Diplomarbeit

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Adherence of Breast Cancer Patients under Antihormonal Treatment

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Abstract

Background: Breast cancer is the most common cancer among females in Austria. Antihormonal treatment has been linked with longer relapse-free periods and an increased overall survival in hormone-receptor-positive patients. Recent studies have shown a high non-adherence rate amongst breast cancer patients. Low adherence-rates could be related to an increased number of recurrences and elevated mortality. Bad communication on side-effects, a poor doctor-patient-relationship and a low quality of life were related to low adherence-rates.

Objective: Intentional and non-intentional non-adherence amongst hormone-receptor-positive breast cancer patients has not previously been investigated in Graz. This study aimed to determine intentional and non-intentional non-adherence-rates, level of information about side-effects and to evaluate the doctor-patient-relationship.

Material and Methods: 44 women attending routinely follow-up visits at the breast care center at the Department for Gynecology and Obstetrics of the Medical University Graz were interviewed using semi-structured interviews. Additionally, participants were asked to fill in two standardized questionnaires evaluating the quality of life and the health locus of control. Descriptive statistical analysis was done using SPSS 17.

Results: Non-intentional non-adherence was 40 %. Three patients admitted that they were intentionally non-adherent. Common side-effects had frequently not been discussed during initial consultations. Furthermore a divergence between side-effects that women in contrast to doctors considered wearing was remarkable. Still the women rated their doctor-patient-relationship good. The quality of life was generally high. Women who considered themselves well informed had a higher quality of life and a stronger feeling of self-control over their health than women who felt moderately or poorly informed.

Conclusion: Communication on side-effects should be improved, bearing in mind that well informed patients seem to have a higher quality of life.

Kurzbeschreibung

Hintergrund: Brustkrebs ist die häufigste Krebserkrankung unter Frauen in Österreich. Antihormonelle Therapien können längere rezidivfreie Zeiten und ein höheres Gesamtüberleben bei Hormonrezeptor-positiven Patientinnen erbringen. Aktuelle Studien zeigten hohe Non-Adherence Raten unter Brustkrebspatientinnen. Niedrige Adherence Raten können in einer erhöhten Anzahl an Rezidiven und einer erhöhten Mortalität resultieren. Schlechte Kommunikation in Bezug auf Nebenwirkungen, eine schlechte Arzt-Patienten-Beziehung und eine niedrige Lebensqualität wurden mit niedrigen Adherence Raten in Zusammenhang gebracht.

Zielsetzung: Bewusste und unbewusste Non-Adherence unter Hormonrezeptor-positiven Brustkrebspatientinnen wurde in Graz zuvor nicht erforscht. Diese Studie zielt darauf ab die bewussten und unbewussten Non-Adherence Raten und den Grad an Informiertheit zu ermitteln. Zusätzlich soll die Arzt-Patienten-Beziehung evaluiert werden.

Material und Methoden: 44 Frauen, die routinemäßige Nachfolgeuntersuchungen der Brustambulanz der Abteilung für Gynäkologie und Geburtshilfe an der Medizinischen Universität Graz besuchten wurden mit Hilfe eines semistrukturierten Interviews befragt. Zusätzlich erhielten die Teilnehmerinnen zwei standardisierte Fragebögen zu Erfassung der Lebensqualität und der subjektiven Kontrollüberzeugungen der Patientinnen. Die statistische Auswertung erfolgte mit SPSS 17.

Resultate: Die unbewusste Non-Adherence lag bei 40 %. Drei Patientinnen gaben an bewusst nicht adherent zu sein. Häufige Nebenwirkungen wurden oft im ersten Aufklärungsgespräch nicht besprochen. Weiters divergierten die Ansichten von Ärzten / Ärztinnen und Patientinnen bezüglich belastender Nebenwirkungen. Trotzdem bewerteten die Patientinnen ihre Arzt-Patienten-Beziehung gut. Die Lebensqualität unter den Frauen war generell hoch. Frauen, die sich selbst als gut aufgeklärt einstuften hatten eine höhere Lebensqualität und ein stärkeres Gefühl der Kontrolle über ihre eigene Gesundheit im Vergleich mit den Frauen, die sich selbst als schlecht bis mittelmäßig gut informiert einstuften.

Konklusion: Die Kommunikation der möglichen Nebenwirkungen sollte verbessert werden, im Lichte dessen, dass ein höherer Grad an Informiertheit mit einer höheren Lebensqualität in Verbindung zu stehen scheint.

