Maturitas 74 (2013) 259–263

Contents lists available at SciVerse ScienceDirect

Maturitas

journal homepage: www.elsevier.com/locate/maturitas

Women's preferences toward attributes of local estrogen therapy for the treatment of vaginal atrophy

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ARTICLE INFO

Article history:
Received 7 November 2012
Received in revised form 5 December 2012
Accepted 10 December 2012

Keywords:
Menopause
Local estrogen therapy
Preference
Survey
Vaginal atrophy
Willingness to pay

ABSTRACT

Objectives: Decreased estrogen production due to menopause is often associated with vaginal atrophy, and estrogen therapy is the most effective treatment for the management of this condition. This study investigated women's preferences relating to various aspects of local estrogen therapy (LET) for the treatment of postmenopausal vaginal atrophy.
Study design: The study involved 423 women aged >50 years who were resident in Sweden, had experienced menopausal changes in and around the vagina, and had used LET for these changes. The women completed an online questionnaire.
Main outcome measures: The questionnaire involved a discrete choice experiment to determine women's willingness to pay for different characteristics of therapy. Time of LET appliance, use of disposable applicators with small tablets compared with both dosing syringes with vaginal cream and vagitories, and therapy that did/did not cause smudges/leakage were all considered.
Results: The women had no significant preference as to the time of day LET should be used. However, quantifying other preferences suggested that respondents were willing to pay €66.58 or €60.32 per month extra for using disposable applicators with small tablets rather than dosing syringes with vaginal cream or vagitories, respectively, and to avoid smudges/leakage.
Conclusions: This survey suggests that women may prefer using disposable applicators with small tablets to deliver LET and value therapy that does not cause smudges/leakage. It is possible that if women are able to use their preferred form of LET, improved uptake or adherence of such medication may enhance the management of postmenopausal vaginal atrophy.

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1. Introduction

Decreased estrogen production due to menopause is often associated with vaginal atrophy, a chronic disorder experienced by as many as half of postmenopausal women [1,2]. Reduced levels of estrogen adversely affect the morphology of the vaginal epithelium, loss of estrogen-dependent glycogen in the mucus layer alters the vaginal flora, with pH changes increasing the risk of infection, and postmenopausal reductions in vaginal vascularization and fluid secretion may also occur [1,3]. Vaginal dryness is often the first reported symptom [4], but others include vaginal soreness, itching or burning, and pain during intercourse or when touching the vagina [5]. Consequently, vaginal atrophy can impact sexual function [6] and, independent of sexual activity, negatively affect quality of life [1,2,5].

While hot flushes and night sweats are common features of the menopause that resolve spontaneously over time, vaginal atrophy is often progressive, thereby requiring treatment, and estrogen therapy is the most effective option in such instances [7]. Local estrogen therapy (LET) may be preferred to systemic treatment [3], and is a relatively simple therapeutic strategy, which is rapid, effective, and can improve quality of life [1,3,8]. LET can take a number of forms, and these vary in their timing of application and mode of administration. While vaginal creams and vagitories have commonly been used, leakage of such preparations may require the use of sanitary protection [9]. An alternative form of LET involves use of a disposable applicator to place a small tablet deep into the vagina; the tablet can subsequently adhere to the vaginal mucosa [10] with no discharge.

Abbreviations: LET, local estrogen therapy; SEK, Swedish kronor; VIVA, Vaginal Health: Insights, Views & Attitudes; WTP, willingness to pay.

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http://dx.doi.org/10.1016/j.maturitas.2012.12.004

Table 1
Attributes, and their characteristics, considered in the survey.

Attribute	Characteristic
Time of appliance	Any time
	At bedtime
Mode of administration	Disposable applicator with small tablet
	Dosing syringe with cream
	Vagitory
Smudges/leakage; panty liners recommended	No
	Yes
Cost per month, in SEK[a]	300 (equivalent to €35.42)
	100 (equivalent to €11.81)
	20 (equivalent to €2.36)

SEK, Swedish kronor.
[a] Direct, out-of-pocket total, with the equivalent value in euros shown according to the exchange rate applicable in September 2012, whereby 1 SEK = €0.118057.

This study investigates women's preferences relating to various aspects of LET for the treatment of postmenopausal vaginal atrophy, identifying preferences as measured by willingness to pay (WTP) for different characteristics, independent of the actual products on the market. Such preferences may impact on treatment uptake and adherence. With a condition such as vaginal atrophy, which often requires long-term therapy, a medication that facilitates longer-term use and adherence is likely to lead to improved clinical outcomes [11].

