

Conflict of interest statement

- I have no conflict of interest to report.



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SOCIO-ECONOMIC CONSEQUENCES OF CANCER

A patient perspective

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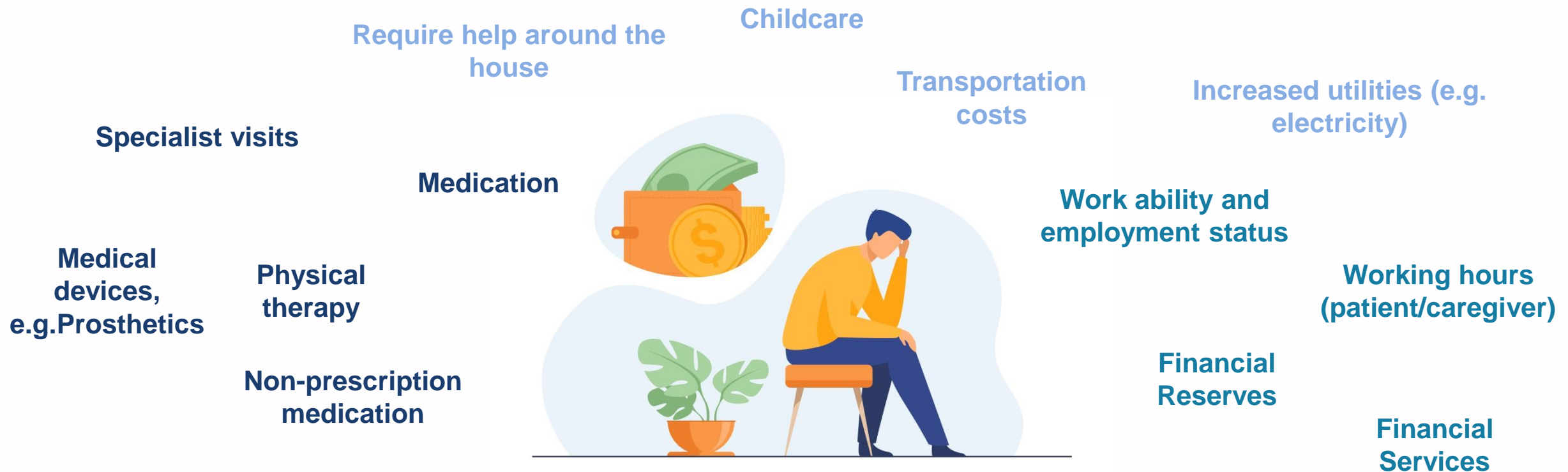
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European Cancer Centre Alliance

What are socio-economic consequences of a cancer diagnosis?

“Financial toxicity”



1. Carrera P. et al, The financial burden and distress of patients with cancer: Understanding and stepping-up action on the financial toxicity of cancer treatment. CA Cancer J Clin. 2018
2. Mehlis K et al. The patient-level effect of the cost of Cancer care-financial burden in German Cancer patients. BMC Cancer. 2020



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Gaps in Research

US centric research



- Out-of-pocket expenditures
- Very different healthcare system

EU Cross-country comparison studies



- Awareness of topic relevance
- Equity of EU social inclusion & protection

Consensus on taxonomy



- Terminology “Financial Toxicity”
- Definitions
- Cut-off point

Vulnerable population groups



- Fragile contexts
- Inform policies
- Better clinical outcomes (?)

1. Witte J, et al. Methods for measuring financial toxicity after cancer diagnosis and treatment: a systematic review *Annals of Oncology*. 2019.
2. Carrera P. Financial Toxicity in Europe. 2019.
3. Zafar Y, et al. Impact of out-of-pocket expenses on cancer care. *J Clin Oncol*. 2011



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Objectives

- **Primary objective**

- To explore the socio-economic consequences for patients resulting from cancer diagnosis in European countries.

