REES France

Health Economics Evaluation Network

Willingness to pay for a drug in stress urinary incontinence

Yentreve

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Laboratoire Lilly

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PRESENTATION OF THE COMPANY

The REES France Health Economics Evaluation Network is a study group created by economists, doctors of pharmacy, statisticians and information technologists. Our aim is to bring together clinical, human, economical and social information in health in the context of the "RICHESS" model of which we are the sponsors.

This involves placing the patient rather than the disease at the center of the system and analyzing the patient through observational surveys of the patient's conditions of access to care, his/her behavior in terms of compliance, complaints with respect to the disease and outcome on treatment.

Onto this base, quality of life scales, stratified consumption profiles according to severity of the disease, reference trajectories through the health care system and illustrations of cost per state of health and per place of residence are constructed

The relative risks of different treatments and treatment modalities are analyzed from published randomized clinical trials or from available meta-analyses. These are introduced, along with the observational data, into an appropriate mathematical representation, in order to calculate the clinical, human and budget impact of new treatment or organizational strategies.

This value creation analysis opens a new route to evaluation, which is independent of clinical research and marketing research. Its tools are statistical and computing analysis. Its field of intervention prioritizes research for efficacy in everyday practice and the use of large data bases.

- Construction of computerized questionnaires and shared medical files
- Creation of quality of life scales specific to a disease
- Statistical analysis of data bases on SAS software
- Decisional analysis, Markov model, probabilistic and bootstrap sensitivity studies
- Analysis of the impact of coordinated health care networks

REES France has published more than a hundred articles in peer-reviewed journals.

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ONGOING RESEARCH AND STUDIES

Evaluation of the RESALIS Asthma Network (1999-2002) Evreux CPAM (national health insurance fund) - Alliance Médica; Evaluation of the Groupama Networks (1999-2001); Evaluation of generic prescription behaviors in France (2000-2001) National Health Care Directorate (DSS); Support program for costly diagnostic and therapeutic innovations, Directorate of Hospitals and Organization of Treatment (DHOS); HER.ME.S Program (APHP, CRLCC, 12 oncology departments); PREMISS Program (SFAR, SRLF, 118 intensive care departments); Construction and validation of a specific quality of life scale in upper limb lymphoedema in breast cancer patients.

Willingness to pay for a drug for stress urinary incontinence

STUDY PROTOCOL

1. Urinary incontinence, a public health issue

1.1. Definitions

Urinary incontinence (UI) is the inability to control emission of urine. The International Continence Society (ICS) defines it as involuntary leakage of urine through the urethra in an inappropriate setting, and which poses a hygiene or social problem. There are several types of urinary incontinence. *Stress urinary incontinence* (SUI) is usually due to pelvic floor laxity and leakage occurs when intraabdominal pressure exceeds the pressure in the urethra, for example when coughing, laughing or standing up. *Urge urinary incontinence* (UUI) is caused by involuntary bladder contractions and manifests as a sudden and pressing urge to void. Mixed urinary incontinence (MUI) is a combination of different types of incontinence, particularly stress and urge incontinence. Urinary incontinence may be urethral, the most common type with leakage of urine through the urethra, or extra-urethral, which is less frequent. Overflow incontinence is due to chronic outlet obstruction, as in benign prostatic hyperplasia or neurologic disease and occurs when the bladder is full and distended.

1.2. Epidemiology

The diagnosis of urinary incontinence must be based on urodynamic testing and cannot be established through a questionnaire. An epidemiological survey on this subject must therefore ask questions that can substitute for this diagnosis. For instance, a French study[1] defined as incontinent any woman who answered "yes" to the question "Do you currently experience involuntary leakage of urine?". Sandvik et al.[2] estimated that the diagnostic sensitivity of this type of approach is 0.66 for SUI, 0.56 for UUI and 0.84 for MUI, with a specificity of 0.88, 0.96 and 0.66, respectively. Thus, a woman taking a questionnaire who reports leakage of urine caused by stress maneuvers has a 66 % probability of actually having SUI, and a woman reporting no urine leakage has an 88 % probability of not having SUI. Such surveys therefore tend to overestimate the proportion of MUI and underestimate that of the other two types of incontinence.

The estimated prevalence of female urinary incontinence is approximately 40 %. Studies have classically observed that prevalence increases to age 50, stabilizes at about 30 % between ages 50 and 70, then begins to rise again. A study by Minaire and Jacquetin published in 1992[3] reported that 37 % of French women presenting to a general practitioner have urinary incontinence. Similarly, a study by the general medicine research and documentation center of the National Union of General Medicine Associations (Unaformec)[4] in women who gave birth more than two years prior or over the age of 35 found that the prevalence of incontinence differed according to how it was defined: 53 % for involuntary leakage, 40 % for women who complained of leakage or 20 % for use of continence pads. An analysis of the Société Française de Médecine Générale[5] (SFMG) data base for 1999 revealed that only 6.8 in 1000 women had a health problem identified as UI by the physician, a proportion which increased to 14 in 1000 for women over the age of 40. One can therefore measure the difference between the true prevalence of female UI and the stated prevalence, i.e. estimated from only those women who discussed this problem with their GP.

Indeed, women do not spontaneously bring up the subject of incontinence. In the Minaire and Jacquetin study[3], one-third of incontinent women reported interference with their daily activities but only 4.4 % of these women presented to primary care for this reason. In the Unaformec survey[4], 43 % of the women had discussed their problem of incontinence and 34 % received some form of treatment. Only 34 % of the women with UI had been questioned by their doctor about incontinence before the survey. Among the different treatments, 228 women followed a program of pelvic floor training exercises, 46 underwent surgery and 39 received drug therapy (oxybutynin in most cases, but also desmopressin, homeopathic treatments, THS).

The prevalence of UI was 27.5 % among women aged 20-62 years working at the Tours Hospital Center[1] and 29 % among female Auxerre residents aged 40 to 79 years[6].

1.3. Natural history

Data are scarce on this point. In studies that have addressed this question, remission rates measured in heterogeneous populations ranged from 6 to 38 %. It appears that there is an equilibrium between incidence and remission rates, both of which are non-negligible. However, there is no way to distinguish between the proportion of spontaneous remissions and remissions achieved through a given treatment.

1.4. Stress urinary incontinence

1.4.1. Epidemiology

In surveys on urinary incontinence, 24-75 % of incontinent women are considered to suffer from SUI. This frequency varies with age: the youngest subjects more often present with stress incontinence while the oldest usually have mixed incontinence. A study covering all of France was therefore set up with the IPSOS Institute in partnership with LILLY and with the collaboration of the French Urology Association. Between December 2002 and January 2003, 5150 women aged 18-70 years were randomly selected from all over France for a telephone survey on the nature and consequences of any urinary problems they might have. The questionnaire defined stress incontinence as at least one leakage episode in the past 30 consecutive days precipitated by coughing, lifting a heavy load or laughing. This study found that 19.7 % of French women in this age group reported at least one incontinence episode in the four weeks preceding the survey.

The severity of incontinence can be defined by incontinence episode frequency and volume of urine lost. The severity scale of Sandvik[7] classifies incontinence as mild, moderate or severe, without addressing the patient's subjective evaluation of this severity. Mild incontinence corresponds to loss of 6 g per day, moderate incontinence to 17 g per day and severe incontinence to 56 g per day[8]. In the Norwegian EPINCONT study[9], stress incontinence was less severe than mixed or urge incontinence: while one-fifth of the incontinent patients were classified as suffering from severe incontinence, this proportion fell to 15 % when considering only SUI.

The severity index proposed by I. Gasquet[29] is similar but not altogether identical to the Sandvik index. For instance, major leakage every day is classified as severe UI in both indices. However, an incontinence episode frequency of once a week or several times a week is considered severe in the Sandvik index but moderate in the IPSOS classification. Thus, the IPSOS index considers severe what the Sandvik index classifies as very severe.

<table>
<tr><td></td><td>Mild</td><td>Moderate</td><td>Severe</td></tr>
<tr><td>Once a week or less</td><td rowspan="2">Stage 1</td><td colspan="2" rowspan="2">Stage 2</td></tr>
<tr><td>Two to three times a week</td></tr>
<tr><td>About once a day</td><td rowspan="3">Stage 2</td><td colspan="2" rowspan="3">Stage 3</td></tr>
<tr><td>Several times a day</td></tr>
<tr><td>All the time</td></tr>
<tr><td>DK</td><td colspan="3">DK</td></tr>
</table>

The impact of severity of incontinence on quality of life was evaluated in the Conlife[29] questionnaire which examines the consequences of the disorder in three areas: work activities, social/family life, vacation and leisure time.

1.4.2. Treatment strategies

At the present time in France, there are two ways to treat stress incontinence: by perineo-sphincter exercises, or by surgery. An incontinence drug should soon be on the market as well.

1.4.2.1. Perineo-sphincter exercises

ANAES[10] evaluated the different pelvic muscle exercise techniques:

- manual intravaginal exercises to strengthen the pelvic floor muscles.
- pelvic floor training exercises, which are most effective when practiced in association with a physical therapist.
- instrumental biofeedback which trains the patient to feel pelvic muscle contraction and thus helps improve muscle recruitment.
- functional electrostimulation using electrical currents to induce muscle contraction (frequency 50 Hz).
- behavioral therapy to teach the patient to become aware of voiding interval and frequency and which is often associated with pelvic floor training.
- vaginal pessaries of identical size but different weight. The patient contracts the pelvic floor muscles to hold the pessary in place. The effectiveness of this method has been called into question.

ANAES recommends that 10-20 sessions be prescribed initially and, if there is some improvement but not enough, an additional 10 to 15 sessions.

The effectiveness of pelvic floor training was evaluated in a 1993 Swedish study[1]1 in 170 women who followed the exercise program for a mean duration of 5 months. At the end of the program, the subjective cure or improvement rate was 71 % [95 % CI: (0.63, 0.78)], and the subjective improvement or cure rate was 64 % [95 % CI: 0.56, 0.72)]. Among 152 women who were not lost to follow-up 2 to 7 years after the end of treatment, 25 % had had surgery and the subjective cure or improvement rate had dropped from 71 % to 41 % [95 % CI: 0.33, 0.50)].

A Danish study[12] provides information on biofeedback techniques. In this study conducted in 31 women, the objective improvement or cure rate was 81 % [95 % CI: 0.62, 0.93)]. Fifteen women were reevaluated after a mean of 2 years, at which time the improvement or cure rate was 73 % [95 % CI: 0.44, 0.93)], although only 47 % of the women [95 % CI: 0.21, 0.74)] claimed to be satisfied with their present situation.

Finally, an American study[13] investigated the efficacy of functional electrostimulation. Among 35 women treated for 12 weeks, 62 % had at least 50 % improvement in their symptoms and 27 % were cured.

Although exercise programs provide good results in the short-term, their efficacy appears to wane over time.

1.4.2.2. Surgical methods

There are more than 150 different surgical procedures to treat female stress urinary incontinence. One of the most recent is TVT (Tension-free Vaginal Tape), in which a woven elastic polypropene band is inserted intravaginally to provide tension-free support of the middle part of the urethra. The procedure can be performed under local, locoregional or general anesthesia. TVT® has been marketed by Gynecare since 1998.

ANAES[14] conducted a comparative evaluation of TVT versus the Burch colposuspension. The objective cure rate at 4 years was 84 % for the latter method, as compared to 86-90 % at 3 years and 85 % at 5 years for TVT. Although the incidence of bladder perforation, hemorrhage, urinary tract infection and urinary retention was the same for both methods, transfusion requirements were slightly higher for the Burch colposuspension.

The typical course of the patient may be described as follows:

<table>
<tr><th>Burch colposuspension</th><th>TVT</th></tr>
<tr><td colspan="2">Diagnostic tests and preoperative work-up</td></tr>
<tr><td>Hospitalization: 6.54 to 11.2 days</td><td>Hospitalization: 2.4 to 2.6 days.</td></tr>
<tr><td>Mean operating time = 56 to 96 minutes.</td><td>Mean operating time = 22 to 30 minutes</td></tr>
<tr><td colspan="2">Postoperative complications:</td></tr>
<tr><td colspan="2">Dysuria
Urge to void
Urinary retention
Pelvic hematoma
Urinary tract infection</td></tr>
<tr><td>Anuria</td><td>Infection of the TVT
Vaginal/urethral erosion
Vulvar or suprapubic echhymosis
Chronic pain</td></tr>
<tr><td colspan="2">Postoperative check-up 1 to 3 months after surgery</td></tr>
<tr><td colspan="2">Annual visits</td></tr>
</table>

According to ANAES, TVT accounts for 80 % of surgical procedures for isolated SUI in France. Different studies report a hospital stay ranging from 8 hours to 3 days, with a procedure time of 22 to 47 minutes. Normally, the patient can go back to work after 4 days, although the mean sick time observed in the different studies was longer: 10 days [15, 16] or even 21 days [17].

TVT has been evaluated in two French surveys. The survey by Soulié[18] in 120 patients reported an 87 % objective cure rate and a 9 % improvement rate. The Villet survey[19] in 124 patients found an 89 % objective cure rate and an 8 % improvement rate, with 94 % of the patients claiming to be satisfied. The follow-up time in both of these studies is too short to assess the long-term efficacy of the procedure.

1.4.2.3. A drug alternative: duloxetine

Duloxetine is a combined serotonin/norepinephrine reuptake inhibitor that is thought to act on urinary incontinence by improving urethral closure during bladder filling and by increasing urethral sphincter muscle contraction.

It is suppled as a 40 mg capsule to be taken orally morning and evening. There have been four randomized, double-blind clinical trials evaluating efficacy of duloxetine versus placebo in stress urinary incontinence conducted in a total of 1913 women aged 22-83 years who received either placebo (955 women) or active treatment (958 women). The main endpoints were incontinence episode frequency and quality of life evaluated by I-QOL[20]. The mean reduction in leakage episodes in women on duloxetine was 50 %, 50 %, 54 % and 58 % in the four studies, versus 27 %, 29 %, 40 % and 40 % for the placebo groups. Approximately 11 % of patients on duloxetine no longer had any incontinence episodes as compared with 7 % of those on placebo. The combined analysis of these studies revealed a significant improvement in quality of life for patients who received duloxetine compared with those on placebo. After 12 months of treatment, roughly 80 % of the patients reported improvement. The clinical benefit of duloxetine was not diminished if the patient had previously had continence surgery. Association of duloxetine with pelvic muscle training led to a greater decrease in continence pad use and a greater improvement in quality of life than either treatment alone. Duloxetine alone produced a greater reduction in incontinence episodes after 12 weeks than pelvic exercises alone.

Adverse effects were most frequent during the first week of treatment. They were mild to moderate and regressed within 30 days of onset. The adverse effects most frequently reported in clinical trials were nausea (23.2 % vs. 3.7 % for the placebo group), dry mouth (13.4 % vs. 1.5 %), fatigue (12.7 % vs. 3.8 %), insomnia (12.6 % vs. 1.9 %), constipation (11.0 % vs. 2.3 %). Also reported were headache (9.7 % vs. 6.6 %), dizziness (6.8 % vs. 0.1 %), drowsiness (6.8 % vs. 0.1 %), diarrhea (5.1 % vs 2.7 %), vomiting (4.8 % vs. 1.6 %), excessive sweating (4.5 % vs. 0.8 %), anorexia (3.9 % vs. 0.2 %), dyspepsia (3.0 % vs. 1.3 %), tremor (2.7 % vs. 0.0 %), lethargy (2.6 % vs. 0.3 %), loss of appetite (2.3 % vs. 0.2 %), sleep disorders (2.2 % vs. 0.8 %), anxiety (1.5 % vs. 0.3 %), decreased libido (1.5 % vs. 0.3 %), inability to achieve orgasm (1.4 % vs. 0.0 %).

In one of the phase III trials, the frequency of treatment discontinuation due to adverse effects related to duloxetine was 16.6 %.

2. Study objectives

As duloxetine is going to be introduced in France, the objective is to evaluate how many women would consider using this treatment, if they had to pay for it.

The main study objective is therefore to evaluate the proportion of women with stress incontinence who would be willing to be treated by a medication, and at what price level.

The secondary objectives are:

- identify the characteristics of the women most interested in a medication;
- describe the women's attitudes towards alternative treatment strategies;
- determine price elasticity of demand for the drug;
- better discern the women's perception of the drug in the context of the French healh care system.

3. Methodology

This study is neither a clinical study, since the efficacy of the drug has already been demonstrated, nor a purely economic study, since the objective is not to determine the impact to society of introducing a new treatment alternative. Instead, the aim is to help in decision making by providing results that can predict what portion of the population of patients with stress urinary incontinence would be favorable to the use of a non-reimbursed medication. However, these choices are dependent on both the clinical characteristics of the drug and those of its competitors, as well as the value that patients place on a drug treatment of incontinence. The study is therefore at the crossroads of the fields of epidemiology, economics and marketing. It makes use of tools from each of these disciplines, including the concept of willingness to pay, which is measured with the help of tools specific to economics (discrete choice modeling) and marketing (conjoint analysis).

3.1. The instrument of measure: Willingness to Pay

The chosen instrument of measure is WTP, or Willingness To Pay. Willingness to pay studies are based on the hypothesis that the maximum amount of money an individual is willing to pay for a good is an indicator of the utility or satisfaction that the good procures for that individual. It thus combines in a single measure the value that individuals place on health care processes and on their outcomes, and allows to estimate both the direction and the intensity of individuals' preferences for health care interventions.

There are different methods by which to estimate the preferences of consumers of health care and determine the economic value of health care services and products. The group of methods called SP, for Stated Preferences, involves asking individuals to consider one or more hypothetical options and indicate their preference for these options (as opposed to revealed preference methods where one studies the individual's actual choices). There are major differences between SP methods.
Contingent Valuation and Discrete Choice Modeling are derived from the economic sciences and have been used in the health field as well as in environment and public transportation. These methods are based on utility theory, which measures a consumer's welfare.
On the other hand, CA, or Conjoint Analysis, is based on marketing techniques and looks more at examining consumer preferences than at estimating economic values. In this case the individual must give his/her opinion on the merits of several alternatives by ranking or rating them. CA therefore differs from the other methods in so far as the individuals questioned have no specific option to choose, thus distinguishing it from economic theory and market processes.

3.1.1. Contingent valuation methods

Contingent valuation has been used since the early '60s to estimate the values of goods and services unobservable or not directly traded in the market system. Thus, the evaluation concerns either the amount of money that must be paid by or paid to an individual, *after* introduction of a therapeutic advance, so that said individual has the same level of welfare than if the introduction had not taken place (compensating variation (21)), or the amount of money that an individual must accept or give when the therapeutic advance is not introduced so that his welfare is identical to what it could have been had the therapeutic advance been introduced (equivalent variation).

The original form of contingent valuation is an open-ended question asking whether the respondent is willing to pay (or accept payment) for an improvement (or a reduction of quality) of a good or service. Many other methods have since been developed, including referendum, payment cards and experimental auctions.

The pros and cons of CV may be summarized as follows:

➢ Pros

- Provides a single measure of the economic value of a health intervention;
- Based on economic theory;
- Understood and accepted by most respondents;
- Behaves in accordance with theoretical *a prioris*;
- Disregards processes and attributes evaluated during decision making. The respondent can incorporate any information he feels is relevant to his decision;
- Has proved itself in the field of environmental economics;
- Guidelines exist for its use, even though their applicability to health economics might be questioned;

➢ Cons

- Sensitivity to political ideals: answers of protestation if the respondent feels that health care should be free, strategic answers or exaggeration;
- Willingness to pay depends on ability to pay, therefore the preferences of people with a higher income hold more weight;
- It appears that WTP is insensitive to the amplitude of benefits of the intervention; individuals would be more willing to pay "for a good cause";

Numerous other biases have been described, according to the method of CV used.

After all is said and done, contingent valuation methods were not used in this study because they do not satisfactorily take into account the reality of the French health care system. One speaks of an embedding effect when willingness to pay for an attribute is less if it is evaluated as part of a larger choice of attributes rather than by itself. The value of all goods (market or otherwise) depends on the framework in which they are presented: the greater the number of possible choices, the lesser the value assigned to a particular good. In environmental economics, this is called substitution bias. Evaluation of several treatment strategies in the same study fulfils different aims: elucidating patients' preferences for the strategies in question by means of willingness to pay or, quite simply, in accordance with NOAA[22] guidelines, to more closely reflect everyday situations where the good under evaluation has potential substitution products on the market. One study[23] showed that a simple reminder of the existence of substitution goods and services is not enough to cancel the substitution bias. It is therefore necessary to simultaneously evaluate all goods identified as potential substitutes. This requirement, which is essential considering that stress urinary incontinence can be treated by three competing strategies (even though they can be considered complementary): drug therapy, certainly, but also surgery and exercises, leads to complex protocols the validity of which would require confirmation.

3.1.2. Discrete choice modeling

Discrete choice modeling (DCM) identifies variables that can influence choice by parametrizing the probability that a good is chosen by a given individual with given characteristics. As in conjoint analysis, it is the economic theory of Lancaster (24) according to which the utility of a consumer good is related not to the good itself but to the characteristics which the good provides, which justifies the method.

In practice, respondents are presented with a given number of choice sets (in mail surveys, it has been shown that the quality of response is not compromised for up to 15 sets) comparing 3 to 5 alternatives. The alternatives are described according to defined attributes of the product, and if one of these attributes is price, it becomes possible to evaluate willingness to pay for each of the other, non-monetary attributes of each product.

The DCM approach not only makes it possible to assign a WTP to each characteristic of an attribute, but it also allows a measure of consumer utility for a whole series of services characterized by combinations of different levels for each attribute.
In comparison with contingent valuation, DCM methods have a good many advantages:

- Respondents are forced to consider compromises between the attributes characterizing the goods;
- WTP estimation is indirect and less liable to offend people;
- The utilities (in the form of WTP) of a multitude of scenarios can be evaluated;
- Reduces the bias of strategic behavior (eg. accepting any price to show one's approval of the product);
- Simulates choice situations similar to those encountered in daily life.

This comes at the expense of the following weaknesses:

- The method requires more concentration on the part of respondents and therefore complicates the administration of surveys by telephone;
- Estimation of WTP in the health care field using these methods has been challenged by some authors [25, 26].

3.1.3. Conjoint analysis methods

Conjoint analysis, a method derived from psychometric studies, aims to explain an ordinal variable by several independent nominal variables. The purpose is to explain, rather than describe, consumer behavior. Green and Srinivasan [27] define conjoint analysis in the context of marketing analysis as follows: "Conjoint analysis is any decompositional method that estimates the structure of a consumer's preference (i.e., estimates preference parameters such as part-worths, importance weights), given his or her overall evaluations of a set of alternatives that are prespecified in terms of levels of different attributes".

Conjoint analysis is frequently used in marketing analysis and shares many common characteristics with discrete choice modeling. Both methods decompose each consumer good into a sum of attributes, then estimate the part-worth assigned to each one.

Conjoint analysis can be carried out by several methods:
- CA by rating scale: each alternative to be evaluated is presented to the individual who must give a rating according to his/her interest in the product;
- CA by rank order: the set of alternatives to be evaluated is presented to the individual who must rank them in order of preference;
- CA by paired comparison: the alternatives are presented in pairs and the individual must rank his/her preference for one of the pair.

The main difference with discrete choice modeling is the absence of choice: since CA looks only at individuals' preferences and not at their consumption behavior, it is more difficult to predict a choice behavior or a level of demand for a particular product.

Conjoint analysis has its advantages and drawbacks:

➢ Advantages:

- Rating is considered to be the method requiring the least amount of cognitive effort for the respondent;
- It does not take much time;

- It is a less costly method to obtain data on individual preferences.
  - Drawbacks:
- The data obtained in rating scales are much less rich than with other, more detailed methods which, for example, allow an estimate of interactions, effects specific to alternatives, cross-effects.
- The approach gives less reliable results, consumer behavior is not mimicked because the individual is not confronted with a choice;
- The individual does not have the opportunity to indicate whether he/she would not consume any of the products presented.

3.2. Towards a questionnaire reflecting the actuality of the French health care system

3.2.1. Choice of population

Only women with stress urinary incontinence between the ages of 18 and 70 years were eligible to take the questionnaire. Had we wanted to determine the social worth of strategies to manage this pathology, it would have been necessary to survey a representative French population of both men and women, with and without SUI. As our objective was to evaluate demand for an SUI drug, only women with the pathology were of interest to us.

The population was screened as follows:

Screening 1. May I please ask your age?
Screening 2. Are you pregnant or have you given birth in the past 3 months?
Screening 3. We are now going to talk more specifically about a health problem that affects women. Some women experience a pressing urge to urinate but do not have time to get to a bathroom. Has this happened to you at any time during the past 30 days?
Screening 4. Some women experience leakage of urine when they sneeze, cough, exercise, lift a heavy load, run or walk. Has this happened to you, even just once, in the past 30 days?

Women reporting an age under 18 or over 70 years at **screening 1** were excluded from the survey.
Women who answered "yes" to **screening 2** were excluded from the survey.
Women who answered "no" to **screening 4** were excluded from the survey.

The **screening 3** question defines the type of urinary incontinence:

- any woman not fitting the exclusion criteria and who answered "no" to **screening 3** was considered to have stress urinary incontinence;
- any woman not fitting the exclusion criteria and who answered "yes" to **screening 3** was considered to have mixed urinary incontinence

3.2.2. Conduct of the survey

This was a telephone survey conducted by the Ipsos Institute between Friday, November 28, 2003 and Thursday, December 18, 2003.
A cohort of 1000 women who met the definition of stress urinary incontinence as set forth in §3.2.1 were surveyed.

On Friday, December 5, 2003, a first data base in ASCII format containing the responses of 325 women was sent by Ipsos to REES France. On Tuesday, December 9, 2003, a second data base was sent in SAS format. From these two data bases, it was possible to identify problems with data

transmission and encoding and rectify them before the final data base was transmitted on Friday, December 19.

The survey was then presented twice, on January 21, 2004 and on January 28, 2004.

3.2.3. Definition of variables

After the initial contact and screening phase for women with stress incontinence, it was important to:

- describe the severity and impact of urinary incontinence on quality of life;
- investigate the woman's interaction with the health care system for her incontinence;
- determine if the woman was willing to seek treatment and, if yes:
    - which strategy or strategies were favored?
- determine the importance-weight of a drug that treats stress incontinence;
- identify sociodemographic variables that might influence women's attitudes regarding their incontinence.

To measure the severity of stress incontinence and impact on quality of life, it was decided to make use of *ad hoc* instruments developed in a previous epidemiological survey conducted by the Ipsos Institute. A severity scale quite similar to that of Sandvik[7] and the "impact on quality of life" scale developed in the Ipsos study were therefore used.