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Glossary and abbreviations

- AI= Aromatase inhibitors
- BI RADS= Breast Imaging Report And Data System
- CC= cranio-caudal
- CIS= Carcinoma in situ
- COX= Cyclooxygenase
- CUP= cancer of unknown prime
- DCIS= Ductal carcinoma in situ
- ER= Estrogen receptor
- FACT-Es= Functional Assessment of Cancer Therapy for Patients with endocrine symptoms
- GnrH= Gonadotropin releasing hormone
- HER-2= Human epidermal growth factor receptor 2
- KKG= Fragebogen zur Erhebung von Kontrollüberzeugungen zu Krankheit und Gesundheit
- LCIS= Lobular carcinoma in situ
- MEMS= Microelectronic monitoring system
- MHLOC= Multidimensional Health Locus of Control
- MRI= Magnetic Resonance Imaging
- NOS= Not otherwise specified
- OBL= oblique-lateral
- PR= Progesterone receptor
- QOL= quality of life
- SERM= Selective estrogen receptor modulator
- TDLU= Terminal ductal lobular unit

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1. Introduction

1.1. Epidemiology

Breast cancer is the most common cancer for women both in Austria and worldwide. In Europe it was the most frequent cancer in 2008, with 28.2% of the total female population and thereby was also the leading cause of death in women, being responsible for 17% of total female deaths. [1]

According to the WHO over one million women were diagnosed with breast cancer in the year 2000 with 370.000 fatalities. In Europe the number for new cases were 350.000 and 130.000 for deaths. In Austria approximately 4.700 women are diagnosed with breast cancer annually. [2, 3]

Statistically, in Austria every ninth women contracts breast cancer in the course of her life, whereas it is rarely found in the male population. In 2007 the incidence for breast cancer in Austria was 66.4/100.000 women and only 0.6/100.000 men. The mortality in 2007 in Austria was 17.8/ 100.000 women. In Styria the incidence in the annual average 2005/ 2007 was 69.7/ 100.000 women. [3, 4]

Approximately 40% of new cancer cases in the female population and nearly 30% of cancer-related deaths are caused by breast cancer. With the mean age at slightly more than sixty years at the time of diagnosis, women with breast cancer are seven years younger than the average female cancer patient. [2]

Currently the 5-year-survival-rate for breast cancer in Europe is around 79%, which is high compared to other forms of cancer. Female lung cancer patients, for example, only have a 15% survival rate after five years. It is not possible to draw efficient conclusions between improvement of survival rates and fundamental reasons like early diagnosis and medical progress in therapy. However surveillance of the tumor size at the time of diagnosis between 1996 and 2002 has lead to the assumption that presently breast cancer is detected in smaller and earlier stages. [5, 2]

1.1.2. Risk factors

The risk factors are age, familial strain (especially breast or ovarian cancer in first degree relatives), nullipara or first pregnancy over the age of 40, menarche before the age of eleven or menopause after the age of 54, hormonal contraception (prior to the first pregnancy and for more than five years), hormone replacement therapy for more than five years, a body mass index (BMI) > 30 and frequent consumption of alcohol defined as more than one glass of beer or 1/8 liter wine per day. [5]

Genetic disposition is held responsible for 5-10% of breast cancer cases. We distinguish high penetration genes which are led back to about half of the found mutations and moderate and low penetration genes. [6]

Monogenic inheritance underlies mutations with high penetration genes. The most important mutations are in the BRCA 1 and BRCA 2 genes. BRCA stands for “breast cancer” and marks tumor suppressor genes that are involved in the DNA repair process. Other high penetration genes found in familial breast cancer (e.g. the P53 gene found in combination with the LiFraumeni syndrome) only contribute to 5% of genetically induced breast cancer cases. The lifetime risk of developing breast cancer for women carrying BRCA1 or 2 is 80-85%. Mutations of moderate and low penetration genes underlie a polygenic inheritance and increase the risk of developing breast cancer by 10%. [5, 6]

Families with an increased risk should be informed by gynecologists and geneticists. A family tree can help to calculate the likeliness of a monogenic inheritance in the family. It is also possible to do a genetic analysis if desired. Women with increased genetic risk will get increased medical controls to assure early detection. If applicable, prophylactic measures such as surgery are possible. In addition to risk evaluation, psychological attendance of families with cumulative cancer cases should be applied. [6]

1.1.3. Prevention

Breast cancer prevention is a very important consideration for health care providers. The target group for screening and education are women with familial strain, women who have already had breast cancer or a precancerosis, and older women. [6]

For primary prevention we have only a few possibilities. A healthy lifestyle is relevant for the general decline of cancer risk. Reduction of weight, humble alcohol consumption, non-smoking and physical activity are recommended and supposedly decrease the cancer risk. [5]

A significant relation between body mass index (BMI) and increase of incidence and mortality of breast cancer was found in a prospective study on over 900.000 U.S. adults. A significantly increased risk of fatality from breast cancer was found in females with a higher BMI. [7] In the course of the Women's Intervention Nutrition Study (WINS), a correlation between low-fat diet and number of relapses and overall survival has been described. [8] The European Prospective Investigation into Cancer and Nutrition (EPIC) study including 285.526 women could not support the association between vegetable or fruit intake and breast cancer risk. [9]

Several studies observed a positive impact of sport on the occurrence of breast cancer. Possible explanations might be a reduction of estrogen production, loss of body weight, a better lipid profile, escalation of the glucose metabolism and climax of immunity. [6]

More radical options are surgical interventions or the prescription of drugs. A surgical bilateral mastectomy after completion of family planning respectively at the age of 35- 40 might reduce the risk by 90-95%. Furthermore early detection mostly guarantees a sufficient therapy. [6]