- **Secondary objective**

- To measure the relation of the FIT (& subscales) score to clinical socio-economic demographics of the patients to identify vulnerable population groups



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The SEC-study

Cross-sectional questionnaire

- Sep 2021- Sep 2022
- 14 countries (11 included)
- 41 questions
 - Sociodemographic variables
 - Index of Toxicity (FIT) score
 - Other socio-economic consequences & coping behavior of patients
 - Employment changes & income loss
 - Additional treatment related expenses
 - Financial measures & services
 - Health-related quality of life (EQ-5D)

Population group

- European cancer patients treated with systemic therapy and/or invasive surgery
- Currently treated or <2 years after treatment

Data collection & distribution

- Hospitals: Pseudo-anonymous/anonymous with ethical committee approval
- Patient organizations: Anonymous with open link



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Financial Index of Toxicity

Measuring Financial Toxicity Incurred After Treatment of Head and Neck Cancer: Development and Validation of the Financial Index of Toxicity Questionnaire

Katrina Hueniken, MPH ¹; Catriona M. Douglas, BSc, MBChB, MD^{2,3}; Ashok R. Jethwa, MD^{2,3}; Maryam Mirshams, MSc⁴; Lawson Eng, MD, MSc⁵; Andrew Hope, MD⁵; Douglas B. Chepeha, MD ^{2,3}; David P. Goldstein, MD, MSc^{2,3}; Jolie Ringash, MD, MSc⁵; Aaron Hansen, BSc, MBBS ¹; Rosemary Martino, PhD^{6,7}; Madeline Li, MD, PhD⁸; Geoffrey Liu, MD^{4,9,10}; Wei Xu, MD¹; and John R. de Almeida, MD, MSc ^{1,2,3}

Three subscales, 9 questions:

Financial stress



Ability to pay for

1. Food
2. Housing,
3. Medications

Financial strain



1. Worries about finances
2. Satisfaction with finances
3. Perceived comparison of finances with peers
4. Borrowing money

Loss of productivity



Permanently quit their job

1. Cancer patient
2. Caregiver

Financial Index of Toxicity (FIT)
Score between 0 (best) and 100 (worst)



1. Hueniken K, et al. Measuring financial toxicity incurred after treatment of head and neck cancer: Development and validation of the Financial Index of Toxicity questionnaire. Cancer 2020



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Research Center
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Regression models

To assess the relation between the FIT score & subscales per clinical socio-demographics

Independent variables		
Sociodemographic	Clinical	Economical
Gender	Cancer category	Pre-diagnosis household income
Age	Metastasized	Pre-diagnosis employment status
Education	Treatment type	
Country of residence	Currently treated	
Adults	Diagnosis time	
Children	Quality of life	
Marital status		



Dependent variables			
Regression model 1	Logistic Regression model 1	Logistic Regression model 2	Logistic Regression model 3
General FIT	Financial stress	Financial strain	Lost productivity

Demographics (N=2507)

Inclusion of patients per country & cancer category

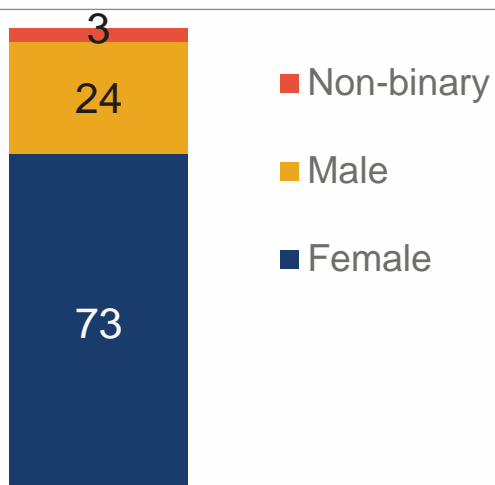
Country	ES	NL	FR	DE	BU	CY	DK	NO	FI	BE	CH	CZ	GR	UK
#Patients included	520	413	241	208	201	192	176	175	127	96	47	25	22	13

