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Disentangling breast cancer patients' perceptions and experiences with regard to endocrine therapy: Nature and relevance for non- adherence

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ABSTRACT

Background & study aims: Adjuvant endocrine therapy effectively prevents recurrence and progression of estrogen-receptor positive breast cancer. However, studies reveal substantial non-adherence. The objective was therefore to identify the nature of the experiences and beliefs of women treated with endocrine therapy in an attempt to find potential determinants of non-adherence. **Method:** Online Focus Groups (OFGs) and individual interviews were conducted with 37 women who were treated with endocrine therapy. Sixty-three statements derived from the OFGs and 11 belief items from the Beliefs about Medicines Questionnaire (BMQ) were used in a Q-sorting task conducted with 14 of the women. The quantitative Q-sorting data were statistically analyzed with Hierarchical Cluster Analysis.

Results: A six cluster solution was revealed that included the clusters 'information', 'efficacy', 'tenacity', 'coping', 'side effects' and 'usage'. Women's own experiences and perceptions were not clearly delineated from the beliefs measured with the BMQ. However, women judged their own experiences and perceptions with regard to endocrine therapy as more relevant for adherence than the BMQ beliefs. **Conclusion:** In order to understand and to improve women's adherence to endocrine therapy, women's own perceptions and experiences about endocrine therapy should be targeted in addition to common belief that apply to a wide range of medicines.

INTRODUCTION

Adjuvant endocrine therapy has improved the prospects of women with breast cancer markedly. Evidence shows that prolonged use of tamoxifen or an aromatase inhibitor strongly reduces the risk of estrogen-receptor-positive breast cancer recurrence, disease progression and mortality.¹⁻³ A contradictive finding is therefore that adherence to endocrine therapy seems to be almost as important a problem as it is for such medicines as statins.⁴ Studies have found substantial non-adherence by the fourth year of therapy⁵ and premature discontinuation by 30%-50% of the patients.^{6,34} Non-adherence to endocrine therapy is a serious problem that is associated with increased mortality.⁷ Understanding non-adherence to endocrine therapy is therefore crucial for clinicians. Clinicians who are aware of the obstacles that women encounter are better at promoting adherence to endocrine therapy and in the end women's health.⁹ However, understanding the causes of non-adherence to endocrine therapy is compromised by a number of factors. First, the causal structure of endocrine therapy non-adherence is likely to be multifaceted. Over 200 predictors of adherence to a wide range of medicines have been postulated.^{8,9} Which of these factors are especially relevant for endocrine therapy non-adherence remains unclear. Second, a comprehensive overview of factors lacks, as different studies have addressed different factors. Third, many studies focused on beliefs about medicines. For that goal, the Beliefs about Medicines Questionnaire (BMQ) framework has often been used to assess perceived necessities and concerns with regard to medicine use and the calculation of a difference score thereof called the necessity-concerns differential.^{10,11} The BMQ has been used to explain adherence to various types of medicines.¹²⁻¹⁸ With regard to endocrine therapy, non-adherent patients were found to report beliefs of inefficacy of tamoxifen more often.¹⁹ However, as important as beliefs that apply to a wide range of medicines are women's own perceptions and experiences with regard to endocrine therapy. Atkins and Fallowfield,²² for example, found that women who disliked any aspect of their current endocrine therapy (e.g. side effects and difficulties swallowing tablets) were more likely to be non-adherent. Accordingly, the aim of this study was to provide a comprehensive overview of women's beliefs and experiences with regard to endocrine therapy. We examined (a) which clusters of beliefs and experiences could be identified, (b) whether experiences and beliefs regarding endocrine therapy formed separate clusters and (c) how relevant each cluster of beliefs and experiences was for therapy adherence.

PATIENTS AND METHODS

Participants

We identified all breast cancer patients who had been or were being treated with endocrine therapy at the outpatient oncology clinic of the Leiden University Medical Center (LUMC), the Netherlands (n = 175). A total of 54 patients had to be excluded for the following reasons: metastatic disease, severe or terminal illness or unclear health status, psychiatric disorders, regimen completion >1 year ago to avoid recall bias, and language problems. Therefore, 121 patients were invited to participate of whom 30 patients responded positively. Another 7 women responded to our call posted on the website of a patient organization (see Fig.1 Flowchart of participant recruitment). All 37 participating women returned a complete informed consent form along with a questionnaire by means of which we assessed demographic and clinical

characteristics and therapy adherence using the Medication Adherence Rating Scale (MARS) (R. Horne, M. Hankins, unpublished). The medical ethical committee approved the study (protocol number CME10/145). Table 1 shows that there was ample variation in demographic and clinical characteristics of the participants.

Research design

The study consisted of two phases. In Phase I, Online Focus Groups (OFGs) were conducted to identify women's beliefs and experiences with regard to endocrine therapy. In Phase II, following the methodology by Kool et al.,²³ the discussions of these OFGs were quantified by means of a Q-sorting task enabling a statistical analysis of the sorting data.²³

Phase I: Online Focus Groups

OFGs²⁴ were conducted by two members of the research team (LvD and HW) to identify women's beliefs and experiences with regard to endocrine therapy (n = 31). Women were individually interviewed if they did not have internet access (n = 3) or when they had prematurely discontinued endocrine therapy (n = 3).

