Patient Preferences and Cost-Benefit of Hypertension and Hyperlipidemia Collaborative Management Model between Pharmacies and Primary Care in Portugal: A Discrete Choice Experiment Alongside a Trial (USFarmácia®)

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1. INTRODUCTION

Little is known on patient preferences and value of pharmacy collaborative disease management with primary care using interprofessional communication technology-driven under real-world conditions. Discrete Choice Experiments (DCEs) are useful for quantifying preferences for nonmarket services.

2. AIMS

1) To explore variation in patient preferences and estimate willingness-to-accept (WTA) annual cost to the National Health Service (NHS) for attributes of a collaborative intervention between pharmacies and primary care in Portugal using a DCE; 2) to incorporate DCE into an economic evaluation using cost-benefit analysis (CBA).

3. METHODS

A convenience sample of hypertension and hyperlipidemia intervention and control patients was selected to complete the DCE at the end of a collaborative trial between pharmacies and primary care in Portugal. We used five attributes: waiting time to get medical appointment, model of pharmacy intervention, integration with primary care, chance of having a stroke in 5 years, and annual cost to the NHS.

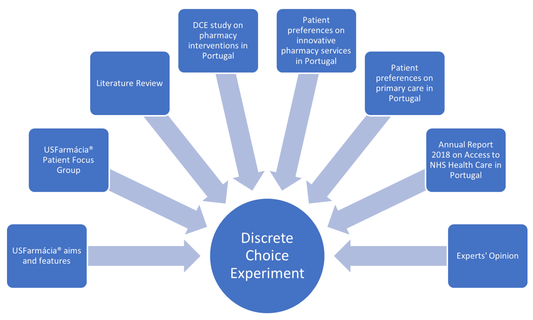

Fig 1. Sources for attributes and levels of Discrete Choice Experiment (DCE). NHS indicates National Health Service

	ATTRIBUTE	SERVICE A	SERVICE B
1	Model of pharmacy intervention	5-minute at counter for a basic medication check of your prescription medicines.	15-minute in private office every 3 months for BP measurement and medication review of your medicines for high blood pressure and/or cholesterol
2	Integration with primary care	Poor – NO protocols pre-agreed with physicians and it is not possible to schedule medical appointment with your GP via pharmacy IT system	Full – protocols pre-agreed with physicians AND it is possible to schedule medical appointment with your GP via pharmacy IT system
3	Waiting time to get requested medical appointment	48 hrs (urgent) / 30 days (not urgent)	7 days (urgent) / 45 days (not urgent)
4	Chance of having a stroke in the next 5 years	Is much lower	Is slightly lower
5	Annual cost to the NHS	€76	€51
	WHICH SERVICE A OR B WOULD YOU CHOOSE?	□	□

Fig 2. Example of a choice set. BP indicates Blood Pressure; GP, General Practitioner; IT, Information Technology; NHS, National Health Service

We used an experimental orthogonal fractional factorial design. Data were analyzed using conditional logit, and bootstrap with 1,000 replications for confidence intervals.

Trade-offs between attributes can be demonstrated by using utility scores (V), calculated by using the following equation:

$$V = \beta_{model} + \beta_{integration} + \beta_{wait\ time} + \beta_{stroke} + \beta_{cost} cost$$

We used the ratio of the coefficient for the attribute of interest (β_x) to the cost coefficient (β_{cost}) to calculate WTA for marginal changes in attributes.

The welfare change in moving from the reference case (usual care) to the "best" case scenario (ideal intervention) was incorporated into a CBA framework. We used the estimated annual incremental trial costs to perform CBA. Mean WTA was compared to these costs using Net Benefit (WTA - costs) from the perspective of intervention patients.

4. RESULTS

A total of 122 completed the DCE survey.

Intervention patients have a significantly higher monthly equivalent income, a slightly higher proportion pays the NHS user charge, and lower waiting time for medical appointments vs control patients (P<0.05). Monthly equivalent income and payment of the NHS user charge were not covariates in the regression model. Waiting time for medical appointments was an attribute itself.

