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# Exploring preferences of older adults for dental services: A pilot multi-national discrete choice experiment

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**Objectives:** To pilot an exploration of older adults' future preferences using discrete choice experiments to understand who should provide dental examinations and treatment, where these services should be provided, and participants' willingness to pay and willingness to travel.

**Background:** The proportion of older adults in the general population is increasing and is recognised as a pressing public health challenge.

**Materials and Methods:** Older people aged 65 years and over were recruited into this study from the UK, Switzerland and Greece. Drawing on earlier stakeholder engagement, a set of choice experiments are developed to explore the future preferences of older people for dental examinations and dental treatment, as they anticipated losing their independence. These were presented to the participants using a range of platforms, because of the COVID pandemic. Data were analysed in STATA using a random-effects logit model.

**Results:** Two hundred and forty-six participants (median age 70 years) completed the pilot study. There was a strong preference across all countries for a dentist to undertake a dental examination (Greece:  $\beta=0.944$ , Switzerland:  $\beta=0.260$ , UK  $\beta=0.791$ ), rather than a medical doctor (Greece:  $\beta=-0.556$ , Switzerland:  $\beta=-0.4690$ , UK:  $\beta=-0.468$ ). Participants in Switzerland and the UK preferred these examinations to be undertaken in a dental practice (Switzerland:  $\beta=0.220$ , UK:  $\beta=0.580$ ) while participants in Greece preferred the dental examination to be undertaken in their homes ( $\beta=1.172$ ). Greek participants preferred dental treatment to be undertaken by a specialist ( $\beta=0.365$ ) in their home ( $\beta=0.862$ ), while participants from the UK and Switzerland preferred to avoid any dental treatment at home (Switzerland:  $\beta=-0.387$ ; UK:  $\beta=-0.444$ ). Willingness to pay analyses highlighted that participants in Switzerland and the UK were willing to pay more to ensure the continuity of future service provision at a family dental practice (Switzerland:  $\beta=0.454$ , UK:  $\beta=0.695$ ).

**Conclusion:** Discrete choice experiments are valuable for exploring older people's preferences for dental service provision in different countries. Future larger studies should be conducted to further explore the potential of this approach, given the

pressing need to design services that are fit for purpose for older people. Continuity of dental service provision is considered as important by most older people, as they anticipate losing their dependence.

#### KEYWORDS

dental service provision, discrete choice experiments, older people, stated preference, willingness to pay, willingness to travel

## 1 | INTRODUCTION

The proportion of older adults in the general population is increasing, due to longer life expectancy and decreasing fertility rates.<sup>1</sup> This shift is now being recognised as a pressing public health challenge, given the differing health needs of this cohort and the implications of service design.<sup>1</sup> As older people lose their independence, these needs change further, with many residing in care homes or supported by assisted living schemes.<sup>1</sup> The oral health of older people is significant in this respect, given that oral conditions can impact on their quality of life, self-esteem, general health and diet, and can exacerbate underlying medical conditions.<sup>2–5</sup> Equally, the oral health of dependent older people is much worse than their community living peers and can be aggravated further by self-care deterioration, cognitive decline, polypharmacy, xerostomia and cariogenic diets.<sup>4</sup>

To meet these changes, continued access to appropriate service provision is important.<sup>1</sup> However, access to services for dependent older people is often poor, and the recent pandemic has shown that the demand for clinical treatment was significantly decreased.<sup>6,7</sup> Equally, little is known about their preferences for key service parameters: Who should deliver the service and where should care be delivered? This is important because several studies have suggested that other members of the dental team could provide the necessary care. For example, Monaghan & Morgan concluded that a large proportion of need in care homes in Wales could be wholly provided by other members of the dental team, rather than by dentists themselves.<sup>8</sup> Equally, given that many dependent older people receive ongoing medical care, it could be possible to extend this role to other members of the medical team in certain countries.<sup>9</sup>