[FIGURE 1][TABLE 1]

Premature discontinuation was defined as discontinuation before the 55th month to allow for a grace period. Hence, discontinuation between the 55th-60th month was considered as completion of the endocrine therapy regimen. Women who had prematurely discontinued, were interviewed because we deemed it unethical to bring those women into contact with other women who were still taking endocrine tablets but who might have had their own doubts about endocrine therapy.

OFGs were centered on key topics related to endocrine therapy. Candidate themes for the OFGs were derived from a review of the general literature and endocrine therapy literature about adherence. These themes were discussed by all authors in multiple rounds. The following 9 themes were selected: (a) provider-patient relationship,^{21,25-27} (b) social support,^{16,21,28,29} (c) medicine knowledge,^{30,31} (d) practical aspects of medicine use,^{19,32,33} (e) (perceived) medicine efficacy,^{28,34} (f) (perceived) adverse effects,^{19-21,34-36} (g) illness perception,^{22,26} and (h) coping styles.^{20,37} An extra theme (i) was added to reflect on being diagnosed with breast cancer and being treated with endocrine therapy (see Appendix A). Finally, an open theme (j) was posted to verify that in the discussions about all of the previous themes no important experiences and perceptions had been overlooked. Themes were posted during a two week period. Every day, except for Saturdays and Sundays, we posted a new theme on a secured website on which participants could log on anonymously. Themes remained posted for the whole two-week period to allow for additional comments that women had not come up with in the first instance. After posting the theme, participants were sent a reminder by e-mail to inform them that a new theme had been posted.

Subsequently, based on thorough review by three members of the research team (HW, LvD, ECGvG), a key list of statements was extracted from all of the statements made in the OFGs and interviews. For inclusion in the list, statements (1) were not

allowed to duplicate other statements (2) had not to be vague and (3) had to be applicable to most women.

Phase II: Q-sorting task

Fourteen women, who participated in the OFGs, also performed the Q-sorting task. To assure enough variation of opinions, a sample of ten to twenty participants is recommended for Q-sorting tasks.³⁸ Participants' median age was 54 years (range 33-63 years). The median number of months they had been treated with endocrine therapy was 15 months (range: 1-61 months). In the Q-sorting task, women were asked to sort the list of key statements printed on separate cards in two rounds. In the first round, lasting 60 min, women had to form piles from the statements and were asked to label each pile by a concept that characterized the statements of that pile.²³ In the second round, lasting 30 min, women had to sort the statements according to the relevance for therapy adherence into 5 piles (pile 1 least and pile 5 most important). Women were asked to distribute the statements equally across the 5 piles. Unbeknownst to the women, the items from the Beliefs about Medicines Questionnaire (BMQ) were added and presented as if they were statements that had been made by the OFG participants. This was done to examine to what extent women distinguished common beliefs that apply to a wide range of medicines from their own experiences and perceptions regarding endocrine therapy.

Analysis of Q-sorting data

Cluster analysis is a quantitative method to classify related experiences and beliefs into clusters. Hierarchical Cluster Analysis (HCA), was used to analyze the piles of statements obtained in the first round of the Q-sorting task. In the data matrix, each statement was represented by a row. Each column represented a binary variable that indicated for each statement if it had been put on a particular pile of a particular woman. In HCA, clusters are organized hierarchically and can be graphically presented in a tree diagram. Classification (Ward's method, squared Euclidean distances) occurs by calculating distances between clusters based on the number of times statements were put on the same pile. Statements with the least distance are classified in the same cluster. HCA is hierarchical because at each next higher level, higher-order clusters are formed of lower-order clusters with the smallest distance, i.e. lower-order clusters that are most alike. The HCA of the results from the first round of the Q-sorting task was done to examine which and how many clusters could be formed of beliefs and experiences with regard to endocrine therapy and whether beliefs and experiences were clustered separately. The results from the second round of the Q-sorting task were used to calculate a median weight that indicated the relevance of each cluster for perceived therapy adherence.

RESULTS

Phase I: Online Focus Groups (OFGs)

Participants posted 392 reactions in total. The median number of reactions to the themes was 39 (minimum 13 to Theme 10: "open theme", maximum 58 to Theme 2: "perceived support"). Participants posted a median number of 12 reactions. The total number of statements extracted from the OFGs was 1188. After excluding identical

statements, ambiguous, irrelevant or vague statements and statements that were not applicable to most women 141 statements remained. To reduce patient burden, these statements were further discussed for relevance. While retaining the BMQ items as statements, another 67 statements made by the women in the OFGs were excluded. The set of statements thus included 74 statements.

