Patient Preference and Adherence Dovepress

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Patients' Preferences for the Treatment of a Single Missing Tooth in China: A Discrete Choice Experiment

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Purpose: The main treatment options offered to patients to choose from when restoring a single missing tooth include tooth-supported three-unit fixed partial dentures (FPDs) and implant-supported single crowns (ISCs). However, due to the heterogeneity of current studies, it is difficult to objectively compare these two treatment strategies. In this study, a discrete choice experiment (DCE) was used to quantify the preferences of individuals undergoing restoration treatment for single tooth loss.

Patients and Methods: The DCE questionnaire was disseminated in a "snowball" fashion, with data collected from participants aged 18–60. Five important attributes of treatment were selected: (1) treatment procedure, (2) treatment time, (3) cost, (4) five-year survival rate, and (5) five-year complication rate. A conditional logit model was employed to ascertain the direction of participants' preferences for specific attribute levels and to derive their willingness to pay (WTP) through the principle of marginal utility.

Results: 287 participants completed the questionnaire. The results of the questionnaire revealed that the five-year complication rate (42.42%) was the most important attribute, followed by cost (20.43%), five-year survival rate (14.23%), treatment time (13.44%), and treatment procedure (9.49%). Participants were willing to pay RMB$11076.2 (USD$1,772.2) to obtain a 10% extra reduction in the five-year complication rate, and RMB$7434.6 (USD$1,189.5) for a non-invasive treatment.

Conclusion: In the ranking of the relative importance of key factors affecting single missing tooth restoration, complication rates are most highly valued, suggesting that reducing the complication rate is a key issue to be addressed in prosthodontics. In addition, deriving the ranking of patients' concerns about key factors can help to improve doctor-patient communication and provide a reference for treatment technology development and medical decision-making.

Keywords: choice behavior, discrete choice experiment, restoration treatment, patients' preferences

Introduction

Dentition defects, also known as partially edentulous, are one of the most prevalent diseases in dentistry, affecting 276 million people worldwide.[1] It not only affects maxillofacial function and aesthetics but can also lead to temporomandibular joint disorder (TMD) and even be linked to neurological and cardiovascular diseases.[2–4] According to the 4th National Oral Health Survey in China, 84.4% of Chinese people have varying dentition defects.[5] In clinical practice, restoring a single tooth is the most common requirement. Among the various treatment options, tooth-supported three-unit fixed partial dentures (FPDs) and implant-supported single crowns (ISCs) are the most frequently selected. FPDs has

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the advantages of short treatment time, affordability, and non-invasiveness, which to a certain extent reduces the psychological pressure and pain on patients during the treatment. But it requires the reduction of the abutment teeth and results in several complications, such as an increased need for endodontic treatment, secondary caries, and fracture of the abutment teeth.[6–9] To prevent needless teeth reduction and its complications, ISCs offer an alternative that maintains the integrity of the teeth adjacent to the edentulous area.[10] However, ISCs also has its complications, including peri-soft tissue inflammation, screw and abutment loosening and so on.[9,11,12] Furthermore, ISCs usually brings pain and accompanying anxiety, which in turn exacerbate the patients' perception of pain.[13]

The majority of existing literature provided objective data on the attributes associated with these two treatment options, serving as a clinical basis for making treatment recommendations to patients. However, comparing these two treatment modalities is challenging due to the heterogeneity of the reported study data which clearly influenced the results, and the fact that both treatments have pros and cons. Some studies concluded that ISCs has a higher survival rate and a lower complication rate than FPDs.[7,9–11] While some studies indicated comparable survival and complication rates for both, especially in the posterior teeth.[6,14] The initial cost and long-term cost-effectiveness ratios are highly country and region specific.[10,14,15] Patients restored with implants did not have a higher quality of life related to oral health than those restored with conventional restorations, and their preoperative expectations significantly influenced the perceived outcomes.[16] In this context, patient perspective reports are recognized as significant factors in their choices,[16] but the preferences and influencing factors are still unknown.