2. Methods

2.1. Sampling and participants

The study was conducted by Incentive Partners (Copenhagen, Denmark), an independent economic consultancy. Contact details for a representative sample of females aged >50 years and who were resident in Sweden were obtained from Userneeds (Copenhagen, Denmark), an independent company that provides appropriately selected panels for market research in the Nordic countries (Sweden, Denmark, Norway and Finland). E-mails inviting participation, and containing a link to an electronic questionnaire, were subsequently sent to 4386 women, with data being collected during June 2011.

To be included in the survey, questionnaire respondents were required to be postmenopausal, to have experienced menopausal changes in and around the vagina, and to use local estrogen treatment for these menopausal changes. Given the nature of the survey, ethics approval was not sought. Respondents were entered into a draw to win gift certificates worth approximately €130.

2.2. Questionnaire

In addition to asking women about their current condition, the medications they were receiving, and other relevant background information, the questionnaire posed questions comprising a discrete choice experiment to determine WTP.

Discrete choice experiments in healthcare are based on two premises: (1) treatments can be described in terms of their attributes; (2) the extent to which an individual values a treatment depends on the characteristics of these attributes. In relation to this, the survey considered four attributes of LET, with different characteristics, as described in Table 1. These characteristics were defined independently, not matched to specific products.

In a series of questions, respondents were asked to choose between two hypothetical LET treatments with similar efficacy and dosing frequency (twice per week), but which had varying characteristics of the four attributes. For example, one hypothetical treatment may offer a more desirable time of application and mode of administration, but smudges/leakage may occur. Another hypothetical therapy may have a less desirable time of application and mode of administration with no possibility of smudges/leakage. Women's choices revealed trade-offs amongst the different characteristics, and the trade-offs produced results relating to WTP.

In line with standard practice [12], respondents were asked a test question in which one of the two hypothetical choices was clearly better than the other, i.e. there was no legitimate trade-off. Results from respondents who failed to select the better treatment were excluded from the analysis.

2.3. Data analysis

All data were anonymized and validated, with the responses to the questionnaires being checked for consistency and errors. Descriptive statistics were calculated for the validated data, and frequency tables were produced for discrete answer categories.

A statistical model, conditional logit, was used to derive the WTP results, which were used to infer women's preferences for various treatment characteristics. In the conditional logit model used to analyze the choice sets, the probability of choosing an alternative j from n_i choices in a choice scenario i was defined as follows:

$$P(j) = \frac{\exp(\chi'_{ij}\beta)}{\sum_{k \in C_i} \exp(\chi'_{ik}\beta)}$$

where there are $n_i = 2$ possible choices in each scenario's choice set (C_i).

WTP for the attribute levels was calculated by dividing the estimated coefficient, β, for each attribute, by the coefficient of payment. The rationale underlying this approach was derived from the economic theory of demand, in which the calculated ratios are known as marginal rates of substitution (explained more fully elsewhere [13]), e.g. WTP for avoiding smudges/leakage = $\beta_{smudges}/\beta_{payment}$. As WTP was calculated as the ratio between two stochastic variables, confidence intervals could not be derived directly from the parameter estimates of the conditional logit estimations; they were determined using adapted bootstrapping methodology, with 10 000 iterations as recommended by Barker [14].

All statistical analyses were performed using SAS software (version 9.2).

3. Results

3.1. Survey population

Of the 4386 women who received e-mails inviting participation, 423 were included in the final survey population. Reasons for non-inclusion are shown in Fig. 1. A total of 118 individuals failed to answer the test question correctly and the mean age of these women was significantly higher than for those who provided the correct response (62.6 vs. 61.2 years; $P < 0.05$ [t-test]). All geographical areas of Sweden were represented in the survey. The participants' average age was 61.1 years, with the majority (263, 62%) being aged between 56 and 67 years.

Vaginal dryness was the reason given by most women (309, 73%) for needing LET (Fig. 2). At the time of the survey, vaginal tablets applied with a disposable applicator (used by 259 [61%] respondents) were the most commonly received form of treatment (Fig. 3). The respondents' pattern of local treatment usage corresponded well to market share information among the different products (IMS Health, Sweden, September 2012 data).

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