[TABLE 2]

Phase II: Q-sorting task round one

Among participants, the number of piles varied from 4 to 12. The piles received approximately 54 different labels in total. Typical labels reported by 3 or more participants were background information, empathy, side effects, (practical) use, insecurity, efficacy, and discomfort.

Hierarchical Cluster Analysis (HCA) of the 74 statements sorted in the first round revealed a solution with 6 clusters: 'information', 'efficacy', 'tenacity' 'coping', 'side effects' and 'usage' (see Fig. 2 and Appendix B).

Information: consisted of the clusters foreknowledge e.g. that side effects of endocrine therapy were discussed at the start, misconceptions e.g. that it does not matter to take the endocrine tablets every day at exactly the same time, and regimen duration e.g. that the duration of therapy was not clear.

Efficacy: consisted of the clusters hesitation e.g. having doubts about the efficacy, commitment e.g. it is unwise to stop using endocrine therapy, and dependence such as completion of endocrine therapy is an awkward idea.

Tenacity: consisted of the clusters deliberation e.g. using endocrine therapy gives the feeling that you try everything to prevent recurrence of breast cancer and necessity e.g. realizing that endocrine therapy is necessary.

Coping : consisted of experiences about support e.g. that people around you understand it when endocrine therapy causes side effects, appreciation e.g. it takes time to adjust to endocrine therapy, concerns e.g. having concerns about harmful effects for the long term and arduousness e.g. the duration of the endocrine therapy regimen is long, especially when endocrine therapy bothers you.

Side effects : consisted of the clusters avoidance e.g. you do not try to think too much about the side effects, influence exertion e.g. side effects are difficult because you cannot control them and abiding e.g. you try to live with the side effects of endocrine therapy.

Usage : included the clusters of memory e.g. combining endocrine therapy use with a daily activity such as putting tablets besides breakfast plate and practicality e.g. taking one tablet per day is more convenient than taking more than one.

In turn, all of the lower-order clusters except 'usage' could be clustered into a higher-order cluster of effect and this higher-order cluster was linked to the highest-order cluster of experiences and beliefs. Usage was directly tied to the highest-order cluster of experiences and beliefs.

[FIGURE 3]

Phase II: Q-sorting task round two

Table 2 shows the clusters along with their weights assigned during the second round that reflect the importance of each cluster of beliefs and experiences for perceived therapy adherence. Experiences and beliefs with regard to 'information', 'tenacity' and 'coping' were most important, whereas those with regard to 'usage' were less important.

Phase II: Q-sorting task: general statements vs. women's own perceptions and experiences

Turning to the general beliefs that applied to a wide range of medicines as measured with the Beliefs about Medicines Questionnaire (BMQ), these appeared not to form a distinct cluster apart from women's own experiences and perceptions. Rather, these were distributed over 4 different clusters namely: 'information' (1 statement), 'efficacy' (6 statements), 'coping' (3 statements) and 'side effects' (1 statement). The second sorting round, in which women had to sort the statements for their relevance for therapy adherence into 5 piles (pile 1 least and pile 5 most important), revealed that the BMQ statements (Mean 2.6, Standard deviation 0.8) were perceived less important for therapy adherence than women's own experiences and perceptions (Mean 3.1 Standard deviation 0.8) reported during the Online Focus Groups (OFGs): $t(72) = 2.08$, $p = 0.04$. Across the clusters, the BMQ statements were considered less important for therapy adherence than women's own experiences and perceptions, except for the 'side effects' cluster.

DISCUSSION

We identified the nature and the hierarchical structure of beliefs and experiences of women with breast cancer regarding endocrine therapy. Experiences and beliefs pertaining to information and tenacity seemed to be most important for perceived adherence, whereas experiences and beliefs related to usage seemed to be less important for perceived therapy adherence.

Previous studies identified substantial non-adherence to this potentially lifesaving medication.^{5,6,22,27,39} However, predominantly demographic and clinical predictors of non-adherence were examined while less studies addressed women's own perceptions and experiences. Yet, perceptions and experiences may offer important clues why and when non-adherence occurs. For clinicians, it is therefore imperative to know how breast cancer patients perceive and experience endocrine therapy in view of the need to detect the obstacles women encounter when using endocrine therapy and to support women in adhering and persisting to the regimen.

To our knowledge this is the first in depth study of breast cancer patients' perceptions and experiences with regard to adjuvant endocrine therapy. The clusters we found can be related to previous findings. With regard to the lower-order cluster of deliberation within the 'efficacy' cluster, Fink et al.⁴⁰ previously found that women with negative or neutral beliefs about the value of endocrine therapy were more likely to discontinue. With regard to the lower-order cluster of necessity within

the 'tenacity' cluster, Grunfeld et al.¹⁹ found that non-adherers were more likely to believe that there was nothing to be gained from taking endocrine therapy whereas adherers were more likely to believe that endocrine therapy would stop them from developing breast cancer.