The discrete choice experiment (DCE) is a survey-based experimental method that combines statistics and psychology. It is also a quantitative technique for predicting individual and collective preferences by modeling them within a probabilistic framework based on a random utility model. The application of DCE in the medical sector has grown exponentially because the advantage of this approach is that it can predict choices, mimicking real-world decisions, if at least scale and preference heterogeneity are taken into account.[17] The study can present variables to participants in a controlled experimental setting to quantify their trade-off preferences.[18] That is, different levels of relevant attributes are randomly composed into different scenarios for participants to choose from in the hypothetical scenario. Participants' choices reflect their weighing of different levels of attributes, implying relative importance.[18,19] Furthermore, the willingness to pay (WTP) is a method used to capture the upper limit of the amount of money that people are willing to sacrifice to receive the benefits of a particular medical service or treatment option.[20]

Our study aimed to explore individual preferences for restoration treatment of a single missing tooth through the DCE method. In today's era where people are highly involved in their restoration treatment options, and with the explosion in both treatment technologies, an in-depth understanding of the tradeoffs in a patients' choice of treatments can provide useful guidance to dentists.

Materials and Methods

Attributes and Levels

According to the review literature of DCE, the average number of attributes used in the study was around five, with treatment effectiveness, side effects or treatment risk, price, and time being the most frequently examined attributes.[19,21] We also consulted a wide range of literature and conducted interviews with a panel of experts. The literature related to single-tooth restorative treatment was comprehensively reviewed across several esteemed databases, like Web of Science, PubMed, Embase, and CNKI. The experts panel comprises specialists in prosthodontics, public health, statistics and other areas.

The distinction between FPDs and ISCs hinges on the nature of the treatment procedure (ie, invasive and non-invasive). Additionally, treatment time and costs are also crucial factors that influence patient choice. The five-year survival rate represents the probability of sustaining the treatment effect over a five-year period. It should be noted, however, that this does not include the probability of the occurrence of a complication that did not affect the continued use of the restoration. Consequently, the five-year complication rate is also included as an attribute. We finally selected the following five attributes: (1) treatment procedure, (2) treatment time, (3) five-year survival rate, (4) five-year complication rate, and (5) cost. The level ranges for each attribute were derived from relevant literature as well as the

Chinese clinical situation.[6–9,11,12,14] The difference in the levels of the two treatments on the same attribute gives participants a choice space (Table 1).

(1) Comfort and (2) aesthetics are also significant factors that patients consider, and can influence their satisfaction with the treatment outcomes,[22,23] but they are difficult to describe with objective criteria. Therefore, instead of including these two attributes in the DEC task choices, we collected data on the importance of these two factors separately.

Study Design

This study contained two levels of one attribute, four levels of three attributes, and five levels of one attribute. The test profiles presented in choice questions were created by generating permutations of attribute levels. If a full factorial design is implemented, 640 combinations could be generated, which led to [640*(640–1)/2] combinations of two-alternative choice questions.[18] It is impractical to include all possible combination in a questionnaire. To improve the efficiency of the experimental design, a fractional factorial design was chosen, which complied with the requirements of balance (such as each level within an attribute appearing equally) and orthogonality properties (such as each level appearing equally and as often as combinations of other attribute levels). Ultimately, 100 versions of the questionnaire were generated using d-efficiency, and one version was randomly assigned to each participant to ensure balance and orthogonality. This web-based questionnaire allowed participants to enter their information directly into our system, which was executed using the Choice Based Conjoint application of Sawtooth (SSI Web version 9.4.0; Sawtooth Software Inc).

Table 1 Attributes and Levels

Attributes	Levels of Attributes	
Treatment procedure	L1	Invasive
	L2	Non-invasive
Treatment Time	L1	3 months
	L2	6 months
	L3	9 months
	L4	12 months
Cost[a]	L1	RMB$2,000 (USD$320)
	L2	RMB$6,000 (USD$960)
	L3	RMB$10,000 (USD$1,600)
	L4	RMB$14,000 (USD$2,240)
	L5	RMB$18,000 (USD$2,880)
Five-year survival rate	L1	95%
	L2	90%
	L3	85%
	L4	80%
Five-year complication rate	L1	40%
	L2	30%
	L3	20%
	L4	10%

Note: [a]$1 RMB=$0.16 USA.

Questionnaire

The questionnaire consisted of three parts: (1) demographic information questions, (2) comfort and aesthetics and (3) DCE task choices. The first part focused on collecting basic information, and two questions about the importance of comfort and aesthetics were set at the second part. Before starting the DCE task choices, the basic processes of FPDs and ISCs were described using illustrations and the meaning of the five-year survival rate and possible complications were briefly explained. It was also emphasized to participants that all options did not represent the actual clinical situation.