Cancer Category*	N= 2507	% sample
Malignant neoplasms of breast	1178	47
Malignant neoplasms of digestive organs	278	10
Neoplasms of haematopoietic or lymphoid tissues	177	7
Malignant neoplasms of female genital organs	191	7
Malignant neoplasms of middle ear, respiratory or intrathoracic organs	174	7
Other	129	5
Malignant neoplasms of male genital organs	114	4
Malignant neoplasms of urinary tract	81	3
Malignant neoplasms of skin	56	2
Neoplasms of brain or central nervous system	55	2
Malignant neoplasms of lip, oral cavity or pharynx	32	1
Malignant neoplasms of endocrine glands	22	0
Malignant neoplasms of ill-defined or unspecified primary sites	14	0

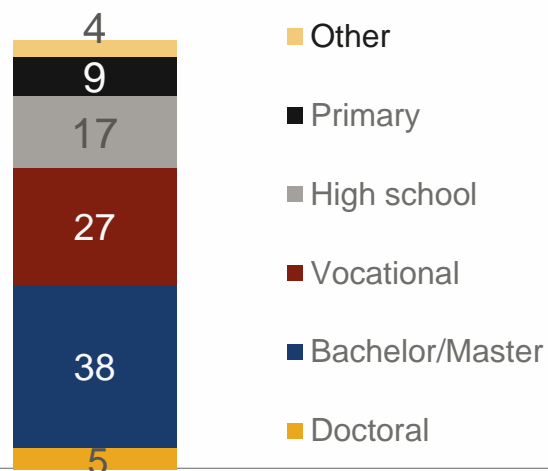
*Categorization of cancer types in mayor categories using ICD-11