The most frequently examined experiences in the literature were side effects^{6,19,21,27,34} and practical problems.^{19,22,33} Although both side effects and practical problems were clusters that we found, our findings show that information and tenacity were perceived more important for non-adherence. Of course, severe side effects could be important determinants of discontinuation.^{20,21,34} However, in our opinion, discontinuation because of side effects would actually reflect intolerance rather than adherence behavior. Perhaps women did not consider this as non-adherence when they were asked to judge each belief and experience for its relevance to therapy adherence and therefore gave extra weight to information and tenacity. Future research of this question is warranted.

The importance of information for adherence is consistent with a previous finding showing non-adherence to be associated with not having received information about side effects in advance.²¹ Another study showed that apparently 'helpful' information actually seemed to increase non-adherence²⁰ perhaps by increasing misconceptions about endocrine therapy. We found misconceptions to be a lower-order cluster within the important cluster of information. Regimen duration was a lower-order cluster within the same cluster of information, but has received less attention in the literature.

The importance of tenacity is consistent with findings of a previously observed pattern of substantially decreasing adherence in time.^{5,34} Within the cluster of coping, the lower-order cluster of support has also received attention in the literature,²¹ but the lower-order clusters of appreciation and arduousness have received less attention. 'Experiences' and perceptions with regard to the efficacy of endocrine therapy have received attention too,¹⁹ although the lower-order clusters of dependence and hesitation offer new experiences and perceptions in this regard.

The beliefs applying to a wide range of medicines as measured with the Beliefs about Medicines Questionnaire (BMQ) were distributed across various clusters indicating that they could not be clearly distinguished from women's own experiences and perceptions. However, these BMQ beliefs were perceived less important than women's own experiences and perceptions. Also, the BMQ beliefs about medicines were lacking in the 'tenacity' cluster, which is crucial for long term adherence to endocrine therapy.³⁸ This study had strengths and limitations. A strength of this study was the combination of in depth Online Focus Groups, with a conceptual interpretation of the qualitative findings by the women themselves using a Q-sorting task and subsequently a quantitative Hierarchical Cluster Analysis of the Q-sorting data. A sufficiently large number of women from various demographic backgrounds and with various clinical characteristics participated actively. Another strength was the discussion of a large number of themes.

There were also limitations. First, in our sample non-adherence to endocrine therapy was not as pronounced as reported previously. Perhaps, because this was truly the case. Alternatively, this may be due to selection bias with non-adherent women being less willing to participate. Second, to avoid test burden in the interest of the women, the number of statements had to be limited. Perhaps this could have resulted in selection bias. However, we tried to keep bias at a minimum by adopting inter-

subjective rules for the selection of statements such as removing identical, vague, irrelevant or ambiguous statements and thorough discussion of the selection of statements. Also, none of the women who participated in the Q-sorting task reported omission of important experiences and perceptions.

CONCLUSION

Although women's own experiences and perceptions are not independent from common beliefs about medicines, they were regarded as more important for therapy adherence by women themselves. Consequently, women's own experiences and perceptions have additional value. For the sake of adherence, persistence and women's health, these should be targeted rigorously.

Ethical approval

The Medical Ethical Committee of the Leiden University Medical Center approved the study (protocol number CME10/145). The study complies with the current medical ethical laws of the Netherlands. All participants gave informed consent.

Role of the funding source

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Conflicts of interest

Liset van Dijk: Research Funding/Contracted Research: 2 unrestricted grants (BMS and Astra Zeneca). All other authors report no conflicts of interest.

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Appendix A. Supplementary data Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.breast.2013.05.005>.

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TABLES AND FIGURE

Fig. 1. Flowchart of participant recruitment.