In the DCE task choices section, 12 questions were presented to participants, who were asked to complete the task choices based on preference in a hypothetical scenario of choosing a treatment option for themselves or their family members. Participants could choose one of three options in each of the task choices: (1) Treatment A, (2) Treatment B, or (3) neither. Each question was generated according to the study design described previously, except for 1, 6 and 12, which were fixed questions. The combination of attribute levels in question 6 most closely approximated clinical reality (Table 2). For questions 1 and 12 in the DCE task, we designed the treatment options to represent the extreme best and worst combinations of each attribute. These two questions were called rationality tests. Given the evident superiority or inferiority of the options, participants were expected to either select the optimal treatment in both cases or decline treatment altogether. Otherwise, their questionnaire results would be excluded as unreliable. The flowchart of the selection process for attributes and main stages of DCE are shown in Figure 1

Participants

Given that single missing tooth is a common disease,[1,5] our questionnaire was distributed through various online social media platforms in China. A snowballing approach was employed to collect the questionnaires, whereby a random sample of participants initially completed the questionnaires and then disseminated them to individuals within their networks. This iterative process enables the continuous expansion of the subject pool and the diversification of the sample, ensuring the inclusion of a representative sample from different background conditions, while simultaneously enhancing the feasibility and reducing the cost of the survey. Only participants aged 18–60 years were included in the questionnaire, as this group has the independence and integrity to make reasonable comparative choices.

In order to guarantee the sufficiency of the sample size to substantiate the findings' validity, the minimum size is calculated using the following formula according to the method proposed by Johnson and Orme:[24]

$$n > 500c/(t \times a)$$

In our study, at least 139 valid samples are needed. Of all participants, those who did not pass the rationality test described above would be excluded from the analyses.

The study was conducted in accordance with the guidelines of the 1964 Declaration of Helsinki and was approved by the Medical Ethics Committee of Jinan University (JNUKY-2021-004). All information pertaining to participants will be anonymous and participants have the right to withdraw from the study at any time.

Statistical Analysis

Considering the heterogeneity of attributes, we employed the Conditional Logit Model (CLOGIT) as a data analysis method that can better simulate the real situation.[25] This method linked the likelihood of choice with the characteristic of

Table 2 A Sample Discrete Choice Experiment Choice Question

Attributes	Treatment A	Treatment B	Neither
Treatment procedure	Invasive	Non-invasive	No treatment
Treatment time	6 months	3 months	
Cost	RMB$10,000	RMB$6,000	
Five-year survival rate	95%	90%	
Five-year complication rate	30%	40%	