Demographics

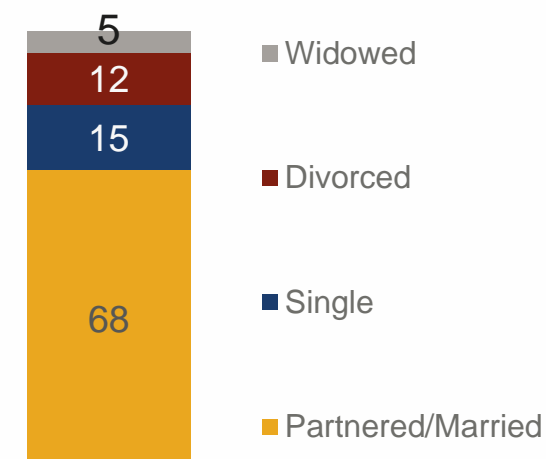
Gender, % of total



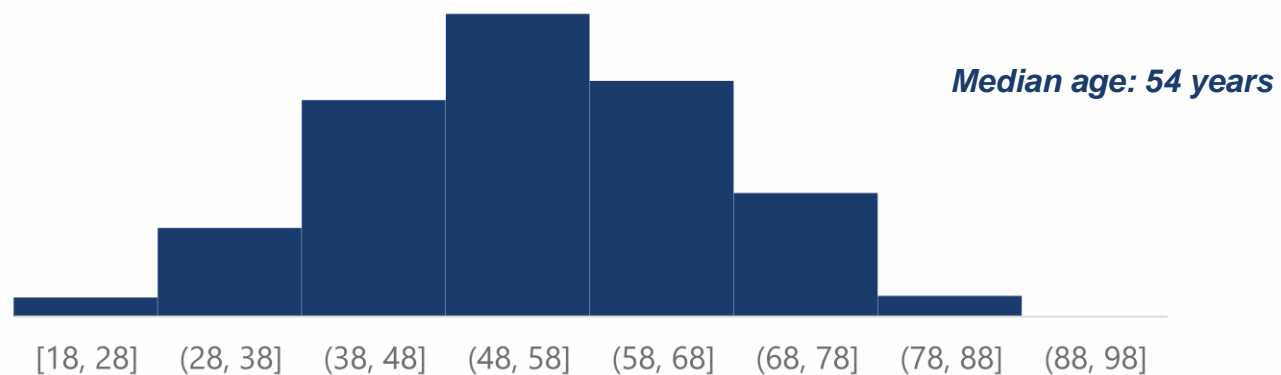
Education, % of total



Marital, % of total



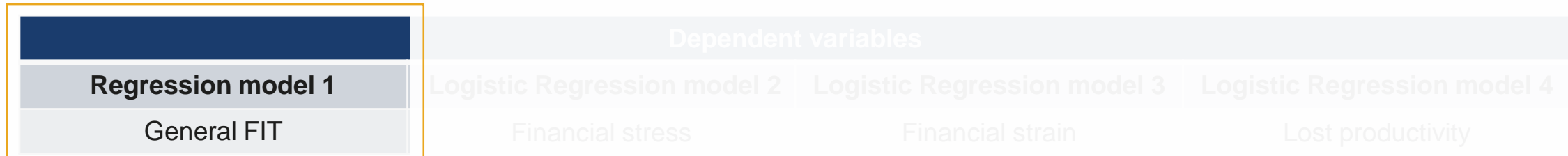
Age categories, frequency



Regression models

To assess the relation between the FIT score & subscales per clinical socio-demographics

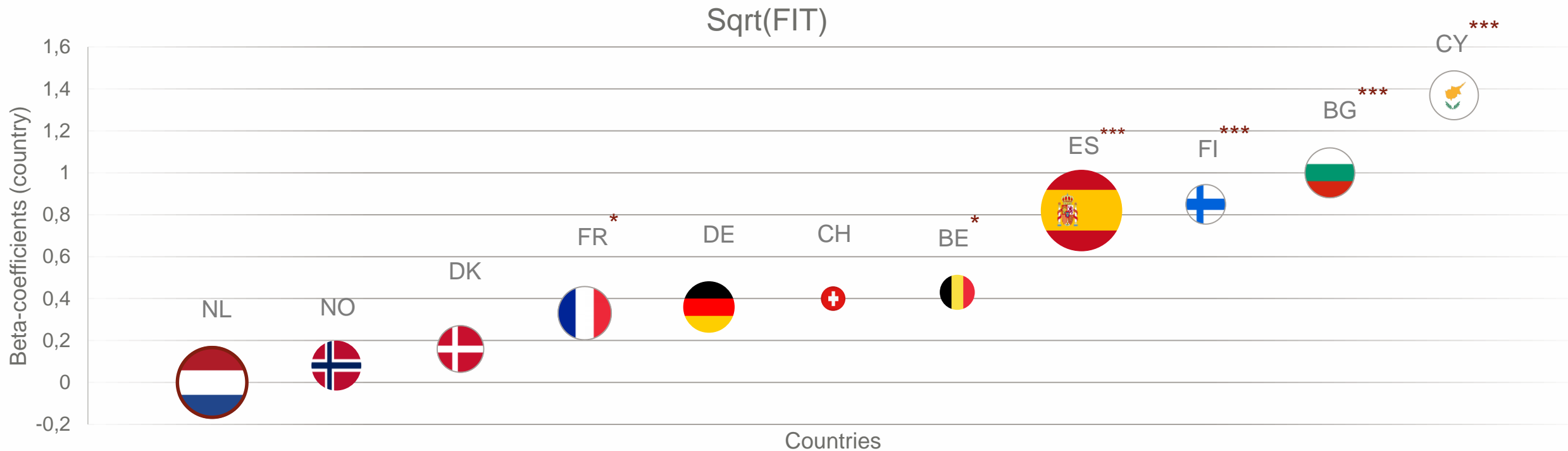
Independent variables		
Sociodemographic	Clinical	Economical
Gender	Cancer category*	Pre-diagnosis household income***
Age***	Metastasized	Pre-diagnosis employment status****
Education***	Treatment type	
Country of residence***	Currently treated	
Adults	Diagnosis time	
Children***	Quality of life***	
Marital status***		



Regression model 1: Total Financial Index of Toxicity

Scale: 0 (best) – 10 (worst)

Total score as the sum of all questions (9) and all subscales (3)