An incontinent woman who never received treatment for her incontinence has a choice between several strategies:

- Not be treated;
- Be treated with exercises first;
- Be treated with surgery first;
- Be treated with medication first.

The survey was based on the assumption that the only type of surgery proposed was the TVT procedure, so as to minimize the surgery descriptor. This hypothesis is not far from reality according to ANAES[14] (cf § 1.4.1.2).

Evaluating only the value that women attribute to a medication, while totally disregarding the possibility that they might use alternative strategies, would not reflect how things really are and would pose the problems outlined in § 3.1.1. It was important that the protocol take into account all the treatment alternatives for each woman so as not to bias the estimate of their willingness to pay for a drug.

A first series of questionnaires was therefore developed based on a single discrete choice model, where exercises, surgery and medication were compared simultaneously, and the woman could always choose none of these three treatments at each choice set proposed. This questionnaire was pretested on two healthy subjects and found to be methodologically sound. Two other pretests were therefore carried out on patients at Georges Pompidou Hospital during the month of September. Although none of the patients was unable to answer the face-to-face questions, the questionnaire was judged to be too long and complex, running the risk that the women surveyed by telephone would refuse to participate or give incoherent answers. This first method was therefore abandoned and a more segmented questionnaire was developed.

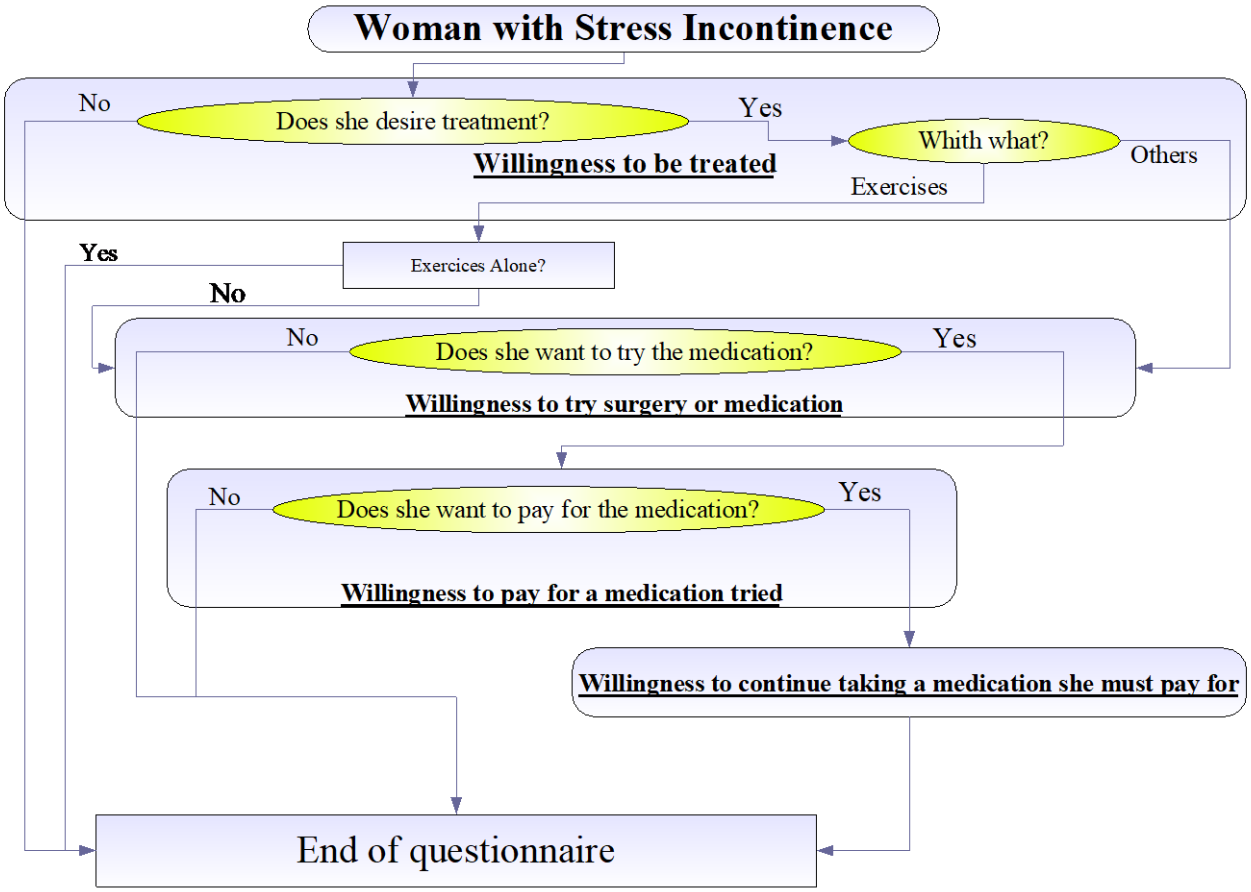
In fact, during the pretests at Georges Pompidou Hospital, it was found that the six women surveyed (including two continent and one with urge incontinence according to the definition in § 3.2.1) all preferred exercises to the other treatment alternatives, with surgery the second choice for two women and medication the second choice for four. Thus, there was a roughly one-in-two probability that, on a larger scale, over 90 % of the women would prefer exercises.

A second set of questionnaires was therefore developed based on the postulate that exercises are not a true competitor of drug therapy and that only relative preferences between medication and surgery would count. This allowed simplification of the protocol by stratifying the questions as follows:

- A first step identified women willing to be treated with exercises and/or surgery and/or medication;
- Among women willing to be treated, a second step identified women willing to try something other than exercises;
- Among women who would consider surgery and/or medication, a third step identified women who would consider medication;
- Among these latter, a fourth step evaluated their willingness to pay for this medication;
- Finally, among women willing to pay for a medication, a fifth step evaluated their willingness to continue treatment with this medication and the parameters influencing this choice.

The structure of the questionnaire can thus be summarized in the following figure. As the saying goes, "You get nothing for nothing": simplifying the questionnaire to make it easier for the interviewees made it unduly complex for analysis of the results, because the initial aim (identifying which women would be willing to pay for a drug and at what price) was no longer addressed by a single measure on all women surveyed, but by multiple measures on women selected according to their answers to the previous questions. Any summary of the data would therefore require the use of conditional probabilities, making comprehension of the results more difficult. Nonetheless, the responses obtained in this manner are *a priori* more reliable, since less complex information is given to women who are supposedly more interested, considering that they were selected on the basis of their previous answers. Furthermore, we were able to overcome the thorny question raised by the first generation of questionnaires, namely, finding a common basis of comparison for the three competing treatment strategies which differ on a number of points.

Figure 1 Schematic outline of the questionnaire



We now turn to the method used to evaluate preferences between medication and surgery, followed by an estimation of willingness to pay for the medication.

3.3. Willingness to try surgery or medication

We worked on the assumption that most women would prefer exercises before choosing surgery or medication, which would be second choice treatments. Consequently, what must be determined here is the factors leading a woman to prefer medication over surgery. Recall that at this level, the following profiles have already been excluded from the survey:

- Women not wanting to try either surgery, medication or exercises;
- Women willing to try exercises as first choice, but unwilling to try surgery or medication if the exercises did not give a satisfactory result.

We are therefore working with a heterogeneous population:

- Women whose first choice was exercises but who chose one of the other two treatments as second choice;
- Women whose first choice was medication;
- Women whose first choice was surgery;
- Women who could not precisely define their preferences.

With regard to the study objectives, it is above all the women whose first choice was medication who are of greatest interest.

Note that when determining willingness to be treated, the three treatment strategies were described much as they would have been in the doctor's office, but without any indication of their efficacy or cost. When the women were asked to state their preferences prior to determining their willingness to try, we did not seek to identify the effect these two factors would have on their choice. It is not impossible that a woman preferring medication to surgery when asked about her willingness to be treated would change the order of these preferences if she were to learn that surgery would not entail any costs to her while the medication would.

In order to identify these phenomena without making the questionnaire overly complex, there is a simpler instrument available to us: conjoint analysis by rating scale.

3.3.1. Defining the attributes to be compared

As noted earlier, conjoint analysis involves decomposition of each alternative (in this case, surgery or medication) into a series of relevant attributes which were, in this case:

- **Nature** of the treatment: the woman may not have the same subjective impression of a treatment requiring a surgical procedure (which one might imagine would incite fear in a good number) and a treatment requiring that she take a medication (here, they would be divided ideologically into those who do and do not believe in drugs), all else being equal.
- The expected **efficacy** of the treatment. Before undertaking a treatment, the woman might wonder about its chances of success. For instance, in pilot tests, some women believed outright that such and such a strategy would not work for them. One might ask how this chance of success affects their decision making.
- The financial **cost** for the patient. Indeed, patients might be put off by a treatment they must pay for.

Recall that here the context is one of trying the treatment, without regard to its actual effect or duration. Thus it is relevant to make a comparison between surgery, which is a one-time thing, and a drug which must be taken for as long as one wants relief from incontinence, between surgery with a high cure rate (and therefore a low rate of symptom improvement without complete cure) and a drug with a low cure rate but a higher improvement rate. Similarly, this is "one-shot" cost reasoning: you pay once to try it, be it surgery or medication, without worrying about whether or not you must subsequently continue to pay.

Once the attributes were defined, their range of variation had to be determined.

3.3.2. Defining levels for each attribute

3.3.2.1. Efficacy of the treatment

The number of levels influences the number of questions that must be asked to estimate each woman's preferences. From the same standpoint that led us to adopt a conjoint analysis by rating rather than a discrete choice model, only two levels were used.

The matter is one of trying a treatment, what is discrimintaory between the two proposed strategies is the chance "that it works", more than the effects expected if the woman is receptive to the treatment strategy. What remains to be justified is the choice of levels.

- For **surgery** (i.e., TVT), Moran[28] reported that 39 of 40 women who underwent TVT surgery considered themselves to be cured or significantly improved. This corresponds to a probability

of 98 %. The Villet survey[19] in French women reported a 94 % rate of satisfaction with the surgery. We therefore chose a level of 95 % in the questionnaire.
- For **drug therapy** (in this case, duloxetine), a meta-analysis of the four trials found an 80 % rate of subjective improvement, while a phase III trial presented in a poster session reported a rate of 62 %. We therefore rounded this number to 60 % to keep a conservative outlook.

The two levels of efficacy are therefore 95 % and 60 %.

3.3.2.2. Cost of the treatment

Again with the aim of keeping the questionnaire simple, only two price levels were adopted.

- **Surgery** was considered to be free of charge for the patient, assuming that it does not take place in a private clinic exceeding the authorized fee, that all patients have mutual insurance to reimburse hospital expenses, that a home nurse is not needed, and that there are no non-reimbursed pharmaceutical expenses (dressings, etc.) after hospital discharge.
- **Drug therapy** has a cost. In meetings of the work groups, it was decided to set the price at 45€.

The two price levels are therefore 0€ and 45€.

3.3.3. Defining the experimental design

There are three attributes (nature of treatment, efficacy, cost) with two levels each. The exhaustive number of combinations is therefore 2^3, or 8. However, again to keep the questionnaire simple, only four treatment alternatives were described using a Hadamard matrix. This concern for simplicity of the questionnaire comes at the price of accuracy, since analysis of each woman's preferences on only four responses necessarily increases the variance of the estimators.

The four alternatives to be rated by the women in this experimental design were therefore:

Option	Nature	Efficacy	Price
1	Surgery	60 %	00€
2	Surgery	95 %	45€
3	Medication	60 %	45€
4	Medication	95 %	00€

When the questionnaire was administered the options were presented in random order.
Each option was rated on a scale of 1 to 9, the higher the rating the greater the interest in the treatment.

A woman who gave a rating of less than 5 for option 4 was considered unwilling to try the medication since in fact, she was giving a low rating to a drug with a good chance of success and which would cost her nothing.

Women willing to try medication were selected in this manner, and their willingness to pay for the drug was then estimated.

3.4. Willingness to pay for a medication tried

Here, the population has already passed through two filters: first, without prejudging their attitude towards the medication, the women declared themselves willing to be treated, and not solely by

means of exercises. Next, and again without prejudging relative preferences between surgery and medication, these women did not have a negative attitude towards a drug which would have a good chance of success and which would have no cost.

At this stage, the population has had to consider the efficacy of the strategies in terms of chances of success and cost. With these parameters in hand, they next had to (re)define their relative preferences between surgery and medication. In willingness to pay, other parameters also come into play: the women must no longer consider the presence or absence of an effect, but the level of effect which would satisfy them. Emphasis is also placed on a characteristic of the drug noted in the phase to identify women willing to be treated: the possibility of experiencing side effects. Finally, the drug necessarily has a cost.

One might ask whether, among the women who reached this stage of the survey, those who would actually be willing to take a medication as first choice are not the most largely represented. In fact, we could have decided to only question a "hard core" of women for whom medication would be one of their first treatment choices, but that would mean neglecting a population which is not entirely against drug therapy and would run the risk that the cohort would be too small to obtain an accurate estimate of willingness to pay for the drug.

As this part of the questionnaire was the essential part of the survey, by which to fulfil the study objectives, a discrete choice model was used to provide the most data on the women's behavior.

3.4.1. Defining the attributes of the drug

Without prejudging the conditions which would lead them to do so, the women who reached this stage of the survey were willing to try a medication. Once the medication is tried, under what conditions would they agree to continue taking it?

One of the criteria speaks for itself: price. As long as the woman decides to continue taking the drug, she must accept its impact on her budget. However, many other factors will lead her to examine the validity of her consumption. Out of concern for simplicity, only three attributes were retained:

- **Efficacy** of the drug, which can influence the importance-weight the patient gives it in her basket of goods. While the earlier phase of the survey exploring her willingness to try medication or surgery looked at her attitude towards chances of success of the treatment, without prejudging what she defined as "success", this phase defines a more concrete criterion of efficacy: the relative reduction in incontinence episode frequency.
- **Tolerability** (i.e. adverse effects) of the drug. Clinical trials on duloxetine have described a non-negligible frequency of transient side effects, which means that some women in the survey will be led to weigh the benefits of the drug against any side effects they might experience. If they feel that the efficacy of the drug makes up for any bothersome side effects, they will continue taking it until the side effects regress, otherwise they will discontinue treatment.
- **Price**. Once they decide to take the drug, they must take the price into account in their monthly budget. A high price will dissuade some women from using the drug.

3.4.2. Defining levels for each attribute

3.4.2.1. Defining the number of levels

When each attribute is described by the same number of levels, one might hope to obtain optimal or almost optimal experimental plans with a moderate number of choice sets. Deciding on the number

of levels for one attribute will therefore determine the number of levels for the other two attributes. In this field, the number of price levels is the most sensitive parameter and the accuracy of the estimates of willingness to pay will depend on this number. We chose an experimental plan comprising 3 attributes with 4 levels each: in fact, it appeared difficult to obtain an estimate of the part-worth attached to price by studying fewer than four different price levels.

3.4.2.2. Efficacy of the drug

The efficacy criterion is the reduction in the number of incontinence episodes. Duloxetine reduced this number by 100 % (i.e. it restored continence) in a certain proportion of women in clinical trials. We therefore retained this level of efficacy. The other three levels were chosen so as to be "meaningful" for the interviewees. The final efficacy levels were therefore 25 % (one-quarter reduction in leakage episodes), 50 % (leakage episodes reduced by one-half) and 75 % (leakage episodes reduced by three-quarters) and 100 % (no more leakage).

3.4.2.3. Tolerability of the drug

This characteristic had to have four levels in order for the model to best meet the objectives while taking into account the constraints, and one of the levels of tolerability was necessarily complete tolerability (no side effects). Thus the other three levels had to be defined. The initial versions of the questionnaire mentioned three of the most frequent side effects: nausea, dry mouth and constipation. After a meeting of the work group, the following tolerability levels were retained in the final questionnaire:
- No side effects;
- Nausea;
- Dizziness;
- Sleep disorders.

3.4.2.4. Price of the drug

The definition of price levels should reflect as closely as possible the potential prices envisioned for market launch. It was not necessary to consider a 0 € price level since the drug is not reimbursed. So as to force the women to make trade-offs on price, it was also important that one of the price levels be fairly high so that even women most interested in the medication would have to think about the cost factor. The different price levels were therefore set at 20€, 40€, 60€ and 100€.

3.4.2.5. Experimental design

With 3 attributes at 4 levels each, an almost optimal experimental design was obtained for 32 choice sets. These were designed so that one medication would never completely dominate the alternative medication proposed in the same set (eg. a drug without side effects at 40€ and 75 % efficacy versus a drug causing dizziness at 60€ and 50 % efficacy). Thus, we avoid asking questions whose answers are known in advance. On the other hand, we have an experimental plan which is not perfectly equilibrated.

We could not reasonably ask the women taking the survey to make 32 choices between two different drugs. The choice sets were therefore divided into four sub-questionnaires with eight choice sets each. Each woman took only one of the sub-questionnaires.

QUESTIONNAIRE

Now that the methodological choices have been explained, the questionnaire (or, more precisely, the first of the four sub-questionnaires which differ in terms of choice sets for the willingness to pay analysis) is presented below:

1. Initial phase: contact and screening

INTRO. Hello, I'm an interviewer from the Ipsos Institute and I'm calling because we are conducting a large scientific survey in women between 18 and 70 years of age, concerning a women's health problem. May I please speak with a woman in your household who is between the ages of 18 and 70?

1 Begin interview
2 No answer/Answering machine
3 Cannot be contacted during study period
4 Work phone/Fax
5 Refusal
6 Outside target / SECOND HOME
7 Not available
8 Wrong number - name
9 Dialogue impossible
10 No women aged 18-70 / No answer / Personal answering machine

Contact 1. May I please speak with a woman in your household who is between 18 and 70 years old?
1. Speaking
2. Hold on I'll get her
3. No woman aged 18-70 in this household → recode stop C1-3
4. Refusal to participate => GO TO CONTACT 3
5. Make appointment

Contact 2. The questionnaire I'm asking you to take lasts from 5 to 15 minutes. Would you like to take the questionnaire now or would you rather we set up an appointment for another time?

1. now
2. set up appointment
3. Refusal => GO TO CONTACT 3

Contact 3. I can understand that you might hesitate to take part in this survey. However, in order for us to have a representative population, it is very important that you participate. If you like, we can set up a date and time of your choosing for you to take the questionnaire.
Interviewer: if she still refuses, ask if there is another woman aged 18-70.

1. now
2. set up appointment
3. Refusal => recode stop C6

Screening 1. May I please ask your age?

|__|__| years (min 18 / max 70)

IF UNDER 18 YRS OR OVER 70 YRS => STOP INTERVIEW
Recode
1. 18 to 24 yrs
2. 25 to 34 yrs
3. 35 to 44 yrs
4. 45 to 59 yrs
5. 60 to 64 yrs
6. 65 to 70 yrs

If age < 45 yrs ask screening 2
Screening 2. Are you pregnant or have you given birth in the past 3 months?

1. Yes => STOP INTERVIEW → recode stop S2
2. No

Screening 3. We are now going to talk more specifically about a health problem that affects women. Some women occasionally experience a pressing urge to urinate but do not have time to get to a bathroom. Has this happened to you at any time during the past 30 days?

1. Yes
2. No

Screening 4. Some women experience leakage of urine when they sneeze, cough, exercise, lift a heavy load, run or walk. Has this happened to you, even just once, in the past 30 days?

1. Yes
2. No => STOP INTERVIEW → recode stop S4

2. Severity and impact on quality of life

Let's talk more about your urinary problems.

Severity 1. Have you been having this leakage of urine induced by certain maneuvers for more than one year?

1. Yes
2. No
3. (don't know)

Interviewer: If necessary, indicate: when you sneeze, cough, etc …

If Severity 1 = 1 ask Severity 1bis
Severity 1bis. For how many years?

Interviewer: clearly indicate
|__|__| years

Severity 2. How often do you experience urine leakage when you make these kinds of maneuvers?
Interviewer read list of answers, only one answer possible

1. Once a week or less
2. Two to three times a week
3. About once a day
4. Several times a day
5. All the time
6. (Never) => STOP INTERVIEW → recode stop S2
7. (don't know)

Severity 3. When leakage occurs, would you say you loose a small, moderate or large amount of urine?

1. Small amount
2. Moderate amount
3. Large amount
4. (don't know)

Severity 4. Would you say that at the present time, for each of the following situations, you are very bothered, somewhat bothered, not very bothered or not at all bothered by this urine leakage?
Interviewer read list of answers, only one answer possible – only ask initial question once

1. Very bothered
2. Somewhat bothered

3. Not very bothered
4. Not at all bothered
5. (Not concerned)
6. (don't know)

• In your work life (only ask if person is employed) – if yes, the person is employed -
• In your social/family life
• During vacation or leisure time

Severity 5. Do you wear protective undergarments (such as continence pads, panty liners, diapers)?
Interviewer read list of answers, only one answer possible

1. Never => GO TO CHAPTER 3
2. Occasionally
3. Every day
4. (don't know)

Severity 6. If you wear protective undergarments, how often do you have to change them?
Interviewer read list of answers, only one answer possible

1. Once a day
2. Two to three times a day
3. More than three times a day
4. (don't know)

Severity 7. Approximately how much do you spend on protective undergarments per month?
Interviewer read list of answers, only one answer possible

1. Less than 5 euros (about 33 F)
2. Between 5 and 10 euros (33 to 66 F)
3. Between 10 and 15 euros (66 to 100 F)
4. Between 15 and 20 euros (100 to 130 F)
5. More than 20 euros (more than 197 F)
6. (don't know)

3. Disease context

Context 1. Are you currently or have you previously been under the care of a health professional for this problem?
Interviewer read list of answers, several answers possible

1. Currently followed for this problem
2. Previously followed for this problem
3. Preventively followed in the past
4. No, never followed => GO TO CHAPTER 4
5. (don't know) => GO TO CHAPTER 4

Context 2. What did the health professional recommend to treat your stress urinary incontinence?
Interviewer read list of answers, several answers possible

1. Exercises/physical therapy
2. Medication
3. Surgery
4. (none of the above)
5. (don't know)

For each treatment listed in Context 2 ask
Context 2bis. Did you accept this recommendation for …?
Interviewer read list of answers, several answers possible

1. Yes
2. No
3. (don't know)

• Exercises/physical therapy
• Taking a medication
• Having surgery

If treatment accepted in Context 2bis – If C2bis S1O→3=1 ask
Context 3. Would you say that, after your...(treatment*), your urine leakage...?
*: Treatment: your surgery, your medication, your exercises/physical therapy
Interviewer read list of answers, only one answer possible

1. completely stopped
2. was significantly reduced
3. was somewhat reduced
4. did not change
5. got worse
6. (treatment accepted but not followed)
7. (don't know)

4. Willingness to be treated

We are now going to ask you some questions so that we can determine women's preferences for different strategies to treat stress urinary incontinence, which is manifested as leakage of urine during a stress maneuver such as coughing, lifting a heavy load, etc. There are three types of treatment for this problem: pelvic floor exercises, surgery and medication.

- Pelvic floor exercise sessions take place once or twice a week at the physical therapy office. Treatment lasts for two to three months and is designed to strengthen the muscles involved in urine leakage, for example through exercises that you do with a painless probe placed against the perineum. To conserve the benefits, you should continue doing your exercises regularly at home.

- Surgery is performed under anesthesia and takes about 30 minutes. Usually, the hospital stay is no more than two days and the convalescence period is a few days. In the month following surgery, you must not do any carrying, you must not take baths or have sexual intercourse. Urinary tract infection may occur after surgery, which is treated with antibiotics. Difficulty urinating or urge to urinate, usually of moderate intensity, may also occur. Annual check-ups are recommended.

- The medication is a tablet that must be taken every day, morning and evening, for as long as you want relief from leakage. It may cause temporary side effects such as nausea, dizziness or sleep disorders.

WBT 1. In the next six months, if your problem is not any better, would you consider treatment with?
Interviewer read list of answers, only one answer possible

1. Yes, definitely
2. Yes, probably
3. No, probably not
4. No, definitely not
5. (already tried)
6. (don't know)

• exercises
• surgery
• medication

IF ANSWER 3 TO 5 FOR THE 3 SUB QUESTIONS GO TO CHAPTER 8 (SOCIODEMOGRAPHIC DESCRIPTORS AND END)

If WBT 1S1o→3 = 1 or 2 or 6 ASK WBT 2
WBT 2. Which treatment would be your first choice?
Interviewer read list of answers, only one answer possible

1. Exercises
2. Surgery
3. Medication
4. (none of the above) => GO TO CHAPTER 8 (SOCIODEMOGRAPHIC DESCRIPTORS AND END)
5. (DK)

If WBT 1S1o→3 = 1 or 2 or 6 AND WBT 2 = 1 or 2 or 3 ASK WBT 3
WBT 3. If this first treatment did not work, which one would you try next?
Interviewer read list of answers, only one answer possible

1. Exercises
2. Surgery
3. Medication
4. Neither of the two, continue as I am now with the same results => GO TO CHAPTER 8 (SOCIODEMOGRAPHIC DESCRIPTORS AND END)
5. (DK)

If (WBT 2=1) AND (WBT 3 = 4) GO TO CHAPTER 8 (SOCIODEMOGRAPHIC DESCRIPTORS AND END)

5. Willingness to try medication

WTT 1. We will now ask you to rate treatment by medication or treatment by surgery on a scale of 1 to 9. The higher the number, the more willing you are to accept the treatment. A rating of 1 means you would definitely not consider using the treatment and a rating of 9 means you would definitely consider using the treatment and intermediate numbers reflect different degrees of willingness.

(If WBT 2 = 1) Now, let's suppose that you had physical therapy which did not give you full satisfaction.

Cite the 4 TREATMENTS below in random order.

Question in euros or francs: In some cases I will be quoting prices in euros. Would you like me to give you the equivalent in francs?

1. In euros
2. Both

Depending on the answer, quote prices in euros only or in euros and francs.

Information for data manager:

The respondent's choice should be kept in the data base because we will later test whether otherwise comparable women who think in euros and francs did not answer differently than those who think only in euros.

Information for interviewers: use the following transitional phrases between the 4 treatments:

First let's look at,
Next let's look at,
Let's look at another case,
Finally let's look at.
Ex: First let's look at a medication that gives good results in 60 % of patients…

WTT1A Treatment No. 1: Surgery gives good results in 60 % of cases. It is reimbursed. How would you rate this treatment on a scale of 1 to 9 according to your willingness to accept it in the next six months?

Rating: |__| (min 1 max 9)

WTT1B Treatment No. 2: Surgery gives good results in 95 % of cases. It costs 45€ (295F) which is not reimbursed. How would you rate this treatment on a scale of 1 to 9 according to your willingness to accept it in the next six months?

Rating: |__| (min 1 max 9)

WTT1C Treatment No. 3: A medication which gives good results in 60 % of cases. It costs 45€ (295F) which is not reimbursed. How would you rate this treatment on a scale of 1 to 9 according to your willingness to accept it in the next six months?