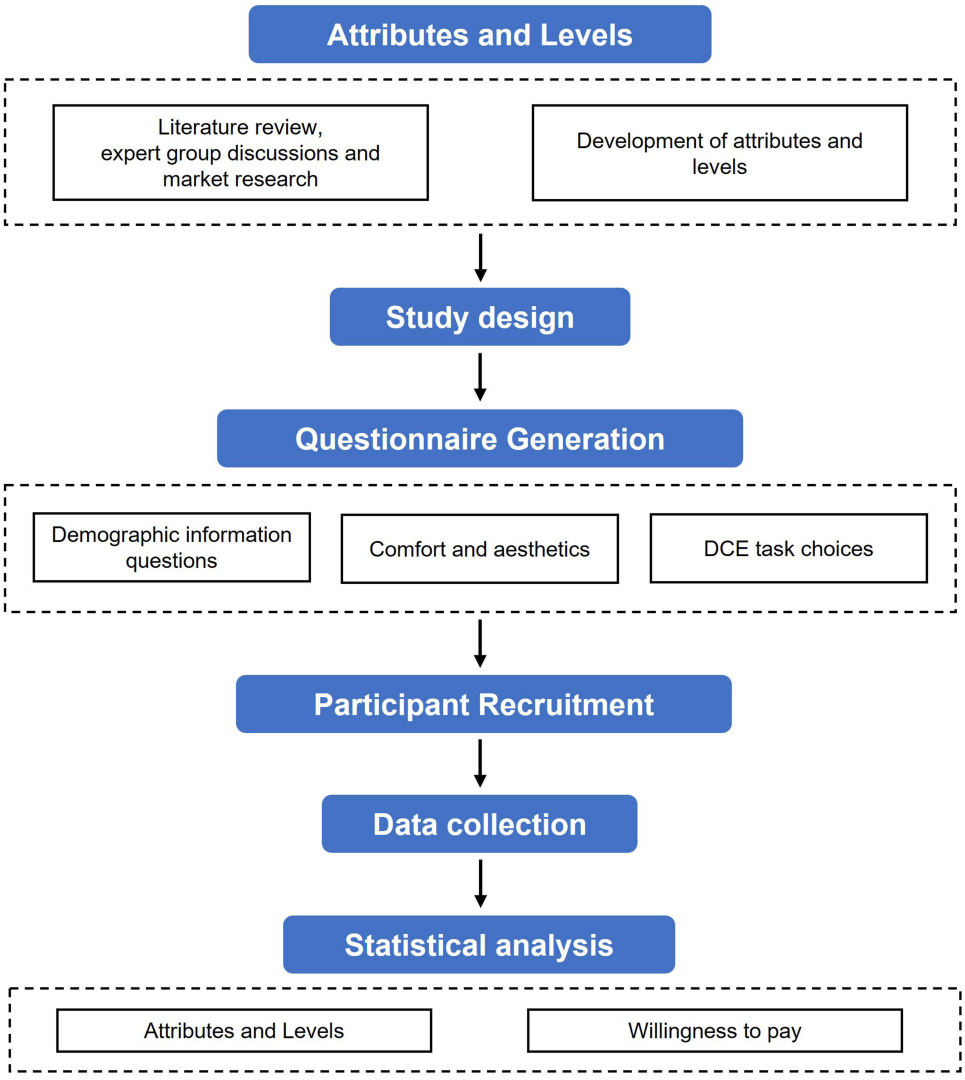

Figure 1 The development process of the DCE.

attribute level, with the choices serving as the dependent variable and the attribute levels of the tests serving as covariates. For each attribute and level mentioned in the questionnaire, the CLOGIT made inferences about respondents' preferences weights. A positive or negative coefficient indicated the direction of the respondents' preferences for a certain attribute level.

The marginal utility principle permitted an estimation of the WTP, where cost was coded as a continuous variable and assumed to be linear. The WTP for each attribute was calculated by dividing the regression coefficient for each attribute by the regression coefficient for the cost attribute.[26]

Results

A total of 442 participants completed the survey. 155 (35.1%) who did not pass both rationality tests were excluded. Therefore, 287 (64.9%) participants provided effective responses to all questions, regarded as valid data that can be used for subsequent analysis, which meets the minimum sample size requirements mentioned above.

Demographic Result

Of the total number of participants, 62.4% were female, with a mean age of 34.3 ± 12.7 years. Over half (55.4%) of the participants were married, 93.0% resided in urban areas, 86.5% had obtained a college degree or above, and 49.5% of

Table 3 Demographics and Characteristics of Participants (n=287)

	Level	Overall
Gender (%)	Male	108 (37.6%)
	Female	179 (62.4%)
Age (mean (SD))		34.3 (12.7)
Household size (mean, people (SD))		3.82 (1.14)
Marital status (%)	Divorce	3 (1.0%)
	Widowed	1 (0.3%)
	Married	159 (55.4%)
	Unmarried	124 (43.2%)
Current Residence	Urban	267 (93.0%)
	Rural-urban continuum	11 (3.8%)
	Rural	9 (3.1%)
Educational background (%)	Junior high school or below	2 (0.7%)
	Technical secondary school	4 (1.4%)
	Senior high school	14 (4.9%)
	Junior college	19 (6.6%)
	College degree	187 (65.2%)
	Master's degree or above	61 (21.3%)
Gross monthly household income (%)	RMB$4,999 and below	16 (5.6%)
	RMB$5,000–9,999	41 (14.3%)
	RMB$10,000–14,999	43 (15.0%)
	RMB$15,000–19,999	45 (15.7%)
	RMB$20,000–24,999	34 (11.8%)
	RMB$25,000–29,999	30 (10.5%)
	RMB$30,000–34,999	18 (6.3%)
	RMB$35,000–39,999	15 (5.2%)
	RMB$40,000 and above	45 (15.7%)

individuals reported a gross monthly household income exceeding RMB$20,000 (USD$3,200). The specific characteristics of the participants are presented in Table 3. When faced with afixed problem that represents aclinical situation (Table 2), 43.9% of participants chose treatment A, 39.7% chose treatment B, and the remainder did not choose any treatment.