* Statistical significant difference observed with NL

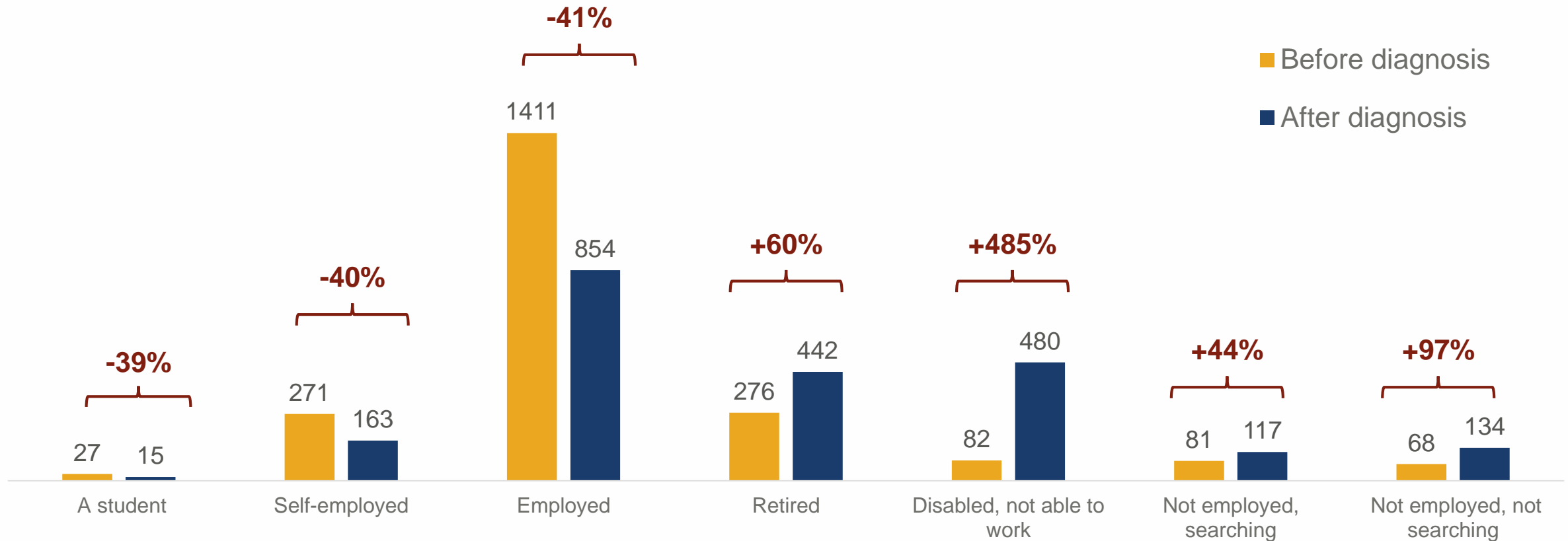


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Employment changes

Number of respondents per employment status, n=2216



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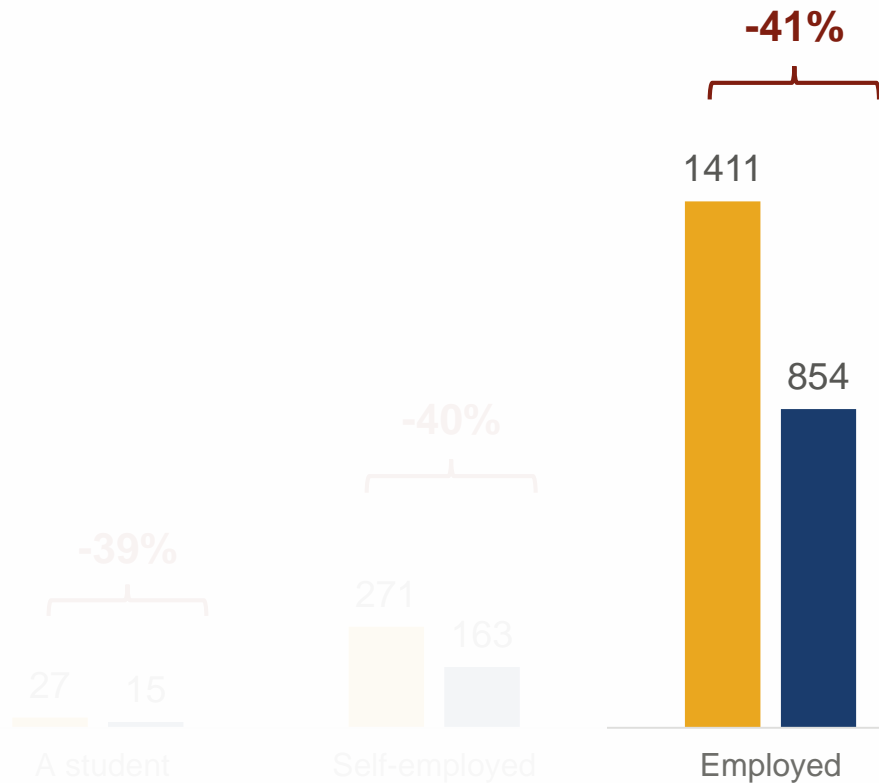
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Employment changes