Rating: |__| (min 1 max 9)

WTT1D Treatment No. 4: A medication which gives good results in 95 % of cases. It is reimbursed. How would you rate this treatment on a scale of 1 to 9 according to your willingness to accept it in the next six months?

Rating: |__| (min 1 max 9)

WTT 2. You are now going to choose between medication and surgery, keeping in mind that:

- Surgery is effective in 95 % of cases and is reimbursed.
- The medication is effective in 60 % of cases and it will cost you 45€ (295F) per month, which is not reimbursed.

What would you be willing to try in the next six months: surgery, the medication, or neither of the two?

1. Medication
2. Surgery
3. Neither of the two

Note: Don't know is not a possible answer.

If (Rating for Treatment no. 4 < 5) GO TO CHAPTER 8 (SOCIODEMOGRAPHIC DESCRIPTORS AND END)

6. Willingness to pay for a tried medication

In this section also take into account the respondent's preference for quoting prices in euros only or in euros and francs.

WTP 1. To treat your stress incontinence, you chose to take a medication. Medications have different effects in different individuals. I am going to ask you to make 8 simple choices between two medications. You can continue treatment with medication A or B, or discontinue it. I will describe each medication according to its efficacy, that is to say, the reduction in the number of leakage episodes, its side effects and its price. Neither medication is reimbursed. Your choice should be compatible with your budget.

For each woman, randomly pick one of the four sub-questionnaires .
Cite the 8 CHOICES in random order – in all cases, three response modes per choice

Example: Questionnaire No. 1:

WTP1A- Choice No. 1:
Medication A has **75 %** efficacy, medication B **50 %** ;
A and B both cause temporary **nausea** ;
A costs **40€** (260F) per month, not reimbursed, and B costs **20€** (130F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **75 %**. It gives you transient **nausea** and costs you **40€** (260F) per month, which is not reimbursed.
Medication B reduces the number of leakage episodes by **50 %**. It also gives you transient **nausea** and costs you **20€** (130F) per month, which is not reimbursed.

WTP1B- Choice No. 2:
The efficacy of medication A is **75 %**, that of medication B is **100 %** ;

A gives you transient **sleep disorders**, B has **no** side effects ;
A costs **60€** (390F) per month, not reimbursed, and B costs **100€** (660F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **75 %**. It gives you transient **sleep disorders** and costs you **60€** (390F) per month, which is not reimbursed.
Medication B reduces the number of leakage episodes by **100 %**. Does not cause **side effects** and costs you **100€** (660F) per month, which is not reimbursed.

WTP1C - Choice No. 3:
The efficacy of medication A is **50 %**, that of medication B is **25 %** ;
A gives you transient **sleep disorders**, B gives you transient **dizziness** ;
A costs **100€** (660F) per month, not reimbursed, B costs **60€** (390F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **50 %**. It gives you transient **sleep disorders** and costs you **100€** (660F) per month, which is not reimbursed.
Medication B reduces the number of leakage episodes by **25 %**. It gives you transient **dizziness** and costs you **60€** (390F) per month, which is not reimbursed.

WTP1D - Choice No. 4:
The efficacy of medication A is **50 %**, that of medication B is **100 %** ;
A gives you transient **nausea**, B gives you transient **sleep disorders** ;
A costs **20€** (130F) per month, not reimbursed, B costs **60€** (390F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **50 %**. It gives you transient **nausea** and costs you **20€** (130F) per month, which is not reimbursed.
Medication B reduces the number of leakage episodes by **100 %**. It gives you transient **sleep disorders** and costs you **60€** (390F) per month, which is not reimbursed.

Interviewer: You only have four more choices left.

WTP1E - Choice No. 5:
The efficacy of medication A is **100 %**, that of medication B is **75 %** ;
A gives you transient **dizziness**, B has **no side effects ;**
A and B cost **20**€ (130F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **100 %**. It gives you transient **dizziness** and costs you **20€** (130F) per month, which is not reimbursed.

Medication B reduces the number of leakage episodes by **75 %**. Does not cause **side effects** and costs you **20€** (130F) per month, which is not reimbursed.

WTP1F - Choice No. 6:
The efficacy of medication A is **100 %**, that of medication B is **50 %** ;
A has **no side effects,** B gives you transient **dizziness**;
A costs **100€** (660F) per month, not reimbursed, B costs **40€** (290F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **100 %**. Does not cause **side effects** and costs you **100€** (660F) per month, which is not reimbursed.
Medication B reduces the number of leakage episodes by **50 %**. It gives you transient **dizziness** and costs you **40€** (260F) per month, which is not reimbursed.

WTP1G - Choice No. 7:
The efficacy of medication A is **25 %**, that of medication B is **75 %** ;
A has **no side effects,** B gives you transient **sleep disorders**;
A costs **60€** (390F) per month, not reimbursed, B costs **40€** (290F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **25 %**. Does not cause **side effects** and costs you **60€** (390F) per month, which is not reimbursed.
Medication B reduces the number of leakage episodes by **75 %**. It gives you transient **sleep disorders** and costs you **40€** (260F) per month, which is not reimbursed.

WTP1H - Choice No. 8:
The efficacy of medications A and B is **25 % ;**
A gives you transient **dizziness**, B gives you transient **nausea;**
A costs **40€** (260F) per month, not reimbursed, B costs **100€** (660F) per month, not reimbursed.

Will you continue taking medication A, medication B or will you stop taking medication?

1. Medication A
2. Medication B
3. Stop medication

If necessary, interviewer explain:
Medication A reduces the number of leakage episodes by **25 %**. It gives you transient **dizziness** and costs you **40€** (260F) per month, which is not reimbursed.
Medication B reduces the number of leakage episodes by **25 %**. It gives you transient **nausea** and costs you **100€** (660F) per month, which is not reimbursed.

WTP2. We're now finished with the choices. Do you feel that:
Interviewer read list of answers, only one answer possible

1. Yes
2. No
3. DK

- the choices I proposed to you were easy to understand?
- too much information was given?
- the proposed situations were realistic?

IF OPTION «DO NOT TAKE A MEDICATION » IS STILL CHOSEN GO TO CHAPTER 8

7. Willingness to continue treatment

WTC 1. If you were sure to take a medication, what characteristics would it have?
Interviewer: don't make any suggestions, open-ended answer, several answers possible

1. Does not cause nausea
2. Does not cause side effects
3. Does not cause dizziness
4. Does not cause sleep disorders
5. Price not too high, not expensive (specify) ……
6. Effective (specify) ……
7. Other (specify)……..
……

If DK in WTC 1 Recode directly item 2
Automatic recode
1. Mentioned something in WTC1
2. Did not mention anything in WTC1

IF CITED SOMETHING IN WTC1, ASK WTC2
WTC 2. Would you take this medication...?
Interviewer read list of answers, only one answer possible

1. Continually, for more than one year
2. Continually, for less than one year
3. From time to time, for more than one year
4. From time to time, for less than one year
5. (I would not take it)
6. (Don't know)

WTC 3. If you hesitated to take a medication, what characteristics would it have?
Interviewer: don't make any suggestions, open-ended answer, several answers possible

1. Nausea
2. Side effects, adverse reactions
3. Sleep disorders
4. Dizziness
5. High price, expensive (specify) ……
6. Little or no effectiveness (specify) ……
7. Other (specify)……..
……

If DK in WTC 3 Recode directly item 2
Recode
1. Mentioned something in WTC3
2. Did not mention anything in WTC3

IF CITED SOMETHING IN WTC3, ASK WTC4
WTC 4. Would you take this medication...?
Interviewer read list of answers, only one answer possible

1. Continually, for more than one year
2. Continually, for less than one year
3. From time to time, for more than one year
4. From time to time, for less than one year
5. (I would not take it)
6. (Don't know)

8. Sociodemographic characteristics

These next few questions in this final section will allow us to categorize our results.

Characteristic 1. Do you have children?
1. Yes
2. No

If Yes
Characteristic 1bis. How many live with you?

|__|__| children

Characteristic 2. Including yourself, how many people are there in your household?

|__|__| people

Characteristic 3. Are you?

1. Married
2. Common law marriage / civil union / living together
3. Widowed
4. Divorced
5. Single

Characteristic 4. (If characteristics 2> 1) Are you ……?

1. Head of household
2. Woman of the house
3. Another person in the household

Characteristic 5. Are you currently employed?

1 Yes
2 No, unemployed
3 No, retired
4 No, disability
5 No, seeking a first job
6 No, homemaker or no occupation
7 No, student
8 No, other

Characteristic 6. What is your occupation?
Recode in 8 and 5 positions

If C2>1 or C4=2o3 ask
Characteristic 7. Is the head of household currently employed?

1 Yes
2 No, unemployed
3 No, retired
4 No, disability
5 No, seeking a first job
6 No, homemaker or no occupation
7 No, student
8 No, other

Characteristic 8. What is his/her occupation?
Recode in 8 and 5 positions

Characteristic 9. What is your level of education?
Interviewer read list of answers, only one answer possible

1. Secondary education certificate / Technical education certificate / Vocational training certificate / Basic school-leaving qualification
2. High school diploma
3. 2-yr university diploma / Advanced vocational diploma / 2-yr technology diploma (High school diploma + 2)
4. Bachelor's degree / Master's degree (High school diploma +3 / High school diploma +4)
5. "Grande école" / Post-graduate certificate / Post-graduate degree after Master's (High school diploma + 5)
6. Doctorate (High school diploma + 8 or more)
7. No degree
8. (DK)

If C2>1 or C4=2o3 ask
Characteristic 10. What is the head of household's level of education?
Interviewer read list of answers, only one answer possible

1. Secondary education certificate / Technical education certificate / Vocational training certificate / Basic school-leaving qualification
2. High school diploma
3. 2-yr university diploma / Advanced vocational diploma / 2-yr technology diploma (High school diploma + 2)
4. Bachelor's degree / Master's degree
5. "Grande école" / Post-graduate certificate / Post-graduate degree after Master's
6. Doctorate
7. No degree
8. (DK)

Characteristic 11. We need to know the income bracket of your household, for statistical purposes only. What is the estimated total take-home monthly income for your household as a whole?

1. Less than 1000 euros (less than 6559 Francs)
2. Between 1000 and 1524 euros (from 6559 to less than 10,000 Francs)
3. Between 1525 and 3048 euros (from 10,000 to less than 20,000 Francs)
4. Between 3049 and 4573 euros (from 20,000 to less than 30,000 Francs)
5. 4574 euros and over (30,000 Francs and over)
6. (Refusal)
7. (DK)

Characteristic 12. Place of residence
1. Rural
2. Population less than 20,000
3. Population between 20,000 and 100,000
4. Population of 100,000 and over
5. Paris region

Characteristic 13. Region of residence
1. Ile de France
2. Western Paris outskirts
3. Eastern Paris outskirts
4. North
5. West
6. East
7. Southwest
8. Southeast
9. Mediterranean

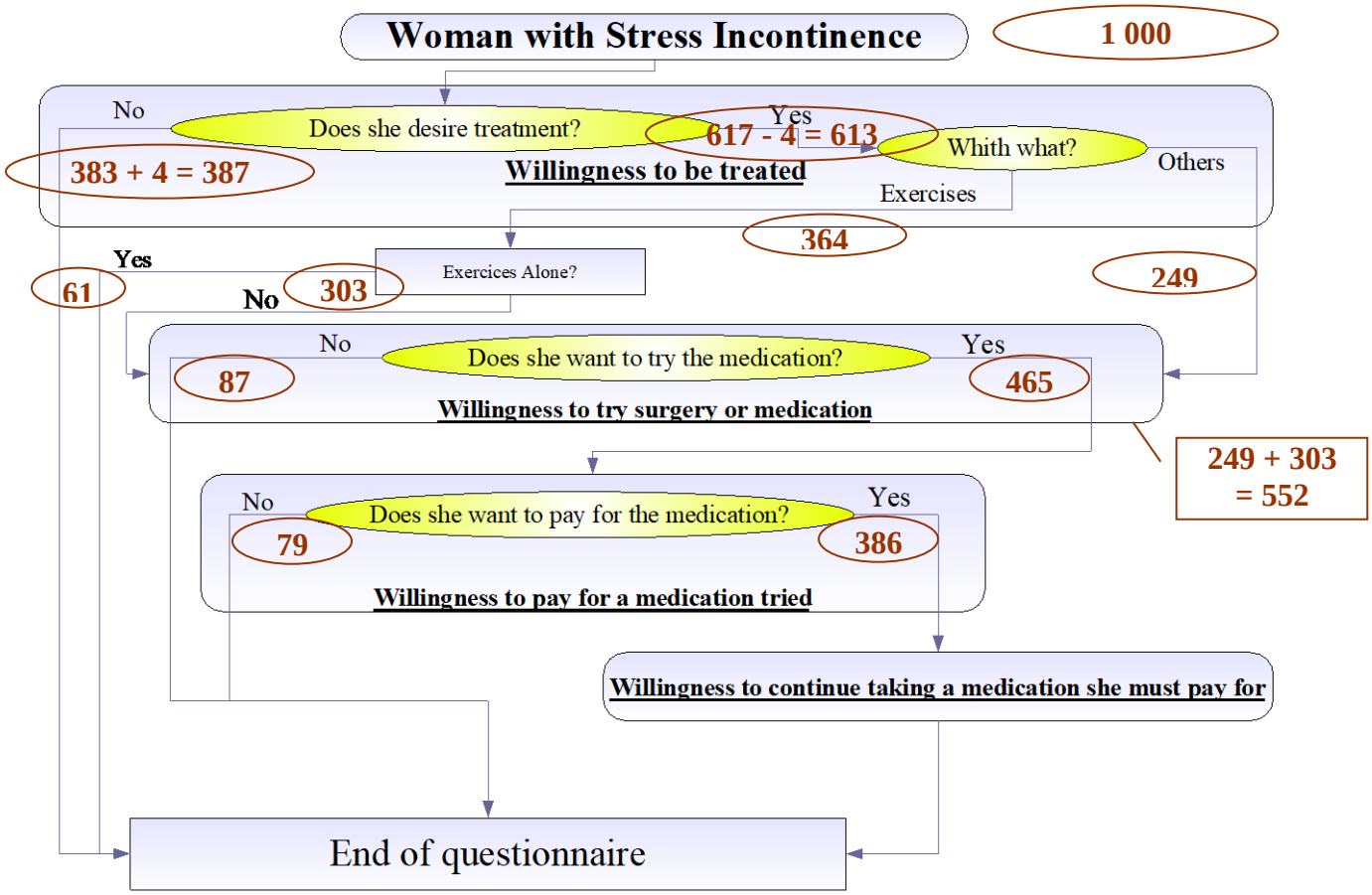
RESULTS

The results will be presented in parallel with the order of the questionnaire. First, the respondent characteristics will be described, followed by the results concerning severity of incontinence and impact on quality of life, followed by interactions with the health care system for incontinence.
Next, the first key variable of the analysis will be studied: willingness to be treated (WBT). At the end of this part of the questionnaire, only women willing to be treated by medication and/or surgery will be retained for further study.
The willingness to try (WTT) part of the questionnaire will then analyze relative preferences for medication or surgery. At the end of this step, only women who are not put off by medication will be retained.
Willingness to pay (WTP) for a medication will then be explored. At the end of this step, only women willing to pay for a medication will be retained.
Lastly, willingness to continue treatment with medication (WTC) will be examined.

In parallel, the survey results will be used to develop a model for estimating the potential market of women in France for a non-reimbursed drug.

The size of the population at each step of the survey may thus be summarized as follows:

Figure 1 Flow chart of respondents

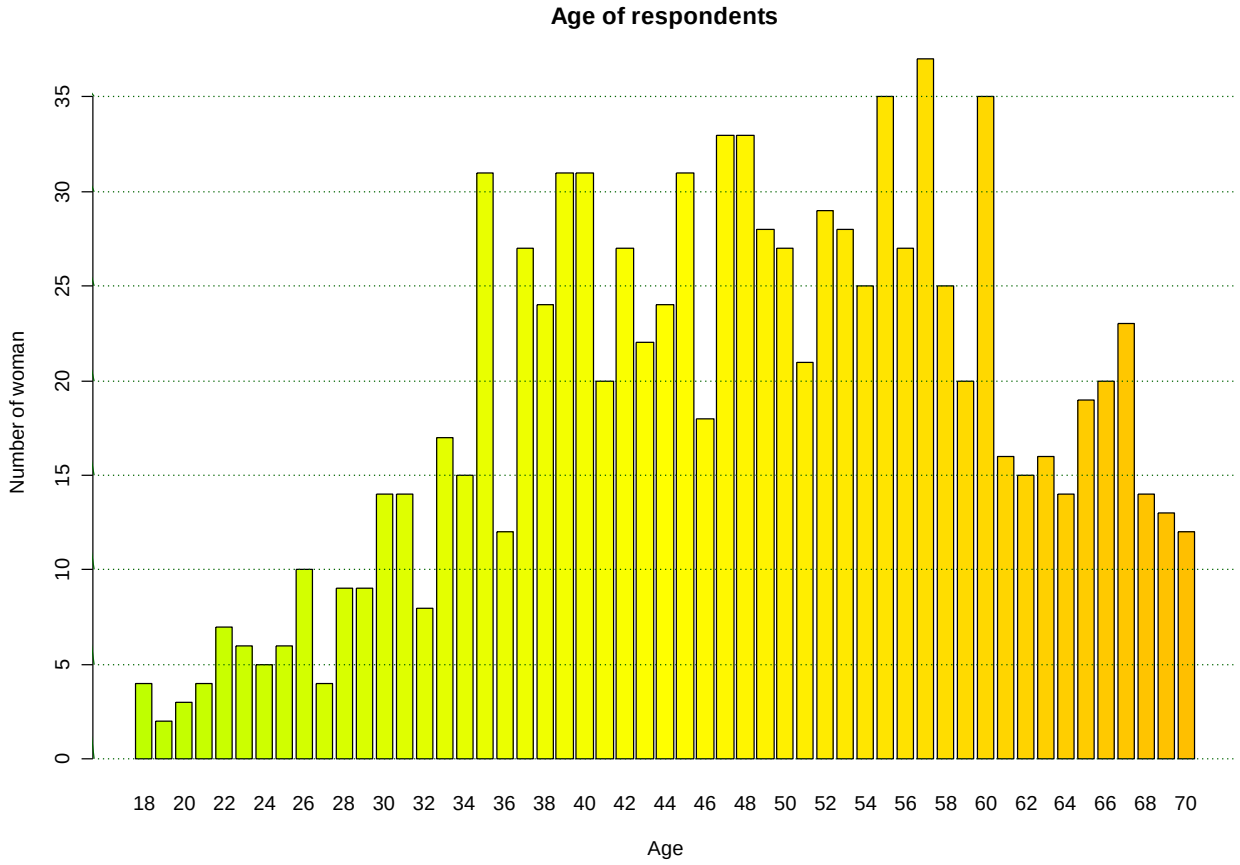


1. Respondent characteristics

1.1. Screening

1.1.1. Age

Screening 1. May I please ask your age?	**Value**
Number	1 000
Mean age	48
Standard deviation	12
Mode	57
Minimum	18
Median	48
Maximum	70



The majority of women who took part in the survey were over the age of 30 and half were 48 or older. A Shapiro-Wilk test rejects the hypothesis of a normal age distribution ($p<0.0001$) but the large cohort size ($n=1000$) nonetheless allows us to use the central limit theorum to calculate a 95 % confidence interval around the mean: [47.32; 48.83]. Note that this mean relates to the mean age of female stress incontinence between 18 and 70 years, and not the mean age of female stress incontinence as a whole, since stress incontinent women outside the 18-70 year age bracket were excluded from the survey.

1.1.2. Symptomatology

To be eligible for the survey, the women had to have stress incontinence (i.e., answer "yes" to the "**screening 4**" question). On the other hand, these women could also have or not have urge incontinence (i.e., answer "yes" to the "**screening 3**" question). This distinguishes between "pure" stress incontinence (SUI), for women who denied urge incontinence, and mixed incontinence (MUI) for those who reported both stress and urge incontinence:

Type of UI	Number of women	Percentage	$CI_{95\ \%}$
SUI	617	61.7 %	[0.586 ; 0.648]
MUI	383	38.3 %	[0.352 ; 0.414]
Total	1 000	100.0 %	

It can be seen that more than one woman in three also had urge incontinence in addition to stress incontinence.

The mean ages can be broken down as follows:

Type of UI	Mean age	Standard deviation - age	$CI_{95\ \%}$
SUI	47.10	11.39	[46.15 ; 48.06]
MUI	49.64	11.18	[48.43 ; 50.85]
Total	48.08	12.06	[47.32 ; 48.83]

A Student's t test rejects the hypothesis of equivalence of the mean age between women with SUI and those with MUI at 5 % significance (p=0.0012). Women who reported MUI were on average 2.5 years older ($CI_{95\%}$ = [1.00 ; 4.07] than those with SUI only. This is in agreement with the findings from previous epidemiological studies (see § 1.4.1).

1.2. Sociodemographic characteristics

1.2.1. Parity

Characteristic 1: children	Number of women	Percentage	$CI_{95\ \%}$
Yes	907	90.7 %	[0.887 ; 0.925]
No	93	9.3 %	[0.075 ; 0.113]
Total	1 000	100.0 %	

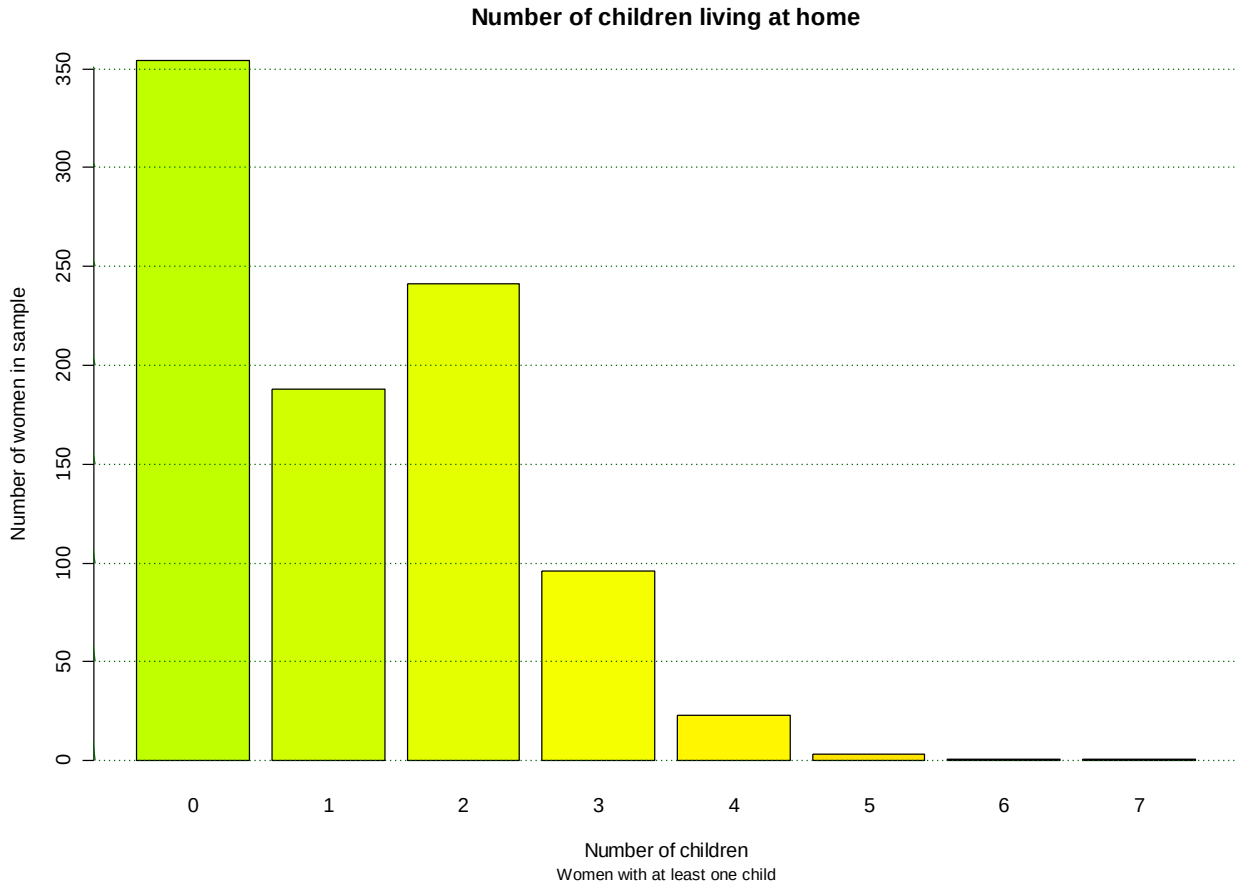
Comparison of women with MUI and those with SUI gives the following result:

Type of incontinence	Number with children	Percentage with children	$CI_{95\ \%}$
SUI (n = 617)	552	89.5 %	[0.867 ; 0.918]
MUI (n = 383)	355	92.7 %	[0.896 ; 0.951]
Total (n = 1000)	907	90.7 %	[0.887 ; 0.925]

Fewer women with SUI had children as compared to those with MUI. However, a Fisher exact test does not reject the hypothesis of independence between parity and type of incontinence at 5 % significance (p=0.0937).