Providing care for dependent older people is also influenced by the over-arching design of the health system and the extent to which oral service provision is supported by the State or funded by the individual patient. For example, in the UK, a change in the incentives in the NHS dental contract in 2006 produced a dramatic reduction in the level of provision of domiciliary care.<sup>10</sup> Equally, the extent to which older people are required to (or are prepared to) pay for services is key. In this sense, it is important to understand older peoples' willingness to pay (WTP) for different services, to best match service need and supply. As Vernazza et al<sup>11</sup> outlined WTP 'measures the maximum amount an individual is willing to forgo in monetary terms to gain a given health state improvement, and it allows non-health aspects of programs to be considered'. To this end, processes determine exploration of older peoples' preferences for oral service

provision appear to be important. As highlighted by Brocklehurst et al,<sup>12</sup> 'people's emotional and practical response to challenges in health and well-being and the responsiveness of systems to their needs is crucial to improve the quality of service provision'. This is a particularly important aspect of care for older people because felt, expressed and normative needs may be fundamentally different and change as they become increasingly dependent.<sup>13,14</sup>

Discrete choice experiments (DCEs) have been used by researchers to elicit preferences and measure the trade-offs that people make between different levels and attributes of service provision.<sup>15</sup> They rely on two fundamental assumptions: (i) Service parameters can be described by a set of attributes; and (ii) these can be valued.<sup>16</sup> By asking participants to trade off preferences between different levels of attributes, researchers can quantify their relative value.

The aim of this study was to pilot the use of DCEs to elicit the older people preferences for oral service provision, as they anticipated losing their independence. In addition, we enquired about older peoples' WTP, and willingness to travel (WTT) for these different service parameters in Switzerland and the UK.

## 2 | METHODS

Approval for the study was obtained from the relevant ethics committees (Bangor University Ethics Committee 29/09/20; Greece 327/2017; and Switzerland 2017-00488).

### 2.1 | Identifying attributes

A structured approach was taken to determine the most important attributes and levels to utilise in the DCE. This approach drew on two Priority Setting Partnerships that took an inductive approach to exploring important parameters for service provision, involving a range of key stakeholders in the UK and the Netherlands.<sup>17,18</sup> The detail of these studies is reported elsewhere, but the process followed the criteria laid by the James Lind Alliance, which seeks to mitigate the asymmetrical relationships that often exist among researchers, service providers and users of services.<sup>19</sup> In both studies, participants were asked a number of key questions: (i) What aspects of oral health were important to them as they anticipated losing their independence? (ii) What does good oral health care look like? (iii) How should services be designed to meet their needs?

**TABLE 1** Attribute and levels selected for the multicentric discrete choice experiment.

Attributes	Examination levels	Treatment levels
Type of health professional	Dentist [base] Doctor Auxiliary	Dentist [base] Specialist
Where the activity takes place	Home [base] Dental Practice Medical practice Specialist setting	Home [base] Dental practice Specialist setting

Based on the findings from these earlier studies, the research team developed a list of different attributes and levels that could be investigated across three different countries, the UK, Switzerland and Greece. These countries were selected partly out of convenience and partly because of their different service models and different payment mechanisms for older people. The UK has a public health system, where the costs for treatment are either born entirely or partially by the State, while Switzerland and Greece have a private system of care. Two different DCEs were developed: (i) exploring preferences for dental examinations, and (ii) exploring preferences for dental treatment (Table 1). Given that this was an international pilot study, it was important to ensure that each attribute and level was contextually appropriate and plausible in each country in order to facilitate cross-country comparison. This was reached after a final consensus meeting of the research team.

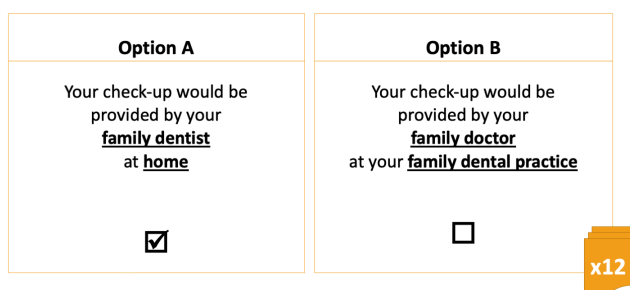
Accounting for this contextual plausibility, the attributes and levels set in this study produced 12 possible scenarios for dental examinations and six possible scenarios for dental treatment. Binary choices between these different hypothetical scenarios were created using a full-factorial design; that is, participants were required to choose their preferred option from a choice of two possible options and were not allowed to opt out of the decision or choose the status quo. An example of a choice set for examination is represented in Figure 1.