Regarding preventive drug use, several studies showed that treatment with Tamoxifen reduces the risk of cancer. The International Breast Cancer Intervention Study I (IBIS-I) showed an incidence reduction of about a third in the Tamoxifen group in a double-blind, placebo-controlled randomized trial including 7.152 women with increased risk of breast cancer. [10] The follow-up after ten years showed a persistent preventive potential. The risk reduction was limited on estrogen-receptor-positive lesions. [6]

Nevertheless Tamoxifen can cause serious side-effects. In a recent study including 632 women with an increased five year risk of developing breast cancer, women's knowledge and attitudes toward Tamoxifen were investigated. The participants of the study received a tailored decision aid, that informed them of the risks and benefits of Tamoxifen. The results showed, that women understood the positive and negative effects of Tamoxifen, but were mostly uninterested in taking it as a prophylaxis. The authors assume this is because the possible side-effects overweighed the desired benefit. [11]

The fact, that breast cancer risk can be reduced by antihormonal drugs has led to a controversial discussion. Especially substances proven to be effective in breast cancer therapy have been debated. These include selective estrogen receptor modulators (SERM), aromatase inhibitors (AI) and only under study conditions retinoids and COX-2 inhibitors. [6]

Early detection is classified among secondary prevention. It has notable relevance because smaller tumors and low tumor stage are easier to treat and have a better prognosis. Today most women still detect their tumor during self-examination. At that time many tumors have a diameter over 2 cm. [2]

1.1.4. Diagnostics

Before mammography and sonography became state of the art in early detection of breast cancer, clinical signs were often the only symptoms. In general there are three clinical signs that are suspect for breast cancer: optical alterations of the breast like change of color, retractions or asymmetry, and palpable alterations and secretion of the mamilla. [5]

Although self-examination is widely recommended, mammography is still the only diagnostic method with evidence based reduction of mortality. The American Cancer Society recommends annual mammograms beginning at the age of 40 years. European quality assurance programs are based on the European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis. (EUREF- guidelines) [5, 6]

In principle the mammography device works like a normal x-ray system. Usually cranio-caudal (CC) and olique-lateral (OBL) photographs are taken. The main goal is to take as few radiograms as possible. As a side effect of mammography, false positive test results have to be considered. Especially during routine early detection of young asymptomatic women, conspicuous results are found in higher numbers. This can lead to over diagnosis, and in the worst case, over therapy. Another issue that should be related to screening mammography is the radiation dosage. With about 4 mGy it constitutes a very low amount of radiation and only hits the breast tissue. Risk assessments of all radiation protection commissions have shown that the benefits outweighed the potential risks. False negative diagnostic findings in mammography screening can be clarified with additional mammograms or sonography. [5, 6]

Sonography can not replace mammography but it is a good endorsement to mammography. The results are device- and user-dependent and are classified into BI-RADS 1-5. BI-RADS 1 and 2 are controlled accordant the regards for early detection. BI-RADS 3 is usually controlled after 6 months and BI-RADS 5 and 6 have to be histologically confirmed. [6]

Magnetic resonance imaging (MRI) is the most sensitive complementary procedure in imaging diagnostics. It is generally applied if there are ambiguities in the results of mammography and sonography. Indications for an additional MRI are the differential diagnosis between cicatrice and relapse after lumpectomy, radiotherapy or reconstruction of the breast. Another indication is CUP- Syndrome (cancer of unknown prime) with pathological axillary lymph nodes.

As for the invasive diagnostic measures, fine needle puncture is used as clarification for symptomatic cysts whilst high-speed punch biopsy is commonly used for solid tumors. According to the S3- guidelines it is recommended to draw at least four sonographically controlled samples. In case of microcalcifications, S3- guidelines recommend a vacuum punch biopsy where more tissue can be drawn. [57]

Very small lesions can be removed macroscopically after minimal invasive intervention. Therefore it is possible to mark the biopsy cavity with small clips. If the lesion turns out to be benign the clips can stay in the breast. If subsequent excision is necessary the clip can serve as landmark. Another important indication for clip implantation is as a check mark of the tumor bed before neoadjuvant chemotherapy.

1.1.5. Pathology

The pathological anatomical findings are essential for further treatment. They should include histopathological type, grading, tumor size, multifocality/ multicentricity, R-classification and safety margin, peritumoral vessel invasion, pTNM-classification, hormone receptor status, HER-2-status and MIB1.

1.1.5.1. Carcinoma in situ

The carcinoma in situ (CIS) is the progenitor lesion of invasive breast cancer where the malign epithelial cells remain confined to the ducts and lobes of the gland and show no signs of invasion into the surrounding stroma. Depending on regional differences, CIS accounts for 5-30% of all breast cancers. The majority originates from the terminal dutal lobular unit (TDLU) wherein 95% are ductal CIS (DCIS) and 5% lobular CIS (LCIS). [6,12]

1.1.5.2. Invasive breast cancer

40-70% are counted among invasive ductal carcinomas. About 70% of those are defined as “not otherwise specified” (NOS) which means they have no specific histological attributes.

