Choosing your health insurance package: A method for measuring the public's preferences for changes in the national health insurance plan

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ABSTRACT

With rising healthcare expenditure and limited budgets available, countries are having to make choices about the content of health insurance plans. The views of the general population can help determine such priorities. In this article, we investigate whether preferences of the general population regarding the content of health insurance plans could be measured with the help of a stated preference method: the Basket Method (BM). In this method, people use an online tool to include or exclude healthcare interventions from their hypothetical insurance package; this then affects their monthly premium. The study was conducted in the Netherlands. In total, 1007 members of two panels managed by the NIVEL filled out an online questionnaire that included the BM. The suitability of the BM was tested with the help of five criteria, e.g. the BM's ability to distinguish between healthcare interventions. Our results suggest that the BM is suitable for measuring preferences of the general population regarding the content of the health insurance plan, as it performs well on most criteria. Policy makers can use these preferences when deciding the content of the health insurance plan. Its contents will then be more aligned to the population's needs and preferences.

1. INTRODUCTION

1.1. Background

There is increasing demand worldwide for healthcare, caused by rising population expectations, population ageing and improved diagnosis and treatment due to advances in medical technology [1] and [2]. While this increasing demand causes healthcare expenditures to rise, the budget that can be allocated to healthcare is more and more limited. Given these growing budget constraints, choices have to be made concerning the financing of healthcare [3], including whether or not to reduce health insurance coverage [4].

To guide this decision-making process about the use of public funds, many countries have started to apply cost-effectiveness analysis (CEA) of health interventions, often as part of a more formalised implementation of health technology assessment (HTA) [5]. Some countries, such as New Zealand and Sweden, make their criteria for funding decisions publicly available in order to enhance the transparency and legitimacy of the outcome [6]. Additionally, an increasing number of countries, including the UK and Ireland, are considering incorporating the views of the general public in their decision-making process about resource allocation to healthcare interventions [7] and [8]. The involvement of the general population in setting healthcare priorities is considered to have added value, given the public's central role in funding the system, their awareness of which types of healthcare are important for them and their knowledge of the benefits of the various healthcare programmes gained through their own experiences or those of family and friends [7].

As it is often difficult to derive preferences for healthcare interventions from revealed behaviour, a variety of what are known as 'stated preference methods' have been developed, asking individuals to state preferences and inferring information from that to help determine the priorities as seen by the general public. Common examples include Contingent Valuation and Contingent Ranking [8]. Until now, most studies have used stated preference methods to elicit preferences from the public at large for healthcare interventions intended only for a single illness. Fewer studies consider a small number of different illnesses [7], [9], [10], [11], [12], [13], [14], [15] and [16]. For instance, Olsen and Donaldson measure preferences for three interventions intended for different illnesses with help of Contingent Valuation [12]. Even in that case, respondents make choices for each intervention separately, which can lead to mental account and scope biases (e.g. wanting to spend all funds on one intervention but also on the other). In the case where a health insurance package is being assembled, it is important which interventions from a set of interventions should be added to one package.

A common study design that considers a complete health insurance plan is called Choosing Health Plans All Together (CHAT) [9], [10] and [11]. CHAT is a stated preference method that asks groups of people to compose a new insurance plan that fits a given budget by choosing different coverage levels for different healthcare categories [9]. In the current study, however, we are interested in measuring individuals' preferences for specific healthcare interventions under consideration for inclusion or exclusion from the insurance package and need to be weighed against each other. We propose the use of a novel Internet-based stated preference method, the 'Basket Method' (BM), to measure these preferences. The Basket Method focuses on individuals, asking them which of a set of interventions they want in the existing insurance package. Individuals are constantly confronted with the effects of

their choices on the insurance premium. This makes them aware of the consequences of their changes to the existing health insurance plan. Combined with the option of presenting information about which interventions are already part of the package in a natural way, BM can models reality closely.

1.2. Study focus

We aim to investigate whether the Basket Method is suitable for measuring the preferences of the general public regarding the content of the health insurance package. Our study is conducted in the Netherlands, where people are obliged to take out healthcare insurance covering a fairly broadly defined part of the healthcare costs they incur, e.g. hospital care and physician services [17]. On top of this basic package, people may opt for a complementary insurance package [18] and [19]. As financial resources are limited, the Dutch government makes choices about which interventions to include and exclude in the basic insurance package. These choices are based on recommendations from the Health Insurance Board (CVZ).