## 2.2 | DCE questionnaire

The two DCEs were embedded in a questionnaire that collected additional information about age, sex, previous profession and monthly income, as well as recording their WTP and WTT for services. The monetary values utilised in the questionnaires in the UK and Switzerland were based on the average service fee per hour in each service model. WTP was not investigated in Greece, as this element of the questionnaire was added later in the piloting process. The questions on WTP and WTT are presented in Figure 2. The questionnaire and associated data collection form (response sheet) were conceived in English, translated to French (S.M), German (S.A.) and Greek (A.K.), and then back-translated to English to linguistically validate the content.

The DCE were initially tested in Geneva using a small convenience sample of French-speaking patients attending the University Clinics of Dental Medicine. Equally, data collection in the UK was

### Example of examination 'choice set'



**FIGURE 1** Example of an examination choice set.

piloted in Belfast in a face-to-face meeting. Minor changes were made to the presentation of the questionnaire.

## 2.3 | Eligibility and recruitment

Included in the study were participants who were (i) at least 65 years of age or attending older people's dental services, and (ii) independently living at home. Participants were excluded if they currently resided in dependent care facilities, suffered from cognitive impairment or did not sufficiently comprehend the local language.

In Switzerland and Greece, participants were recruited from the gerodontology patient pool of in their respective dental hospitals. Participants were also recruited via the University for Seniors at the University of Bern and Geneva, and from the Day Centers for Older People in Athens. In the UK, data collection was initially conducted in Belfast using a similar face-to-face process to Switzerland and Greece. However, given the restrictions caused by the COVID-19 pandemic, further data collection had to be conducted using an online research platform and a consumer marketing panel. For this stage of the recruitment process, quota sampling was utilised to ensure a representative sample was produced.

## 2.4 | Preference elicitation

To elicit their preferences, participants were asked to choose between a series of hypothetical scenarios that were constructed from the predetermined levels and attributes (Table 1). In the face-to-face approach, this was facilitated by the researcher team reading out the

## Willingness to Pay (WTP) / travel (WTT)

How much would you be willing to pay for dental examination?

☒ CH
 ☐ UK

☐ I am willing to pay up to CHF 60  
☐ I am willing to pay up to CHF 120  
☐ I am willing to pay more than CHF 120

£0  
 £100  
☐ more than £100

How much would you be willing to pay for dental treatment?

☒ CH
 ☐ UK

☐ I am willing to pay up to CHF 200  
☐ I am willing to pay up to CHF 400  
☐ I am willing to pay more than CHF 400

£0  
 £300  
☐ more than £300

How far would you be prepared to travel to have your examination? ... your treatment?

☐ I'd be prepared to travel up to 5km (3 miles)  
☐ I'd be prepared to travel up to 10km (6 miles)  
☐ I'd be prepared to travel more than 10km (6 miles +)

**FIGURE 2** Willingness to pay and willingness to travel questionnaire presented to participants in Switzerland and the UK.

Country	Region	n	Mean age	Median (range)	% Male	Live alone %
Greece	Athens	20	70.5	70 (64–77)	35	20
Switzerland		89	71.5	70 (64–91)	47	15
	Geneva	38	73.3	73 (64–88)	45	36
	Bern	51	74	73 (65–91)	49	0
UK	Belfast	17	69.8	70 (62–77)	59	41
	England <sup>a</sup>	33	69.9	69 (65–84)	73	30
	N. Ireland <sup>a</sup>	22	70.1	69 (66–77)	68	27
	Scotland <sup>a</sup>	33	71	70 (65–81)	46	39
	Wales <sup>a</sup>	32	70.4	70 (65–81)	53	25
Pooled		246	71.5	70 (62–91)	53	25

<sup>a</sup>Experiment was done online.

different scenarios using the support of a projected visual presentation. Participants were then asked to respond to each question. In the online version of the questionnaire, the research team provided detailed written instructions that were utilised by the consumer marketing panel.