The invasive lobular carcinoma accounts for 10-15% of breast cancer cases. [12]

1.1.5.3. Additional analysis

HER-2- status is a prognostic and predictive parameter for the tumor response to Transzumab (Herceptin®). [6]

1.1.6. Therapy

1.1.6.1. Surgery

Dependent on preoperative diagnostics like mammography, preoperative histopathological results, tumor size in relation to breast size and the patient's wish there are two possible surgical approaches: segmental resection (i.e. breast conserving surgery) and mastectomy. Additional measures are the removal of the sentinel lymph node. If metastasis of the sentinel lymph node can be found axillary dissection is necessary.

It is necessary to evaluate tumor size and resection margin during surgery using frozen section. The final histopathological analysis is important to assure that the resection margin was tumor-free. [6]

1.1.6.2. Radiotherapy

The aim of adjuvant radiotherapy is the prevention of relapses. Especially in combination with segmental resection it is essential and can reduce the relapse risk from 20-30% to 5-10%. After mastectomy it can reduce the risk of relapses affecting the thoracic wall. Modern radiotherapy also gains a good cosmetic result and minimization of side effects on heart and lungs. [6]

1.1.6.3. Chemotherapy

Neoadjuvant chemotherapy is considered in inflammatory breast cancer, advanced cancer that is primarily inoperable, a cancer type that might also respond to adjuvant chemotherapy and as preparation for breast saving surgery. [5]

Chemotherapy also has a value in adjuvant and palliative care. The most effective drugs are anthracyclines, taxanes and cyclophosphamide. Main side effects include nausea and vomiting and hair loss. Furthermore chemotherapy affects the blood system. Leukopenia can cause infections and fever. Thrombocytopenia can lead to a dangerous bleeding. [5]

1.2. Endocrine treatment

The aim of adjuvant antihormonal treatment is the reduction of relapses and micro-metastases. An estimated 75% of breast cancers are estrogen-receptor-positive and approximately 55% progesterone-receptor-positive. Adjuvant endocrine treatment is recommended for these breast cancer types.

In premenopausal women the the main contingent of estrogen in the body is produced by the ovaries. Conversely, in postmenopausal women the enzyme aromatase generates estrogen by aromatization of peripheral androgens from ovaries, adrenal gland and adipose tissue. This is where antihormonal treatment approaches and why it is variable depending on the menstrual status.

St. Gallen 2007 classifies 3 risk groups: “low risk”, “intermediate risk” and “high risk”. [see table 1]

Low risk	**Intermediate risk**	**High risk**
Nodal negative and all following criteria: • pT < 2 cm • Grading 1 • no vessel invasion • (questionable) hormone sensitivity • HER-2/neu negative • age > 35	Nodal negative and at least one of the following criteria: • pT > 2 cm • Grading 2-3 • peritumoral vessel invasion • no hormone sensitivity • HER-2/neu positive • age < 35 Nodal positive (1-3 lymph node metastases) and • (questionable) hormone sensitivity • HER-2/neu negative	Nodal positive (1-3 lymph node metastases) and • no hormone sensitivity • HER-2/neu positive Nodal positive (4 lymph nodes and more)

Table 1: risk groups and therapy recommendations according to St.Gallen 2007 (source: [6])

Adjuvant hormone therapy is indicated in every patient with ER and/or PR positive breast cancer and not in the low risk group according to St. Gallen 2007. The low risk group can be prescribed antihormonal treatment as prevention of contralateral breast cancer. [5, 6, 13]

1.2.1. Endocrine treatment in postmenopausal women

For many years Tamoxifen was gold standard in adjuvant endocrine treatment. In the last years the aromatase inhibitors gained importance.

Three possibilities for the adjuvant prescription of aromatase inhibitors can be distinguished: upfront therapy, switch therapy and extended adjuvant therapy. [6]

1.2.1.1. Upfront therapy

This is primarily adjuvant application of aromatase inhibitors instead of 5 years of Tamoxifen. In two randomized studies significantly smaller recurrence rates have been found in the group taking Anastrozole (ATAC) or Letrozole (BIG-98) compared to a tamoxifen monotherapy.

In a median follow-up of the ATAC-study the difference in recurrence rates was increased from 2.8% after 5 years to 4.8% after 9 years showing a long-term benefit of Anastrozole treatment. Also the results of the BIG-98 trial showed that Letrozole significantly reduces the recurrence rates compared to Tamoxifen especially at distant sites. On the other hand no increase of the overall survival could be described yet. [6, 14, 15]

1.2.1.2. Switch therapy

Switch therapy indicates the application of aromatase inhibitors following two to three years of Tamoxifen therapy completing five years of treatment in total. Several trials (IES-31, ABCSG-8, ARNO) showed that patients could benefit from a switch to aromatase inhibitors adverted to recurrence rates. A metaanalysis of the three switch-trials with Anastrozole (ABCSG-8, ARNO, ITA) showed an amelioration of the overall survival as well as lower relapse rates in the Anastrozole group. [6]