Comfort and Aesthetics

A total of 269 (93.7%) participants thought the comfort level of the dental restoration was very important, and 198 (69.0%) participants also considered the aesthetic level to be of great importance. However, females demonstrated a greater focus on the aesthetic aspects of dentures than males, and the difference was statistically significant (Table 4).

Table 4 Comfort and Aesthetic Levels

	Level	Male	Female	p-value
N		108	179	
Comfort level				0.129
	Very important	98 (90.7%)	171 (95.5%)	
	Comparatively important	8 (7.4%)	7 (3.9%)	
	General important	2 (1.9%)	0 (0.0%)	
	Less important	0 (0.0%)	1 (0.6%)	
	No important	0 (0.0%)	0 (0.0%)	
Aesthetic level				0.006
	Very important	61 (56.5%)	137 (76.5%)	
	Comparatively important	37 (34.3%)	32 (17.9%)	
	Generally important	9 (8.3%)	7 (3.9%)	
	Less important	1 (0.9%)	2 (1.1%)	
	No important	0 (0.0%)	1 (0.6%)	

Importance of Attributes

Ultimately, based on responses from all respondents in our study, it was found that the five-year complication rate was considered the most essential attribute (42.42%), while the treatment procedure was deemed the least important one (9.49%). In descending order of importance, the remaining attributes were cost (20.43%), five-year survival rate (14.23%), and treatment time (13.44%). (Figure 2)

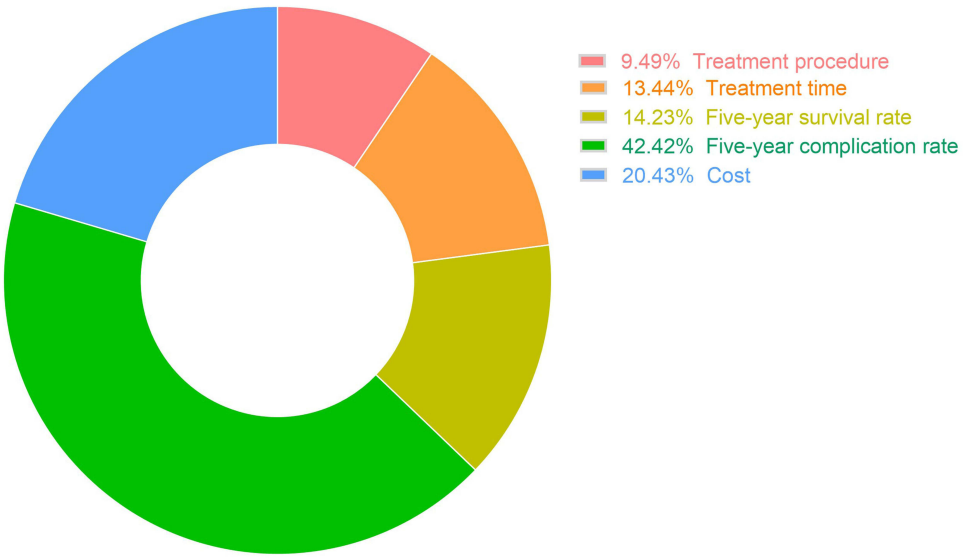

Figure 2 The importance of attributes.

Conditional Logit Model

The detailed results of the conditional logit model are shown in Table 5. Figure 3 shows a vivid presentation of the estimated preference weights. The positive constant associated with the treatment procedure model indicates that patients preferred non-invasive treatment. The negative constant associated with treatment time and cost suggests that the patients preferred treatments with shorter times and lower costs. Respondents were found to favor a higher five-year survival rate. In contrast, the direction of preference for the five-year complication rate exhibits a strong aversion to the complications. In summary, the coefficient signs of attributes suggest that the shorter the treatment time, the lower the cost, the higher the five-year survival rate, and the lower the five-year complication rate, the more likely patients were willing to have the treatment, especially the non-invasive treatment.

The results of the treatment procedure, five-year survival rate, and five-year complication rate were statistically significant. The other P-values, which were more than 0.05, were possible because too few participants chose these options.