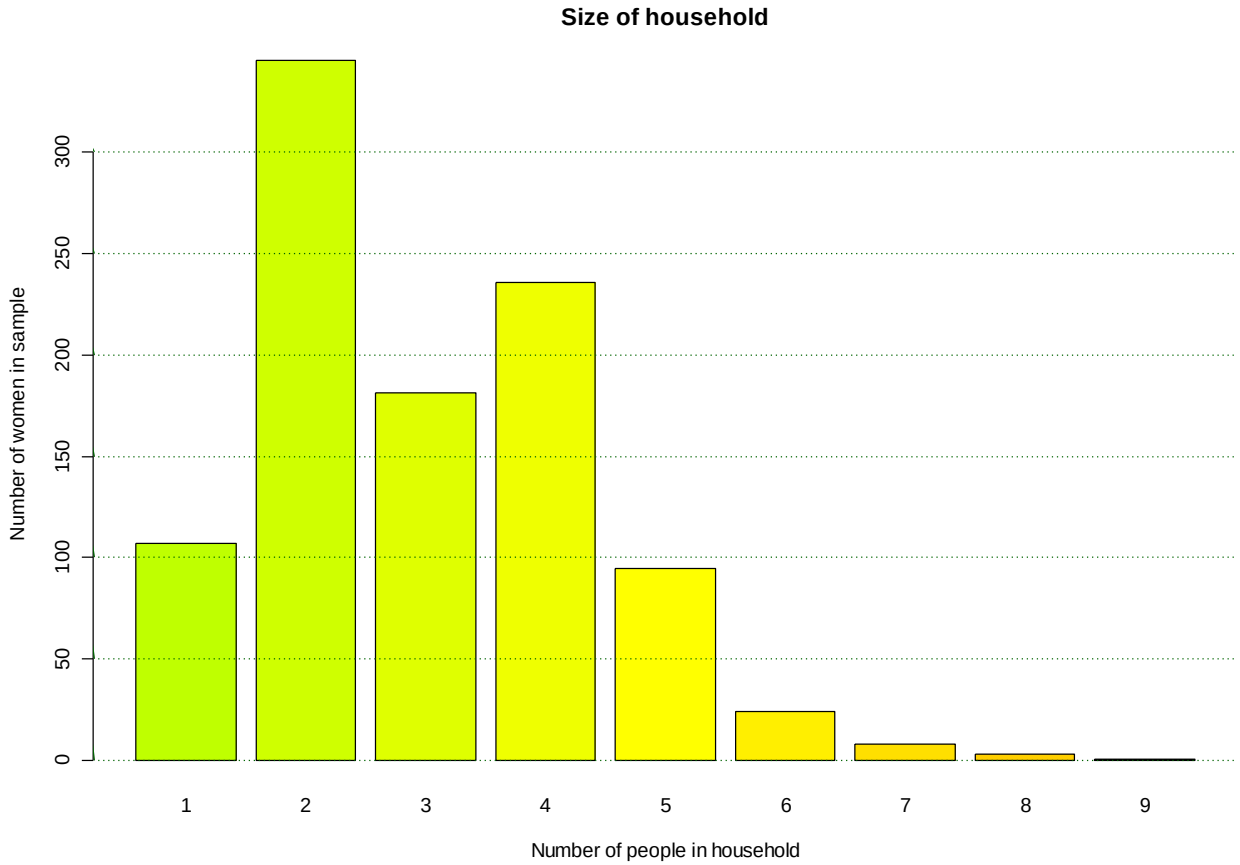
For the 907 women with children:

Children living at home	Number of women	Percentage	CI95 %
0	354	39.0 %	[0.358 ; 0.423]
1	188	20.7 %	[0.181 ; 0.235]
2	241	26.6 %	[0.237 ; 0.296]
3	96	10.6 %	[0.086 ; 0.128]
4	23	2.6 %	[0.016 ; 0.038]
5	3	0.3 %	[0.000 ; 0.010]
6	1	0.1 %	[0.000 ; 0.007]
7	1	0.1 %	[0.000 ; 0.007]
Total	907	100.0 %	



1.2.2. Characteristics of household

Size of household	Number of women	Percentage
1	107	10.7 %
2	345	34.5 %
3	181	18.1 %
4	236	23.6 %
5	95	9.5 %
6	24	2.4 %
7	8	0.8 %
8	3	0.3 %
9	1	0.1 %
Total	1 000	100.0 %



Two household sizes were predominant: a 2-person household (couple with children no longer living at home?) and a 4-person household (couple with children still living at home?).

Are you:	Head of household	Woman of the house	Other	Total
Married	2.3 %	66.5 %	0.1 %	***68.9 %***
Living together	1.7 %	8.5 %	0.1 %	***10.3 %***
Widowed	4.6 %	0.1 %		***4.7 %***
Divorced	7.5 %	0.3 %		***7.8 %***
Single	5.9 %	0.2 %	2.1 %	***8.2 %***
Refusal	0.1 %			***0.1 %***
Total	***22.1 %***	***75.6 %***	***2.3 %***	***100.0 %***

Two out of three women were married and described themselves as women of the house. The second most frequent category was divorced head of household (7.5 %).

1.2.3. Socio-cultural characteristics

Woman employed	Head of household	Other	Total
Yes	48.4 %	57.38 %	55.4 %
No: Unemployed	9.5 %	5.13 %	6.1 %
No: Retired	27.6 %	17.5 %	19.7 %
No: Disabled	5.4 %	1.2 %	2.1 %
No: Seeking first employment		0.1 %	0.1 %
No: Homemaker / No profession	8.1 %	17.5 %	15.4 %
No: Student	0.5 %	1.3 %	1.1 %
No: Other	0.5 %		0.1 %
Total	100.0 %	100.0 %	100.0 %

Women declaring themselves as heads of household were less likely than the others to be employed, and were more frequently retired.

Woman's occupation	Head of household	Other	Total
Farmer		1.7 %	1.3 %
Craftsperson/Shopkeeper/Company head	0.9 %	1.2 %	1.1 %
Senior executive	6.3 %	7.1 %	6.9 %
Middle manager	13.1 %	16.4 %	15.7 %
Clerk	28.5 %	29.4 %	29.2 %
Worker	9.5 %	6.8 %	7.3 %
Retired	27.6 %	17.5 %	19.7 %
Not working	14.5 %	20.0 %	18.8 %
Total	100.0 %	100.0 %	100.0 %

Woman's level of education	Head of household	Other	Total
< High school diploma	53.6 %	49.2 %	50.2 %
High school diploma	17.2 %	18.1 %	17.9 %
High school diploma + 2	7.2 %	12.8 %	11.6 %
High school diploma + 3/+4	9.1 %	10.4 %	10.1 %
High school diploma + 5	2.7 %	3.9 %	3.6 %
High school diploma + 8	3.6 %	0.9 %	1.5 %
No diploma	5.9 %	4.5 %	4.8 %
DK	0.5 %	0.3 %	0.3 %
Total	100.0 %	100.0 %	100.0 %

Household income	Percentage
< 1 000€	11.0 %
1000 – 1 524€	23.1 %
1 525 – 3 048€	38.2 %
3 049 – 4 573€	14.9 %
> 4 574€	4.5 %
DK	2.4 %
Refusal	5.9 %
Total	100.0 %

1.2.4. Place of residence

Place of residence	Percentage
Rural	29.0 %
Population less than 20,000	17.6 %
Population between 20,000 and 100,000	12.4 %
Population of 100,000 and over	28.7 %
Paris region	12.3 %
Total	100.0 %

Characteristic 13: Region of residence	Percentage
Ile de France	13.9 %
Western Paris outskirts	10.0 %
Eastern Paris outskirts	8.0 %
North	6.6 %
West	15.2 %
East	11.4 %
Southwest	10.3 %
Southeast	14.2 %
Mediterranean	10.4 %
Total	100.0 %

2. Severity and impact on quality of life

2.1. Duration of incontinence

Type of incontinence	No. with incontinence > 1 yr	Percentage	$CI_{95\ \%}$
SUI (n = 617)	393	63.7 %	[0.597 ; 0.675]
MUI (n = 383)	279	72.9 %	[0.680 ; 0.773]
Total (n = 1000)	672	67.2 %	[0.641 ; 0.702]

A duration of incontinence of more than 1 year was more frequently reported by women with MUI. A Chi² test rejects the hypothesis of independence between type of incontinence and answer to this question at 5 % significance (p=0.0094).

Among the 672 women with incontinence for more than 1 year:

Duration of incontinence (years)	Value
Number	643
Mean	7
Standard deviation	7
Mode	2
Minimum	1
Median	5
Maximum	65
Missing	29

Looking now at duration of stress incontinence of more than 1 year according to type of incontinence:

Type	Mean duration	Standard deviation - duration	$CI_{95\ \%}$
SUI (n = 375/393)	6.88	6.42	[6.22 ; 7.54]
MUI (n = 268/279)	7.48	7.64	[6.55 ; 8.40]
Total (n = 643/672)	7.13	6.95	[6.59 ; 7.67]

A Student's t test does not reject the hypothesis of equivalence of the means at 5 % significance (p=0.2968).
Therefore, women with mixed incontinence more frequently declared a duration of incontinence of more than one year than those with stress incontinence, but among all women with an incontinence duration of more than one year, the duration did not differ between the two types of incontinence.

2.2. Severity index[29]

Incontinence episode frequency	MUI	SUI	Total
Once a week or less	62.4 %	84.4 %	76.0 %
Two to three times a week	17.8 %	6.8 %	11.0 %
About once a day	6.0 %	4.5 %	5.1 %
Several times a day	10.2 %	2.6 %	5.5 %
All the time	3.1 %	0.8 %	1.7 %
DK	0.5 %	0.8 %	0.7 %
Total	100.0 %	100.0 %	100.0 %

Here again, a Chi² test rejects the hypothesis of independence between type of incontinence and answer to the question about incontinence episode frequency at 5 % significance ($p<0.0001$). Women with MUI more frequently reported leakage several times a day while those with SUI reported a frequency of once a week or less.

Amount of urine loss	MUI	SUI	Total
Small	82.3 %	91.3 %	87.8 %
Moderate	13.8 %	7.9 %	10.2 %
Large	3.9 %	0.8 %	2.0 %
Total	100.0 %	100.0 %	100.0 %

A Chi² test rejects the hypothesis of independence between type of incontinence and amount of urine loss per incontinence episode at 5 % significance ($p<0.0001$). The amount of urine loss was greater in women with MUI.

If level of severity is defined as follows:

<table>
<tr><td></td><td>Mild</td><td>Moderate</td><td>Severe</td></tr>
<tr><td>Once a week or less</td><td rowspan="2">Stage 1</td><td colspan="2" rowspan="2">Stage 2</td></tr>
<tr><td>Two to three times a week</td></tr>
<tr><td>About once a day</td><td rowspan="3">Stage 2</td><td colspan="2" rowspan="3">Stage 3</td></tr>
<tr><td>Several times a day</td></tr>
<tr><td>All the time</td></tr>
<tr><td>DK</td><td colspan="3">DK</td></tr>
</table>

then the women are distributed as follows:

Severity	MUI	SUI	Total
Stage 1	69.2 %	84.1 %	78.4 %
Stage 2	23.5 %	13.5 %	17.3 %
Stage 3	6.8 %	1.6 %	3.6 %
DK	0.5 %	0.8 %	0.7 %
Total	100.0 %	100.0 %	100.0 %

Due to the small number of "DK" answers, we tested the hypothesis of independence between severity and incontinence for women who did not answer DK for incontinence episode frequency. A Chi² test rejects this hypothesis at 5 % significance ($p<0.0001$). Severity stage is distributed differently between women with MUI and those with SUI.

2.3. Quality of life index[29]

	Work activities	Social/family life	Vacation and Leisure
Very bothered	9.6 %	10.8 %	12.0 %
Somewhat bothered	19.7 %	19.8 %	20.4 %
Not very bothered	25.6 %	28.7 %	21.7 %
Not at all bothered	43.5 %	40.4 %	40.7 %
Not concerned	1.6 %	0.0 %	4.3 %
DK	0.2 %	0.3 %	0.9 %
Total	100.0 %	100.0 %	100.0 %

Note that only the 554 women who were employed were asked the question about impact on work activities.

The level of impact was defined as follows:

- **Low** for answers "Not concerned", "not at all bothered" or "not very bothered" for all categories ("Social/family life" and "vacation and leisure" for those not working, all three categories for the others);
- **High** for answers "somewhat bothered" and "very bothered" for all activity categories;
- **DK** for "don't know" answer to one activity category;
- **Moderate** for all other cases.

The level of impact is therefore distributed as follows:

Level of impact	Not working	Employed	Total
Small	64.8 %	63.5 %	64.1 %
Moderate	9.4 %	16.8 %	13.5 %
Large	23.8 %	19.0 %	21.1 %
DK	2.0 %	0.7 %	1.3 %
Total	100.0 %	100.0 %	100.0 %

The distribution of level of impact is not independent of employment: a Chi² test rejects the hypothesis of independence at 5 % significance (p=0.0012).

Level of impact	MUI	SUI	Total
Small	49.6 %	73.1 %	64.1 %
Moderate	18.0 %	10.7 %	13.5 %
Large	31.1 %	14.9 %	21.1 %
DK	1.3 %	1.3 %	1.3 %
Total	100.0 %	100.0 %	100.0 %

A Chi² test rejects the hypothesis of independence between type of incontinence and impact on quality of life at 5 % significance (p<0.0001).

2.4. Continence pad use

Continence pad use	MUI (38.3%)	SUI (61.7%)	Total
Never	29.0 %	41.8 %	36.9 %
Occasionally	35.0 %	32.4 %	33.4 %
Every day	36.0 %	25.8 %	29.7 %
Total	100.0 %	100.0 %	100.0 %

A Chi² test rejects the hypothesis of independence between type of incontinence and continence pad use at 5 % significance ($p<0.001$).

Among the 631 women who used continence pads:

Frequency of change	MUI (43.1%)	SUI (56.9%)	Total
Once a day	57.4 %	71.0 %	65.1 %
Two to three times a day	31.6 %	21.5 %	25.8 %
More than three times a day	5.9 %	3.3 %	4.4 %
DK	1.8 %	1.7 %	1.7 %
NR	3.3 %	2.5 %	2.9 %
Total	100.0 %	100.0 %	100.0 %

Here again, a Chi² test rejects the hypothesis of independence between type of incontinence and continence pad change frequency at 5 % significance ($p=0.0101$).

For the 1,000 women who took the survey, the money spent on continence pads is distributed as follows:

Continence pad expenses	MUI (38.3%)	SUI (61.7%)	Total
None	29.0 %	41.8 %	39.9 %
Less than 5€	28.2 %	28.4 %	28.3 %
Between 5 and 10€	21.2 %	17.3 %	18.8 %
Between 10 and 15€	7.6 %	4.4 %	5.6 %
Between 15 and 20€	2.9 %	0.3 %	1.3 %
More than 20€	1.6 %	0.8 %	1.1 %
DK	9.7 %	7.0 %	8.0 %
Total	100.0 %	100.0 %	100.0 %

Since continence pad use was related to type of incontinence, the amount spent thereupon was also necessarily related, taking the population as a whole. Considering only those women who used continence pads, it is again seen that women with MUI spent more than the others ($p=0.0123$).

3. Disease context

3.1. Medical follow-up

Context 1. Are you currently or have you previously been under the care of a health professional for this problem?

Followed	MUI	SUI	Total	p-value
Currently followed	12.8 %	6.2 %	8.7 %	0.0005
Previously followed	28.5 %	20.3 %	23.4 %	0.0035
Preventively followed	3.7 %	5.2 %	4.6 %	0.2814
Never followed	56.7 %	69.4 %	64.5 %	$5.9.10^{-5}$

There is no significant difference between the proportion of women with MUI and those with SUI in terms of preventive follow-up. In contrast, the number of women who had never been followed was higher among SUI, and the number of those currently or previously followed was higher among those with MUI.

3.2. Previous treatment exposure

Of interest here is exposure to different treatments, without distinguishing between prior, present or preventive recommendations. Also, "DK" answers were treated as "No", since the important point is that the woman remembered the treatment.

Among the 1,000 women surveyed:

Treatment proposed	MUI	SUI	Total	p-value
Exercises	32.9 %	24.2 %	27.5 %	0.0028
Surgery	11.2 %	4.2 %	6.9 %	$3.2.10^{-5}$
Medication	9.9 %	3.4 %	5.9 %	$4.3.10^{-5}$

Women with MUI were more likely to have had the three treatments proposed to them. In particular, roughly one in three women with MUI had exercises proposed to them.

Treatment accepted	MUI	SUI	Total	p-value
Exercises	29.2 %	21.2 %	24.3 %	0.0050
Surgery	5.7 %	1.9 %	3.4 %	0.0019
Medication	7.8 %	2.9 %	4.8 %	0.0007

Women with MUI were more numerous to have accepted treatment for each of the treatments, which is not surprising considering that they were more numerous to have seen a health professional for the problem and more numerous to have had a treatment proposed to them.

Looking now at only those women who had a treatment proposed to them, the probability of accepting the proposed treatment is as follows:

Prob. of accepting	MUI	SUI	Total	p-value
Exercises	88.9 %	87.9 %	88.4 %	0.8520
Surgery	51.2 %	46.2 %	49.3 %	0.8049
Medication	79.0 %	85.7 %	81.4 %	0.7301

There is no significant difference between women with MUI and those with SUI with regard to the three probabilities of accepting the proposed treatment. Rough estimates are given below:

Prob. of accepting	Estimate	$CI_{95\%}$
Exercises	88.4 %	[0.839 ; 0.920]
Surgery	49.3 %	[0.370 ; 0.616]
Medication	81.4 %	[0.690 ; 0.904]

A look at the 95 % confidence intervals for the three proportions allows us to postulate that women to whom surgery was proposed were less likely to accept the proposal than those to whom exercises or medication was proposed.

3.3. Outcomes

Among women who accepted a treatment:

Context 3: your urine leakage:	Exercises	Medication	Surgery
Completely stopped	9.9 %	12.5 %	29.4 %
Was significantly reduced	46.1 %	39.6 %	32.4 %
Was somewhat reduced	23.1 %	27.1 %	8.8 %
Did not change	15.2 %	18.7 %	2.9 %
Got worse	0.8 %	0.0 %	0.0 %
Treatment accepted but not followed	4.5 %	2.1 %	26.5 %
DK	0.4 %	0.0 %	0.0 %
Total	100.0 %	100.0 %	100.0 %
Number in sample	243	48	34

It can be seen that a high proportion of women accepted the proposal for surgery but did not actually have it (either they changed their minds or the scheduled date had not yet come up), which masks the higher efficacy of this treatment relative to the others.

4. Willingness to be treated

4.1. Attitudes towards treatment

WBT 1: In the next six months, if your problem is not any better, would you consider treatment with?

WBT 1	Exercises	Surgery	Medication
Yes, definitely	21.0 %	4.6 %	12.5 %
Yes, probably	20.3 %	6.4 %	17.2 %
No, probably not	18.8 %	15.6 %	14.0 %
Not, definitely not	37.7 %	72.5 %	55.1 %
Already tried	1.4 %	0.1 %	0.8 %
DK	0.8 %	0.8 %	0.4 %
Total	100.0 %	100.0 %	100.0 %

Not surprisingly, more women would consider exercises than medication, and more women would consider medication than surgery.

If willingness is defined as a "yes" answer ("yes, definitely" or "yes, probably" to question WBT1), we can examine the factors underlying the women's interest in each proposal :

4.1.1. Variables

1. Age (quantitative)
2. Urge incontinence (qualitative, two classes – yes, no)
3. Duration of incontinence (quantitative)
4. Severity (qualitative, three classes – stage 1, stage 2, stage 3)
5. Impact (qualitative, three classes – low, moderate, high)
6. Continence pad expenses (qualitative, five classes – None, less than 5€, between 5 and 10€, more than 10€, DK)
7. Income (qualitative, 3 classes – Less than 10 kF, 10 to 20 kF, more than 20 kF)
8. Currently followed for this problem (qualitative, two classes – yes, no)
9. Previously followed for this problem (qualitative, two classes – yes, no)
10. Preventively followed in the past (qualitative, two classes – yes, no)
11. Never followed (qualitative, two classes – yes, no)
12. Children (qualitative, two classes – yes, no)
13. Employed (qualitative, two classes – yes, no)
14. Level of education (qualitative, five classes – below high school diploma, high school diploma, high school diploma + 2, high school diploma + 3 or high school diploma + 4, high school diploma + 5 and over)
15. Place of residence (qualitative, five classes – rural, population < 20,000, population of 20,000 to 100,000, population ≥ 100,000, Paris region)
16. Region (qualitative, nine classes – Ile de France, Western Paris outskirts, Eastern Paris outskirts, North, West, East, Southwest, Southeast, Mediterranean)
17. Exercises proposed (qualitative, two classes – yes, no)
18. Surgery proposed (qualitative, two classes – yes, no)
19. Medication proposed (qualitative, two classes – yes, no)
20. Interest in the other two treatments (each one: qualitative, two classes – yes, no)

4.1.2. Interest in exercises

A first data-mining step retains 8 variables: quality of life impact, duration of incontinence, age, urge incontinence, interest in medication, absence of follow-up, region of residence, employed or not working. The final model, built by logistic regression with a first species risk of 5 %, retains 5 variables:

Variable	**p-value (Wald Chi² test)**
Age	0.0176
Urge incontinence	0.0166
Duration of incontinence	0.0012
Impact	0.0001
Never followed	0.0405

The corresponding OR are as follows:

Variable	**Odds-Ratio**	**$CI_{95\ \%}$**
Age	0.987	[0.976 – 0.998]
Urge incontinence (Yes vs No)	1.412	[1.065 – 1.873]
Duration of incontinence	0.962	[0.940 – 0.985]
Impact (High vs Low)	1.968	[1.409 – 2.749]
Impact (Moderate vs Low)	1.416	[0.953 – 2.104]
Never followed (Yes vs No)	0.745	[0.561 – 0.987]

The probability of reporting an intention (definitely or probably) to be treated by exercises in the next six months is therefore 1.013 times lower for every extra year of age, adjusting for the other 4 variables.
It is 1.412 times higher in women with MUI. It is 1.040 times lower for every extra year of duration of stress incontinence. It is 1.968 times higher if the impact is high as compared to a low impact. Finally, it is 1.342 times lower if the woman was never followed for stress incontinence.

In conclusion, a woman interested in exercises may be described as follows:

- On the young side;
- Suffering from MUI;
- Short duration of incontinence;
- High impact on quality of life;
- Currently or previously followed for stress incontinence.

4.1.3. Interest in surgery

A first data mining step retains 7 variables: surgery proposed by a health professional, currently being followed, urge incontinence, level of education, place of residence, exercises proposed by a health professional, duration of incontinence.
A logistic regression model retains the following 5 variables:

Variable	p-value (Wald Chi² test)
Urge incontinence	0.0048
Currently followed	0.0035
Level of education	0.0197
Exercises proposed	0.0095
Surgery proposed	0.0100

The corresponding OR are as follows:

Variable	Odds-Ratio	CI95 %
Urge incontinence (Yes vs No)	1.838	[1.204 – 2.805]
Currently followed (Yes vs No)	2.385	[1.331 – 4.271]
Level of education (High sch. dipl. vs < High sch. dipl.)	0.657	[0.371 – 1.162]
Level of education (High sch. dipl. +2 vs < High sch. dipl.)	0.707	[0.365 – 1.367]
Level of education (High sch. dipl. +3/4 vs < High sch. dipl.)	0.180	[0.054 – 0.595]
Level of education (≥ high sch. dipl. +5 vs < high sch. dipl.)	0.281	[0.066 – 1.206]
Exercises proposed (Yes vs No)	1.866	[1.164 – 2.991]
Surgery proposed (Yes vs No)	2.280	[1.218 – 4.269]

Women with MUI were more likely to be interested in surgery than those with only SUI. Women currently being followed and to whom exercises and/or surgery were proposed were also more likely to be interested in surgery. Women with a high education level were less likely to be interested in surgery.

In conclusion, a woman interested in surgery may be described as follows:

- Being followed for her incontinence;
- To whom surgery was proposed;
- To whom exercises were proposed;
- Suffering from MUI;
- « Low » level of education.

4.1.4. Interest in a medication

A first data mining step identifies 7 variables related to interest in a medication: urge incontinence, duration of incontinence, severity of incontinence, household income, level of education, surgery proposed by a health professional, interest in exercises.
A logistic regression model retains 6 variables:

Variable	p-value (Wald Chi² test)
Urge incontinence	0.0182
Duration of incontinence	0.0472
Level of education	< 0.0001
Interested in exercises	0.0030
Surgery proposed	0.0056
Household income	0.0046

The corresponding OR are as follows:

Variable	Odds-Ratio	CI95 %
Urge incontinence (Yes vs No)	1.458	[1.066 – 1.994]
Duration of incontinence	0.975	[0.950 – 1.000]
Level of education (High sch. dipl. vs < High sch. dipl.)	0.665	[0.440 – 1.003]
Level of education (High sch. dipl. +2 vs < High sch. dipl.)	0.415	[0.242 – 0.713]
Level of education (High sch. dipl. +3/4 vs < High sch. dipl.)	0.279	[0.146 – 0.533]
Level of education (≥ high sch. dipl. +5 vs < high sch. dipl.)	0.070	[0.016 – 0.305]
Interested in exercises (Yes vs No)	1.597	[1.172 – 2.175]
Surgery proposed (yes vs No)	0.358	[0.173 – 0.740]
Income (10 to 20 kF vs <10 kF)	0.571	[0.406 – 0.802]
Income (>20 kF vs <10 kF)	0.837	[0.521 – 1.347]

A woman with MUI was more likely to be interested in a medication than one with SUI. The greater the duration of incontinence, the lesser the interest in a medication. The higher the level of education, the lesser the interest in a medication. A woman interested in exercises was more likely to be interested in a medication. A woman to whom surgery was proposed was less likely to be interested in a medication. Finally, a woman with a household income of more than 1,524 euros per month was less likely to be interested in a medication.

In conclusion, a woman interested in a medication may be described as follows:
- Interested in exercises;
- Suffering from MUI;
- Short duration of stress incontinence;
- « Low » level of education;
- Surgery not proposed by a health professional;
- Under the average income level.

4.1.5. Conclusion

The variables retained to predict interest in a given treatment are summarized below:

Variable	Exercises	Surgery	Medication
Age	-		
Urge incontinence	+	+	+
Duration of incontinence	-		-
Impact on quality of life	+		
Never followed	-		
Currently followed		+	
Level of education		-	-
Exercises proposed		+	
Surgery proposed		+	-
Interested in exercises			+
Income			-

Thus, the fact of suffering from MUI is correlated with an increased demand for treatment, whatever it may be: women with mixed incontinence were more likely than those with only SUI to be interested in exercises, surgery or medication.
According to the model, women interested in surgery would be those currently being followed for their problem by a health professional and to whom surgery and exercises have been proposed.
Women interested in exercises are younger, with a more recent onset of incontinence, who are currently or previously being followed by a health professional, and who are bothered by their condition.
Women interested in a medication are also interested in exercises, have a low education level, like those interested in surgery, but in contrast to the latter did not have surgery proposed to them, and have a low household income.

We know that 41.3 % of women are interested in exercises, 29.7 % in a medication and 11.0 % in surgery. At the level of question WBT 1, we can already eliminate 38.3 % of the women, who are not willing to be treated.

Women not refusing to be treated
Women with stress (or mixed) incontinence

4.2. Preferences

4.2.1. Preferred treatment

Among the 617 women who had the intention of trying at least one treatment or who did not give their opinion on at least one of them:

WBT 2: preferred treatment	MUI	SUI	Total
Exercises	54.5 %	62.8 %	59.0 %
Surgery	9.6 %	5.7 %	7.5 %
Medication	34.9 %	30.7 %	32.6 %
DK	0.7 %	0.0 %	0.3 %
None of the above	0.4 %	0.9 %	0.7 %
Total	100.0 %	100.0 %	100.0 %
Number in sample	281	336	617

Disregarding the last two response categories so as to only retain preferences regarding the three treatments, a Chi² test at 5 % significance does not reject the hypothesis of independence between type of incontinence and preferred treatment (p=0.0536). Thus, while women with SUI appear more inclined to prefer exercises, this difference is not significant.