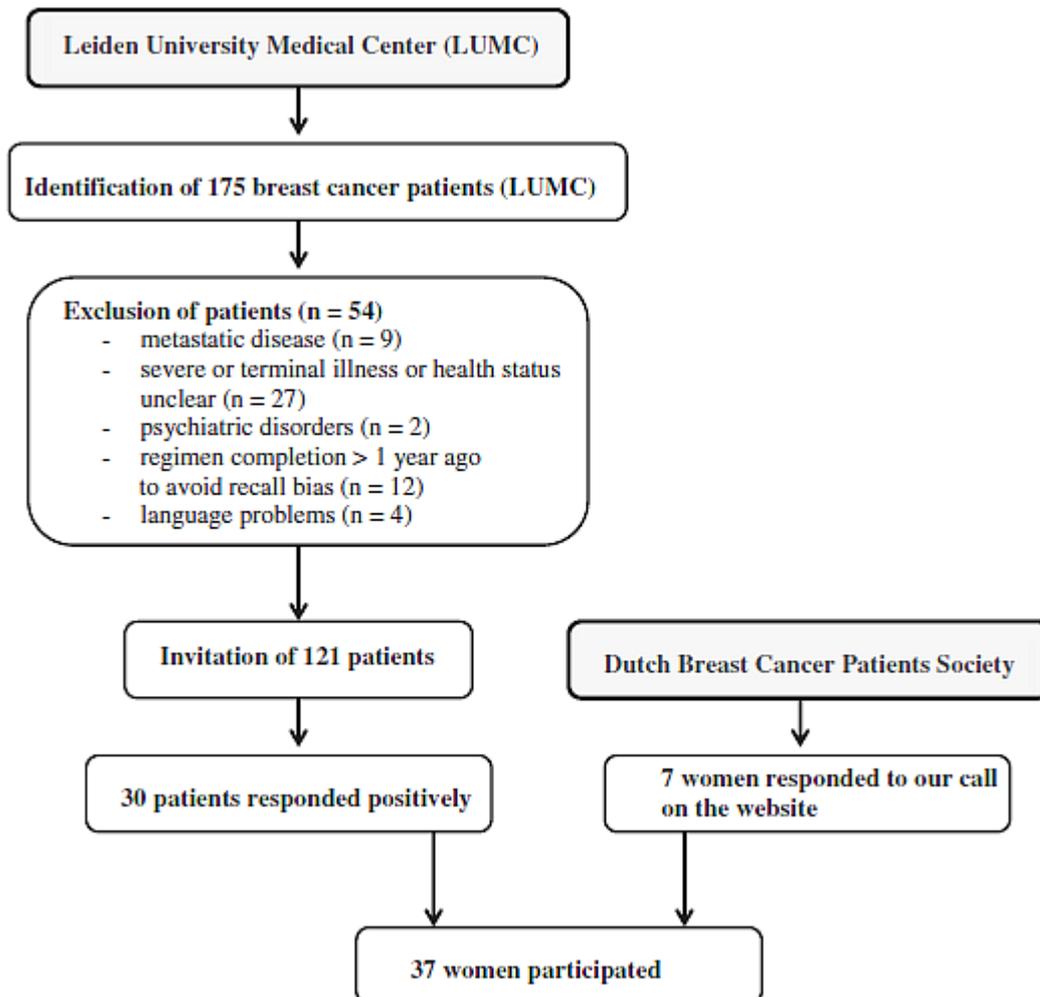


Table 1
Participants' demographic and clinical characteristics.

Variables & characteristics	Statistic
<i>Demographic characteristics</i>	
N	37
Median age (IQ-range*; min & max)	55 (51–62; 31 & 78)
Marital status	
Living with a partner (n, %)	26 (70)
Having children (n, %)	24 (65)
Work as main daily activity (n, %)	24 (65)
Educational level	
Primary & lower vocational education (n, %)	4 (11)
Secondary & intermediate vocational education (n, %)	15 (41)
Higher vocational education (n, %)	14 (38)
University (n, %)	4 (11)
<i>Endocrine therapy characteristics</i>	
Type of endocrine therapy used (n, %)	
Tamoxifen	25 (68)
Anastrozole	8 (22)
Letrozole	2 (5)
Exemestane	2 (5)
Median duration of endocrine therapy months (IQ-range)	23 (11–50)
Therapy adherence (n, %) MARS**	
Fully adherent: MARS score 25	21 (57)
Partially adherent: MARS score of 24	9 (24)
Nonadherent: MARS score of 23 or <	3 (8)
Discontinuation (n, %)***	3 (8)
Otherwise	1 (3)
<i>Other clinical characteristics</i>	
Median time (months) since diagnosis breast cancer (IQ-range)	28 (19–55)
n lumpectomy vs. n mastectomy (%)	15 (41) vs. 22 (59)
Treated with chemotherapy (n, %)	31 (84)
Treated with radiation therapy (n, %)	23 (62)

Note: *IQ-range, Inter-quartile range; ** Medication Adherence Rating Scale (MARS); *** Defined as premature discontinuation before the 55th month to allow for a grace period.