## 2.5 | Analysis

Data coding and analysis were undertaken with STATA version 13 (StataCorp LP) using a random-effects logit model that allowed for multiple observations from the same respondent. The regression model estimated the preference weights ( $\beta$  coefficient) for each attribute to capture its relative importance and direction of effect. The level of significance was set at 0.01. Subgroup analysis were performed on a range of preselected variables. Log likelihood ratio tests were performed on subgroups: region, age, WTP and WTT at a 1% level of significance. Planned exploratory analysis was also conducted on the UK data set to assess the impact of the coronavirus pandemic on preferences in the UK (willingness to access services) and influence of sampling/survey method (face to face and online in Northern Ireland). Expected utility associated with

the hypothetical scenarios was derived to estimate the probability of uptake for the most and least preferred scenarios, within each subgroup.

## 3 | RESULTS

A total of 246 participants in three countries completed the DCEs and the median age was 70years (62–91). Twenty-five percent of participants lived alone and 53% were male (Table 2).

The results of the DCE for a dental examination are reported in Table 3 and revealed a positive preference for a dental examination by a dentist across all three countries (Greece:  $\beta=0.944$ , Switzerland:  $\beta=0.260$ , UK:  $\beta=0.791$ ). Equally, it revealed a negative preference for a dental examination by a medical doctor (Greece:  $\beta=-0.556$ , Switzerland:  $\beta=-0.4690$ , UK:  $\beta=-0.468$ ). As for the location, the Swiss and UK participants stated a significant positive preference for the examination to be conducted in a dental practice (Switzerland:  $\beta=0.220$ , UK:  $\beta=0.580$ ), while in Greece, the preferred location for a dental examination was at home (Greece:  $\beta=1.172$ ).

The results of the DCE for treatment are presented in Table 4. Greek participants showed a significant preference for

**TABLE 2** Participants' characteristics.

TABLE 3 Country-wise results of the random effects logit regression for intraoral examination.

Examination attribute	Greece			Switzerland			United Kingdom		
	β coeff.	P-value	95% CI <sup>a</sup>	β coeff.	P-value	95% CI <sup>a</sup>	β coeff.	P-value	95% CI <sup>a</sup>
Family dentist <sup>b</sup>	0.944			0.260			0.791		
Family doctor	-0.556 <sup>*</sup>	.001	-1.279 to -0.287	-0.469 <sup>*</sup>	<.001	-0.638 to -0.399	-0.468 <sup>*</sup>	<.001	-0.593 to -0.389
Auxiliary healthcare provider	-0.388 <sup>*</sup>	.006	-0.887 to -0.144	0.210 <sup>*</sup>	<.001	0.116 to 0.347	-0.322 <sup>*</sup>	<.001	-0.431 to -0.239
Home <sup>b</sup>	1.172			-0.047			-0.578		
Family dental practice	-0.115	.599	-0.678 to 0.579	0.220 <sup>*</sup>	.002	0.100 to 0.400	0.580 <sup>*</sup>	<.001 <sup>*</sup>	0.465 to 0.740
Family medical Practice	-1.267 <sup>*</sup>	<.001	-2.766 to -0.901	-0.109	.128	-0.274 to 0.031	0.247 <sup>*</sup>	<.001 <sup>*</sup>	0.126 to 0.373
Specialist setting	0.21	.227	-0.237 to 0.718	-0.064	.360	-0.223 to 0.078	-0.249 <sup>*</sup>	<.001 <sup>*</sup>	-0.374 to -0.140
Constant	0.411	.035	0.015 to 1.165	-0.061	.365	-0.214 to 0.072	-0.072	.232	-0.191 to 0.043
Number of observations	240			1068			1644		
Number of groups	20			89			137		
Wald X2 (5)	49.86			73.28			251.99		
Log likelihood	-114.06			-700.35			-943.06		

Abbreviations:  $\beta$  coeff, Beta coefficient; CI, confidence interval.<sup>a</sup> CIs generated by 1000 bootstrap replications.<sup>b</sup> Omitted level calculated as -1 \* (sum  $\beta$  of other levels).\* $P < .01$ .