2. METHOD

2.1. The basket method

The basket method is an Internet-based survey tool in which people are presented with a variety of healthcare interventions. They are then asked to move the interventions that they want to include in the insurance package to one box on the screen, and move the remainder to the other box. Meanwhile, with each choice that the respondent makes, the monthly premium for the insurance package is adjusted. Because respondents were immediately confronted with the budget impact of the choices they made, their choices were very close to reality [9]. The interventions were described using a fixed set of attributes (Supplementary data: [43], [44], [45] and [46]).

2.2. Study materials

2.2.1. Intervention descriptions

Recommendations from the CVZ to the government regarding the inclusion or exclusion of healthcare interventions are bundled in yearly reports [20]. For this study, 29 interventions from the 2007, 2008 and 2009 reports were chosen [21], [22] and [23]. Half the 29 interventions were being considered for inclusion in the basic package and the other half were being considered for exclusion. We developed intervention descriptions based on a review of the literature, the available information about the interventions, and online focus groups with members of the Dutch public (aged 39–85). The resulting descriptions consisted of the title and explanation (including the patient group and the severity of the illness) and seven different attributes: the intervention's expected effect, incidence of the illness, available alternative interventions, costs of the intervention for users, costs of the alternative for users, size of co-payment and additional costs per premium payer if the healthcare intervention is included (Supplementary data: Table 1). Every respondent had to assess a random subset of five interventions from the total of 29. This number was chosen based on existing literature on information processing [24], [25], [26] and [27] and based on the results of our focus group.

2.2.2. Internet application and questionnaire: the choice questions

We developed an Internet questionnaire that we offered to respondents through a self-developed Internet application. First, all healthcare interventions and their attributes were shown one by one to the respondents. The respondents then saw the five interventions again in a decision-making setting and could request detailed attribute information per intervention (Fig. 1a). They had to place interventions that were to become part of the basic package in the upper box (the insurance package; coloured green in the original version) on the right of the computer screen. The interventions that were not to become part of the insurance had to be placed in the lower box (coloured red in the original version). To emphasise the budget impact of the respondents' choices, the mean total premium per premium payer per month was shown above the box that represented the insurance package. At the start of the task, the monthly premium was 95 euros (the average premium of the basic package in the Netherlands at the time of the survey in 2010). This premium was adjusted as interventions were added or removed. An amount per premium payer was chosen because we were interested in the individuals' preferences. When the amounts are presented at an aggregated national level, the choices people make depend not only on what they themselves are willing to pay but also on what they think others should pay [28]. After completing the task, respondents were asked to answer a set of additional questions.

[FIGURE. 1]
Translated black-and-white mock-up of the BM neutral task (a) and the BM real task (b).
To investigate to what extent adding information about inclusion or exclusion in reality affects the population's preferences for healthcare interventions, we studied a second version of the BM task (Fig. 1b). In the above-mentioned version (BM neutral), no information was given about which interventions were already part of the Dutch health insurance. The second version, the BM real, modelled reality more closely: interventions that in reality were being considered for exclusion were initially presented as already being covered.

2.3. Study sample

We consulted members of two different survey panels, the Insurance Panel [29] and the Dutch Health Care Consumer Panel [30]. Both panels are registered with the Dutch Data Protection Authority (Dutch Insurance Panel: no. 1309664; Dutch Health Care Consumer Panel: no. 1262949). In May 2010, 1758 members were approached by e-mail. In total, 1317 members were invited to answer the BM neutral and 441 the BM real (fewer respondents were needed to investigate to what extent adding information about inclusion or exclusion in reality affects the population's preferences). After two weeks, members received a reminder.

2.4. Analyses

Statistical analyses of the data were performed using Stata statistical software [31]. To determine the feasibility of the BM for measuring the general Dutch population's preference about the content of their health insurance, we assessed the following five criteria:

1.Difficulty of the BM. The BM must not be too difficult if for people to be have an overview the whole task and carry it out correctly [32]. We asked questions about the difficulty of the task and of making decisions about healthcare interventions. We used partial correlations or ANCOVAs to test whether the task results differed between respondents who had trouble performing the task or making choices and those who did not. Results were adjusted for the maximum additional costs and the relative popularity of the set of interventions the respondents received. Partial correlations were used when we could use the mean score on a scale instead of scores for the individual items (when the reliability of the scale was at least 0.7).