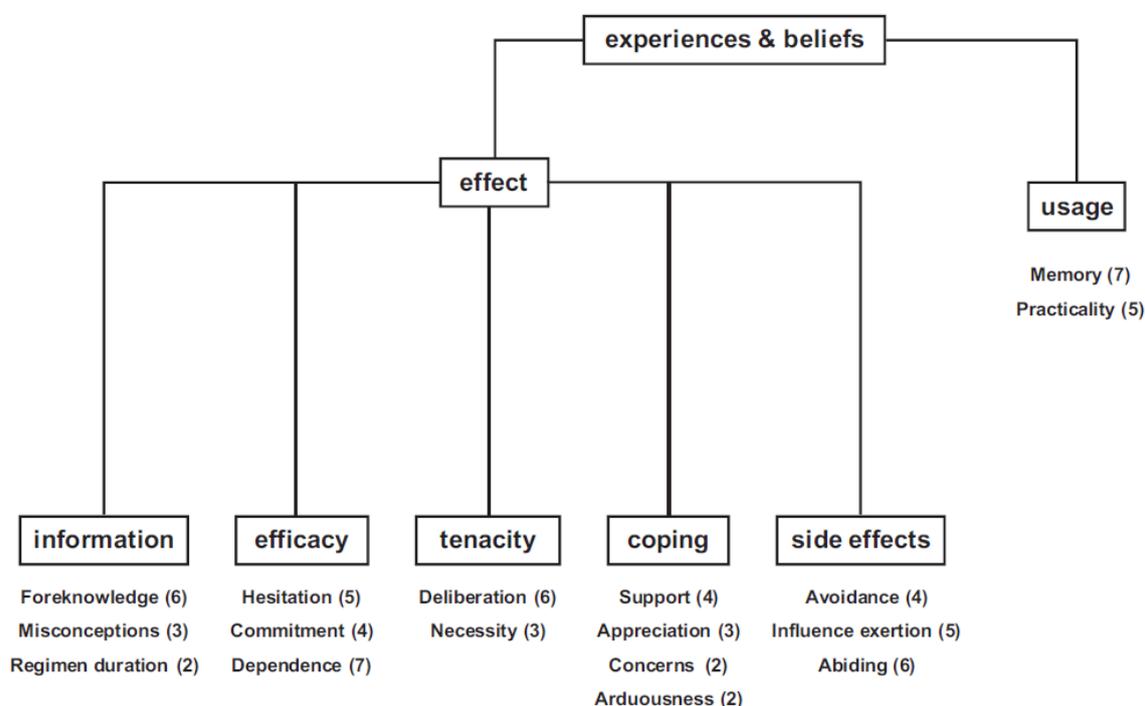
Table 2

Clusters of experiences and beliefs and their relevance for adherence to endocrine therapy indicated by the weight of the second sorting round. Weights between parentheses are weights of BMQ* items.

Cluster	Weight**
Effect	3.1 (2.6)
<i>Information</i> (foreknowledge, misconceptions, regimen duration)	3.5 (2.9)
<i>Efficacy</i> (hesitation, commitment, dependence)	2.8 (2.2)
<i>Tenacity</i> (deliberation, necessity)	3.8 (–)
<i>Coping</i> (Appreciation, concerns, arduousness, support)	3.1 (2.2)
<i>Side effects</i> (avoidance, influence exertion, abiding)	2.8 (3.1)
Usage (memory, practicality)	2.6 (–)

Notes: * BMQ, Beliefs about Medicines Questionnaire; ** Median value calculated from the sortings of the second sorting task i.e. sorting the statements on 5 separate piles (pile 1: not at all relevant for therapy adherence, pile 5: very relevant for therapy adherence).

Fig. 2. Tree diagram of experiences and beliefs of women with breast cancer regarding their endocrine therapy. See text for explanation of the labels. Numbers between parentheses indicate number of statements.



Appendix A Themes presented during the Online Focus Group Internet Discussions along with an example of a response made by a patient

THEMES	MAIN QUESTION(S)
INTERPERSONAL	
1 Conversations with your physician / nurse practitioner	If we are not mistaken, you probably have follow up visits in the hospital at regular intervals. These appointments are meant to assess how you are doing and if everything goes well with the endocrine therapy. We would like to ask you what you think of the conversations that you have with your physician / nurse practitioner in general about endocrine therapy.
Example of a response by a patient:	[My appointments with my nurse practitioner] are always pleasant, a cup of coffee, a bit of a talk and then the important results: discussion of the MRI scan (once a year) and a breast examination.
2 Perceived Support	Many people consider support from (significant) others to be very important when they are or have been ill. For example, support from their physician / nurse practitioner / family / friends / partner. To what extent do you have the feeling that the people around you support you? Who is your main support? How do you appreciate support from the people around you?
Example of a response by a patient:	I don't have a partner. I do have family and friends. As long as people are not familiar with cancer, they do not know very much about cancer treatments. To us, the difference between chemotherapy and radiation therapy is quite clear, but I often notice that in explaining this difference I am telling someone something new. Endocrine therapy is absolutely vague for the people around me. My general practitioner never asks about my surgery, chemotherapy, radiation and endocrine therapy. I am quite on my own.
THE MEDICINE	
3 Knowledge of endocrine therapy	People differ in their need to know a lot about their disease and the types of treatment that are available. As a result, people may differ with regard to their level of knowledge about a certain type of treatment. We would like to know how much you knew about endocrine therapy when you started using it.

Example of a response by a patient: Just before I started using endocrine therapy, I got a brochure and I read it carefully. I don't think I discussed the information of the brochure with my oncologist. I spoke with him later when I was already using it and experienced side effects. I have a need to gain knowledge you know. When I am concerned about something, I'll try to find information about my concerns and if at that point I do not understand the information I ask my oncologist or primary care physician. However, my primary care physician often needs to consult my oncologist, so that does not work out very well.

4 Use of Medicines When using medication, several aspects may be important. Which of them are more important than others depends on your own personal circumstances and hence differ from person to person. To what extent does endocrine therapy meet the things that you consider as important? You may think of the dosage, the convenience of removing tablets from a blister package, swallowing the tablets, the time at which tablets have to be taken, the duration of the endocrine therapy regimen (5 years)?