1.2.1.3. Extended adjuvant treatment

Extended adjuvant treatment means intake of aromatase inhibitors following five years of adjuvant Tamoxifen therapy. It has been shown, that receptor-positive, recurrence-free patients have a better recurrence-free survival under aromatase inhibitor treatment after five years of Tamoxifen therapy. [6]

1.2.2. Endocrine treatment in premenopausal women

For premenopausal women Tamoxifen is the endocrine therapy of choice. Because of its mechanism of action aromatase inhibitors are not able to lower the estrogen level sufficiently. Tamoxifen can be given as first line therapy or after chemotherapy. It can also be combined with ovarian ablation. Surgery, radiotherapy or the administration of GnRH-analoga are the methods of choice to reach ovarian ablation. Especially women under the age of 35 should be administered GnRH-analoga in combination with Tamoxifen for two to five years. [5, 6]

1.2.3. Tamoxifen

Tamoxifen (Nolvadex®, Ebefen®) is an important adjuvant endocrine therapy prescribed to women with hormone-receptor-positive breast cancer. It is a selective estrogen-receptor modulator (SERM). Tamoxifen has both antagonistic and agonistic estrogen-receptor effects depending on the tissue. In the breast it acts as an estrogen antagonist while in uterus and bone it shows estrogen-like activity.

Side effects include hot flashes, tiredness, dizziness, headache, depression, hair thinning, loss of sexual desire, vaginal discharge and abnormal vaginal bleeding. Serious side effects can be cancer of the uterus, strokes and embolism of the lungs. Regular gynecological examinations are obligatory to find early signs of endometrial cancer. [13, 17, 18]

In premenopausal women Tamoxifen can be combined with Goserelin (Zoladex®). Goserelin is a gonadotropin releasing hormone agonist (GnRH). It suppresses ovarian hormone secretion and lowers the blood levels of estrogen in premenopausal women in the same way as surgical oophorectomy. Compared with combined Cyclophosphamide, Methotrexate, Fluorouracil (CMF) chemotherapy, Goserelin treatment combined with Tamoxifen is equivalent in disease-free survival in receptor-positive patients and is well-tolerated. Some studies even suggest it might be superior to chemotherapy in premenopausal, early-stage breast cancer patients. [19, 20]

1.2.4. Aromatase inhibitors

Aromatase inhibitors are highly effective in postmenopausal women as they inhibit the enzyme aromatase in peripheral tissues. Agents of this class of medication are Anastrozole (Arimidex®), Letrozole (Femara®) and Exemestane (Aromasin®). All of them decrease the amount of estrogen produced by the body.

1.2.4.1. Letrozole

Letrozole is a 3rd generation nonsteroidal aromatase inhibitor. It can be given as monotherapy after surgery, chemotherapy and/ or radiotherapy or following 5 years of tamoxifen treatment.

Common side effects during Letrozole treatment are hot flashes, tiredness, dizziness, headache, depression, hair thinning, loss of sexual desire and muscle, joint and bone pain. Furthermore Letrozole might cause or worsen osteoporosis. [21]

1.2.4.2. Anastrozole

Anastrozole also is a 3rd generation nonsteroidal aromatase inhibitor and very similar to Letrozole in the mode of prescription.

Side effects are similar to Letrozole.[22]

1.2.4.3. Exemestane

Exemestane is a 3rd generation steroidal aromatase inhibitor with a difference in the pharmacological profile. Pharmacokinetics and side-effects are similar to nonsteroidal aromatase inhibitors. [58]

1.3. Importance of information for patients

Several studies showed that patients information needs vary and sometimes change during the course of treatment. A small qualitative study on 17 patients who were interviewed about their desire for information found that patients did not need all information at once but changed their information requirements during their treatment. Influential factors in information seeking were faith, hope and charity. These findings resemble the results of a qualitative study on 105 women who were interviewed at diagnosis and after 21 months. The information needs of these cancer patients changed over time as well as their main concerns. This leads to the conclusion that primary information needs relevant at the time of diagnosis may become less relevant during treatment and might be replaced by other issues related to the illness. [23, 26]

Patients have a strong wish to be informed about the main aspects of their disease and the following treatment. A survey of 250 representative cancer patients in west Scotland using semi-structured interviews showed that cancer patients have a strong desire to be informed. The majority of patients (79%) stated that they wished to get as much information as possible; 96% wanted to know if their disease was cancer. As to their treatment options 91% wanted to know their chance of cure and 94% required to be informed about all possible side-effects. [27]

These findings were confirmed in a multi-centered study asking 2.331 patients about their information preferences. A high number (87%) wished to get all possible information including good and bad news. 98% wanted to know whether their illness was cancer. The authors concluded that doctors should never withhold this fact assuming that their patients preferred not to know. [28]

An adequate level of information is also linked with increased self-care behaviors. Patients who are invited to take an active part in their treatment have lower anxiety levels. They experience a feeling of control and self-efficacy which can even ameliorate the symptoms. Furthermore the knowledge about the upcoming treatment helps the patients to plan and arrange the future. This causes a decrease of disruptions in everyday life and also enhances the adherence to their recommended treatment. [24, 25]