2.The respondents' understanding of the principle of insuring. If policy makers are to be able to consider the views of the general public, respondents have to understand the principle of insuring. Although such an understanding might involve many aspects, we only asked respondents three questions: whether they were willing to pay the premium for interventions they do not use (1) and if they found it a problem that they (2) or others (3) had to pay for interventions excluded from the package if they then need them. Whether these variables influenced preferences was tested with help of ANCOVAs, adjusted for the maximum additional costs and the relative popularity of the set of interventions the respondents received.

 3.Theoretical validity. We tested the theoretical validity by inquiring whether the results of the BM conform to three predictions that arose from theory. The first and second predictions concern the positive relationship between choosing to include a healthcare intervention and how high the respondents estimated the chance was that they or people from their direct environment would need that intervention in the future [7]. These two relationships were tested using chi-square tests. The third prediction concerned the negative correlation between the number of healthcare interventions included and the income level. This prediction is based on the fact that an income dependent compensation for the basic insurance package reduces the effect of premium increases on the net costs of this insurance for lower incomes [33]. This relationship was tested by partial correlations, adjusting for the maximum additional costs and the relative popularity of the set of interventions the respondents received. The relationship between choosing to include an intervention and whether the respondents or good acquaintances of theirs needed that intervention could not be analysed because only a few respondents or acquaintances needed the healthcare interventions.

4.Content validity. To investigate whether the attributes were indeed important for respondents, we asked which attributes respondents based their choices on. To test whether respondents took the additional costs per premium payer into account, we asked how sure they were about the total premium of the adjusted health insurance. We expected that respondents would not be surprised by the level of the total premium for the adjusted healthcare insurance plan.

5.Ability to distinguish between healthcare interventions. For a method to be suitable for measuring preferences for different healthcare interventions, it must make clear whether statistical differences exist between the preferences for healthcare interventions. To assess the ability of the BM to distinguish between healthcare interventions, we assessed how many other interventions a healthcare

intervention differed from by checking for non-overlap of 1.39-sigma comparison intervals [34]. We only included the respondents who received a single task in the analysis in order to have comparable sample sizes.

The preferences for the individual interventions were analysed in multilevel analyses to account for the hierarchical data structure (individual responses were nested within respondents, as each respondent assessed a unique set of interventions).

3. RESULTS

3.1. Respondents

In total, 1007 people (57%) completed the questionnaire. A total of 761 people (58%) completed the BM neutral task and 246 people (56%) completed the BM real task. Table 1 shows that the sample approached was representative for the Dutch population in terms of gender [35] and [36]. In terms of age and education level, however, the respondents are older, more highly educated and somewhat healthier than the general Dutch population. Both subsamples were comparable.

[TABLE 1]

3.2. Understanding of the principle of insuring

Most respondents (75%) indicated they were willing to pay insurance premiums for healthcare interventions they do not use. Additionally, most respondents indicated that they had no problem with themselves (63%) or others (67%) having to pay for healthcare interventions not covered in the healthcare insurance plan.

Table 2 shows that all the background characteristics of the participants influenced their understanding of the principle of insuring, except for age. Men, more highly educated and healthier people and people with higher incomes had a better understanding of the principle of insuring.

[TABLE 2]

Additionally, people's level of understanding influenced their preferences regarding interventions to add in the insurance package: respondents who are unwilling to pay insurance premiums for healthcare interventions include fewer healthcare interventions in the health insurance ($F(1, 1003) = 13.38$, $p = .000$); respondents who find it a problem to pay for healthcare they excluded then include more interventions ($F(1, 1003) = 22.53$, $p = .000$); and finally, respondents who find it a problem that others have to pay for healthcare interventions not covered in the insurance also include more healthcare interventions ($F(1, 1003) = 26.94$, $p = .000$).