TABLE 4 Country-wise results of the random effects logit regression for dental treatment.

Treatment Attribute	Greece			Switzerland			United Kingdom		
	β coeff.	P-value	95% CI <sup>a</sup>	β coeff.	P-value	95% CI <sup>a</sup>	β coeff.	P-value	95% CI <sup>a</sup>
Family dentist <sup>b</sup>	-0.365			-0.026			-0.015		
Specialist dentist	0.365 <sup>*</sup>	.002	0.149 to 0.835	0.026	.586	-0.081 to 0.134	0.015	.700	-0.067 to 0.103
Home <sup>b</sup>	0.862			-0.387			-0.444		
Family dental practice	-0.796 <sup>*</sup>	<.001	-1.805 to -0.489	0.225 <sup>*</sup>	.002	0.120 to 0.433	0.606 <sup>*</sup>	<.001	0.557 to 0.854
Specialist setting	-0.066	.706	-0.524 to 0.369	0.162	.025	0.029 to 0.357	-0.163 <sup>*</sup>	.006	-0.323 to -0.054
Constant	-0.359	.129	-1.327 to 0.130	-0.149	.118	-0.400 to 0.054	-0.06	.44	-0.247 to 0.104
Number of observations	120			534			822		
Number of groups	20			89			137		
Wald X2 (3)	24.61			28.00			98.20		
Log likelihood	-62.78			-353.89			-514.85		

Note: Log-likelihood ratio test,  $P$ -value < .0001\*.

Abbreviations:  $\beta$  coeff, Beta coefficient; CI, confidence interval.

<sup>a</sup>CIs generated by 1000 bootstrap replications.

<sup>b</sup>Omitted level calculated as -1\* (sum  $\beta$  of other levels).

\* $P$  < .01,  $P$  < .05 corrected for multiple comparisons.



dental treatments to be conducted by a specialist dentist (Greece:  $\beta=0.365$ ;  $P=.002$ ) and for this to be undertaken within their own home (Greece:  $\beta=0.862$ ;  $P<.001$ ). In the UK and Switzerland, participants did not want dental treatments being performed at home (Switzerland  $\beta=-0.387$ , UK  $\beta=-0.444$ ).

Table 5 is a summary of the findings where cells highlighted in green show the significant positive preference and the cells highlighted in red show a significant negative preference.

Subgroup analysis of preferences identified statistically significant subgroups by region, age, WTP and WTT; this differed by sample and scenario (examination or treatment). Age influenced preferences in the UK for both examination and treatment, and examination only in Switzerland. WTP influenced preferences for examination in the UK and examination and treatment in Switzerland. In the UK participants' median WTP was estimated to be £21 for a dental examination and £32 for dental treatment. The WTP had a significant influence on the choice preferences for examination in Switzerland and the UK (Table 6). WTT influenced preferences for examination only in the UK. The UK also had a higher proportion of participants WTT more than 5 km for an examination and treatment, than in Greece and Switzerland. Preference models accounting for willingness to access UK NHS services during the Covid-19 pandemic did not reach statistical significance.

Table 7 compares the probability of uptake of the most and least preferred scenarios for examination and treatment by country and reveals that, when participants were presented with the preferred scenario, the probability of uptake for dental services was greater.

## 4 | DISCUSSION

To the best of our knowledge, this is the first pilot of a DCE to explore the preferences for services of older people, as they anticipated losing their independence. The pilot appeared to show that meaningful data could be collected from participants using this form of preference elicitation technique. The study found that participants had a strong preference for a dental examination to be undertaken by a dentist, rather than any other member of the dental team. Equally, although a number of recommendations have been made by a range of inter-professional groups in an attempt to increase the scope of multidisciplinary care, the findings show that participants did not see a direct role for medical doctors in the provision of dental examinations or treatment.<sup>9,20,21</sup> The finding that participants were often prepared to pay more and travel more to see a dentist rather than another member of the dental team also has potential implications for the design of future services or raising awareness among older people about the scope of practice of different members of the dental team. The pilot also shows a strong preference for the dental examination to be undertaken in a dental surgery in the UK and in Switzerland. However, participants from Greece and those with a low WTP threshold in Switzerland appeared to prefer to have a dental examination in their own home. The latter may represent

differences in income-related inequality, which could be explored further in a definitive study.<sup>22</sup>

The findings for dental treatment followed a similar pattern in terms of the preference for where the service should be provided. In the UK and Switzerland, participants preferred to have any dental treatment in the dental practice, while Greek participants preferred dental treatment to be undertaken in their home. However, all participants from all three countries wanted the service provider to have some degree of specialisation in providing care for older people.