The CAWAC (Caring About Women and Cancer) study group asked 13.136 women in 15 European countries about their satisfaction with the quality and amount of information they had received about their disease. Only one third was extremely satisfied with the usefulness and amount of information provided by their doctors at diagnosis. The majority (88%) stated that they had received too little information and 25% were dissatisfied with the information about side-effects of their endocrine treatment. For surgery, radiotherapy and chemotherapy the satisfaction according to information about side-effects was slightly better. Seven percent of patients wanted to be involved in decisions concerning their treatment and thought that they had not been invited. Forty-four percent wished to be part in decision making and participated actively and the same number of patients preferred to leave treatment decisions to their doctor. The authors concluded, that giving information was essential as it helped the patients and their families to cope with the serious situation. [29]

The patients wish to participate in decision making should not be confused with a desire to make all decisions alone. A study on 233 patients evaluated the preferred level of participation in decision making. Patients who felt they were making shared decisions with their doctors were the most satisfied compared to patients who stated that they had made their decision on their own or the doctor decided exclusively about their treatment. The authors defined shared decision making as the best work model for doctors and patients. [30]

1.3.1. Communication between doctor and patient

Communication skills are important clinical skills. Good communication enables the doctor to collect a complete data from the patient. It also influences the number of symptoms determined by the doctor. Referring to the treatment, good communication allows better assessment of the efficacy of therapy and leads to higher adherence to therapy recommendations. It also affects the physical and emotional well-being of the patient. Furthermore good communication improves the doctors' satisfaction with his or her job. [31, 32]

Communication problems on the patients' side are numerous. Many patients do not ask for important information even when doctors encourage asking questions. One possible reason for this behavior is that patients assume the doctor would automatically provide all important information. Other patients fear they would seem ignorant when asking too many questions. Some do not want to take up the doctor's busy time. [28]

The standard mode to deliver important information is verbal. In the setting of a consultation the patient can raise questions and in the best case a dialogue between doctor and patient can take place. Unfortunately patients are often overstrained in these situations and are unable to recall the contents of the conversation. This is often due to the shock after the diagnosis of a serious illness like cancer. Furthermore the doctors tend to overestimate a patient's knowledge about basic biology. [25]

Patients have a leaning to overvalue the seriousness of their disease. Doctors should find out what their patients already know and what further information they need. Also they should find out what kind of information their patients expect. It has been described that people generally have better memory of information about life-threatening situations. Moreover patients preferably recall facts that are provided at the beginning of a consultation and topics they consider most relevant which is not necessarily the information the doctors attribute the highest weight. [25, 31]

The amount of information influences the ability to recall. The more statements are made the smaller is the percentage of recollection. Written information like leaflets and books can be a good addition to verbal information as they provide permanent record and are useful to refresh the patients' memories. Especially for patients who are shocked or anxious during the first consultation a booklet can be useful. It can also help informing the family. It is of utmost importance that these leaflets are always at high standard and state of the art. Moreover it is essential that it contains information that meets the patients' needs and not only what doctors assume to be relevant. It should also be at the right level for patients to understand. [25, 31]

Good communication skills are especially essential for hospital doctors. In a study questioning 250 women in west Scotland the vast majority stated that they preferred to be informed about their diagnosis by a hospital doctor (60%) whilst only 14% preferred their general practitioner. [27]

During a carrier span of approximately 40 years a hospital doctor carries out between 150.000 and 200.000 consultations with patients and their families. Even highly trained and experienced specialists frequently have communication difficulties. Bad communication can lead to complaints and may in the worst case result in legal actions. It may also affect the job satisfaction and results in higher stress levels and emotional burn-out. Insufficient training in this clinical skill is thought to be the primary reason for bad communication in clinical practice. A prospective study tried to evaluate the efficacy of a 3-day training course on communication skills. 160 oncologists from 34 UK cancer centers participated in this randomised controlled trial. The doctors who had attended the course significantly improved their key skills. They asked a greater number of focused questions, provided more appropriate responses to patients' cues and asked a smaller number of leading questions. Furthermore they showed more empathy resulting in a better doctor-patient relationship. The oncologists participating in the study rated the training as relevant for their practical work. [32]

A further drawback affecting good communication between doctor and patient is the clinical environment in general. In many hospitals it is hardly possible to find a quiet place for private consultations. Interruptions are very common. Doctors and nurses walk into the room and the telephone rings frequently. This results in intimidation of the patient who abstains from further questions. Another common problem is the lack of time. Under this pressure doctors tend to sacrifice the dialogue for physical exam and the doctors monologue. [31]

Important information for the patient is furthermore often omitted because the doctor assumes that the information must have been given to the patient at an appropriate time. This is the result of bad communication between different departments and specialists. Eventually the patient feels distressed and the physician is frustrated because he or she has to spend extra time to give the patient basic information or bad news. [31]

1.3.2. Information on side-effects of hormone treatments

Endocrine treatment with Tamoxifen or aromatase inhibitors has some specific side-effects. Two studies determined the information provided about side-effects of these two treatment options by the doctor and the patients' preferences toward them. [33, 34]

