PATIENTS' PREFERENCES FOR BREAST CANCER TREATMENTS: RESULTS OF A DISCRETE CHOICE EXPERIMENT (DCE) SURVEY FROM SPAIN, FRANCE, POLAND AND IRELAND

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Introduction

- Involvement of patients in the decision making process has a better chance of being successful once it explores the preferences in a **measurable way**, captured with the appropriate scientific methods

- One such method, widely employed in the international literature, is the Discrete Choice Experiment (DCE):
  - DCEs have been commonly used in the field of health economics to address a wide range of policy questions [12]

- **DCE is a quantitative method that measures the preferences of individuals and allows the examination of trade-offs they make for different options of health care services and interventions**

- Participants are presented with **alternative *hypothetical* scenarios** and **asked to indicate their most preferred option**, with **each option involving several attributes** (i.e. characteristics of an intervention, product or policy programme)

References:
12. Ryan, M., K. Gerard, and M. Amaya-Amaya, *Using Discrete Choice Experiments to Value Health and Health Care*. 2007: Springer Netherlands.

Objectives of our Breast Cancer DCE

1. **Understand** breast cancer **patients' perspectives** in the **choice of the treatment** for their disease

2. **Gain information** on **patients' willingness to accept trade-offs** between treatment features

3. **Highlight** those treatment **characteristics** that are **valued as most important** from patients' perspective

Choice of attributes

Qualitative Phase

- Literature review to identify candidate attributes

Advisory Board

- Refine the list of attributes through advisory board of patients, health care professionals & decision makers
- Content analysis & Report Ad board findings

Development of DCE

- Design of the DCE questionnaire (scenarios)
- Survey design (battery of questionnaires)
- Questionnaire translation in French, Spanish, Polish
- Design of web survey and adaptation to each country

DCE Data Collection in the four participating countries

- Soft launch of the survey and quality check of samples
- Changes based on feedback from soft launch
- Complete data collection from four countries via online patients panel

Attributes and levels

Attributes	Levels/Description
Progression-free survival	1: 10 months
	2: 15 months
	3: 20 months
	4: 25 months
Febrile neutropenia	1: 16% chance of occurring
	2: 6% chance of occurring
	3: 2% chance of occurring
	4: 1% chance of occurring
Pain	1: Severe pain
	2: Moderate pain
	3: None/Mild pain
Functional wellbeing	1: Severely impaired
	2: Moderately impaired
	3: Not impaired/Mildly impaired
Out-of-pocket payment (PPP-based values for each country)	1: Euros 0
	2: Euros 3,000
	3: Euros 5,000
	4: Euros 8,000

Levels for the "Opt-out of treatment" option

Progression-free survival	5 months
Febrile neutropenia	0% chance of occurring
Pain	Severe pain
Functional wellbeing	Severely impaired
Out-of-pocket payment	Euros 0

Sample and Data collection

- 371 patients with any type and stage of breast cancer (e.g. localized, metastatic or in remission)

- \>18 years old

- Responders per Country:
    - Spain: 100 patients
    - France: 101 patients
    - Poland: 100 patients
    - Ireland: 70 patients

- The DCE was designed as a self-administered, online survey

Experimental design and analysis

- Experimental design created in SAS software package based on D-efficiency criterion

- 16 choice-sets per respondent (plus 3 warm up scenarios and 2 tests for rationality and consistency): Treatment A vs Treatment B or Opt-out of treatment options

- Data were analysed with the use of the conditional logit model, a widely used econometric model for the analysis of discrete choice data

- Out-of-pocket payment, Progression-free survival (PFS) and Febrile neutropenia (FN) were treated as continuous variables, while Pain and Functional well-being (FWB) were dummy-coded, using the most severe level as reference

- Marginal rates of substitution (MRS) between the Out-of-pocket payment and other treatment attributes were calculated

- MRS constitute the "part-worth" values for each attribute, an indicator of the relative weighting of the attributes and the willingness to trade-off between them

Reference:
Louviere JJ, et al., Stated choice methods: analysis and applications. Cambridge university press; 2000

Results – Respondents' disease characteristics

- Most patients had either received in the past -or were currently on- radiotherapy treatment (58%) followed by chemotherapy (51%) and hormone therapy (51%) at the time of the survey.