Number of respondents per employment status, n=2216



■ Before diagnosis

■ After diagnosis

	Before	After	Change
Employed, n	1411	854	-41%
<12 hours/week	12	77	+542%
12-16, hours/week	22	69	+214%
16 -36, hours/week	369	284	-23%
+36, hours/week	1005	418	-59%
Missing	3	6	

not



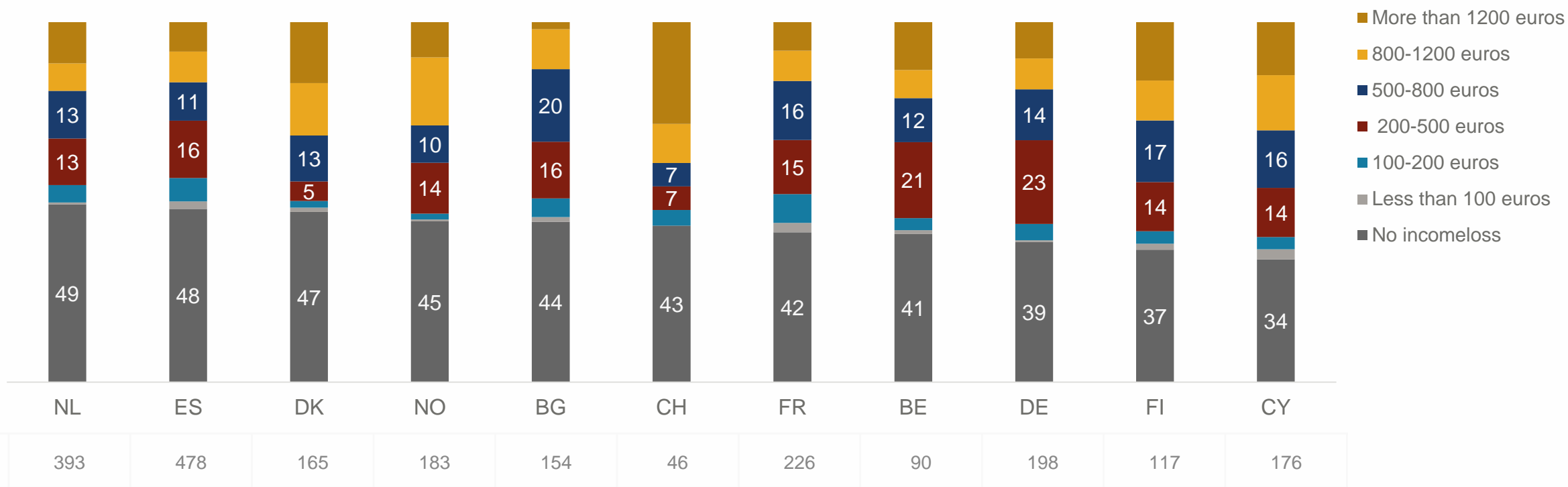
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Monthly income loss

Have you suffered a loss of income because of your diagnosis?