A qualitative study on 16 teams of breast cancer professionals in the UK analyzed the information provision concerning side-effects of Tamoxifen or aromatase inhibitors to postmenopausal women. Multidisciplinary teams including a surgeon, an oncologist and a breast care nurse participated. The most mentioned side-effects for both treatments were vasomotor symptoms like hot flushes and sweats. Vaginal bleeding, endometrial cancer and thrombo-embolic events were frequently brought up during consultations of Tamoxifen patients. Arthralgia and loss of bone density were often discussed with patients taking an aromatase inhibitor. Interestingly, sexual dysfunctions were scarcely mentioned for either therapy. Of note might also be the fact, that some symptoms commonly described for both Tamoxifen and aromatase inhibitors were mentioned with different frequencies. For example all professionals discussed vaginal dryness, discharge and itching elaborately when talking about Tamoxifen. Side-effects like vomiting, nausea and gastrointestinal problems were usually discussed with patients taking aromatase inhibitors though the ATAC trial found no difference between patients taking Anastrozole or Tamoxifen. Another notable item was that most of the doctors/ nurses in this trial normally did not let their patients choose their treatment. The authors concluded that there are improvement opportunities concerning both consistency and quality of information about side-effects of aromatase inhibitors and Tamoxifen. [33]

Another study aimed to examine the preferences for adjuvant treatment in premenopausal women. 200 healthy pre- and perimenopausal women aged between of 25 and 49 years were stratified to meet the incidence rates for breast cancer in the UK. The patients were asked to choose between chemotherapy and Goserelin treatment. The subjects were given detailed information about chemotherapy and Goserelin therapy after they had given a spontaneous choice which treatment they would prefer. After this provision of information they were asked to choose again. A high percentage chose Goserelin (78%) over chemotherapy (11%) another 11% stayed undecided. The main reasons for choosing Goserelin were the avoidance of chemotherapy related side-effects, especially hair loss, more convenience as it could be taken at home and therefore less disruptions in everyday life. Women who preferred chemotherapy did so because the treatment was finished earlier. The authors suggested that younger women with receptor-positive breast cancer should be given the opportunity to choose their treatment. [34]

1.4. Adherence to medication

1.4.1. Definition of adherence

Adherence can be defined as the degree to which a patient follows medical advice concerning the recommended treatment. In literature it is often used synonymously with the term “compliance”, but a slight discrepancy between those terms can be described. While compliance describes sticking with a therapy administered by the doctor, adherence means clinging to a therapy agreement between doctor and patient. It is important to note that adherence is a non-judgmental term. It is a statement of fact rather than reproach. Studies define Adherence differently. Often Adherence is defined as taking less than 80% of the prescribed medication. In other studies every omitted dosage is counted to non-adherence. [35, 36, 37, 38, 39, 40]

Also in connection with adherence, the persistence towards a medication should be considered. Persistence means following the treatment over the recommended period of time. For Tamoxifen for example, a 100% adherence and persistence rate would mean taking one tablet a day for five years. [37]

1.4.2. Importance of adherence

In recent years the awareness about the importance of adherence has increased. Lacking adherence to prescribed medication has been described as a problem in the treatment of a variety of diseases. In psychiatric patients for example, adherence is usually low while disabled patients tend to have a higher adherence to their treatment. [38]

Especially in self-administered medication therapy adherence should be an important point of consideration. Former investigations have shown that especially long-term drug therapies have surprisingly low adherence rates, often less than 50%. [37]

This can become a considerable problem. Low adherence can limit the effectiveness of any treatment. Furthermore non-adherence can result in a poorer prognosis. Unrecognized non-adherence can mislead the doctor into incorrect interpretation of a patient's condition to an absence of the therapeutic effect of the prescribed medication. This false estimation may lead to unnecessary diagnostic testing, higher hospitalization rates and treatment changes. Disaccords about the effectiveness of a particular therapy can also compromise the relationship between doctors and patients. This can result in a breakdown of communication. [37, 38]

In clinical trials adherence plays an important role. Non-adherence in the setting of a clinical trial can lead to incorrect results and response rates. In the worst cases it can cause incorrect dosage recommendations. Therefore adherence should be monitored carefully in the clinical setting. The adherence rates during clinical trials are traditionally higher than in out-patient settings. [37, 41]

Several predictors associated with low adherence have been described. The knowledge about them may help to improve a patient’s adherence in the first place. Psychosocial issues, especially depression and cognitive impairment, are often accompanied by low adherence rates. [40] Also, inadequate follow-up and discharge planning, the presence of barriers to care or medication, missed appointments, complex regimens and high costs of medication have been described as reasons for non-adherence. Furthermore, a poor provider-patient relationship can cause low adherence rates. [40] A lack of belief in the treatment and a lack of insight into the illness have also been associated with poor patient adherence. Finally, the occurrence of side effects and the treatment of an asymptomatic disease lower the adherence rates. [40] The later highly apply to breast cancer patients undergoing adjuvant endocrine treatment. No consistent association between sex, race and socioeconomic status could be found. [40]

1.4.3. Measuring adherence

For measuring adherence several direct and indirect methods exist but there is no gold standard.