3.3. Difficulty task

The technical aspects of the task generally did not cause problems for the majority of respondents (Supplementary data: Tables 2 and 3). However, making decisions about the interventions (34.6% ($n = 176$)), indicating which interventions to include (18.1% ($n = 92$)) and comparing interventions (16.3% ($n = 83$)) did cause problems for a significant number of people. Additionally, 159 (15,8%) respondents did not want to take decisions about the interventions and 136 (13.5%) respondents could not remember all interventions. None of the background characteristics of participants influenced whether they had problems with certain aspects of the task or choices (Supplementary data: Table 4). Additionally, whether respondents had trouble

performing the task does not influence the number of interventions included (reliability scale alpha = 0.73). As no scale could be made for the items that indicated the trouble experienced when making the choices, the relationship between each item and the number of healthcare interventions included was analysed separately. Only one difference was found, namely that respondents who found the content of the interventions unclear included more healthcare interventions ($F(1, 1003) = 8.96$, $p = 0.003$).

3.4. Theoretical validity

There was a relationship between the self-perceived chance that a respondent will need a healthcare intervention in the future and the decision to include that intervention. If people estimated this chance to be higher, it was more likely that they would include that healthcare intervention ($\chi^2 (2, N = 938) = 163.1$, $p = .000$). Furthermore, there was also a relationship between the self-perceived chance that good acquaintances of the respondents might need a healthcare intervention in the future and whether they included that intervention in the insurance. The greater the estimated risk, the more likely they were to include the intervention ($\chi^2 (2, N = 958) = 218.6$, $p = .000$).

Finally, there was also a relationship between the mean number of interventions included and the income of the respondents ($r(806) = -0.10$, $p < 0.005$). Respondents with higher incomes included fewer healthcare interventions.

3.5. Content validity

All attributes were taken into account by half or more of the respondents, except for the incidence of the disease (47.4% ($n = 477$)) (Supplementary data: Table 5). In particular, the severity of the illness (89.5% ($n = 901$)) and the intervention's expected effect (87.7% ($n = 883$)) played a decisive role for most respondents. Additionally, most respondents (90%) were probably or definitely willing to pay the total premium of the adjusted healthcare insurance, probably because they were already aware of this amount during the task.

3.6. Ability to distinguish between healthcare interventions

Fig. 2 shows the percentage of respondents who added the various healthcare interventions to the insurance plan (with 97% confidence intervals). With a sample size of 1007 cases, each healthcare intervention on average differs significantly from twenty other healthcare interventions.

[FIGURE. 2]

Percentage (with 97% confidence intervals) of respondents who included a particular healthcare intervention in the health insurance package, measured with help of the BM ($n = 1007$).

3.7. Differences between BM neutral and BM real

The preferences for four healthcare interventions (dyslexia care, text telephones/video phones, oxygen therapy, recovery and balance) differ significantly between the BM neutral and the BM real (Supplementary data: Table 6). Compared to the BM neutral, the healthcare interventions that were in the health insurance were valued more highly in the BM real task. The reverse was true when it comes to interventions that were not yet included.

4. DISCUSSION

This study aimed to examine whether the Basket Method is suitable for measuring the preferences of the public for the content of their health insurance package. As the BM performs well on most criteria we assessed, it can be considered to be a suitable method for measuring these preferences. Both versions of the BM have theoretical and content validity, and the BM can distinguish between healthcare interventions. The technically difficult aspects of the task generally did not cause any problems for respondents. However, other aspects, such as comparing healthcare interventions and making decisions about them, did cause problems for a significant number of respondents. It is highly unlikely that this latter finding applies only apply to the BM; it will also apply to other stated preference methods where people compare healthcare interventions and choose between them. It could be questioned whether the general public are capable of making such hard decisions that have implications for everyone. People may be aware of the responsibility they have for the wellness of others when they make decisions concerning health insurance and are probably unwilling to take that responsibility. Existing literature shows that people may unable or unwilling to make decisions when decision making is complex [37], [38], [39] and [40]. On the other hand, in our study, all respondents who indicated they were unable or unwilling to make decisions did nevertheless make them. It even seems they cared about which interventions should be insured.

Although most people seem to understand the principle of insuring, a substantial minority do not (based on the three questions we asked on this subject). We again expect that this finding will not apply solely to the BM, because people will have to indicate their preferences for interventions that should be included in the package regardless of the method. To ensure that people understand the principle, it may be sufficient to give them information about (health) insurance before asking for their preferences. In future research, it could be investigated whether affording information is effective and whether the preferences of people who do not understand the principle of insuring differ from those of people who do.