Income loss and its severity (%) , total N=2226



* Not adapted to PPP



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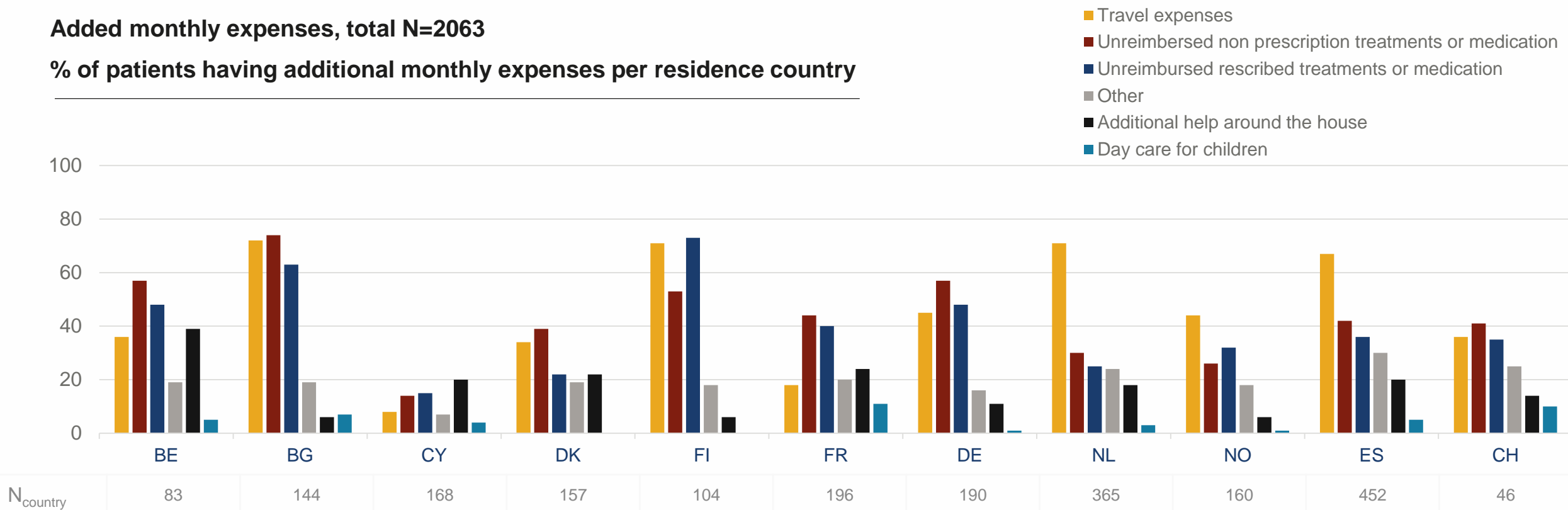


Added monthly expenses*

Due to your cancer diagnosis, did you face any additional expenses related to your treatment?

Added monthly expenses, total N=2063

% of patients having additional monthly expenses per residence country



*Double counting



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Summary

- **Many patients with cancer face socio-economic consequences**
- **Socio-economic consequences may differ depending on**
 - Sociodemographics (age, marital status, children)
 - Country of residence
 - Cancer type
- **In all countries, cancer patients face**
 - Employment change with accompanying income losses
 - Added treatment related expenses
 - Increase financial resources along with difficulties to obtain financial services
- **New policies should be considered to protect vulnerable patient populations from financial distress**



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Strengths & Limitations

- Selection bias:
 - Patient with interest
 - Digital capabilities
- No response rate
- Cultural bias: Comfort to disclose financial information
- Recall bias: Participation after treatment
- Countries with limited inclusions excluded for statistical analysis
- Strong focus on female & breast cancer patients

- First study to measure SEC in + 14 EU countries
- Large collaboration: 15 hospitals & 20 patient organizations
- 2500+ patients
- Multiple cancer types
- Validated instrument: Financial index of toxicity
- Important empirical step to develop a tailored EU instrument



Acknowledgements

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 Leyla Azarang
 Michael Schlander
 Wim van Harten

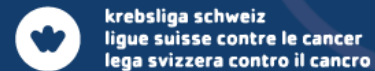


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THANK YOU!

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