4.2.2. Profile of women who prefer medication

The variables examined are those described in § 4.1.1, to which are added interest in each treatment based on the answer to question WBT1.

A first data mining step identifies 9 variables:

1. Type of incontinence;
2. Severity;
3. Preventively followed in the past;
4. Place of residence;
5. Exercises proposed by a health professional;
6. Medication proposed by a health professional;
7. Interest in surgery;
8. Interest in exercises;
9. Interest in medication.

A logistic regression model retains 6 variables:

Variable	p-value (Wald Chi² test)
Severity	0.0249
Place of residence	0.0364
Exercises proposed	< 0.0001
Medication proposed	0.0015
Interested in exercises	< 0.0001
Interested in medication	< 0.0001

The corresponding OR are as follows:

Variable	Odds-Ratio	$CI_{95\ \%}$
Severity (Stage 2 vs Stage 1)	1.391	[0.725 – 2.671]
Severity (Stage 3 vs Stage 1)	0.200	[0.054 – 0.740]
Place of residence. (< 20 M vs Rural)	0.784	[0.350 – 1.758]
Place of residence. (20 to 100 M vs Rural)	2.339	[0.953 – 5.744]
Place of residence. (> 100 M vs Rural)	0.574	[0.289 – 1.140]
Place of residence. (Paris region vs Rural)	1.306	[0.499 – 3.418]
Exercises proposed (Yes vs No)	0.249	[0.126 – 0.490]
Medication proposed (Yes vs No)	6.344	[2.025 – 19.870]
Interested in exercises (Yes vs No)	0.186	[0.108 – 0.322]
Interested medication (Yes vs No)	101.034	[40.423 – 252.531]

A woman who prefers medication is above all a woman claiming to be interested in a medication, not reporting an interest in exercises, to whom exercises were not proposed but to whom medication was proposed. This woman's incotinence is not very severe. The role of the place of residence is more ambiguous. It would appear that women residing in a city of 20,000 to 100,000 inhabitants would be more inclined to prefer a medication (p=0.0637 in the present model, p=0.0316 in a model where place of residence is recoded into three classes).

One might consider that the answers to WBT1 have too strong an influence on preference for a medication. If the same analysis is repeated after discarding these answers from the list of potential explanatory variables, a first data mining step identifies only 5 variables: severity, quality of life impact, household income, level of education, exercises proposed.
The resulting regression model retains all these variables:

Variable	p-value (Wald Chi^2 test)
Exercises proposed	< 0.0001
Household income	0.0004
Level of education	0.0006
Quality of life impact	0.0337
Severity	0.0347

The corresponding OR are as follows:

Variable	Odds-Ratio	$CI_{95\ \%}$
Exercises proposed (Yes vs No)	0.376	[0.234 – 0.605]
Level of education (high sch. dipl. vs < high school dipl.)	0.791	[0.476 – 1.315]
Level of education (high sch. dipl. +2 vs < high sch. dipl.)	0.387	[0.188 – 0.797]
Level of education (high sch. dipl. +3/4 vs < high sch. dipl.)	0.225	[0.088 – 0.574]
Level of education (≥ high sch. dipl. +5 vs < high sch. dipl.)	0.057	[0.007 – 0.451]
Income (10 to 20 kF vs <10 kF)	0.429	[0.278 – 0.660]
Income (>20 kF vs < 10 kF)	0.851	[0.471 – 1.535]
Impact (Moderate vs Low)	1.102	[0.628 – 1.934]
Impact (High vs Low)	0.561	[0.349 – 0.902]
Severity (Stage 2 vs Stage 1)	1.477	[0.904 – 2.415]
Severity (Stage 3 vs Stage 1)	0.281	[0.076 – 1.042]

According to this model, women who prefer medication did not have exercises proposed to them, do not have a high education level and do not experience a high impact on quality of life. The income variable should be interpreted with caution, since household income was not adjusted for household size. Women with household income between 1,524 and 3,048 euros would be less inclined to prefer medication. Finally, women with a more severe incontinence were also less inclined to prefer medication.

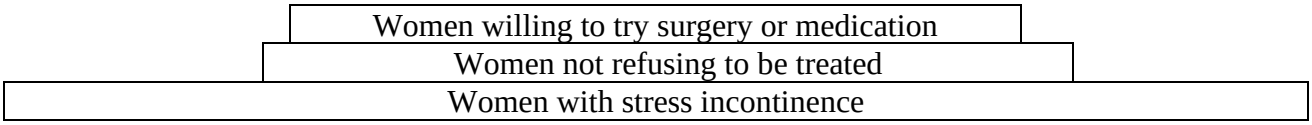
Among women with the intention to try at least one treatment or who did not give an opinion on at least one of them, and citing medication, surgery or exercises as preferred treatment:

4.2.3. Second choice treatment

We have seen that out of 1,000 women with stress urinary incontinence, question WBT reveals that only 617 were willing *a priori* to be treated. After question WBT2, where 4 women answered that they would not take any of the three treatments as first choice, there were 613 women remaining who could be asked about the treatment they would prefer if their preferred treatment was unsatisfactory. The answer to question WBT3 can only be interpreted in light of the answer to WBT2:

Preferences	**Proportion**
Exercises then Medication	29.5 %
Medication then Exercises	22.0 %
Exercises then Surgery	17.8 %
Exercises then neither of the other two	10.0 %
Medication then Surgery	5.9 %
Medication then neither of the other two	4.1 %
Surgery then Exercises	2.9 %
Surgery then Medication	2.9 %
Exercises then don't know	2.1 %
Surgery then neither of the other two	1.6 %
Medication then don't know	0.8 %
Don't know then Exercises	0.2 %
Don't know then don't know	0.2 %
Total	100.0 %
Number in sample	613

At the end of this question we can add to the list of women not interested in medication the 61 women who were willing to try only exercises. Thus, willingness to try surgery or medication concerns 552 women:



5. Willingness to try medication

5.1. Selection of population

To reach this level of analysis of willingness to try, the women had to fit the following profile:

- Answer “yes, definitely”, “yes, probably” or “don’t know” to willingness to try at least one of the three treatments;
- Not state that she preferred none of the three treatments in WBT2;
- Not give exercises as first choice and nothing as second choice.

The population analyzed therefore comprises 552 women.

5.2. Choice of currency

The women were given the choice for the four conjoint analysis questions to have prices quoted in euros or in both euros and francs. This choice was distributed as follows:

Price quoted in	Number	Proportion
Euros	195	35.3 %
Both	357	64.7 %
Total	552	100.0 %

5.3. Rating

5.3.1. Cohesion of answers

All the women rated the four treatments described in the willingness to try section, but the answers were evaluable only if:

- The rating given to the four treatments was not identical;
- Treatment No. 3 describes a medication with a lower chance of success and more expensive than that described in Treatment No. 4. The rating given to the first could therefore not be higher than that given to the second.

Evaluable population	Number	Proportion
Yes	507	91.8 %
No: 4 identical answers	17	3.1 %
No: Rating illogical	28	5.1 %
Total	552	100.0 %

Among 17 women who gave the same rating to the four treatments, 11 gave a rating of 1, 4 gave a rating of 9 and the other 2 gave a rating of 2 and 8, respectively.

The marginal utility estimates will therefore be calculated on 507 women.

5.3.2. Conjoint analysis

5.3.2.1. Theory

To better understand what is measured in conjoint analysis, one must turn to Lancaster's theories[24]. When the consumer decides which goods to consume, he seeks to maximize utility within the constraints of his budget. Lancaster postulates that the utility of a given good can be deduced from the characteristics that the good provides. Under the hypothesis of additivity and linearity, the total utility of a product is equal to the sum of the part-worths of its component characterisitcs. The part-worth of a characteristic is proportional to the quantity of that characteristic.

Conjoint analysis is statistically based on analysis of variance models: the individual gives a measure of his preference for a certain number of products, and conjoint analysis decomposes this preference according to the attributes of these products. For each level of each attribute, a part-worth is thus estimated: the higher the part-worth, the more the level is preferred. The most decisive attributes (characteristics) of the product are those with the highest range of part-worths of each level.

Metric conjoint analysis directly models measures of individuals' preferences.

Let y_{ijk} be the measure of preference given by a woman for a treatment of nature i, efficacy j, cost k. We have:

$$y_{ijk} = \beta_0 + \beta_{1i} + \beta_{2j} + \beta_{3k} + \varepsilon_{ijk}$$

The attributes (nature, efficacy, cost) of the treatment are explanatory variables, we seek to explain the measure of preference given by the individual. The part-worths are the β of the model, ε is the random error term. The total utility of treatment (i,j,k) is therefore y_{ijk}.

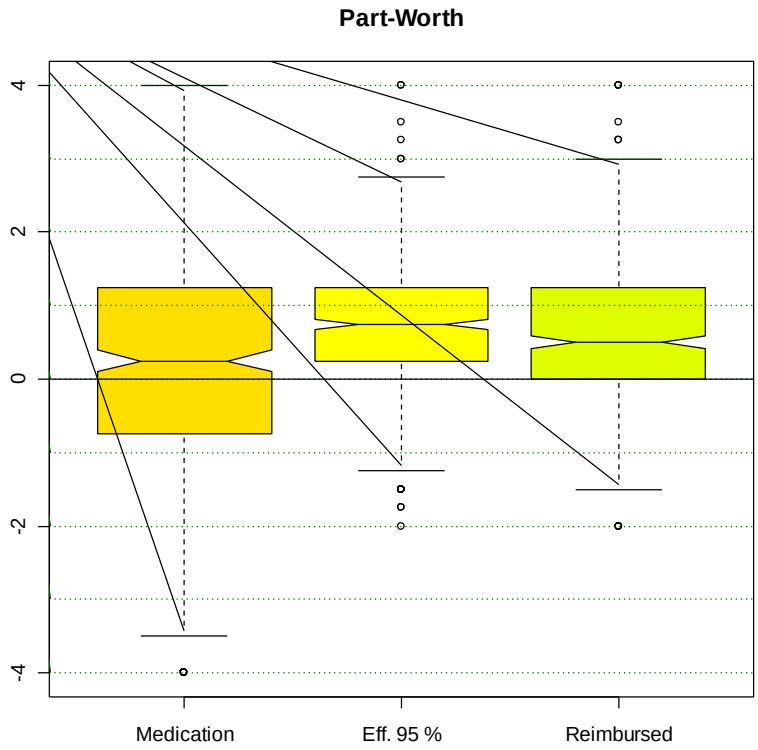
By convention $\Sigma(\beta_{1i}) = \Sigma(\beta_{2j}) = \Sigma(\beta_{3k}) = 0$: the sum of the part-worths for a given attribute is always 0.

5.3.2.2. Application

As the women had to evaluate only four different treatments, we will restrict ourselves to estimating the part-worth of each attribute.

- Part-worth

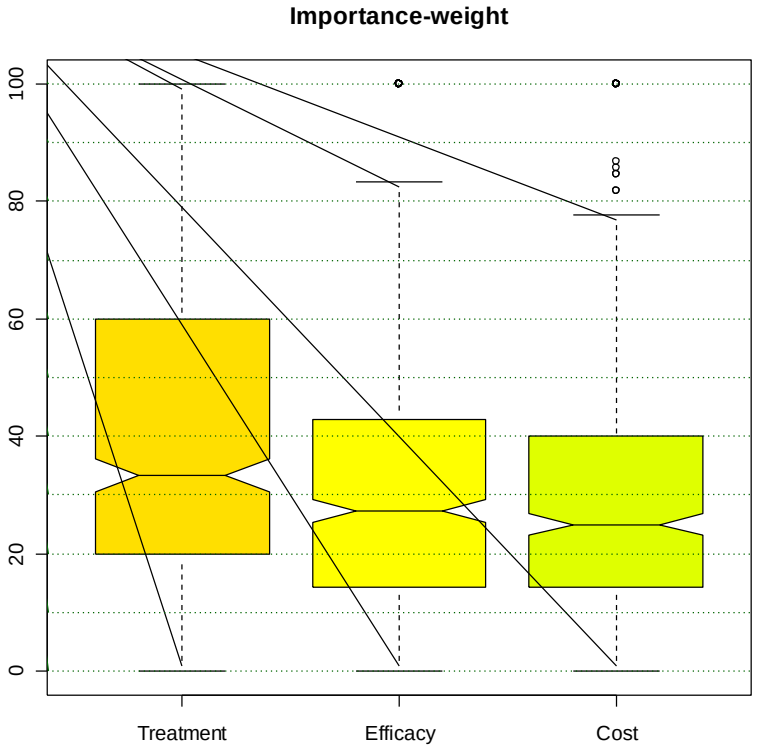
The sum of the part-worths for a given attribute is equal to 0. We will just show three, without loss of information:



We can see that, all other attributes being equal, more than half the women prefer medication over surgery. The part-worth of a 95 % probability of success of the surgery is the least dispersed of the three. Finally, note that 25 % of the respondents do not have a negative part-worth for a non-reimbursed treatment. Keep in mind that with an experimental design in which only four strategies are evaluated, the standard deviations of each estimator are fairly high. This phenomenon in itself could explain the negative part-worths of a non-reimbursed treatment or a less effective treatment.

- Importance-weight of the attributes

The women had to make their rating by taking into account three factors: nature of the treatment, its efficacy, and the fact of having or not having to pay 45€. The importance-weight of one factor compared to another may be calculated as follows:



The mean importance-weights are as follows:

Factor	Mean importance	$CI_{95\ \%}$
Nature of the treatment	40.3 %	[0.378 – 0.428]
Efficacy	30.5 %	[0.284 – 0.325]
Pay or not pay 45€	29.2 %	[0.272 – 0.312]

The nature of the treatment is therefore the factor with the most importance-weight: this attribute will determine 40 % of the total utility of the treatment.

➢ Utility of the treatment

From the part-worths estimated by the model one can calculate the global utility of the two treatments of interest:

- Surgery with a 95 % success rate and reimbursed;
- Medication with a 60 % success rate and costing 45€.

Since a rational consumer prefers the alternative which maximizes utility, one can deduce the treatment preferred by the women:

Preferred treatment	**Proportion**
Medication	24.7 %
Surgery	71.2 %
Indifferent	4.1 %
Total	100.0 %
Number in sample	507

Between a medication with 60 % efficacy which costs 45€ to try and surgery with 95 % efficacy and which is reimbursed, only 25 % of women willing to try medication or surgery (the latter representing 55 % of those with stress incontinence) prefer the medication. Note that this does not mean they intend to try it.

Repeating the analysis according to the preferences stated in WBT:

WBT preferences	**WTT preferences**			**Sample size**
	Surgery	**Medication**	**Indifferent**	
Exercises then Medication	63.5 %	29.9 %	6.6 %	167
Medication then Exercises	52.9 %	43.1 %	4.1 %	123
Exercises then Surgery	91.2 %	4.9 %	3.9 %	102
Medication then Surgery	78.8 %	21.2 %	0.0 %	33
Medication then neither of the other two	68.2 %	31.8 %	0.0 %	22
Surgery then Exercises	100.0 %	0.0 %	0.0 %	17
Surgery then Medication	100.0 %	0.0 %	0.0 %	18
Exercises then don't know	60.0 %	30.0 %	10.0 %	10
Surgery then neither of the other two	100.0 %	0.0 %	0.0 %	9
Medication then don't know	100.0 %	0.0 %	0.0 %	5
Don't know then don't know	100.0 %	0.0 %	0.0 %	1
Total	71.2 %	24.7 %	4.1 %	507

The overlap of the "willingness to be treated" and "willingness to try" answers is interesting. Looking only at the most largely represented response categories (estimates from the other response categories are less precise), it can be seen that:

- Women for whom the two preferred treatments in WBT were exercises and medication were more likely to prefer a non-reimbursed medication with 60 % efficacy in WTT;
- Women for whom surgery was the second choice treatment in WBT were more likely to prefer reimbursed surgery with a 95 % success rate in WTT.

Thus, 79 % of the women who preferred medication over surgery in WBT would be more inclined to choose surgery over medication once efficacy (in the form of a "success" rate) and price (payment of 45€) are taken into account.

5.4. Choice between medication, surgery or neither

The WTT analysis is a rating scale analysis and gives no information on the intention to consume. The WTT2 question levels this off:

WTT 2	Number in sample	Proportion
Medication	166	30.1 %
Surgery	226	40.9 %
Neither of the two	160	29.0 %
Total	552	100.0 %

A cross between the answers to this question and the modeled preferences leads to the following table:

Choice in WTT 2	Modeled WTT preferences			Number in sample
	Surgery	Medication	Indifferent	
Surgery	87.3 %	8.5 %	4.2 %	213
Medication	49.3 %	44.7 %	6.0 %	150
Neither of the two	70.1 %	27.8 %	2.0 %	144
Total	71.2 %	24.7 %	4.1 %	507

A Chi² test rejects the hypothesis of independence of these two variables at 5 % significance ($p<0.0001$). We can consider that the individual preferences revealed in the conjoint analysis model are therefore correlated with the choice of surgery, medication or neither of these treatments.

5.4.1. Profile of women who chose medication in WTT2

The analysis was performed on the 1,000 women, which amounts to considering that women not selected to enter the "willingness to try" phase would not have declared an intention to use a non-reimbursed medication in the next six months had they been asked question WTT2.

A first data mining step (excluding WBT1 answers) identifies 6 potential explanatory variables for choosing medication in WTT2:

- Type of incontinence;
- Continence pad expenses;
- Currently being followed;
- Being employed;
- Exercises proposed;
- Surgery proposed.

A logistic regression model retains 5 of these 6 variables.

Variable	p-value (Wald Chi² test)
Type of incontinence	0.0001
Currently being followed	0.0113
Exercises proposed	0.0123
Surgery proposed	0.0335
Continence pad expenses	0.0438

The corresponding OR are as follows:

Variable	Odds-Ratio	$CI_{95\ \%}$
Incontinence (MUI vs SUI)	1.962	[1.386 – 2.777]
Currently being followed (Yes vs No)	2.193	[1.195 – 4.025]
Exercises proposed (Yes vs No))	0.560	[0.356 – 0.882]
Surgery proposed (Yes vs No))	0.389	[0.163 – 0.929]
Continence pad expenses (DK vs 0)	1.103	[0.562 – 2.163]
Continence pad expenses (<5€ vs 0)	1.027	[0.660 – 3.418]
Continence pad expenses (5 to 10€ vs 0)	1.186	[0.726 – 1.936]
Continence pad expenses (>10€ vs 0)	2.451	[1.356 – 4.429]

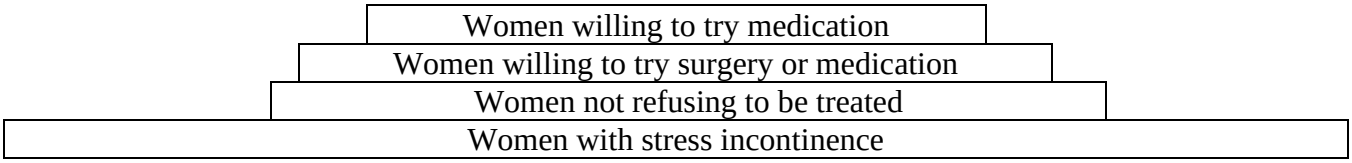
A woman with mixed incontinence, currently being followed but to whom neither exercises or surgery have been proposed, spending more than 10€ per month for continence pads, is the woman most likely to pass through the willingness to be treated filter and choose a medication with 60 % efficacy and costing 45€ in WTT 2.

5.5. Market share

Looking at the WTT2 answers, only 166 of the 1,000 women would be willing to try medication, which represents 16.6 % of women with stress urinary incontinence.
Among these 166 women:

- 98 of 201 women preferred medication in WBT2;
- 66 of 364 women preferred exercises in WBT2;
- 2 of 46 preferred surgery in WBT2.

Looking at WTT1 answers, 465 women gave a rating of 5 or better to the "ideal" medication (treatment No. 4); these are the women who will be selected for the willingness to pay analysis. Thus, 46.5 % of the women reached the "willingness to pay" phase. Among the 98 women preferring medication in WTT2 and WBT2, only 92 are in this situation.



6. Willingness to pay for a tried medication

6.1. Distribution of the women

Again, the women were given the choice to have prices quoted in euros only or in euros and francs. The choices are distributed as follows:

Price quoted in	Number of women	Proportion
Euros	193	41.5 %
Both	272	58.5 %
Total	465	100.0 %

While only 35.3 % of the willingness to try population were content to have prices quoted only in euros, this percentage increased to 41.5 % in the willingness to pay population, indicating either that a different population was selected with respect to this parameter, or that some women got tired of having to hear the prices quoted in both euros and francs.

The sub-questionnaires taken by the women can be broken down as follows:

Questionnaire	Number of women	Proportion
No.1	117	25.2 %
No. 2	116	25.0 %
No. 3	116	25.0 %
No. 4	116	25.0 %
Total	465	100.0 %

It is important to check whether women taking one sub-questionnaire were comparable to those taking another sub-questionnaire. Any dissimilarity would increase the risk of bias in the global discrete choice analysis.

Variable	p-value
Age	0.046*/0.081+
Type of incontinence	0.081
Duration of incontinence	0.346
Severity	0.762
Impact on quality of life	0.310
Continence pad expenses	0.670
Income	0.545
Currently followed	0.930
Previously followed	0.957
Preventively followed	0.100
Never followed	0.622
Children	0.825
Employed	0.307
Level of education (woman's)	0.383
Place of residence	0.038
Region	0.563
Exercises proposed	0.801
Medication proposed	0.186
Surgery proposed	0.416
Interested in exercises	0.946
Interested in surgery	0.812
Interested in medication	0.345

*: ANOVA ; +: Kruskall-Wallis test.

The problematic variables are therefore age and place of residence: women who took sub-questionnaire 4 were on average younger than the others and fewer of these women lived in the Paris region.

6.2. Interest in medication

Interest in medication may be measured by looking at the number of times each woman chose medication over the "neither of the two" option in the eight choice sets:

Number of choices	Sub-quest. 1	Sub-quest. 2	Sub-quest. 3	Sub-quest. 4	Total
0	9.4 %	22.4 %	22.4 %	13.8 %	17.0 %
1	25.6 %	12.9 %	10.3 %	9.5 %	14.6 %
2	15.4 %	9.5 %	17.2 %	14.7 %	14.2 %
3	19.7 %	14.7 %	12.1 %	21.6 %	17.0 %
4	14.5 %	21.6 %	16.4 %	19.0 %	17.9 %
5	3.4 %	8.6 %	8.6 %	6.9 %	6.9 %
6	5.1 %	3.5 %	2.6 %	5.2 %	4.1 %
7	2.6 %	3.5 %	4.3 %	4.3 %	3.7 %
8	4.3 %	3.5 %	6.0 %	5.2 %	4.7 %
Total	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

Depending on the sub-questionnaire, the differences in amplitude are considerable for women who never chose a treatment: only 9.4 % for women who took sub-questionnaire 1 versus 22.4 % for those who took sub-questionnaire 2 or 3. This may be due to the existence of more extreme choice alternatives in some of the sub-questionnaires.
On the other hand, women choosing a medication in the 8 choices sets were more similarly represented in the four sub-questionnaires, as if a core of women had been identified who were so willing to take medication that they would have been willing regardless of the drawbacks described in the different options.

A Chi² test on the number of times medication was chosen (five categories: 0, 1 to 2, 3 to 4, 5 to 6, 7 to 8) rejects the hypothesis of independence of this variable with the sub-questionnaire administered at 5 % significance (p=0.0368).

6.3. Concordance of choices

The distribution of women according to their choices may be examined as an indicator of the homogeneity or heterogeneity of their preferences:

	Sub-quest. 1		**Sub-quest. 2**		**Sub-quest. 3**		**Sub-quest. 4**	
	A	**B**	**A**	**B**	**A**	**B**	**A**	**B**
Choice 1	10.3 %	11.1 %	18.1 %	33.6 %	29.3 %	12.9 %	7.8 %	9.5 %
Choice 2	1.7 %	43.6 %	14.7 %	8.6 %	11.2 %	38.8 %	25.0 %	9.5 %
Choice 3	6.8 %	5.1 %	10.3 %	1.7 %	19.8 %	3.5 %	24.1 %	4.3 %
Choice 4	6.0 %	11.1 %	40.5 %	12.9 %	6.9 %	22.4 %	3.5 %	27.6 %
Choice 5	8.6 %	67.5 %	44.8 %	14.7 %	14.7 %	6.0 %	57.8 %	9.5 %
Choice 6	45.3 %	4.3 %	4.3 %	12.1 %	6.0 %	11.2 %	6.0 %	7.8 %
Choice 7	32.5 %	10.3 %	21.6 %	27.6 %	13.8 %	34.5 %	18.1 %	50.0 %
Choice 8	6.8 %	2.6 %	2.6 %	9.5 %	39.7 %	12.9 %	6.9 %	49.1 %

Keep in mind that the proposed choice sets differed in the four sub-questionnaires.

An examination of the answers to the 32 questions reveals that in most cases, one of the medications attracted at least twice as many women as the other medication. There is some degree of concordance in the women's evaluations of the proposed medications. However, this is a relative concordance in so far as the proportion of women interested in the less frequently chosen medication is rarely negligible relative to the more frequently chosen medication.

It should be noted that the sum of the proportions of women choosing medication A and those choosing medication B is less than 100 %; the difference corresponds to the proportion of those who would choose neither of the two.

6.4. Sub-questionnaire 1

We can attempt to identify women who are willing to sacrifice some of one attribute of the medication to get more of another. It is these women willing to make a trade-off which lend validity to conjoint analysis.
There are two difficulties in this approach:

- at any time the woman can decide not to use one of the two proposed medications, which means that identification of "traders" can only be made on the choices where a medication was selected;
- as far as side effects are concerned, it cannot be determined *a priori* which effect is perceived as less important than another. Only questions where one medication without side effects is compared with another with side effects allow identification of "traders". Since the identification is based on a smaller number of observations, the probability that a woman is considered a non-trader with respect to tolerability is therefore increased.

For the same reasons, the less often a woman chooses one of the two proposed medications, the higher the probability that she will be considered a "non-trader".