Although the BM seems to be suitable for measuring preferences, it is more realistic to provide information about which healthcare interventions are already part of the health insurance package. The availability of this extra information seems to influence the preferences for the content of the health insurance package, as the preferences for some healthcare interventions differ between the two versions of the BM. This can be explained by the endowment effect: the assumption that people value an item more highly when it is in their possession [41].

4.1. Strengths and limitations

The fact that this study concerned real healthcare interventions described in the yearly reports of the CVZ had an important consequence for the investigation of the content validity. Because the information given per attribute could not be systematically varied between the interventions, we could not see whether respondents took all attributes into account when making decisions. Instead, we had to ask them whether they did. Because they had to explain their decision making process, they may have rationalised that process. Another limitation of this study is the fact that the healthcare allowance (an amount that Dutch citizens with a low income receive as compensation for their healthcare costs) was not included in the mean nominal health insurance premium. The reason for this is that respondents might use this healthcare allowance for other purposes and, consequently, might not

associate it with the health insurance premium [42]. Finally, the set of tests we performed to assess the theoretical validity of the BM is not comprehensive. Future research should assess the theoretical validity of the BM more extensively. Despite these limitations, this study is the first to investigate a new preference method that measures the preferences of individual members of the public when adjusting a health insurance plan, assessing numerous specific healthcare interventions intended for a broad spectrum of illnesses simultaneously. It therefore contributes to ongoing discussions on how to take the views of the general population into account while deciding how to adjust a health insurance plan. Future research is needed to further investigate the feasibility of the BM, e.g. by examining its external validity and its reliability. The results of the BM should for instance be compared to other stated preference methods, such as contingent valuation. Additionally, work still needs to be done to improve the comparability of the healthcare interventions. Not all information about the attributes of the interventions was available for all interventions, such as the expected effects of the intervention, because this was not known at the CVZ. Finally, future research could investigate which attributes people base their decisions on. For this purpose, the BM should be repeated more often.

5. CONCLUSION

The BM seems suitable for measuring the preferences of individuals for the content of the health insurance package. It focuses on individuals, assesses preferences for sets of interventions, constantly confronts people with the effects of their choices and makes it possible to distinguish between interventions that are already part of the health insurance package and those that are not. It therefore resembles the way decisions about the financing of healthcare interventions are usually made, which might make it a very intuitive method for respondents. Additionally, the preferences acquired are easily interpretable for policy makers. Ranking the interventions offers policy makers the possibility of deciding on a cut-off percentage of people who want to include an intervention and making actual decisions about healthcare interventions based on this cut-off. Because the method provides room for input from a wider community than a selection of stakeholders or interest groups, it guides policy decisions regarding the coverage of the health insurance. It ensures that the health insurance package will be more aligned to the needs and preferences of the general population. Additionally, the BM might be used for drawing up other kinds of (health) insurance.

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TABLES AND FIGURES

TABLE 1.
Background characteristics of the respondents.

Characteristic	Approached			Finished questionnaire			Total Dutch population[b]
	Task			**Task**			
	BM neutral (n = 1317)	BM real (n = 441)	Total (n = 1758)	BM neutral (n = 761)	BM real (n = 246)	Total (n = 1007)	
Gender (%(n))							
Men	53 (698)	50 (225)	53 (923)	52 (395)	46 (113)	50 (508)	49%
Women	47 (619)	50 (221)	48 (840)	48 (366)	54 (133)	50 (499)	51%
Age (years) (M(SD))	52 (17)	52 (17)	52 (17)	51 (16)	53 (16)	51 (16)	40
Education level (%(n))							
Low	10 (138)	11 (50)	11 (188)	9 (70)	9 (21)	9 (91)	32%
Medium	45 (588)	50 (221)	46 (809)	42 (326)	50 (123)	45 (449)	40%
High	42 (559)	37 (164)	41 (723)	46 (351)	40 (98)	45 (449)	27%
Missing	2 (32)	1 (6)	2 (38)	2 (14)	2 (4)	2 (18)	1%
Health (%(n))							
Medium/poor	13 (172)	13 (57)	13 (229)	14 (103)	12 (30)	13 (133)	19%
Good	48 (631)	50 (222)	49 (853)	50 (377)	48 (117)	49 (494)	53%
Very good/excellent	38 (494)	35 (156)	37 (650)	35 (270)	39 (95)	36 (365)	29%
Missing	2 (20)	1 (6)	1 (26)	1 (11)	2 (4)	1 (15)	0%
Income[a](%(n))							
≤1900	28 (364)	30 (131)	28 (495)	24 (185)	24 (59)	24 (244)	NA
1901–2900	27 (355)	29 (126)	27 (481)	27 (208)	30 (75)	28 (283)	NA