Willingness to Pay (WTP)

The results suggest that participants were fond of a non-invasive treatment and were willing to pay up to RMB$7,434.6 (USD$1,189.5). They were less sensitive to the treatment time and were willing to pay RMB$3,508.2 (USD$561.3) for a three-month reduction in the treatment time. What's more, participants were willing to pay RMB$3,714.9 (USD$594.4)

Table 5 Estimated Relative Preference Weights of Overall

Attributes	Estimated Preference Weight				Odds Ratio	
	Level	Coefficient	Standard Error	P value	Odds Ratio	95% CI
Treatment procedure	Invasive	−0.232	0.027	<0.001	reference	
	Non-invasive	0.232	0.027	<0.001	1.589	1.507–1.676
Treatment time	3 months	0.353	0.052	<0.001	reference	
	6 months	0.095	0.052	0.070	0.773	0.698–0.856
	9 months	−0.144	0.053	0.007	0.608	0.548–0.676
	12 months	−0.303	0.053	<0.001	0.519	0.468–0.576
Cost	RMB$2,000	0.456	0.063	<0.001	reference	
	RMB$6,000	0.355	0.061	<0.001	0.904	0.802–1.019
	RMB$10,000	0.001	0.061	0.983	0.635	0.563–0.715
	RMB$14,000	−0.272	0.063	<0.001	0.483	0.427–0.546
	RMB$18,000	−0.540	0.064	<0.001	0.369	0.326–0.418
Five-year Survival rate	80%	−0.379	0.053	<0.001	reference	
	85%	−0.174	0.053	0.001	1.228	1.106–1.362
	90%	0.239	0.053	<0.001	1.856	1.672–2.060
	95%	0.315	0.053	<0.001	2.002	1.804–2.222
Five-year complication rate	10%	1.044	0.055	<0.001	reference	
	20%	0.355	0.051	<0.001	0.502	0.455–0.555
	30%	−0.373	0.052	<0.001	0.243	0.219–0.269
	40%	−1.026	0.060	<0.001	0.126	0.112–0.142

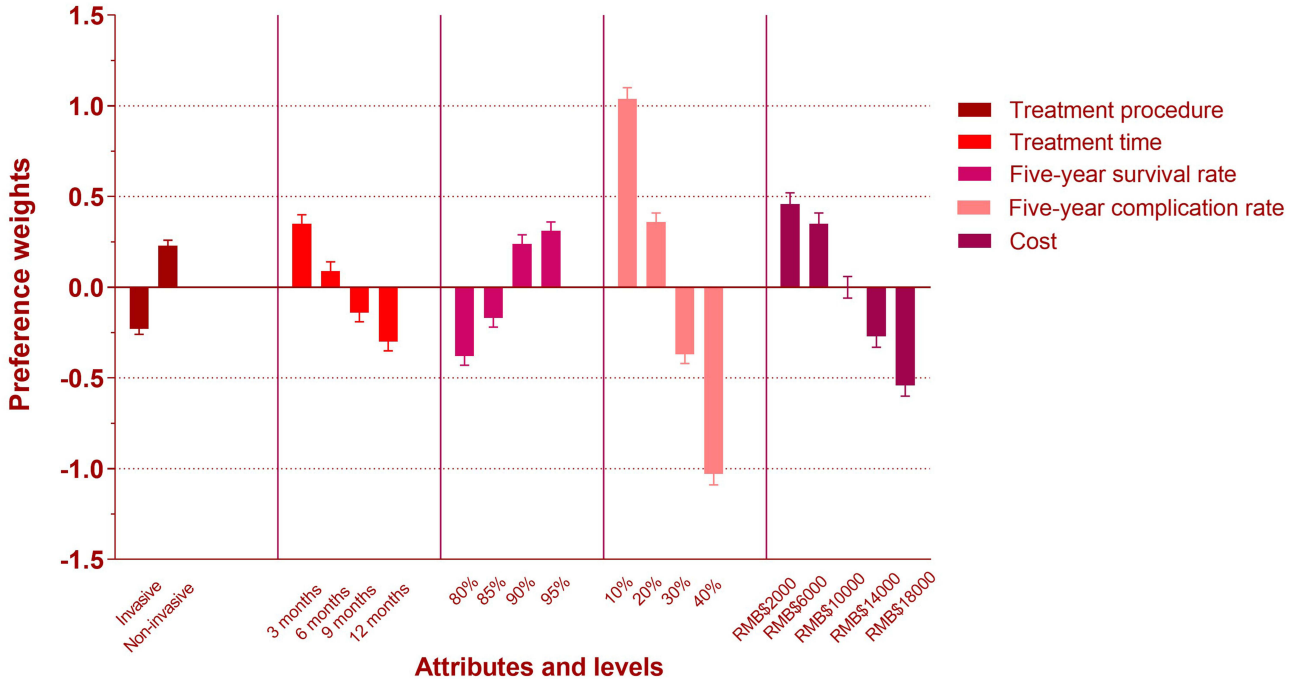

Figure 3 The visual presentation of estimated preference weights in the full sample.

