42)
Cancer stage			
I	280/2465 (11.4 %)	0.95 (0.82, 1.08)	1.12 (0.91, 1.35)
II	135/935 (14.4 %)	1.17 (0.98, 1.38)	1.40 (0.87, 2.07)
III	60/495 (12.1 %)	1.03 (0.75, 1.36)	1.28 (0.83, 1.83)
IV	40/230 (17.4 %)	1.68 (1.15, 2.31)	1.53 (0.93, 2.31)
Number of diagnoses			
1	805/6580 (12.2 %)	1.06 (0.97, 1.14)	1.12 (0.99, 1.26)
2+	50/355 (14.1 %)	1.36 (1.00, 1.77)	1.19 (0.65, 1.92)
Length of cancer survivorship, years			
<5	365/2550 (14.3 %)	1.27 (1.12, 1.42)	1.29 (1.08, 1.51)
5 to <10	215/1890 (11.4 %)	0.96 (0.82, 1.11)	1.11 (0.87, 1.39)
10+	275/2495 (11.0 %)	0.99 (0.86, 1.12)	0.91 (0.71, 1.13)



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LIMITATIONS

- No conclusions about the causal relationship between cancer and mental health
- No information on changes in mental health over time
- Issues with external validity
- Risk of outcome misclassification

CONCLUSIONS

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