Example of a response by a patient: It is not difficult for me to swallow this small tablet or to remove it from the blister. I take it just before retiring to bed with a bit of water. I have never forgotten to take it. The osteoporosis tablet on the other hand is much bigger and awkward to swallow. Fortunately, I only need to take that tablet once a week. I am not sure how long I will have to use Arimidex.

5 Efficacy The main reason for using endocrine therapy is to reduce the likelihood of recurrent breast cancer. We would like to ask you if you have the idea that endocrine therapy works. How do you notice that it works?

Example of a response by a patient: It would be nice to have somewhat more clarity about the question whether it 'works'. I have some side effects, so I know something happens, but the side effects are not always as strong. So what does that tell me?

6 Adverse effects & events Besides their efficacy, many medicines have also unintended effects. These are the so called 'side or adverse effects'. Some side effects can be very disturbing for those who use the particular medication. With regard to endocrine therapy, what kind of side effects do you experience or have you experienced in the past? How disturbing were these to you?

Example of a response by a patient: The main side effects are stiff joints, aching muscles and indeed [in response to another participant] less sexual desire. The consequences can be annoying. I used to walk long distances with friends but I cannot do this anymore. This is also disappointing from a social point of view.

THE PATIENT

7 Health What health stands for and what you can do by yourself to live healthy are issues that people have very different attitudes of. What do you consider as being healthy and how healthy do you think you are?

Example of a response by a patient: (...) I am pretty healthy. Ok, I cannot do everything that I used to do in the past, but that doesn't make you less healthy than someone else. The advantage of everything that happened to me is that I pay more attention to myself. I rest more often, try to live in a more relaxed way, take more time for myself and set my boundaries. That's living healthy in my opinion.

8 Coping with ... In a brief time span, you had to go through a lot of radical events. Many things happened to you. How people cope with things that happened to them differs from person to person. Would you like to tell us more about how you coped with your illness and your treatments?

Example of a response by a patient: I have been very open about my breast cancer. This encouraged the people around me to also talk with me about breast cancer. I got many warm reactions. The chemotherapy made me very ill, but it went away. Starting with endocrine therapy did not pose a problem to me. I am happy that there is something that I can do to prevent metastatic cancer.

REFLECTION

9 Reflection On several moments of your life you look back at periods in your life in which a lot of things happened to you. We can imagine that you sometimes look back at the time that you were diagnosed with breast cancer. We were wondering if you also looked back at starting with endocrine therapy. What do you think was most difficult about using endocrine therapy? Which things were easier for you to accept?

Example of a response by a patient: To me, endocrine therapy was just the next step in the sequence of surgery, chemotherapy and radiation therapy. When I started using endocrine therapy, I thought I had gone through the hardest part of my treatment and I considered endocrine therapy as a protection for the years in the near future. Although, I still feel the same about that, endocrine therapy has a big influence on my life. On the positive side, I have not metastatic cancer or recurrent breast cancer. The difficult consequences of Tamoxifen and later also Arimidex were the severe depressive episodes. I could not adjust to them, whereas I had accepted many other adversities. My oncologist convinced me to continue.