With increasing levels of dependence, dental visits to the dentist decrease and understanding the preferences of older people for service provision as they anticipate losing their independence is important.<sup>23-27</sup> Janssens et al stated that 'once frailty has been detected, good interprofessional communication and care are needed to avoid the drop-out of older adults from the oral healthcare system'. In a recent systematic review of the literature, the main barriers to treatment were found to be a lack of suitable facilities for treatment, transportation problems and patients refusing care.<sup>28</sup> This emphasises not just what needs to be designed into a system of care, but how important it is to negotiate and meet older peoples' preferences in this process. A number of examples across Europe have shown how oral health care can be provided once older people become completely dependent and enter a care environment.<sup>29</sup> A key issue is how older people transition into this and how appropriate services should be provided.<sup>30</sup> One important element here is raising older people awareness of to the range of services that can be provided by other members of the dental team and the role that non-dental professionals can have in a multidisciplinary approach.<sup>9,20,21</sup> Uncertainty in any judgement task tends towards a position of safety; that is people are warier when uncertain. Increasing familiarity with any novel service is therefore important in any transition and loss of independence.<sup>31</sup>

The strength of this study was that it piloted the use of an extensive and detailed DCE model, which was built to understand preferences for care and incorporated WTP and WTT; that is, it helped to understand the additional influences of patient cost and proximity. However, in order to establish contextual plausibility, the range of attributes and their levels had to be limited to those that were applicable across all three countries. This did facilitate a comparative analysis at a multinational level, but at a cost of losing some of the nuances of the contextual differences within the different service models for each country. Throughout the DCE, the research team was also focused on eliciting preferences for anticipated future behaviour, rather than empirically measuring actual behaviour change. Equally, preferences were limited to the views of older people alone and, in a definitive study, could be augmented further by exploring the preferences of service providers and staff in relevant sectors such as dentists and care-home staff. The interview process was changed from face-to-face to a sample quota due to the Covid-19 pandemic and the resulting restrictions. It was shown in this study that preference elicitation could also be done remotely, as has been highlighted by earlier studies.<sup>32,33</sup>



TABLE 5 Summary of regression models for intraoral examination and dental treatment.

Examination	GR	UK	UK WTP less	UK WTP More	UK WTTless	UK WTT more	CH	CH Younger	CH Older	CH WTP Less	CH WTP More
Dentist <sup>a</sup>	0.944	0.791	0.812	0.94	0.692	1.005	0.26	0.447	0.153	0.239	0.293
Doctor	-0.556	-0.468	-0.554	-0.335	-0.469	-0.406	-0.469	-0.680	-0.360	-0.471	-0.485
Auxiliary	-0.388	-0.322	-0.259	-0.605	-0.223	-0.599	0.210	0.233	0.207	0.232	0.1922
Home <sup>a</sup>	1.172	-0.578	-0.821	-0.653	-0.633	-0.767	-0.047	0.194	-0.187	0.215	-0.303
Dental practice	-0.115	0.580	0.604	0.695	0.704	0.634	0.220	-0.039	0.383	-0.024	0.454
Medical practice	-1.267	0.247	0.322	0.285	0.350	0.278	-0.109	-0.07	-0.135	-0.171	-0.069
Specialist setting	0.21	-0.249	-0.106	-0.327*	-0.422	-0.145	-0.064	-0.085	-0.061	-0.02	-0.082
Treatment	GR	UK	UK WTP less	UK WTP More	UK WTTless	UK WTT more	CH	CH Younger	CH Older	CH WTP Less	CH WTP More
Dentist <sup>a</sup>	-0.365	-0.015	-0.015	-0.015	-0.015	-0.015	-0.026	-0.015	-0.015	-0.015	-0.015
Specialist Dentist	0.365	0.015	0.015	0.015	0.015	0.015	0.026	0.015	0.015	0.015	0.015
Home <sup>a</sup>	0.862	-0.444	-0.444	-0.444	-0.444	-0.444	-0.387	-0.387	-0.387	-0.387	-0.387
Dental practice	-0.796	0.606	0.606	0.606	0.606	0.606	0.225	0.225	0.225	0.225	0.225
Specialist setting	-0.066	-0.163	-0.163	-0.163	-0.163	-0.163	0.162	0.162	0.162	0.162	0.162