	Number of times the medication is chosen in sub-questionnaire No. 1									**Total**
Profile	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	
+++				4 %	6 %	25 %	50 %	33 %	40 %	9
++*P*				9 %	6 %					3
+*T*+		17 %	56 %	78 %	88 %	50 %	50 %	33 %	60 %	57
+*TP*		63 %	11 %	4 %						22
***E*++**			6 %	4 %		25 %		33 %		4
E*+*P		10 %	6 %							4
***ET*+**		10 %	22 %							7
ETP	100 %									11
Total	11	30	18	23	17	4	6	3	5	117

The choice profile is defined as follows:

- +++: the woman chose a medication less effective than the other proposed medication at least one time, she chose a medication with side effects over the other without side effects at least one time, she chose the more expensive medication over the other medication at least one time. This profile can legitimately be considered to be that of a woman willing to make trade-offs.
- ++P: the woman chose a medication less effective than the other proposed medication at least one time, she chose a medication with side effects over the other without side effects at least one time, but she never chose a medication more expensive than the other one. This type of woman can be considered to take a cost minimization strategy, independently of the other attributes of the medication.
- +T+: the woman chose a medication less effective than the other proposed medication at least one time, she chose a medication more expensive than the other one at least one time, but she never chose a medication with side effects over the other without side effects. This type of woman can be considered to take a strategy seeking maximum tolerability of the medication.
- E++: the woman chose a medication with side effects over the other without side effects at least one time, she chose a medication more expensive than the other one at least one time, but she never chose a medication less effective than the other proposed medication. This type of woman adopts an efficacy maximization strategy.

- +TP: the woman chose a medication less effective than the other proposed medication at least one time, but she never chose a medication with side effects over the other without side effects nor a medication more expensive than the other one. This configuration can only be observed among women who often chose to not take any of the three medications.
- E+P: the woman chose a medication with side effects over the other without side effects at least one time, but she never chose a medication less effective than the other, nor one more expensive than the other. This configuration can only be observed among women who often chose to not take any of the three medications.
- ET+: the woman chose the more expensive medication at least one time, but never chose the less effective medication nor the medication with side effects over the one without side effects. This configuration can only be observed among women who often chose to not take any of the three medications
- ETP: the woman never chose a medication less effective than the other, nor one with side effects over one without, nor one more expensive than the other. This configuration can only be observed among women who never chose to take one of the two medications proposed, and rarely among those who only chose it once (cf. sub-questionnaire 4), if in this case the chosen medication was chosen in a set where both proposed medications caused side effects, or if one of the other two attributes was the same for the two treatments.

Our observations are therefore in line with the prediction:

- that *trade-offs* are globally more frequently identified if the women often chose one of the two proposed medications;
- that the ability to make *trade-offs* on tolerability is less often identified than that of making trade-offs on price or efficacy.

Among 117 women who took willingness to pay sub-questionnaire 1, only 5 chose one of the two medications in the 8 choice sets proposed, but only 11 chose neither.

Distribution of women willing to make trade-offs on the different attributes:

Number of choice	Efficacy	Tolerability	Price
0	0.0 %	0.0 %	0.0 %
1	80.0 %	10.0 %	26.7 %
2	66.7 %	11.1 %	83.3 %
3	95.7 %	17.4 %	87.0 %
4	100.0 %	11.8 %	94.1 %
5	75.0 %	50.0 %	100.0 %
6	100.0 %	50.0 %	100.0 %
7	66.7 %	66.7 %	100.0 %
8	100.0 %	40.0 %	100.0 %
Total	77.8 %	17.1 %	65.8 %

Keeping in mind that the proportion of women willing to make trade-offs on tolerability is probably underestimated due to the smaller number of choice sets where such trade-offs are possible, we can nonetheless suggest that among women who took willingness to pay sub-questionnaire 1, the attribute of the medication for which the women are most willing to make a trade-off is efficacy, followed by price.

We can also look at the maximum acceptable price and the minimum acceptable efficacy revealed by the choices:

Maximum acceptable price	Number in sample	Cumulative percentage
100€	75	64.1 %
60€	3	66.7 %
40€	4	70.1 %
20€	24	90.6 %
None	11	100.0 %

Two of three women who took willingness to pay sub-questionnaire 1 were at least one time willing to pay at least 60€ per month for the medication.

Minimum acceptable efficacy	Number in sample	Cumulative percentage
25 %	43	36.8 %
50 %	13	47.9 %
75 %	40	82.1 %
100 %	10	90.6 %
None	11	100.0 %

Four of five women who took willingness to pay sub-questionnaire 1 were at least one time willing to take a medication with at least 75 % efficacy versus not quite one in two willing to take a medication with at least 50 % efficacy.

Tolerability cannot be examined in the same way in so far as it cannot be determined *a priori* which side effect is less negatively perceived than which other. We can nonetheless determine the number of times each side effect was selected:

Acceptable side effects	Number in sample	Proportion

No side effects	97	82.9 %
Nausea	27	23.8 %
Sleep disorders	23	19.7 %
Dizziness	22	18.8 %

Only about one out of five women chose at least one time a medication causing nausea, sleep disorders or dizziness.

6.5. Sub-questionnaire No. 2

	Number of times the medication is chosen in sub-questionnaire No. 2									Total
Profile	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	
+++			9 %	24 %	36 %	90 %	50 %	75 %	75 %	31
++*P*			9 %	6 %						2
+*T*+		33 %	36 %	71 %	52 %	10 %				35
+*TP*		47 %	18 %							9
***E*++**		7 %			8 %		50 %	25 %	25 %	7
E*+*P		13 %	27 %		4 %					6
***ET*+**										0
ETP	100 %									26
Total	26	15	11	17	25	10	4	4	4	116

Even though fewer women chose at least one medication in the eight proposed choice sets, more women in this sub-questionnaire were identified as willing to make a trade-off on the entire set of product attributes than in the first sub-questionnaire.

The distribution of women willing to make trade-offs on the different attributes is as follows:

Number of choice	Efficacy	Tolerability	Price
0	0.0 %	0.0 %	0.0 %
1	80.0 %	20.0 %	40.0 %
2	72.7 %	45.5 %	45.5 %
3	100.0 %	29.4 %	94.1 %
4	88.0 %	48.0 %	96.0 %
5	100.0 %	90.0 %	100.0 %
6	50.0 %	100.0 %	100.0 %
7	75.0 %	100.0 %	100.0 %
8	75.0 %	100.0 %	100.0 %
Total	66.4 %	39.7 %	62.9 %

As seen with sub-questionnaire 1, women who took sub-questionnaire 2 more often made trade-offs on efficacy than on price.

Maximum acceptable price	Number in sample	Cumulative percentage
100€	17	14.7 %
60€	36	45.7 %
40€	28	69.8 %
20€	9	77.6 %
None	26	100.0 %

More than two in three women who took willingness to pay sub-questionnaire 2 were at least one time willing to pay at least 40€ per month for the medication.

Minimum acceptable efficacy	Number in sample	Cumulative percentage
25 %	58	50,0 %
50 %	25	71,6 %
75 %	6	76,7 %
100 %	1	77,6 %
None	26	100.0 %

More than three in four women were willing to take a medication with at least 75 % efficacy and one in two were willing to take one with 25 % efficacy.

Acceptable side effects	Number in sample	Proportion
No side effects	77	66.4 %
Nausea	32	27.6 %
Sleep disorders	35	30.2 %
Dizziness	29	25.0 %

At least one in four women who took sub-questionnaire 2 claimed to be willing to take a medication that caused side effects.

6.6. Sub-questionnaire No. 3

	Number of times the medication is chosen in sub-questionnaire No. 3									Total
Profile	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	
+++					11 %	30 %		40 %	57 %	11
++P			5 %		16 %	10 %				5
+T+			35 %	21 %	42 %	40 %	100 %	40 %	29 %	29
+TP		17 %								2
E++			15 %	14 %	21 %	20 %		20 %	14 %	13
E+P				14 %						2
ET+		83 %	45 %	50 %	10.5 %					28
ETP	100 %									26
Total	26	12	20	14	19	10	3	5	7	116

The distribution of women willing to make trade-offs on the different attributes is as follows:

Number of choice	Efficacy	Tolerability	Price
0	0.0 %	0.0 %	0.0 %
1	16.7 %	0.0 %	83.3 %
2	40.0 %	20.0 %	95.0 %
3	21.4 %	28.6 %	85.7 %
4	68.4 %	47.4 %	84.2 %
5	80.0 %	60.0 %	90.0 %
6	100.0 %	0.0 %	100.0 %
7	80.0 %	60.0 %	100.0 %
8	85.7 %	71.4 %	100.0 %
Total	40.5 %	26.7 %	69.8 %

In sub-questionnaire 3, more women were willing to make trade-offs on price than on efficacy, perhaps due to the number of choice sets where the two alternatives had the same efficacy (3 out of 8, compared with 1 and 2 for sub-questionnaires 1 and 2, respectively).

Maximum acceptable price	Number in sample	Cumulative percentage
100€	56	48.2 %
60€	26	70.7 %
40€	7	76.7 %
20€	1	77.6 %
None	26	100.0 %

Roughly one in two women who took sub-questionnaire 3 was willing to pay 100€ per month for at least one of the proposed medications.

Minimum acceptable efficacy	Number in sample	Cumulative percentage
25 %	47	40.5 %
50 %	28	64.7 %
75 %	6	69.8 %
100 %	1	77.6 %
None	26	100.0 %

A little under two in three women who took sub-questionnaire 3 were willing to take at least one of the proposed medications with at least 50 % efficacy.

Acceptable side effects	Number in sample	Proportion
No side effects	74	63.8 %
Nausea	37	31.9 %
Sleep disorders	30	25.9 %
Dizziness	46	39.7 %

6.7. Sub-questionnaire No. 4

	Number of times the medication is chosen in sub-questionnaire No. 3									Total
Profile	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	
+++			12 %	24 %	18 %	75 %	33 %	80 %	67 %	28
++*P*			6 %	4 %				20 %	17 %	4
+*T*+			18 %	52 %	68 %	13 %	50 %		17 %	36
+*TP*		64 %	65 %	16 %	9 %	13 %				25
***E*++**				4 %	5 %		17 %			3
E*+*P										0
***ET*+**		27 %								3
ETP	100 %	9 %								17
Total	16	11	17	25	22	8	6	5	6	116

The distribution of women willing to make trade-offs on the different attributes is as follows:

Number of choice	Efficacy	Tolerability	Price
0	0.0 %	0.0 %	0.0 %
1	63.6 %	0.0 %	27.3 %
2	100.0 %	17.7 %	29.4 %
3	96.0 %	32.0 %	80.0 %
4	95.5 %	22.7 %	90.9 %
5	100.0 %	75.0 %	87.5 %
6	83.3 %	50.0 %	100.0 %
7	100.0 %	100.0 %	80.0 %
8	100.0 %	83.3 %	83.3 %
Total	80.2 %	30.2 %	60.3 %

Women who took willingness to pay sub-questionnaire 4 were on average more willing to make trade-offs on efficacy than on price.

Maximum acceptable price	Number in sample	Cumulative percentage
100€	66	56.9 %
60€	9	64.7 %
40€	6	69.8 %
20€	19	86.2 %
None	16	100.0 %

More than one in two women who took willingness to pay sub-questionnaire 4 declared at least one time to be willing to take one of the proposed medications at a cost of 100€ per month.

Minimum acceptable efficacy	Number in sample	Cumulative percentage
25 %	41	35.3 %
50 %	41	70.7 %
75 %	14	82.8 %
100 %	4	86.2 %
None	26	100.0 %

Seven in 10 women who took willingness to pay sub-questionnaire 4 chose at least one time one of the proposed medications with at least 50 % efficacy.

Acceptable side effects	Number in sample	Proportion
No side effects	96	82.8 %
Nausea	48	41.4 %
Sleep disorders	32	27.6 %
Dizziness	21	18.1 %

6.8. Pooled analysis of responses

6.8.1. Multinomial logit model

Discrete choice models are related to random utility theory. The consumer chooses a good if this good procures at least as much utility as competing goods. The utility associated with a good is presumed to depend on the attributes of the good, which can be grouped into a vector A (for attributes), the characteristics of the individual which can be grouped into a vector X, and an unobserved component ε, which is independently random and identically distributed. The utility of option i can be formulated as follows:
$U_i = V(A_i, X) + \varepsilon_i$
where V is an indirect utility function.

The probability of choosing option i among I options is given by:

$P(i \mid i, i \in I) = P[(V_i + \varepsilon_i) > (V_I + \varepsilon_I)]$

In the logit model proposed by McFadden[1], assuming that ε_i is Gumbel distributed (0,1), this probability is given as:

$$P_i = \frac{e^{\lambda V_i}}{\sum_{j=1}^{n} \lambda e^{V_j}}$$

where λ is a parameter of scale arbitrarily set at 1.

The multinomial logit model seeks to estimate the utility law parameters of a product from observations of choice of this product, by using the maximum likelihood method.

6.8.2. Global analysis

Part-worths are estimated by a multinomial logit model.

The resulting parameters are as follows:

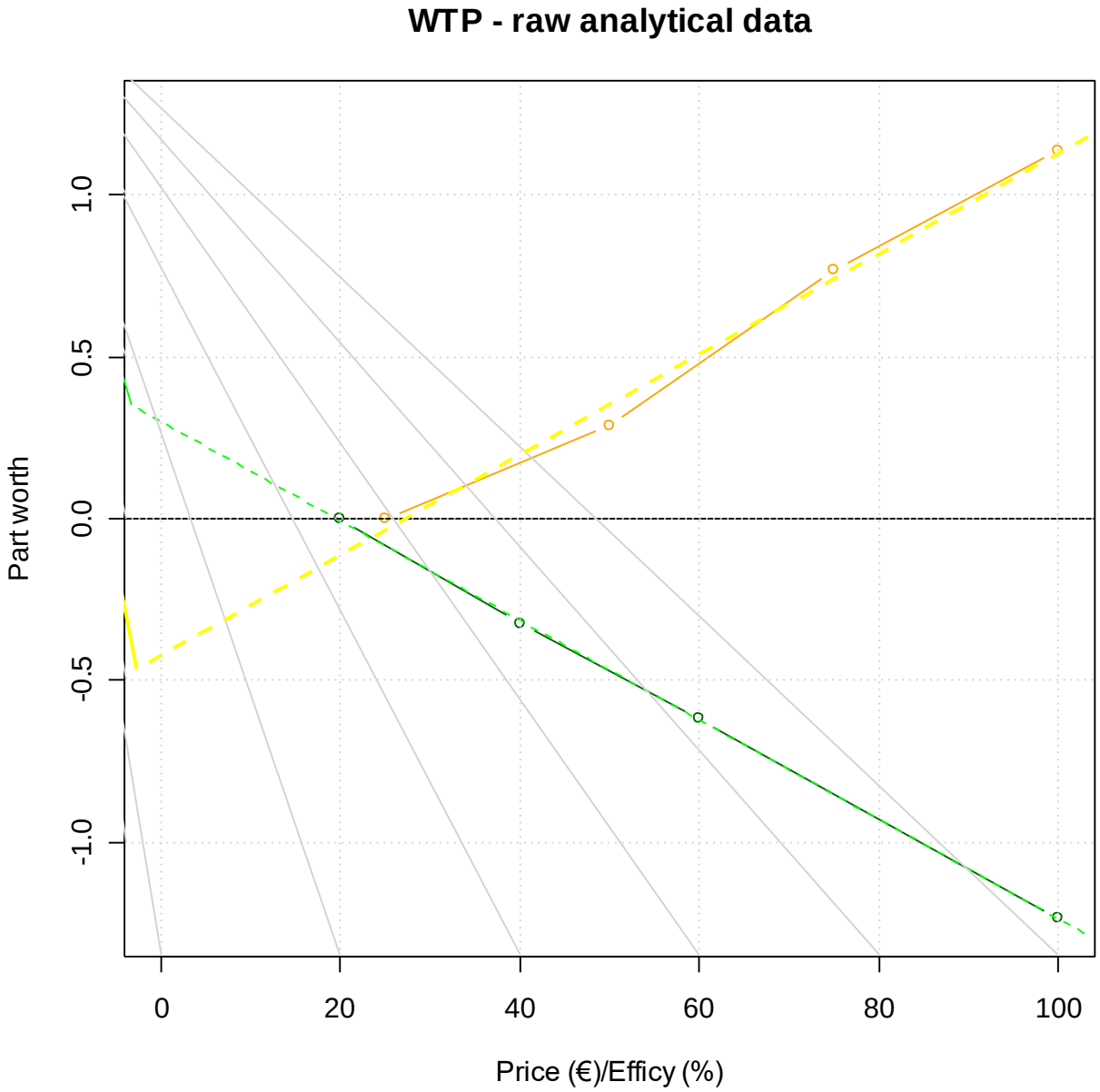
Variable	Part worth	Standard deviation	$CI_{95\ \%}$	p-value
Sleep disorders	-2.04263	0.09276	[-2.224 ; -1.868]	<0.0001
Nausea	-1.97059	0.09264	[-2.152 ; -1.790]	<0.0001
Dizziness	-2.13839	0.09350	[-2.321 ; -1.956]	<0.0001
50 % efficacy	0.28850	0.08451	[0.122 ; 0.455]	0.0006
75 % efficacy	0.76563	0.09077	[0.587 ; 0.944]	<0.0001
100 % efficacy	1.13439	0.09623	[0.945 ; 1.324]	<0.0001
Price 40€ / month	-0.32178	0.08473	[-0.487 ; -0.156]	0.0001
Price 60€ / month	-0.61781	0.07759	[-0.769 ; -0.466]	<0.0001
Price 100€ / month	-1.23377	0.09379	[-1.417 ; -1.050]	<0.0001

It can be seen that there is a disutility of side effects, while efficacy follows an increasing monotonoic utility function and price follows a decreasing monotonic utility function. All the attributes describing the medication are significant in the model.

Utilities are calculated with respect to a medication with no side effects (part worth of 0), 25 % efficacy (part worth of 0) and costing 20€ per month (part worth of 0). This reference medication by construction has a total utility of 0.

According to this model, a medication that causes sleep disorders, with 50 % efficacy and also costing 20€ per month would have a utility of -2.04263 + 0.29714 + 0 = -1.74549. It would be expected that this medication would not be preferred over one without side effects and with 25 % efficacy. Indeed, this is what was observed in sub-questionnaire 2: 47 of 116 women preferred the latter, 15 preferred the one with higher efficacy but also side effects, and the other 54 decided to not take any medication.

The linearity of the part worths of the model may be studied graphically as follows:



The part-worth of price and efficacy both appear linear.

The model can thus be reestimated by treating price and efficacy as quantitative variables:

Variable	Part worth	Standard deviation	$CI_{95\ \%}$	p-value
Sleep disorders	-2.05527	0.08986	[-2.231 ; -1.880]	<0.0001
Nausea	-1.99104	0.08926	[-2.165 ; -1.817]	<0.0001
Dizziness	-2.15337	0.09078	[-2.331 ; -1.976]	<0.0001
Efficacy	0.01451	0.00114	[0.0122 ; 0.168]	<0.0001
Price (€/month)	-0.01600	0.00108	[-0.018 ; -0.014]	<0.0001

In this model, not taking medication, if one considers that the woman will not use other treatment alternatives (surgery or exercises), is the same as hoping for zero efficacy, but at zero cost (disregarding continence pad expenses) and without side effects. This treatment has a utility of 0. The previous reference treatment (25 % efficacy/no side effects/20€) therefore has a utility of 25*0.01451-20*0.01600 = 0.04275 and the (50 % efficacy/sleep disorders/20€) treatment has a utility of 50*0.01451-2.05527-20*0.01600 = -1.64977 in this model.

Willingness to pay for a 1 % reduction in incontinence episode frequency may be calculated as follows:
$WTP = -(\beta_{Efficacy} / \beta_{Price})$

Thus, overall, women who took the willingness to pay questionnaire are willing to pay 0.9069€ for a 1 % reduction in incontinence episode frequency.
A confidence interval for this estimate, resulting from a quotient of two random variables, cannot be calculated in a straightforward manner but can be approximated by simulation:

$CI_{95\ \%}$[WTP(Efficacy)] ~ [0.73 ; 1.12].

Thus, willingness to pay for a 50 % reduction in incontinence episode frequency is 45.34€, if the medication does not have side effects.

The parameters of the model may thus be reestimated as WTP:

Variable	WTP (€/month)	Simulated $CI_{95\ \%}$
Sleep disorders	-128.45	[-151.29 ; -110.19]
Nausea	-124.44	[-146.83 ; -106.60]
Dizziness	-134.59	[-158.24 ; -115.65]
Efficacy	0.91	[0.73 ; 1.12]

For a woman to take a medication causing sleep disorders and having 50 % efficacy, she would have to be paid 128.45-45.34 = 83.11 € per month.
On the other hand, a woman would be willing to pay 22.67 € per month on average for a medication that reduces incontinence episode frequency by 25 % and has no side effects.

6.8.3. Stratified analysis

We have seen that the results of the global analysis are not particularly favorable to the medication: the estimated willingness to pay for a reduction in incontinence episode frequency is fairly low compared to the aversion to side effects. Introduction of interaction terms to the model allows an examination of statistically significant differences in the women's preferences.

6.8.3.1. Type of incontinence

Coefficients of interaction may be tested by likelihood ratios on interlinked models:

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Interaction with price	5730.578	6	0.69568
Interaction with efficacy	5730.389	6	0.55868
Interaction with side effects	5729.240	8	0.68435
Saturated	5725.659	10	0.40716

Type of incontinence is not significantly related to women's preference for medication.

6.8.3.2. Age

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5720.630	6	0.00148
Interaction with efficacy	5704.664	6	<.00001
Interaction with side effects	5690.380	8	<.00001
Base: model with side effects			
Interaction with side effects and efficacy	5688.550	9	0.17613
Interaction with side effects and price	5690.180	9	0.65472
Saturated	5687.371	10	0.22213

Age shows a significant interaction with preferences with respect to side effects:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-0.78327	0.29509	7.0455	0.0079
Sleep disorders	-1.08839	0.30344	12.8653	0.0003
Dizziness	-0.89967	0.32672	7.5828	0.0059
Efficacy	0.01453	0.00114	162.1669	<.0001
Cost/month	-0.01603	0.00109	218.0947	<.0001
Nausea*Age	-0.02625	0.00628	17.4862	<.0001
Sleep disorders*Age	-0.02090	0.00644	10.5266	0.0012
Dizziness*Age	-0.02724	0.00706	14.9065	0.0001

The older the woman, the greater her aversion to side effects.

6.8.3.3. Duration of incontinence

Model	-2 Log Likelihood	df	p-value
No interactions	5598.701	5	<0.0001
Interaction with price	5598.472	6	0.63227
Interaction with efficacy	5598.326	6	0.54029
Interaction with side effects	5595.354	8	0.34115
Saturated	5591.993	10	0.24328

No statistically significant relationship was found between duration of incontinence and preference for medication among women who took part in the WTP analysis.

6.8.3.4. Severity

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5714.585	7	0.0003
Interaction with efficacy	5709.345	7	<0.0001
Interaction with side effects	5681.355	11	<0.0001
Base: model with side effects			
Interaction with side effects and efficacy	5679.692	13	0.43540
Interaction with side effects and price	5677.842	13	0.17265
Saturated	5677.219	15	0.38791

Severity appears to influence women's preferences for medication:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.93851	0.09848	387.4412	<.0001
Sleep disorders	-1.95800	0.09810	398.3547	<.0001
Dizziness	-2.16136	0.10398	432.0978	<.0001
Efficacy	0.01457	0.00114	163.5090	<.0001
Cost/month	-0.01605	0.00108	219.2444	<.0001
Nausea, Stage 2	0.04833	0.17944	0.0726	0.7877
Nausea, Stage 3	-2.76546	1.01217	7.4649	0.0063
Sleep disorders, Stage 2	-0.17064	0.19297	0.7819	0.3766
Sleep disorders, Stage 3	-13.62348	251.09701	0.0029	0.9567
Dizziness, Stage 2	0.20513	0.19606	1.0947	0.2954
Dizziness, Stage 3	-1.15179	0.59768	3.7137	0.0540

Women with stage 3 severity have increased price and side effect disutility, which is in agreement with the previous analyses showing that women with stage 1 severity were three times more likely to prefer medication in WBT than those with stage 3 severity.

6.8.3.5. Impact on quality of life

Model	-2 Log Likelihood	df	p-value
No interactions	5690.146	5	<0.0001
Interaction with price	5684.917	7	0.07320
Interaction with efficacy	5685.118	7	0.08094
Interaction with side effects	5682.463	11	0.26226
Saturated	5672.149	15	0.05501

There is no significant interaction between impact on quality of life and preferences in the WTP analysis.

6.8.3.6. Continence pad expenses

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Interaction with price	5727.095	8	0.30355
Interaction with efficacy	5728.409	8	0.50832
Interaction with side effects	5725.513	14	0.81491
Saturated	5713.521	20	0.30647

There is no statistically significant interaction of this parameter with women's preferences, at a 5 % level of significance.

6.8.3.7. Income

Income adjusted for household size

Model	-2 Log Likelihood	df	p-value
No interactions	5348.615	5	<0.0001
Base: model with no interactions			
Interaction with price	5316.570	8	<.00001
Interaction with efficacy	5307.739	8	<.00001
Interaction with side effects	5309.306	14	0.00001
Base: model with efficacy			
Interaction with efficacy and price	5303.948	11	0.28493
Interaction with efficacy and side effects	5280.023	17	0.00106
Base: model with efficacy and side effects			
Saturated	5278.390	20	0.65193

Looking at income weighted for household size, only price preferences appear not to be significant:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.75894	0.28795	37.3132	<.0001
Sleep disorders	-1.87929	0.29267	41.2320	<.0001
Dizziness	-2.05423	0.30395	45.6764	<.0001
Efficacy	0.00961	0.00242	15.7749	<.0001
Cost/month	-0.01617	0.00112	206.6260	<.0001
Effic, 10 to 20 kF, > 1 person in household	0.00556	0.00250	4.9541	0.0260
Effic < 10 kF, > 1 person in household	0.00201	0.00254	0.6284	0.4279
Effic, > 20 kF, > 1 person in household	0.01174	0.00275	18.2253	<.0001
Nausea, > 1 pers., Inc. < 10 kF	0.03987	0.32580	0.0150	0.9026
Sleep disorders, > 1 pers., Inc. < 10 kF	0.11336	0.32749	0.1198	0.7292
Dizziness, > 1 pers., Inc. < 10 kF	0.25589	0.33998	0.5665	0.4517
Nausea, > 1 pers., Inc. 10 to 20 kF	-0.56133	0.32847	2.9204	0.0875
Sleep disorders, > 1 pers., Inc. 10 kF to 20 kF	-0.42488	0.33045	1.6533	0.1985
Dizziness, > 1 pers., Inc. 10 kF to 20 kF	-0.75698	0.35931	4.4385	0.0351
Nausea, > 1 pers., Inc. > 20 kF	-0.28889	0.34986	0.6818	0.4090
Sleep disorders, > 1 pers., Inc. > 20 kF	-0.29863	0.35273	0.7168	0.3972
Dizziness, > 1 pers., Inc. > 20 kF	0.14124	0.35623	0.1572	0.6917

Women who were not alone in their household and with income greater than 20 kF placed more value on efficacy, while those who were not alone in their household and with income between 10 and 20 kF had a greater aversion to side effects.