Appendix B Statements presented during the Q-sorting task

No	Statement	Clusters				BMQ	Weight
1	You are insufficiently informed on what endocrine therapy exactly does	foreknowledge	information		yes	2.9	
2	Information about endocrine therapy was contradictory				no	2.6	
3	Side effects of endocrine therapy have been discussed beforehand				no	4.2	
4	You decide to look for information yourself about endocrine therapy				no	3.4	
5	You know what to expect when you start with endocrine therapy				no	4.1	
6	Owing to the foreknowledge that you had about endocrine therapy, you are capable to persist				no	3.8	
7	Owing to the information that you got about endocrine therapy, you know that you do not need to take the tablets at exactly the same time	misconceptions			no	3.9	
8	At the start of the endocrine therapy regimen, you thought that it was comparable to other medicines such as contraceptives				no	2.4	
9	When you skip endocrine therapy once, you are afraid that it will work less effectively						
10	Endocrine therapy has to be used for 5 years, which is acceptable	regimen duration			no	2.5	
11	It is not clear how long endocrine therapy should be used				no	3.6	
12	Sometimes you are afraid that you will become too dependent on endocrine therapy	dependence	efficacy		no	2.5	
13	Stop using endocrine therapy is an awkward idea				yes	1.7	
14	Using endocrine therapy means that you are still sick				no	3.3	
15	Your life would be very difficult without endocrine therapy				no	1.9	
16	At this moment your health depends on endocrine therapy				yes	1.8	
17	Endocrine therapy prevents you from becoming worse				yes	3.1	
18	Without endocrine therapy, you would be very sick	yes	2.6				
19	It would be nice to have somewhat more clarity about whether endocrine therapy actually works	hesitation			yes	1.6	
20	The efficacy of endocrine therapy is limited				no	4.4	
21	Your health in future depends on endocrine therapy				no	2.8	
22	In the period around a follow-up appointment the tension always increases somewhat; did the endocrine therapy work?	commitment			yes	4.2	
23	You doubt the efficacy of endocrine therapy				no	2.8	
24	Because you are feeling better, you quit using endocrine therapy prematurely				no	2.8	
25	You continue using endocrine therapy, because you promised so to your oncologist				no	1.6	
26	It is unwise to stop using endocrine therapy				no	2.2	
27	You have to believe that endocrine therapy works, otherwise you could stop as well	no	4.4				
28	What pushed me to start with endocrine therapy was the fact that you could stop at any time	deliberation	tenacity	effect	no	3.3	
29	Endocrine therapy plays a key role in the success of the whole treatment				no	2.4	
30	When you are eligible for endocrine therapy, you start with it without hesitation				no	4.6	
31	Endocrine therapy gives you the feeling that you try everything you can to prevent the breast cancer from coming back				no	3.8	
32	The use of endocrine therapy and going on with it is a deliberate choice				no	4.9	
33	Although you are fed up with it, you continue using endocrine therapy until the end				no	4.4	
34	You acknowledge the necessity of endocrine therapy	necessity			no	3.4	
35	You doubt about going on to use endocrine therapy until the end of the regimen				no	4.8	
36	Endocrine therapy is presented as a self-evident part of the whole treatment which gives you the impression that you do not have a choice	no	2.4				
37	The people around you forget that endocrine therapy is the next step after previous treatments such as radiation therapy and chemotherapy	support			no	3.1	
38	By talking about your disease and endocrine therapy, you get support from others which in turn make side effects easier to accept				no	2.7	
39	Your physician / nurse practitioner understands you and has compassion for you with regard to side effects of endocrine therapy	appreciation	coping		no	3.0	
40	The people around you understand you and provide support with regard to the side effects of endocrine therapy				no	3.8	
41	Compared to previous treatments (chemotherapy, radiation therapy), endocrine therapy is much easier				no	3.1	
42	The use of endocrine therapy requires a slow adjustment to it				no	3.6	
43	Before you start using endocrine therapy, you think that you have experienced the worst (radiation therapy, chemotherapy)				no	2.9	
44	Sometimes you worry about the long term effects of endocrine therapy				no	3.1	
45	You worry about the fact that you have to use endocrine therapy	concerns			no	3.1	
46	Endocrine therapy disrupts your life	arduousness			yes	2.9	
47	Endocrine therapy has to be used 5 years or longer, which is long when it bothers you				yes	2.2	
48	You try to diminish the influence of the side effects of endocrine therapy by doing nice things	avoidance	side effects		yes	2.1	
49	You try not to think about the side effects of endocrine therapy				no	3.6	
50	It's not clear whether the side effects you experience are the result of endocrine therapy or of previous treatments				no	2.7	
51	Experiencing side effects of endocrine therapy, does not necessarily mean that it works				no	3.1	
52	On certain occasions (e.g. when you are feeling tense or when the weather is hot), the side effects bother you more than at other times				no	3.0	
53	Some people experience more hindrance of side effects of endocrine therapy than other people				no	2.6	
54	The side effects of endocrine therapy become less after a while	influence exertion			no	3.4	
55	The side effects of endocrine therapy are difficult because you cannot control them				no	2.6	
56	Endocrine therapy has nasty side effects such as weight gain, insomnia and hot flushes				no	3.1	
57	It is difficult to live with some of the side effects of endocrine therapy	abiding			no	2.7	
58	You would like to quit using endocrine therapy because of the side effects				no	2.1	
59	The side effects of endocrine therapy remember you about your disease				no	2.3	
60	The side effects of endocrine therapy are not nice, but you try to live with them				no	3.2	
61	You worry about the side effects of endocrine therapy				no	2.9	
62	You accept the side effects easier when you are convinced that endocrine therapy works				no	4.1	
63	Although the use of endocrine therapy has become more and more routine, you sometimes don't know whether you took the endocrine tablet or not	memory	usage		no	2.7	
64	By taking endocrine therapy at a fixed time, the use of it becomes routine				no	4.4	
65	You use a memory aid to adhere to the endocrine therapy regimen (e.g. a note on the calendar or a sticker on the mirror)				no	3.4	
66	The most difficult thing was to let endocrine therapy become part of daily life				no	2.5	
67	You sometimes skip endocrine therapy				no	2.2	
68	By combining the intake of endocrine tablets with a daily activity (e.g. teeth brushing or putting tablets besides breakfast plate), you remember to take the endocrine tablets				no	3.9	
69	The practical use of endocrine therapy is easy besides the medicines that you have to use already	practicality			no	2.8	
70	It is awkward to swallow the endocrine therapy tablets				no	1.8	
71	The endocrine tablets are easy to get out of the package or blister				no	2.3	
72	It is more convenient to use endocrine therapy once a day than more often				no	4.0	
73	Changes of the package of the endocrine tablets, make you unsure				no	2.2	
74	The endocrine tablets are small and go in every direction when you try to press them out of the blister	no	1.4				