Note: Key: Values are  $\beta$ -coefficients of the random effect logit regression. Green = significant positive preference; Red = significant negative preference; White =  $P > .01$ .

<sup>a</sup>Omitted level calculated as -1 \* (sum  $\beta$  of other levels).

\* $P < .01$ ,  $P < .05$  corrected for multiple comparisons.

TABLE 6 Results of the random logit regression for intraoral examination by willingness to pay analysis.

Examination attribute	Switzerland WTP less			Switzerland WTP more			UK2 WTP less			UK2 WTP more		
	Up to 60 CHF for a dental examination			More than 60 CHF for a dental examination			Up to £21 for a dental examination			WTP more than £21 for a dental examination		
	$\beta$ coeff.	P-value	95%CI <sup>a</sup>	$\beta$ coeff.	P-value	95%CI <sup>a</sup>	$\beta$ coeff.	P-value	95%CI <sup>a</sup>	$\beta$ coeff.	P-value	95%CI <sup>a</sup>
Family dentist <sup>b</sup>	0.239*			0.293*			0.812			0.940		
Family doctor	0.471*	<.001		-0.485*	<.001		-0.554*	<.001		-0.335*	<.001	
Auxiliary healthcare provider	0.232*	.003		0.1922*	.009		-0.259*	.001		-0.605*	<.001	
Home <sup>b</sup>	0.215*			-0.303*			-0.821			-0.653		
Family dental practice	-0.024	.824		0.454*	<.001		0.604*	<.001		0.695*	<.001	
Family medical Practice	-0.171	.106		-0.069	.5010		0.322*	.003		0.285*	.002	
Specialist setting	-0.020	.845		-0.082	.4120		-0.106	.302		-0.327*	<.001	
Constant	-0.018	.853		-0.037	.690		-0.046	.657		-0.027	.753	
Number of observations	480			522			576			864		
Number of groups	40			46			48			72		
Wald X2 (5)	35.70			56.17			100.90			156.58		
Log likelihood	-312.66			-351.08			-317.33			-464.84		
Log-likelihood ratio test												
P-value = .0001												

Abbreviations:  $\beta$  coeff, Beta coefficient; CI, confidence interval.<sup>a</sup> CIs generated by 1000 bootstrap replications.<sup>b</sup> Omitted level calculated as -1 \* (sum  $\beta$  of other levels).\* $p < .01$  corrected for multiple comparisons; 1 Reported in Table VII Chebib et al 2020. 2 Excluding Belfast (n = 17) group format responses.

TABLE 7 The probability of uptake for the most and least preferred scenarios for intraoral examination and dental treatment (country-wise).

	Greece (Gr)		Switzerland		United Kingdom (UK)	
	Most preferred	Least preferred	Most preferred	Least preferred	Most preferred	Least preferred
Examination	Family dentist at home (39%)	Doctor at medical centre (1%)	Family dentist at dental practice (13%)	Doctor at medical centre (4%)	Family dentist at dental practice (25%)	Doctor at home (2%)
Treatment	Specialist dentist at dental practice (21%)	Family dentist at dental practice (4%)	Specialist dentist at dental practice (21%)	Family dentist at home (11%)	Specialist dentist at dental practice (28%)	Family dentist at home (10%)

5 | CONCLUSION

It was possible to elicit the preferences for dental examinations and dental treatment using DCEs. Using WTP and WTT added further understanding to help in the design of services that meet the needs of older people anticipating losing their independence. However, taking an international approach was challenging and added to the analytical complexity and interpretation of the findings.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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