Income not-adjusted for household size

Model	-2 Log Likelihood	df	p-value
No interactions	5317.350	5	<0.0001
Base: model with no interactions			
Interaction with price	5290.921	7	<0.0001
Interaction with efficacy	5281.854	7	<0.0001
Interaction with side effects	5277.872	11	<0.0001
Base: model with efficacy			
Interaction with efficacy and price	5279.946	9	0.38520
Interaction with efficacy and side effects	5251.535	13	0.00003
Base: model with efficacy and side effects			
Saturated	5251.271	15	0.87634

Here again, only the interaction between household income and price is not significant.

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.70643	0.13834	152.1425	<.0001
Sleep disorders	-1.78355	0.13737	168.5777	<.0001
Dizziness	-1.79083	0.13690	171.1175	<.0001
Efficacy	0.01124	0.00143	61.8270	<.0001
Cost/month	-0.01619	0.00113	206.3864	<.0001
Effic, 10 to 20 kF	0.00384	0.00156	6.0410	0.0140
Effic, > 20 kF	0.00984	0.00194	25.6294	<.0001
Dizziness, Inc. 10 to 20 kF	-1.05469	0.23527	20.0968	<.0001
Dizziness, Inc. > 20 kF	-0.12745	0.23080	0.3049	0.5808
Sleep disorders, Inc. 10 to 20 kF	-0.49885	0.20369	5.9981	0.0143
Sleep disorders, Inc. > 20 kF	-0.39700	0.24026	2.7303	0.0985
Nausea, Inc. 10 to 20 kF	-0.60880	0.20788	8.5769	0.0034
Nausea, Inc. > 20 kF	-0.34206	0.24149	2.0063	0.1566

The importance-weight of efficacy increases with household income. Women with the median income had a strong aversion to side effects.

How should income be defined?

The AIC for the first model is 5314.023 and for the second, 5277.535. The model that minimizes AIC was therefore chosen, i.e. that with income not adjusted for size of household.

6.8.3.8. Currently followed for the problem

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Interaction with price	5730.443	6	0.59151
Interaction with efficacy	5730.131	6	0.43858
Interaction with side effects	5728.730	8	0.57220
Saturated	5727.422	10	0.65246

The fact of currently being followed or not being followed did not change women's preferences for the medication.

6.8.3.9. Never followed for the problem

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Interaction with price	5729.073	6	0.19787
Interaction with efficacy	5730.731	6	1.00000
Interaction with side effects	5729.641	8	0.77949
Saturated	5720.756	10	0.07595

The presence or absence of previous follow-up for incontinence did not significantly modify women's preferences for the medication.

6.8.3.10. Employment

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Interaction with price	5730.707	6	0.87688
Interaction with efficacy	5728.147	6	0.10795
Interaction with side effects	5730.362	8	0.94657
Saturated	5721.329	10	0.09406

The fact of being or not being employed had no significant effect on preferences in WTP.

6.8.3.11. Level of education

Model	-2 Log Likelihood	df	p-value
No interactions	5707.102	5	<0.0001
Base: model with no interactions			
Interaction with price	5656.010	7	<0.0001
Interaction with efficacy	5627.436	7	<0.0001
Interaction with side effects	5660.889	11	<0.0001
Base: model with efficacy			
Interaction with efficacy and price	5626.837	9	0.74119
Interaction with efficacy and side effects	5624.025	13	0.75577
Saturated	5623.125	15	0.82803

The women's level of education interacts with their efficacy preferences.

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-2.02958	0.09076	500.102	<.0001
Sleep disorders	-2.07928	0.09079	524.5361	<.0001
Dizziness	-2.16379	0.09128	561.9023	<.0001
Efficacy	0.01106	0.00122	82.5785	<.0001
Cost/month	-0.01601	0.00109	215.9804	<.0001
Effic, HS diploma to HS diploma+2	0.00785	0.00115	46.6138	<.0001
Effic, > HS diploma+2	0.01225	0.00172	50.5406	<.0001

The higher the woman's level of education, the greater the willingness to pay for efficacy.

6.8.3.12. Exercises proposed

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Interaction with price	5730.191	6	0.46243
Interaction with efficacy	5730.688	6	0.83573
Interaction with side effects	5728.996	8	0.62918
Saturated	5721.685	10	0.10724

Having exercises proposed does not significantly affect women's preferences.

6.8.3.13. Surgery proposed

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5726.785	6	0.04698
Interaction with efficacy	5728.071	6	0.10290
Interaction with side effects	5727.998	8	0.43465
Base: model with price			
Interaction with price and efficacy	5726.783	7	0.96433
Interaction with price and side effects	5724.903	9	0.59726
Saturated	5724.766	10	0.73226

Having surgery proposed interacts with the cost-associated utility at 5 % significance in a likelihood ratio test.

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.99206	0.08928	497.8947	<.0001
Sleep disorders	-2.05631	0.08988	523.3882	<.0001
Dizziness	-2.15429	0.09081	562.8387	<.0001
Efficacy	0.01453	0.00114	163.2469	<.0001
Cost/month	-0.01569	0.00109	206.7737	<.0001
Cost, Surgery proposed	-0.00444	0.00228	3.7748	0.052

Women to whom surgery was proposed have a stronger aversion to paying for the medication. A Wald test rejects the hypothesis of independence between these two variables, in contrast to the likelihood ratio test.

6.8.3.14. Medication proposed

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5727.515	6	0.07292
Interaction with efficacy	5725.782	6	0.02611
Interaction with side effects	5722.952	8	0.05081
Base: model with efficacy			
Interaction with efficacy and side effects	5721.565	9	0.23897
Interaction with efficacy and price	5725.774	7	0.92873
Saturated	5721.543	10	0.37463

Only the interaction coefficient between efficacy and having a medication proposed is significant (of 465 women in WTP phase, only 31 had a medication proposed to them).

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.99074	0.08929	497.0924	<.0001
Sleep disorders	-2.05732	0.08991	523.5691	<.0001
Dizziness	-2.15433	0.09083	562.6087	<.0001
Efficacy	0.01484	0.00115	167.3199	<.0001
Cost/month	-0.01604	0.00108	219.5817	<.0001
Efficacy, medication proposed	-0.00466	0.00213	4.7727	0.0289

Women to whom medication was proposed were less willing to pay for a unit of efficacy.

6.8.3.15. Interest in medication in WBT1

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5727.448	6	0.07000
Interaction with efficacy	5721.986	6	0.00310
Interaction with side effects	5693.889	8	<.00001
Base: model with side effects			
Interaction with side effects and efficacy	5693.548	9	0.55925
Interaction with side effects and price	5693.798	9	0.76291
Saturated	5693.457	10	0.80574

Interest in medication (defined by the answer in WBT1) shows a significant interaction with side effect preferences:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-2.20643	0.13430	269.9143	<.0001
Sleep disorders	-2.68286	0.16165	275.4604	<.0001
Dizziness	-2.31474	0.14279	262.7906	<.0001
Efficacy	0.01453	0.00114	162.8439	<.0001
Cost/month	-0.01602	0.00108	218.7654	<.0001
Nausea, Interest in Medication	0.35313	0.15616	5.1135	0.0237
Sleep disorders, Interest in Medication	0.93571	0.17881	27.3848	<.0001
Dizziness, Interest in Medication	0.26541	0.17417	2.3220	0.1276

Women interested in medication are less averse to side effects.

6.8.3.16. Interest in exercises in WBT1

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5729.877	6	0.35542
Interaction with efficacy	5730.729	6	0.96433
Interaction with side effects	5721.080	8	0.02178
Base: model with side effects			
Interaction with side effects and price	5715.300	9	0.01621
Interaction with side effects and efficacy	5714.717	9	0.01165
Base: model with side effects and efficacy			
Saturated	5714.306	10	0.52146

Interest in exercises shows a significant interaction with side effects and efficacy preferences:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.67560	0.13968	143.9022	<.0001
Sleep disorders	-1.68702	0.13611	153.6196	<.0001
Dizziness	-1.94524	0.14598	177.5568	<.0001
Efficacy	0.01233	0.00143	74.1846	<.0001
Cost/month	-0.01607	0.00108	219.9600	<.0001
Efficacy, Interest in Exercises	0.00353	0.00140	6.3322	0.0119
Nausea, Interest in Exercises	-0.50814	0.17907	8.0519	0.0045
Sleep disorders, Interest in Exercises	-0.60300	0.17648	11.6749	0.0006
Dizziness, Interest in Exercises	-0.33134	0.18620	3.1665	0.0752

Women interested in exercises in WBT1 are more willing to pay for efficacy but more averse to side effects.

6.8.3.17. Interest in surgery in WBT1

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5726.016	6	0.02990
Interaction with efficacy	5722.491	6	0.00410
Interaction with side effects	5720.964	8	0.02065
Base: model with efficacy			
Interaction with efficacy and side effects	5718.500	9	0.26244
Interaction with efficacy and price	5722.321	7	0.68011
Saturated	5718.500	10	0.40723

Interest in surgery interacts significantly with efficacy preferences:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.99221	0.08935	497.1009	<.0001
Sleep disorders	-2.05566	0.08990	522.8282	<.0001
Dizziness	-2.15302	0.09081	562.0962	<.0001
Efficacy	0.01523	0.00116	170.8149	<.0001
Cost/month	-0.01600	0.00108	218.7011	<.0001
Efficacy, Interest in Surgery	-0.00375	0.00132	8.0882	0.0045

Women interested in surgery in WBT1 are less willing to pay for efficacy.

6.8.3.18. Preference for medication in WBT2

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5730.575	6	0.69287
Interaction with efficacy	5728.074	6	0.10310
Interaction with side effects	5709.767	8	0.00011
Base: model with side effects			
Interaction with side effects and efficacy	5708.241	9	0.21671
Interaction with side effects and price	5708.151	9	0.20365
Saturated	5708.020	10	0.41749

Preference for medication in WBT2 shows a significant interaction with perception of side effects:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-2.15933	0.11331	363.1670	<.0001
Sleep disorders	-2.32957	0.12004	376.5902	<.0001
Dizziness	-2.15377	0.11326	361.6329	<.0001
Efficacy	0.01453	0.00114	163.0593	<.0001
Cost/month	-0.01602	0.00108	218.7942	<.0001
Nausea, Prefers Medication (WBT2)	0.38963	0.15053	6.7000	0.0096
Sleep disorders, Prefers Medication (WBT2)	0.60209	0.15453	15.1812	<.0001
Dizziness, Prefers Medication (WBT2)	0.0006211	0.17172	0.0000	0.9971

Women who preferred medication in WBT2 were less averse to side effects.

6.8.3.19. Choice of medication in WTT2

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Base: model with no interactions			
Interaction with price	5689.944	6	<.00001
Interaction with efficacy	5690.925	6	<.00001
Interaction with side effects	5699.875	8	<.00001
Base: model with price			
Interaction with price and efficacy	5686.655	7	0.06975
Interaction with price and side effects	5679.285	9	0.01372
Base: model with price and side effects			
Saturated	5679.284	10	0.97477

The choice of medication in WTT2 interacts significantly with price and side effect preferences:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-2.12904	0.11207	360.9316	<.0001
Sleep disorders	-2.24536	0.11455	384.2033	<.0001
Dizziness	-2.18969	0.11383	370.0512	<.0001
Efficacy	0.01481	0.00114	167.9479	<.0001
Cost/month	-0.01840	0.00121	229.923	<.0001
Price, WTT2 = Medication	0.00605	0.00133	20.6645	<.0001
Nausea, WTT2 = Medication	0.33195	0.16192	4.2029	0.0404
Sleep disorders, WTT2 = Medication	0.45028	0.16051	7.8701	0.0050
Dizziness, WTT2 = Medication	0.08637	0.18003	0.2302	0.6314

Women who preferred medication in WTT2 were less averse to paying and less averse to side effects.

6.8.3.20. Summary

Variables with a significant interaction are shown below:

Variable	Efficacy	Price	Side effects
Type of incontinence			
Age			X
Duration of incontinence			
Severity			X
Impact on quality of life			
Continence pad expenses			
Income	X		X
Currently followed			
Never followed			
Employed			
Level of education	X		
Exercises proposed			
Surgery proposed		X	
Medication proposed	X		
Interested in medication			X
Interested in exercises	X		X
Interested in surgery	X		
Prefers medication (WBT 2)			X
Choice of medication (WTT 2)		X	X

6.8.3.21. Development of a synthetic model

As the model is intended principally to predict market share, the basic model will be that including the WTT2 answer:

Model	-2 Log Likelihood	df	p-value
Choice Med. PT	5679.285	9	<0.0001
Prefers medication T	5668.128	12	0.01
Interaction with efficacy	5730.688	6	0.83573
Interaction with side effects	5728.996	8	0.62918
Saturated	5721.685	10	0.10724

We begin with model M1 which includes all effects:

Model	-2 Log Likelihood	df	p-value
M1	5019.939	41	<0.0001
M2 = M1 – interest in surgery	5019.985	40	0.83018
M3 = M2 – surgery proposed	5020.349	39	0.54629
M4 = M3 – medication proposed	5020.827	38	0.48933
M5 = M4 – choice medication*side effects	5023.005	35	0.53629
M6 = M5 – prefers medication*side effects	5026.156	32	0.36892
M7 = M6 – interest in exercises*side effects	5030.364	29	0.23986
M8 = M7 – interest in exercises*efficacy	5031.269	28	0.34144

The selected model therefore conserves the following interactions:

1) Level of education*Efficacy ($p = 1.3.10^{-10}$);
2) Medication chosen in WTT2*Price ($p = 5.9.10^{-9}$);
3) Interest in medication in WBT1*Side effects ($p = 8.5.10^{-9}$);
4) Age*Side effects ($p = 4.7.10^{-8}$);
5) Severity*Side effects ($p = 3.8.10^{-7}$);
6) Income*Side effects ($p = 9.10^{-5}$);
7) Income*Efficacy ($p = 8.37.10^{-3}$).

Since age taken as a quantitative variable makes it more difficult to model market share, it was replaced by a qualitative variable. The final model is therefore as follows:

Multinomial Logit Parameter Estimates				
	β	σ	χ^2	p-value
Nausea	-1.82265	0.20166	81.6892	<.0001
Sleep disorders	-2.29836	0.21817	110.9853	<.0001
Dizziness	-1.87102	0.21084	78.7492	<.0001
Efficacy	0.00942	0.00149	40.0157	<.0001
Cost/month	-0.01914	0.00127	227.5302	<.0001
Price, WTT2 = Medication	0.00723	0.00128	32.1019	<.0001
Nausea, Interest in Medication	0.55325	0.17382	10.1312	0.0015
Sleep disorders, Interest in Medication	1.00835	0.18993	28.1848	<.0001
Dizziness, Interest in Medication	0.35493	0.19011	3.4856	0.0619
Effic, HS diploma to HS diploma+2	0.00723	0.00128	31.9954	<.0001
Effic, > HS diploma+2	0.01200	0.00194	38.1963	<.0001
Effic, 10 to 20 kF	0.00314	0.00160	3.8337	0.0502
Effic, > 20 kF	0.00579	0.00206	7.8580	0.0051
Dizziness, Inc. 10 to 20 kF	-1.01465	0.23882	18.0507	<.0001
Dizziness, Inc. > 20 kF	-0.03239	0.23847	0.0184	0.8920
Sleep disorders, Inc. 10 to 20 kF	-0.41230	0.20859	3.9070	0.0481
Sleep disorders, Inc. > 20 kF	-0.27714	0.24798	1.2489	0.2638
Nausea, Inc. 10 to 20 kF	-0.59319	0.21414	7.6735	0.0056
Nausea, Inc. > 20 kF	-0.23734	0.25001	0.9012	0.3425
Nausea, Stage 2	0.04028	0.19299	0.0436	0.8347
Nausea, Stage 3	-2.57975	1.01545	6.4541	0.0111
Sleep disorders, Stage 2	-0.13035	0.19994	0.4250	0.5144
Sleep disorders, Stage 3	-13.56840	251.18238	0.0029	0.9569
Dizziness, Stage 2	0.19745	0.21041	0.8806	0.3480
Dizziness, Stage 3	-0.99211	0.60253	2.7112	0.0996
Nausea, Over 48 yrs old	-0.60394	0.17009	12.6083	0.0004
Sleep disorders, Over 48 yrs old	-0.34511	0.16780	4.2300	0.0397
Dizziness, over 48 yrs old	-0.49138	0.18652	6.9402	0.0084

6.8.4. Estimation of number of women willing to make a first purchase

6.8.4.1. Based on initial model

We consider that the medication will be purchased by women who preferred it to other strategies, that is to say:

- Declaring it as their preferred treatment in WBT2;
- Willing to try it in WTT2;
- Giving a rating > 5 to the reimbursed medication described in WTT1D

There were 92 such women, or 9.2 % of the incontinent population.

Among these 92 women, the following variables are predictors of willingness to pay:

Interested in medication in WBT1	Number in sample	Proportion
Yes	92	100.0 %
No	0	0.0 %
Total	92	100.0 %

Level of education	Number in sample	Proportion
< HS diploma	59	64.8 %
HS diploma to HS diploma + 2	28	30.8 %
> HS diploma + 2	4	4.4 %
Total	91	100.0 %
Missing	1	1.1 %

Income	Number in sample	Proportion
< 10 kF	44	50.6 %
10 to 20 kF	23	26.4 %
> 20 kF	20	23.0 %
Total	87	100.0 %
Missing	5	5.4 %

Severity	Number in sample	Proportion
Stage 1	68	73.9 %
Stage 2	23	25.0 %
Stage 3	1	1.1 %
Total	92	100.0 %

Over 48 yrs old	Number in sample	Proportion
Yes	46	50.0 %
No	46	50.0 %
Total	92	100.0 %

It can be seen that women presumed to use duloxetine as first choice treatment are rarely found among those with stage 3 severity. We will therefore disregard this category.

The most highly represented classes are then:

1) Women over 48 yrs, Stage 1 severity, < HS diploma, Income < 10 kF: n = 12 (13 %);
2) Women under 48 yrs, Stage 2 severity, < HS diploma, Income < 10 kF: n = 9 (10 %);
3) Women under 48 yrs, Stage 1 severity, < HS diploma, Income 10-20 kF: n = 8 (9 %);
4) Women over 48 yrs, Stage 1 severity, HS diploma to HS diploma + 2, Income > 20 kF: n = 8 (9 %);
5) Women under 48 yrs, Stage 1 severity, < HS diploma, Income < 10 kF: n = 7 (8 % ;
6) Women under 48 yrs, Stage 1 severity, HS diploma to HS diploma + 2, Income < 10 kF: n = 7 (8 %);
7) Women over 48 yrs, Stage 1 severity, < HS diploma, Income 1 -20 kF: n = 4 (4 %);
8) Women over 48 yrs, Stage 2 severity, < HS diploma, Income < 10 kF: n = 4 (4 %);

9) Women under 48 yrs, Stage 1 severity, HS diploma to HS diploma + 2, Income > 20 kF: n = 4 (13 %).

These nine groups represent 63 women out of 87 for whom the data was not missing, or 72 % of women willing to purchase the medication.

6.8.4.2. Simplified model

A market share estimate would be difficult under these conditions. Instead, we will isolate women corresponding to the target population from the model:

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-2.14025	0.10472	417.6906	<.0001
Sleep disorders	-2.21574	0.10638	433.8646	<.0001
Dizziness	-2.17563	0.10268	448.9616	<.0001
Efficacy	0.01508	0.00132	130.7406	<.0001
Cost/month	-0.01732	0.00126	188.5689	<.0001
Efficacy, Target population	-0.00152	0.00264	0.3320	0.5645
Price, Target population	0.00534	0.00247	4.6812	0.0305
Nausea, Target population	0.58620	0.20381	8.2726	0.0040
Sleep disorders, Target population	0.62690	0.20112	9.7162	0.0018
Dizziness, Target population	0.08555	0.22088	0.1500	0.6985

Women in the target population are less averse to paying, give slightly less importance-weight to efficacy (Wald Chi² not significant for this interaction term, but we will retain a saturated model because it is globally significant and is closer to what would be observed if only women willing to use the medication as first choice had been questioned). These women are also less averse to tolerability problems.

Taking the following parameters into consideration:

23.2 % of patients have nausea ;

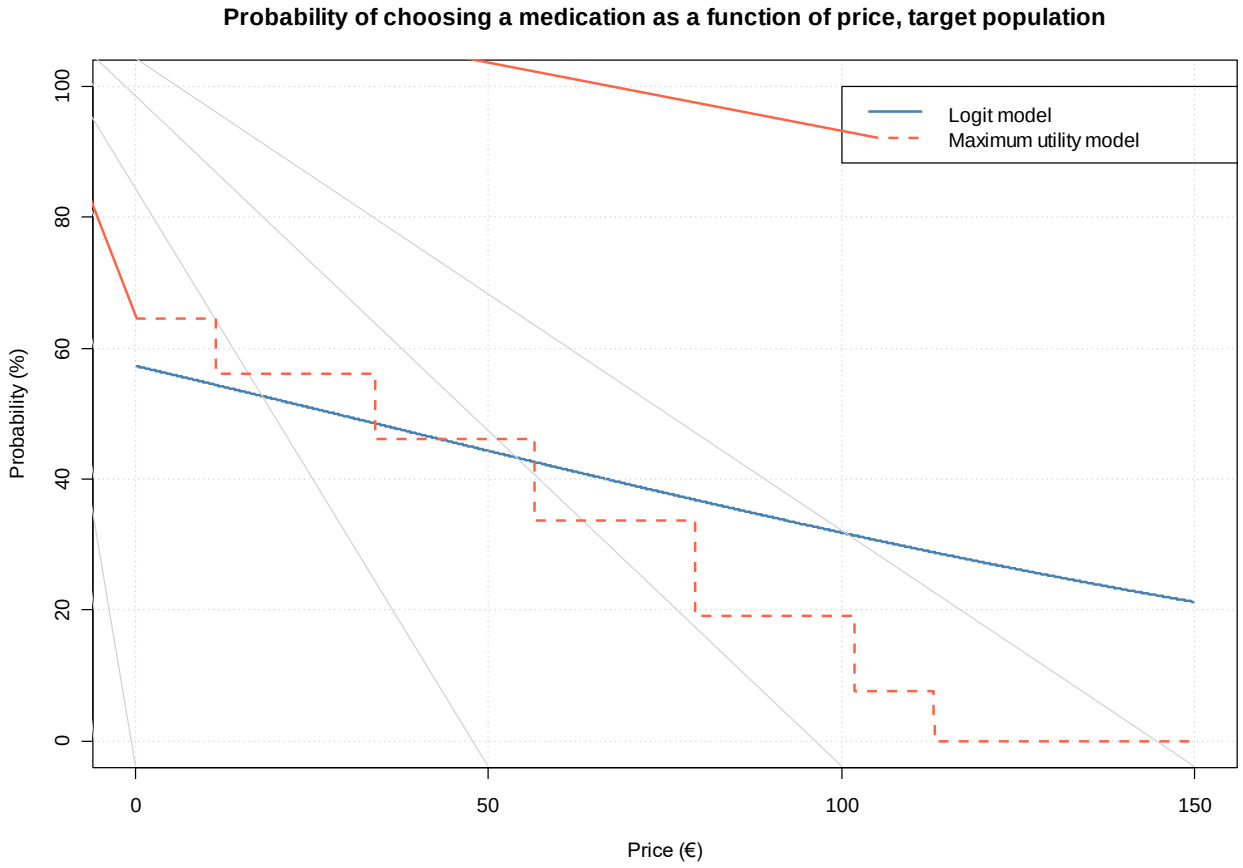
10 % of the women have no leakage;
15 % of the women have an average 90 % efficacy (between 80 and 100 %);
19 % of the women have an average 70 % efficacy (between 60 and 80 %);
16 % of the women have an average 50 % efficacy (between 40 and 60 %);
13 % of the women have an average 30 % efficacy (between 20 and 40 %);
11 % of the women have an average 10 % efficacy (between 0 and 20 %);
16 % of the women have no reduction in leakage.

The following parameters will be needed for the model:

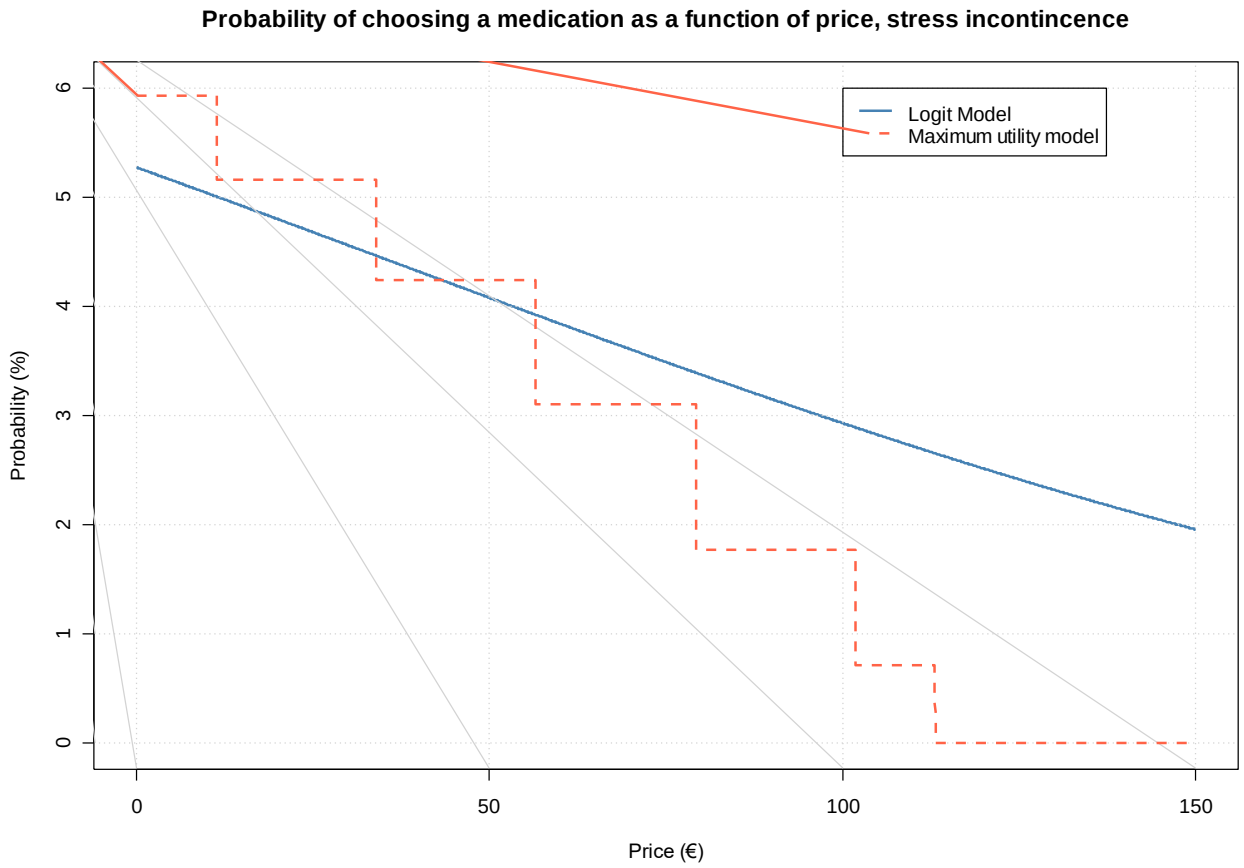
Multinomial Logit Parameter Estimates	
	β
Efficacy, Target population	0.01356
Price, Target population	-0.01198
Nausea, Target population	-1.55405

We worked on the assumption that efficacy and tolerability are independent, the probability of willingness to try the medication as first choice is 9.2 %.
We worked on the assumption that there are 20,221,651 women in France (female population in 20 to 74 yr age group in 2001).