to achieve an additional 5% increase in the five-year survival rate and RMB$11,076.2 (USD$1,772.2) to reduce the five-year complication rate by 10% (Table 6).

Discussion

Attributes and Levels

Our study indicates that the five-year complication rate is the most important attribute for patients. A high incidence of complications can lead to more discomfort and pain after treatment than before and reduced patient satisfaction, as confirmed by several studies.[27,28] The study by Zhi QH et al further illuminated that adverse outcomes, resulting in dissatisfaction among denture wearers, might lead to a decline in oral health-related quality of life (OHRQoL) compared to pre-treatment levels.[29] Another reason may be the prevalence of varying degrees of dental fear among adults.[13,30] Pain caused by complications from previous dental treatment can exacerbate fear and anxiety.[31] Therefore, when patients receive treatment again, these painful memories can lead them to perceive complications extremely seriously. Additionally, the 4th National Oral Health Survey indicates that FPDs were the predominant restorative modality in China in previous years.[5] The AL-Quran survey revealed that patients were most concerned about the damage caused by the reduction of the adjacent teeth, which is one of the complications of FPDs that we mentioned in our questionnaire.[32]

Table 6 Willingness to Pay

Attribute	Willingness to Pay	
	RMB ($)	USD ($)[a]
Test procedure (non-invasive)	7,434.6	1,189.5
Treatment time (3 months reduction)	3,508.2	561.3
Five-year survival rate (5% increase)	3,714.9	594.4
Five-year complication rate (10% reduction)	11,076.2	1,772.2

Note: [a]$1 RMB=$0.16 USA.

Given the high prevalence of FPDs used in the past, many patients may have been plagued by its complications, which has led them to prioritize the complication rate when choosing future treatments.

Cost is the second important attribute following the five-year complication rate. This may be due to the recent improvement in the economic status of the population. According to the data from the National Bureau of Statistics, both per capita disposable income and expenditure on healthcare in China have reached twice the level observed in 2012 by 2020.[33] Concurrently, the sustained promotion of oral health initiatives has elevated public consciousness regarding oral hygiene. Consequently, they are willing and able to pay a premium to reduce complication rates. What's more, a greater proportion of our participants were well educated, had high incomes, and resided in urban areas, which resulted in more pronounced preferences as previously described.[34] However, cost remains the second most important attribute. The most likely explanation for this phenomenon is that 90% of oral treatments in China, including FPDs and ISCs, are paid out-of-pocket.[35] Studies conducted in the United States have shown a significant disparity in implant prevalence between adults with and without health insurance. The primary obstacle to implant acceptance is the high cost.[36] In China, the government is taking incremental measures to reduce the financial burden of implant treatment through government procurement,[37] which may alleviate the impact of cost on individuals' healthcare decisions in the future.

Treatment time and the five-year survival rate are less important than the cost in our study. It is probably because many people have experienced the absence of teeth for an extended period before opting for restorative treatment, which makes the time of treatment more acceptable. This aligns with the findings of AL-Quran, where people did not consider the lengthy treatment time to be a major disadvantage.[32] In addition, people tend to place less emphasis on the survival rate compared to the complication rate. This may be explained by the tendency of people to categorize any pain or discomfort arising from treatment as complications. In contrast, a low survival rate simply results in the tooth reverting to its original missing state without causing additional pain and with ample room for retreatment.