	France	Ireland	Spain	Poland
	N=101(%)	N=70(%)	N=100(%)	N=100(%)
STAGE OF CANCER CURRENTLY				
Localised	14(14)	14(20)	28(28)	68(68)
Advanced	6(6)	13(19)	7(7)	5(5)
Remission	81(80)	43(61)	65(65)	27(27)
STAGE OF CANCER AT INITIAL DIAGNOSIS				
Localised	45(45)	36(51)	60(60)	70(70)
Advanced	27(27)	22(31)	20(20)	12(12)
I do not know	29(29)	12(17)	20(20)	18(18)
TREATMENTS THAT PATIENTS ARE CURRENTLY RECEIVING OR HAVE RECEIVED IN THE PAST				
Chemotherapy	52(52)	37(53)	59(59)	42(42)
HER2 targeted therapy	10(10)	11(16)	5(5)	9(9)
Hormone therapy	50(50)	27(39)	54(54)	58(58)
Radiotherapy	76(75)	39(56)	67(67)	34(34)
CDK 4/6 inhibitor treatments	0(0)	7(10)	3(3)	11(11)
Other treatments	17(17)	20(29)	9(9)	12(12)

Results – Pooled data from 4 countries

- MRS show the amount of € that one is prepared to pay per year as out of pocket money for:

  - gaining 1 month of PFS

  - avoiding 1% risk of FN

  - moving from severe states of pain and functional impairment to perfect states

- Magnitude of MRS demonstrates the preferences of respondents for each attribute/level relative to each other

- The two levels of the Functional wellbeing attributes are the most important based on the values of the MRS (17K € and 15K € respectively)

	Attributes/levels	MRS	95% CI	
All countries	Progression free survival (one month)	574.7***	330.3	819.1
	Febrile Neutropenia (1%)	-721.4***	-1011.3	-431.6
	No pain	15139.0***	9553.9	20724.1
	Moderate pain	11818.4***	7086.9	16549.9
	No impairment functional wellbeing	17288.2***	11549.9	23026.5
	Moderate impairment functional wellbeing	15297.2***	10303.9	20290.6

*** p<0.001

Country-specific results MRS (out-of-pocket payment in € per year)

	Attributes/ Levels	MRS	95% CI	
France	Progression free survival (one month)	236.9*	46.4	427.3
	Febrile Neutropenia (1%)	-822.8***	-1204.9	-440.6
	No pain	14115.9***	7449.9	20781.9
	Moderate pain	9535.9***	4336.7	14735.1
	No impairment functional wellbeing	11693.9***	6598.9	16789.0
	Moderate impairment functional wellbeing	11871.8***	6699.0	17044.6
Ireland	Progression free survival (one month)	1183.982	-2.9	2370.9
	Febrile Neutropenia (1%)	-1900.4*	-3762.8	-37.9
	No pain	20857.4	-114.6	41829.4
	Moderate pain	18257.3	-1669.4	38183.9
	No impairment functional wellbeing	31284.3*	2399.3	60169.2
	Moderate impairment functional wellbeing	27766.6*	2070.1	53463.1
Spain	Progression free survival (one month)	424.7*	41.6	807.7
	Febrile Neutropenia (1%)	-208.0	-514.5	98.5
	No pain	15527.8**	4264.8	26790.8
	Moderate pain	11756.0*	2448.2	21063.8
	No impairment functional wellbeing	17529.2**	6115.7	28942.6
	Moderate impairment functional wellbeing	14339.2**	5259.3	23419.2
Poland	Progression free survival (one month)	1007.3	-41.4	2055.9
	Febrile Neutropenia (1%)	-442.9	-1106.0	220.2
	No pain	11314.4	-208.8	22837.6
	Moderate pain	11657.6	-355.5	23670.8
	No impairment functional wellbeing	17878.2*	1870.3	33886.1
	Moderate impairment functional wellbeing	14729.4*	1982.5	27476.3

* p<0.05 ** p<0.01 *** p<0.001

Conclusions

- There is a **slight variation in the results** on the highest valued attribute **across 4 countries**:
    - French patients value higher the "No pain" level followed by "Moderate impairment in functional wellbeing
    - Irish and Polish patients value higher both levels of functional wellbeing attribute
    - Spanish patients value higher both perfect states of Pain and Functional wellbeing attribute

- Patients' preferences **move differently** from what it is considered as "standard" by the medical society.

- BC **treatments** that **improve FWB, pain and prolong PFS** can be considered **preferred** ones from patients' perspective

- **Patients' preferences** should be **incorporated in regulatory, HTA and industry decision-making processes**