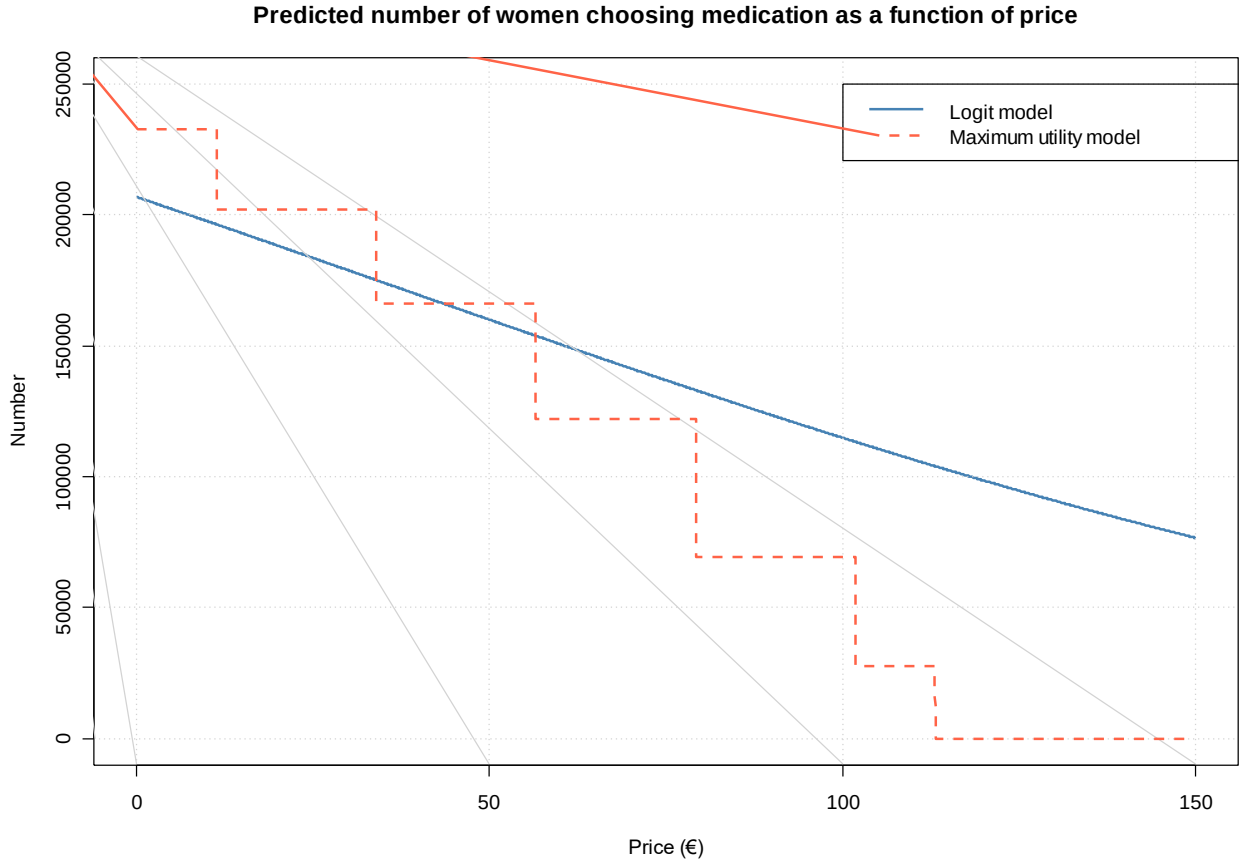
Among women in the target population, the probability of taking a medication as a function of its monthly cost can be estimated by a logit model (probability of choice continuous utility function) and by a maximum utility model (only the product maximizing utility is chosen, with a probability of 1).



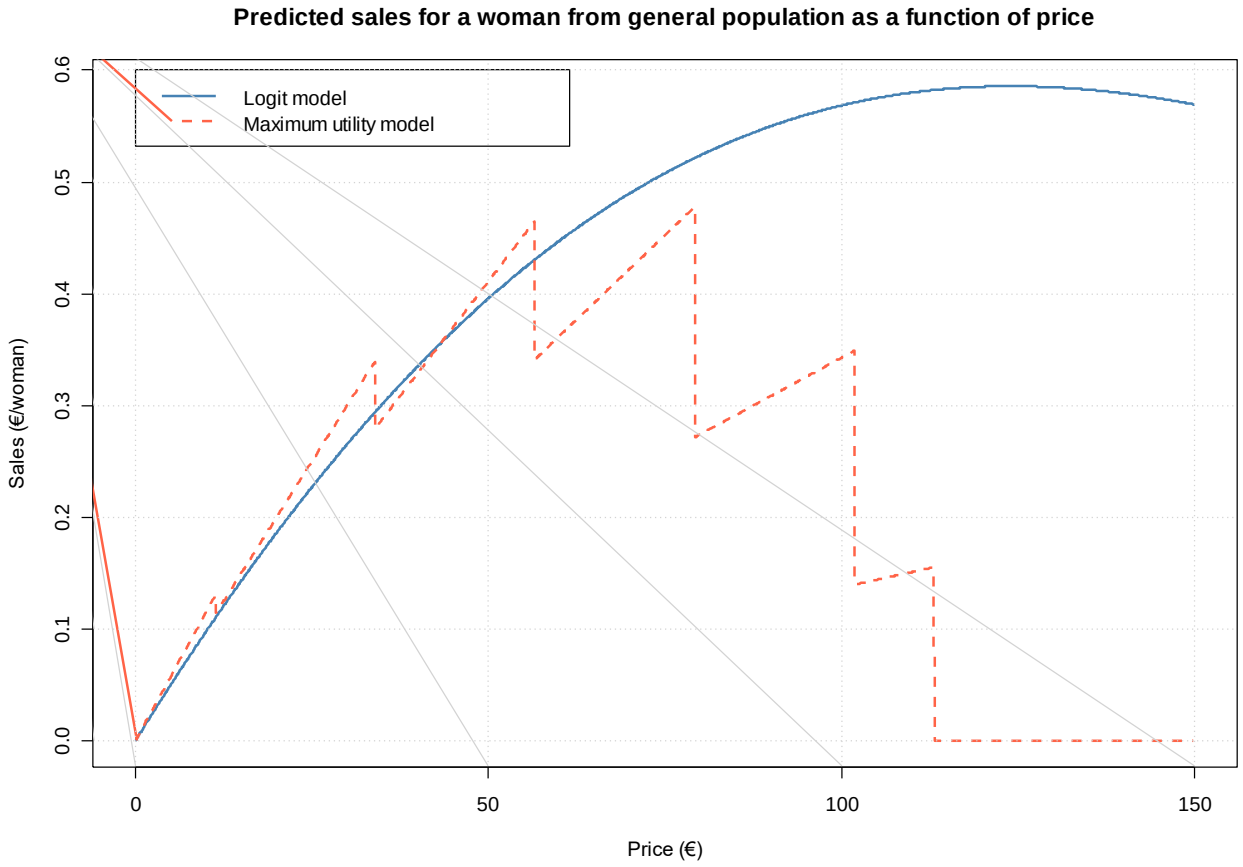
We now make the estimate for all stress (or mixed) incontinent women:



Reasoning in terms of numbers:



Reasoning in terms of sales:



6.9. Feed-back on choices

WTP 2	Yes	No	DK	Total
Choices easy to understand	379	85	1	465
Too much information	231	232	2	465
Realistic situations	358	93	14	465

81.5 % of the women found the choice sets easy to understand, 49.9 % did not feel there was too much information, 77.7 % felt the proposed situations were realistic. These variables can be tested to see whether they influence the WTP estimates by incorporating them as interaction factors:

Model	-2 Log Likelihood	df	p-value
No interactions	5730.731	5	<0.0001
Choices easy to understand, saturated	5717.637	10	0.02251
Too much information, saturated	5725.735	10	0.41637
Realistic situations, saturated	5727.186	10	0.61659

Preferences appear significantly different between women who found the choices easy to understand and the others.

Looking at women in the target population:

Model	-2 Log Likelihood	df	p-value
Target, saturated	5692.487	10	<.00001
Target + choices easy to understand, saturated	5681.328	10	0.04832

Multinomial Logit Parameter Estimates				
	β	**σ**	**χ^2**	**p-value**
Nausea	-1.72709	0.20058	74.1431	<.0001
Sleep disorders	-1.90226	0.20536	85.8041	<.0001
Dizziness	-1.82992	0.20079	83.0591	<.0001
Efficacy	0.01353	0.00267	25.6974	<.0001
Cost/month	-0.01642	0.00249	43.4371	<.0001
Efficacy, Target population	-0.00141	0.00264	0.2861	0.5927
Price, Target population	0.00528	0.00247	4.5491	0.0329
Nausea, Target population	0.55869	0.20427	7.4804	0.0062
Sleep disorders, Target population	0.60647	0.20168	9.0430	0.0026
Dizziness, Target population	0.06234	0.22164	0.0791	0.7785
Efficacy, Choices easy to understand	0.00189	0.00285	0.4388	0.5077
Price, Choices easy to understand	-0.00111	0.00267	0.1748	0.6759
Nausea, Choices easy to understand	-0.51069	0.21606	5.5870	0.0181
Sleep disorders, Choices easy to understand	-0.38640	0.21961	3.0957	0.0785
Dizziness, Choices easy to understand	-0.42981	0.21880	3.8587	0.0495

Women who found the choices easy to understand gave more importance-weight to efficacy, and had increased price and side effect disutility.

Considering only the women who found the choices easy to understand and chose the medication as first choice, the part-worths are then as follows:

Multinomial Logit Parameter Estimates		
	β all target population	**β target women not having difficulty answering**
Efficacy, Target population	0.01356	0.01401
Price, Target population	-0.01198	-0.01225
Nausea, Target population	-1.55405	-1.67909

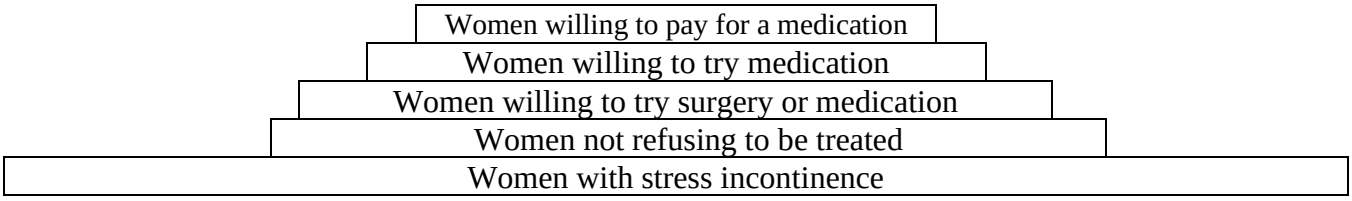
In this manner the willingness to pay for nausea goes from -129.72 € to -137.07 € and for efficacy, from 1.13 € to 1.14 €.

7. Willingness to continue treatment

7.1. Selection of population

Normally, the willingness to pay questionnaire should have been administered only to women who chose medication at least once. However, this filter only works for women who took sub-questionnaire 1. For the other sub-questionnaires, all the women were asked questions about their willingness to continue. We will only analyze the answers of those who should have had taken this part of the questionnaire.

Out of the 465 women who reached the willingness to pay phase of the survey, only 386 chose at least one of the proposed medications.



7.2. Medication that the woman would be certain to take

7.2.1. Analysis WCT1

This analysis concerns the 386 women who chose at least one medication. Only 85 (92 %) of the 92 women in the target population are in this situation.

WCT 1: characteristics	Non-target	Target	p-value
No nausea	19.3 %	27.1 %	0.1321
No side effets	56.5 %	38.8 %	0.0046
No dizziness	16.9 %	20.0 %	0.5210
No sleep disorders	16.0 %	15.3 %	1.0000
Price not too high, not expensive	23.9 %	27.1 %	0.5698
Effective	53.2 %	47.1 %	0.3285
Other	16.6 %	15.3 %	0.8687
Number in sample	301	85	386

As already observed in the willingness to pay analysis, women not interested in medication as first choice tend to place more emphasis on side effects than the others: side effects are the first condition of taking a medication for the first case, followed by efficacy, while the second case puts more importance on efficacy with side effects coming afterwards. Price was only stated by one in four women.

7.2.2. Analysis of open questions

7.2.2.1. "Other" category

There were 28 answers in this category, distributed as follows:

1) Reimbursement: mentioned in 13 out of 28 answers
2) Dosage and pharmaceutical form: mentioned in 7 out of 28 answers
3) Efficacy: mentioned in 5 out of 28 answers
4) Side effects: mentioned in 5 out of 28 answers
5) Other: mentioned in 2 out of 28 answers

➢ Reimbursement

Type of reimbursement	Sample size
"Full reimbursement", "100 % reimbursed"	4
"Reimbursed"	4
"At least partially reimbursed", "Partly reimbursed"	3
"At least 75 % reimbursed"	1
" At least 70 % reimbursed"	1
Total	13

➢ Dosage, pharmaceutical form

The following answers were given:

- "number of doses each time according to what time it is" ;
- "small capsule"
- "once daily dosing"
- "by the oral route"
- "simple, discrete medication"
- "easy to swallow"
- "in capsule form, I mean, tablets"

➢ Efficacy

Two women did not quantify efficacy: "a good success rate" "it gives me relief, with no more pelvic discomfort"
Two women stated a 75 % efficacy: "at least 75 % effective", "at least 75 % chance that it works"
One woman stated "close to 100 % success rate".

➢ Side effects

The following answers were given:

- "Does not cause headache"
- "Does not cause diarrhea"
- "Does not cause skin allergy"
- "No contra-indications"
- "Side effects".

➢ Other

The two answers most difficult to classify are “relieves pain” which is similar to “so I no longer have pelvic discomfort” classified in the “efficacy” category, and “no other type of treatment possible”, an answer given by a woman whose two preferred treatments (WBT answers) were first, exercises, then surgery.

7.2.2.2. “Price” category

Here again, 19 women out of 31 for whom an answer is available desired reimbursement:

Type of reimbursement	Sample size
“Full reimbursement”, “100 % reimbursed”	2
“Reimbursed”	13
“At least partially reimbursed”, “partly reimbursed by mutual insurance”	2
“The patient only pays 20 %”	1
“ At least 50 % reimbursed”	1
Total	19

The other women answered as follows:

Acceptable price	Sample size
“Maximum 60€ / month”	1
“Maximum 50€”, “no more than 50€ / month”	2
“20 or 40€”	1
“Between 20 and 30€ if not reimbursed”	1
“ Less than 30€ / month”	1
“20€ / month”, “around 20€”	3
“If not reimbursed, between 5 and 20€”	1
“15€ / month”	1
“Not too expensive”, “within reach of everyone”, “as inexpensive as possible”	3
Total	14

The women therefore hoped for reimbursement, but if this were not the case, the majority hoped for a price below 30€. Only one woman cited 60€.

7.2.2.3. "Efficacy" category

70 women fall into this category.

- 43 women quantified the expected efficacy:
  - 22 expected 100 % efficacy;
  - 3 expected 95 % ;
  - 9 expected 90 % ;
  - 3 expected 80 % ;
  - 6 expected 75 % ;
- 20 women qualitatively described the expected efficacy:
  - 4 wanted complete or almost complete success;
  - 16 wanted "real" results, for the medication to "really", "visibly" work "well" or "as well as possible", for it to "relieve" and "be useful".
- 8 women were more time-oriented, demanding a "rapid" result, for the medication to work "right away", for it to act "fast"
- 6 women brought up side effect problems
- 2 women wanted the medication to be reimbursed.

7.2.2.4. Conclusion

The ideal medication is therefore a medication without side effects, preferably one that is reimbursed or at worst costing less than 30€, which rapidly and appreciably reduces leakage, by at least 75 %.

7.2.3. Willingness to continue treatment

Answer to WCT 1	**Cited something**
Non-target	92.0 %
Target	88.2 %
p-value	0.2818

Among the 352 women who cited something in WCT1:

Would you take this medication:	**Non-target**	**Target**
Continually, for more than one year	21.7 %	25.3 %
Continually, for less than one year	17.3 %	20.0 %
From time to time, for more than one year	10.1 %	12.0 %
From time to time, for less than one year	43.7 %	38.7 %
I will not take it	1.81 %	2.7 %
DK	5.4 %	1.3 %
Number in sample	277	75

No statistically significant difference is observed between the two groups (p = 0.6199).

7.3. Medication that the woman would hesitate to take

7.3.1. Analysis WCT3

WCT 3: characteristics	Non-target	Target	p-value
Nausea	25.6 %	28.2 %	0.6753
Side effects, adverse effects	48.8 %	25.9 %	<0.0001
Sleep disorders	19.3 %	17.7 %	0.8755
Dizziness	23.3 %	21.2 %	0.7704
Price high, expensive	15.3 %	10.6 %	0.3790
Little/no efficacy	17.9 %	15.3 %	0.6297
Other	18.6 %	17.7 %	1.0000
Number in sample	301	85	386

As in WCT1, women in the target population differ from the others in terms of their overall lower frequency of mentioning side effects.

7.3.2. Analysis of open questions

7.3.2.1. "Other" category

The answers fall into several categories:

1) Tolerability issues: mentioned in 13 out of 33 answers;
2) Dosage/pharmaceutical form issues: mentioned in 6 out of 33 answers;
3) Problems with treatment duration: mentioned in 6 out of 33 answers ;
4) Personal convictions about medications: mentioned in 5 out of 33 answers;
5) Interaction problems: mentioned in 3 out of 33 answers;
6) Reimbursement issues: mentioned in 2 out of 33 answers;
7) Efficacy issues: mentioned in 2 out of 33 answers.

- Tolerability

Problems mentioned include "side effects", "headache" (by the woman stating she would not hesitate to take a medication which does not cause headache), "allergy and nausea", the fact that the medication is not "harmful to health", does not cause "stomach discomfort, hot flashes", does not have "contra-indications", does not cause "diarrhea or make you gain weight", does not cause "mental problems", "stomach or intestinal problems", "allergies", "drowsiness", "stomach ache and diarrhea". There is wide variability in concerns about side effects, particularly gastrointestinal side effects.

- Duration

Continuation of the treatment discouraged the women: one made her choice on the basis of "treatment duration", a second worried about "drug dependence", three others felt that "taking medication every day is constraining", a last woman refused a treatment "lasting more than one year".
It is a safe bet that a good number of women based their choices by telling themselves that the medication was not for life.

- Pharmaceutical form

"Large pills" "difficult to swallow" were not to the women's liking. One women complained about sachets of powder for dilution, another about effervescent tablets. One wanted a medication "easy to take, once a day, with no side effects, in a labeled weekly pack so you don't forget".

- Personal convictions

One woman declared point-blank that "I don't really like medication", another found it "bothersome", a third stated that she had to be "really sick" to take medication, another explained her reticence by stating "because it's medication, it's a matter of principle", and another added that "it's not natural". Women reaching the willingness to continue treatment stage whereas their preferences for a medication were altogether relative express themselves here.

- Interactions

For other women, it was mainly the potential for drug interactions that explained their hesitation. One desired "compatibility with alcohol", another feared that "using too many medications damages the stomach" (she could also have been classified in the personal convictions category), and another feared that taking a new medication could cause "problems of incompatibility with one of my current treatments". After the hesitations related to an aversion to taking medication, here we observe those related to liking medication too much.

- Reimbursement

Two women who would not hesitate to take a reimbursed medication would also not hesitate for a "non-reimbursed" medication.

- Efficacy

While one woman demanded "results at least 70 % credible", a second would hesitate about a treament "with less than at least 75 % efficacy".

7.3.2.2. "Price" category

21 women explained their hesitation:

- 15 gave an upper price limit:
  - 100 € for 4 women, one of whom refused to use it at this price;
  - 60 € for 1 woman;
  - 40 to 50 € was prohibitive for 1 woman;
  - 45 € was the upper limit for 1 woman;
  - 40 € was the upper limit for 1 woman;
  - 30 € / 200F was cited by 3 women;
  - 20 € was prohibitive for 1 woman;
  - 15 € / 100 F was cited for 3 women.
- 6 women did not give a limit:
  - the fact that the medication is not reimbursed was mentioned by 5 women;
  - one brought up the fact that it is too expensive;
  - one stated that she did not have the means;
  - one stated that she would choose the least expensive medication.

7.3.2.3. "Efficacy" category

22 women explained their idea of efficacy:

- 13 gave a minimum level of efficacy:
  - 0 % for 1 woman (« nil (…) result ») ;
  - 20 % for 1 woman;
  - 25 % for 2 women;
  - 50 % for 1 woman;
  - 60 to 70 % for 1 woman;
  - 90 % for 1 woman;
  - 100 % for 6 women.
- 4 women did not give a limit for efficacy, mentioning a medication that "does not give relief", "very minor improvement", "does not help the problem" and "has no effect";
- 3 women gave answers that might indicate confusion with the indicator in WTT:
  - "I have to be certain that it has an effect";
  - "Low percentage of success"
  - "Based on percentages, from 60 % it's ineffective"
- 2 women expressed concern about the rapidity and/or duration of treatment;
- 1 woman protested against the fact that it is not 100 % reimbursed.

7.3.3. Willingness to continue treatment

Answer to WCT 3	Cited something
Non-target	83.1 %
Target	74.1 %
p-value	0.0834

Among the 313 women who cited something in WCT 3:

Would you take this medication:	Non-target	Target
Continually, for more than one year	6.4 %	9.5 %
Continually, for less than one year	9.2 %	12.7 %
From time to time, for more than one year	4.4 %	6.4 %
From time to time, for less than one year	55.6 %	61.9 %
I will not take it	21.6 %	7.9 %
DK	2.8 %	1.6 %
Number in sample	250	63

No statistically significant difference is observed between the two groups (p = 0.1361).

8. Estimate of the potential target for duloxetine

It was seen in § 6.8.4.2 that, for a price of 45€, approximately 160,000 women would try the medication.

However, this estimate is based on the hypothesis that there is no difference between the woman's stated behavior in the survey and her actual behavior once the drug is on the market. If one imagines that 50 % of the women who say they will take the medication actually take it once it is marketed, the target is then 160,000*50 % = 80,000 women.

However this figure only represents the number of women who would be willing to purchase the medication once. How many women would be truly willing to continue the treatment? Women who stated their willingness to take the treatment continually for more than one year may be considered representative of this. These women account for 25.3 % of the women willing to use a medication if said medication was optimal: good efficacy, not expensive, no tolerability problems, etc. In the case of a medication they would hesitate to take, however, this proportion drops to 9.5 %.

Strikingly, (in fact, the above proportion is not based on either the true efficacy of the medication in the woman, or its price, or its side effects), it can thus be estimated that 80,000*9.5 % = 7,600 women would be willing to use duloxetine on a regular basis.

CONCLUSION

Our survey provides a more insight into the attitudes of women with urinary incontinence towards their condition. The first finding is that a considerable number of women have absolutely no plans to seek treatment. Only 8.7 % were being followed by a health professional at the time of the survey and slightly under two-thirds had never been followed by a health professional.

When presented with three treatment strategies, namely, exercises, surgery and medication, 38.7 % stated that they would not use any of these three strategies. Among those who would, exercises were the preferred option, the treatment that 59.0 % of the women would choose first, as compared with 32.6 % for medication and only 7.5 % for surgery.

The profile of a woman who would prefer medication is one who has not had exercises proposed to her, does not have a very high educational level, has a low income, is not overly bothered by her incontinence, and not have a high degree of severity of incontinence.

We can next turn to women who would consider a treatment other than exercises (possibly after having tried exercises without convincing results). These women represent 55.2 % of the incontinent study population. Conjoint analysis revealed that, contrary to any presumptions one might have had, the nature of the treatment does not play such an important role in determining the women's preferences. In fact, while this factor accounts for 40 % in their choice of treatment, factors such as probability of success or having to pay or not 45€ to try the treatment each account for 30 % in their decision making.
Thus it can be concluded that, when asked to choose between highly effective, reimbursed surgery and a less effective medication for which they must pay 45€ per month for as long as they want relief from incontinence, only 30.1 % (16.6 % of the total cohort) are willing to choose medication over surgery or over neither medication nor surgery.
Women preferring medication at this stage are women who are followed by a health professional but to whom neither exercises nor surgery were proposed. Women with mixed incontinence were more likely to choose medication than women with stress incontinence, and women who spend more than 10€ per month on continence pads would also be more favorable to medication that would cost 45€ out of pocket.

Even if medication is not necessarily their first choice, 46.5 % of the women could consider using one. This sample allows us to examine attitudes towards medication. It was found that willingness to pay is proportional to the reduction in leakage that the medication would provide, and that there was a very negative perception of the three side effects, independent of the nature of the side effect. Overall, then, the women would be willing to pay 0.91€ per month for a 1 % reduction in leakage, or 91€ per month for a medication that restores continence, but they would have to be paid more than 100€ per month to take a medication that had no effect on leakage and caused transient side effects.
Looking only at the core of women who would use medication as first choice, their willingness to pay is higher for reduction of leakage but they have an even stronger aversion to side effects.

A more in-depth analysis of perception of the medication in the last part of the questionnaire confirms this aversion to side effects and reveals a fairly negative attitude towards a medication which would not be reimbursed. Thus, the number of women who would continue the treatment over a longer term is quite small, since in the best case, only one in four is willing to take a

medication that gives satisfactory results (that she would be certain to take, as phrased in the question) continually and for more than one year.

So, while the women have a favorable impression of a medication to treat stress urinary incontinence, one might nonetheless wonder about the true proportion who would be willing to take it regularly, especially if they feel it's too expensive.

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