It is noteworthy that invasiveness is the factor that participants are least concerned about. In other minimally invasive procedures, such as prenatal screening for women and esophageal adenocarcinoma screening, a greater emphasis was found on invasiveness.[38,39] However, unlike these procedures, which rarely occur, most people have undergone a multitude of invasive oral treatments, such as extractions. They seem to be used to the wounds in the mouth and assume that they do not have any serious systemic health implications. Moreover, patients may perceive their personal space as being "invaded" when oral instruments enter their mouth for an unseen operation.[40] Although this differs from the invasive procedures we referred to, they still psychologically perceive invasiveness as a necessary attribute of oral treatment. This has the potential to habituate patients to the invasive nature of oral therapy, thereby rendering it the least important attribute. Moreover, people may exhibit greater concern regarding the outcome of the treatment than the procedure itself. Invasiveness is relatively less significant when other attributes are satisfactory.[41]

Nonetheless, our findings indicate that people are still more willing to choose FPDs, seemingly motivated by a desire to circumvent the discomfort and pain associated with invasive procedures. However, it is inconsistent with the other two studies, both of which indicated that implants were more widespread.[42,43] This discrepancy may be attributed to the fact that these studies considered comprehensive factors. In contrast, our study assumes that all other attributes remained constant, and that only the treatment procedure was considered. A lack of knowledge about the implant is also likely to impact the choice of treatment. One study found that 34% of patients with FPDs and 72% with removable partial dentures had no understanding of dental implant therapy.[32] In addition, the promotion of implants in China has been slower than in other countries,[5,36] which can be a reason for patients to avoid implantation at the time of choice.

The participants placed significant emphasis on both the aesthetic and comfort of their dental restorations, with comfort being regarded as a more crucial factor than aesthetics. This is primarily due to the fundamental objective of restorative dentistry, which is to restore functionality, rather than merely to enhance the appearance. Among these, women were found to value beauty more than men, which is in accordance with the findings of previous studies.[44,45] Influenced by socio-demographic and cultural factors, females are subject to greater social pressures on their appearance, and dental aesthetics have a significantly greater impact on female self-confidence than on that of males.[45] Therefore, more consideration should be given to aesthetic when developing treatment plans for women.

Willingness to Pay (WTP)

According to the National Bureau of Statistics, residents' per capita disposable income was RMB$35,128 (US$5,125) in 2021.[33] Our study finds that people are willing to pay up to RMB$11,076 (US$1,772), which demonstrates that the complication rate is the primary consideration for most people. However, allocating one-third of disposable income to achieve a 10% reduction in complications may be considered excessive. It is possible that the data we collected predominantly originated from high-income and highly educated people residing in the urban areas, who may be more focused on the treatment outcome than the cost. In addition, it is essential to recognize that willingness to pay (WTP) primarily reflects the value placed on specific attributes and cannot fully represent actual spending by real-life patients.

Strengths and Limitations

To the best of our knowledge, our research is the first DCE study to focus on individual preferences concerning dental restoration treatments for the loss of a single tooth in China. A number of studies have analyzed and emphasized the various attributes of restoration treatments, but few have compared their relative importance. The ranking of attributes derived from our research may fill this gap. DCE was used in our study to obtain the weight of individual preferences from the collected data, and the results will help facilitate patient-physician communication and inform the development of treatment technology and medical decision-making. The findings of our study emphasize the necessity of providing patients with detailed and accurate information about complications before treatment. Furthermore, the reduction of complication rate will constitute a significant area of focus for future prosthodontic development.

However, several areas in our study that need to be improved remain. Although five principal attributes have been selected for consideration, more factors should be taken into account in the actual treatment. McFadden's conditional logit was employed, which requires a relatively modest sample size. Therefore, the sample size of our study is appropriate. However, its limitation is the assumption of homogeneity in preferences. To address this issue, it would be beneficial to expand the sample size and use latent class analysis to obtain more representative results.

Conclusion

The decision for dental restoration treatment depends on multiple factors, the most important of which is the five-year complication rate for single tooth restorations in Chinese patients, followed by the cost, five-year survival rate, treatment time, and treatment procedure. The findings of our research may influence future communication between dentists and patients regarding treatment options, as well as the direction of future research and development in dental restoration treatment.

Data Sharing Statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Approval

The study was conducted in accordance with the guidelines of the 1964 Declaration of Helsinki and was approved by the Medical Ethics Committee of Jinan University (JNUKY-2021-004).

Consent for Publication

Informed consent was obtained from all participants. We informed participants at the beginning of the questionnaire about the main content and purpose of our questionnaire and promised to comply with the rules of privacy protection. The questionnaire will start after the participant clicks "Informed Consent".

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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