Characteristic	Approached			Finished questionnaire			Total Dutch population[b]
	Task			Task			
	BM neutral (n = 1317)	BM real (n = 441)	Total (n = 1758)	BM neutral (n = 761)	BM real (n = 246)	Total (n = 1007)	
>2900	26 (339)	24 (105)	25 (444)	28 (214)	27 (67)	28 (281)	NA
Missing	20 (259)	18 (79)	19 (338)	20 (154)	18 (45)	20 (199)	NA

NA, not available.

a Net household income in euros per month.

b Data from January 1st 2009.

TABLE 2.

Influence of background characteristics on whether participants understood the principle of insuring.

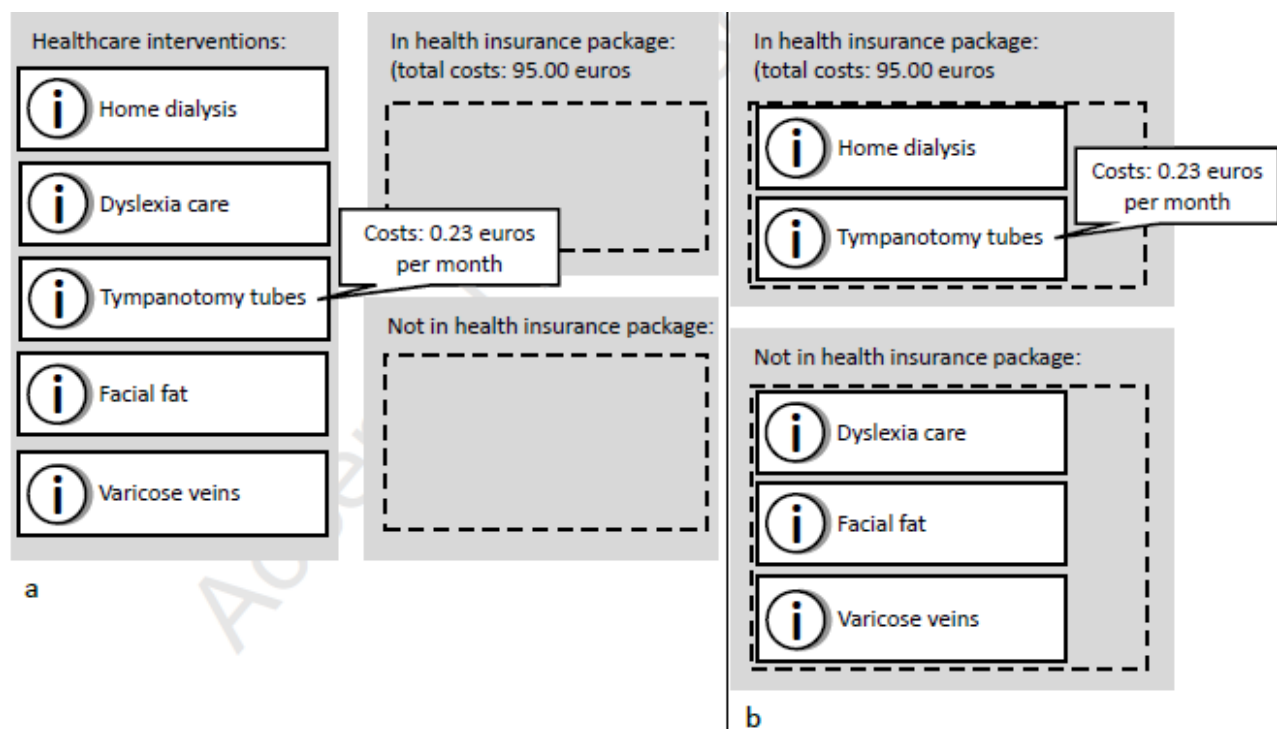| Characteristic	Not willing to pay[a]		Problem to pay themselves[b]		Problem others have to pay[c]	
	Odds ratio	p-Value	Odds ratio	p-Value	Odds ratio	p-Value
Gender (*n* = 1007)						
Men	–	–	–	–	–	–
Women	1.20	.209	1.06	.632	1.44	.007
Age (years) (*n* = 995)						
≤39	–	–	–	–	–	–
40–64	1.14	.448	1.03	.874	.98	.919
≥65	1.10	.637	1.17	.348	.95	.787
Educational level (*n* = 989)						
Low	–	–	–	–	–	–
Medium	.58	.023	.68	.093	.80	.347
High	.31	.000	.42	.000	.51	.004
Health (n = 992)						
Medium/poor	–	–	–	–	–	–
Good	.91	.679	.53	.001	.61	.014
Very good/excellent	.81	.350	.41	.000	.42	.000
Income[d](*n* = 808)						
≤1900 euros	–	–	–	–	–	–
1901–2900 euros	.66	.031	.81	.242	.93	.675
>2900 euros	.39	.000	.34	.000	.51	.000