All regression coefficients of attributes *waiting time to get medical appointment, model of pharmacy intervention*, and *integration with primary care* were positive, indicating that collaborative care options were preferred to reference levels, confirming theoretical validity.

Waiting time to get medical appointment on the same day (urgent) and within 15 days (non-urgent) was the most important attribute. This preference was stronger in control patients.

The next attributes preferred were:

- 30-minute pharmacy intervention in private office every 6 months for point-of-care measurements and for medication review of all medicines
- Full integration with primary care (protocols pre-agreed with physicians
- Possible to schedule medical appointment with GP via pharmacy IT)

These preferences were stronger in intervention patients.

The chance of stroke and cost attributes were not significant.

Trade-offs between the remaining attributes were calculated to determine the WTA cost to the NHS for intervention patients.

	Intervention (€)
Willingness-to-Accept (WTA) when moving from Usual Care to Intervention	877.00
Difference in Annual Costs Baseline/6 Months	88.80
Net Benefit (NB)	788.20

Table 1. Cost-Benefit Analysis (intervention patients)

Intervention patients were willing to accept NHS annual cost of €877 for their preferred scenario. The annual net benefit per patient is €788.20 and represents the monetary value of patients' welfare surplus for this model.

5. CONCLUSION

This study offers a mechanism for patients to participate in decision-making and seeks to capture other benefits not captured in cost-effectiveness or cost-utility analyses using a welfare approach.

This study is the first conducted in Portugal alongside a pharmacy collaborative trial, incorporating DCE into CBA. The findings can be used to guide the design of pharmacy collaborative interventions with primary care with the potential for reimbursement for uncontrolled or at-risk chronic disease patients informed by patient preferences. Future DCE studies conducted in community pharmacy may provide additional contribution to this research.

DISCLOSURE
This poster reports work that is part of the first author's Ph.D. in Public Health, specialization in Health Economics.
The trial was promoted by the NHS Group of Primary Care Units ACeS do Baixo Mondego and the National Association of Pharmacies (ANF), in collaboration with Glintt and SPMS, EPE, and was funded by ANF. The promoters and funder had no role in the: study design; project management; data collection; analysis and interpretation, writing, review; or approval of this abstract and poster.

ETHICS APPROVAL & DATA PROTECTION
The study was approved by the NHS Regional Health Administration "ARS Centro" on 09-02-2017 following the opinion of its Ethics Committee. The Ethics Committee Instituto de Bioética of Universidade Católica Portuguesa also approved the study on 20-03-2018. Patients provided written consent which included provisions for a preference study and reconfirmed at the end of the trial before the DCE survey.

ACKNOWLEDGEMENTS
We gratefully acknowledge all patients who participated in this study.
We thank Spirituc.

You are also welcome to check our POSTERS HSD67 (effectiveness trial) and EE538 (cost-effectiveness and cost-utility analysis of this trial).

REFERENCES
1. Costa S, Guerreiro J, Teixeira I, Helling DK, Pereira J, Mateus C. Cost-Effectiveness and Cost-Utility of Hypertension and Hyperlipidemia Collaborative Management between Pharmacies and Primary Care in Portugal Alongside a Trial Compared With Usual Care (USFarmácia®). Front. Pharmacol. 2022;13:903270. doi: 10.3389/fphar.2022.903270.
2. Costa S, Cary M, Helling DK, Pereira J, Mateus C. An overview of systematic reviews of economic evaluations of pharmacy-based public health interventions: addressing methodological challenges. Syst. Rev. 2019;8:272. doi: 10.1186/s13643-019-1177-3.
3. McFadden D. Conditional Logit Analysis of Qualitative Choice Behavior. In: Zarembka P, editor. Frontiers in Econometrics. New York: Academic Press; 1974. pp. 105-142.

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