[a] Are you willing to pay premiums for healthcare interventions that you do not make use of?

[b] Do you find it a problem paying for healthcare interventions that you excluded from the package if you then need them?

[c] Do you find it a problem that others have to pay for healthcare interventions that you excluded from the package if they then need them?

[d] Net household income in euros per month.

FIGURE 1

Translated blach-and-white mock-up of the BM neutral task (a) and the BM real task (b)
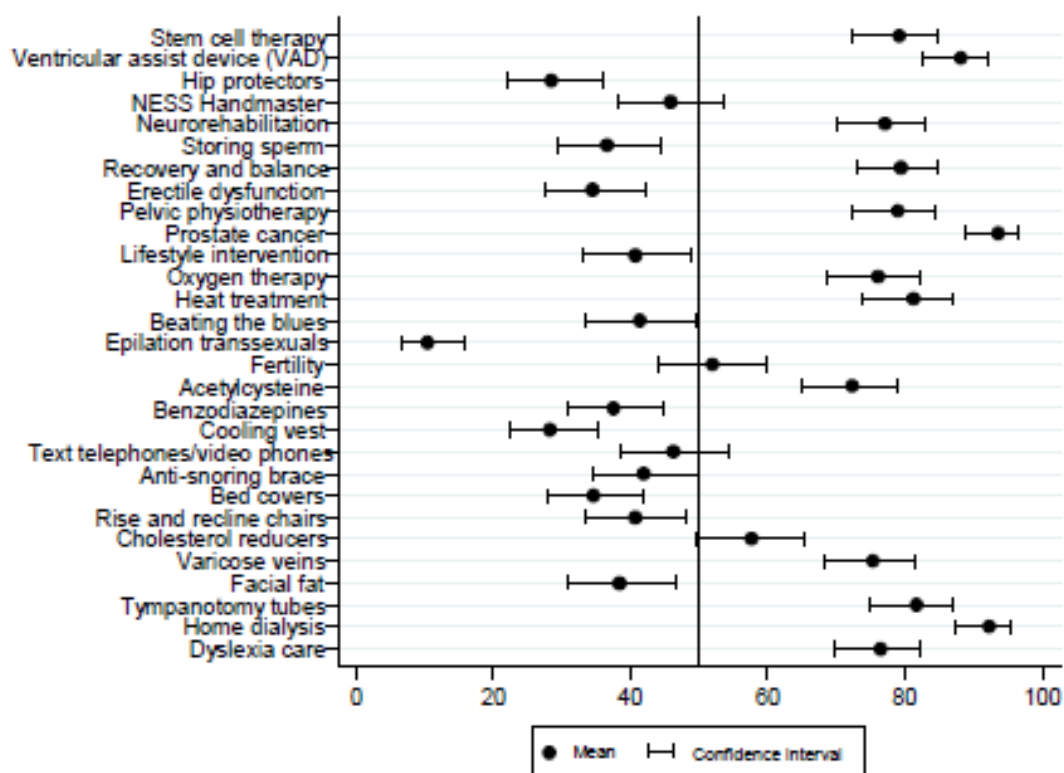
FIGURE 2

Figure 2. Percentage (with 97% confidence intervals) of respondents who included a particular healthcare intervention in the health insurance package, measured with help of the BM (n=1007).