The “Hawthorne-effect” is an important concept to explain adherence. It describes that the action of monitoring the patients' behavior itself might implicate the improvement of patients' adherence. The knowledge alone to be monitored can influence the behavior. This fact is most beneficial and positive for the patient but should be an issue of consideration in clinical trials exploring adherence. [37, 39]

Direct observation methods include the measurement of drug concentrations in blood or urine**.** This approach is expensive and often not feasible in a clinical setting. Besides it can still be manipulated by the patient as he or she can take an extra dose before visiting the clinic to avoid appearing non-adherent. [37, 39, 40]

Among indirect observation methods patients self-reports are very common. A patient who reports poor adherence is usually candid. However, patients tend to over-report their adherence rates to please the doctors. This causes misinterpretation and overestimation of the patients' adherence. Medication diaries and questionnaires present the same problem. [37, 39, 40, 42]

Pill counts are another common way to estimate adherence. After a certain period of time the remaining pills will be counted. Because of its simple yet empirical nature it is attractive for investigators. However, pill counts do not provide any information about the intake habits of the patient such as dose timing or drug holidays and can be easily manipulated by the patient. Therefore, they are not a good measure of adherence. [37, 39, 40, 42]

In a closed pharmacy system the rates of filled prescriptions is another way of measuring adherence. The proportion of days a patient had pills available can be calculated for a large population and over a long period of time. This can be a very informative assessment method for both adherence and persistence to a drug. Possible biases may be that reasons for non-persistence (e.g. change in the regimen) are not recorded. In addition the correct intake of medication can also not be assessed. [37, 39, 40, 42]

A very expensive method that allows a precise insight into patients' medication taking habits is the microelectronic monitoring system (MEMS). The MEMS is able to record the exact time of opening the bottle and provides a computerized record. Still there is a possibility that the patient does not take the medication when opening the bottle or is taking the wrong amount or adding tablets. Because of high costs it is primarily used for clinical research. [37, 39, 40, 42]

1.4.4. Adherence in breast cancer patients

The importance of breast cancer patients' adherence towards their antihormonal therapy has been underestimated for many years. The main reason for not considering cancer patients to be non-adherent suggests that they have too much to lose to not take their medication as advised. An observational linguistic study showed a good rapport between breast cancer patients and oncologists. Still adherence was rarely raised by doctors. Oncologists assumed that adherence was no problem for their patients but they did not inquire. [43]

This is a dangerous assumption since a low adherence rate (less than 85% or 80%) has been associated with higher mortality rates and shorter relapse-free time. This has been shown for both women taking Tamoxifen or aromatase inhibitors. [44, 45, 46]

A retrospective cohort study in Tayside, Scotland including 1.633 women taking Tamoxifen between 1993 and 2002 revealed that over four-fifths had an adherence of more than 80%. Admittedly the persistence was very low. Only 51% finished the recommended five years. A significant association between adherence and mortality could be established. [44]

Similar findings were provided in a large trial monitoring the filled prescriptions of women with early-stage breast cancer taking Anastrozole. Adherence rates under 85% were found to be associated with significantly lower total survival and shorter recurrence-free survival time. In women adhering less than 65%, inferior disease-free survival was reported. The authors strongly recommended that oncologists should be aware of this problem and try to communicate the importance of adherence to the treatment during consultations. [46]

Principal reasons for non-adherence include severe side-effects impairing patients' quality of life (QOL), bad communication between doctor and patient, lacking appearance of obvious benefits of the therapy and the missing psychosocial acceptance towards treatment. [47, 51] Also, women who are diagnosed with a depression tend to have a lower persistence, higher non-adherence rates and reduced overall survival. [50, 52]

More than 40% of patients do not adhere to Tamoxifen because side-effects affect their QOL. Interestingly, the side-effects compromising womens' QOL are often underestimated and unrecognized by their doctors. In consultations clinicians report mostly about potentially life-threatening side-effects like embolism or endometrial cancer. [47, 51] Women experience hot flashes, weight gain, insomnia and joint aches as most troublesome. [48] Also sexual complaints such as the loss of libido, vaginal dryness and discharge remain problematic and are generally not discussed. [49]

Not informing patients about possible side-effects can have a crucial impact on the patient's adherence. Women experiencing side-effects that they had not been informed of in advance are more likely to discontinue their treatment. [53]

Very young and elderly cancer patients (<45 years and >75 years) are less likely to adhere to their endocrine treatment. [44, 50, 51]

1.5. Rationale

The primary aim of the following study was to examine the degree of intentional and non-intentional non-adherence in patients undergoing medical treatment for breast cancer at the Department of Gynecology and Obstetrics at the Medical University Graz. Furthermore we explored whether the communication of possible side-effects and the doctor-patient-relationship influenced patients' adherence. Moreover we assumed that a good doctor-patient relationship and a patient’s feeling of being sufficiently informed could have a positive impact on the QOL.

2. Material and methods

2.1. Survey material

2.1.1. Semi-structured Interview

Semi-structured interviews are common research tools in trials aiming to measure the adherence of patients. [51, 54]

The interview was developed for the purpose of this study. The questions were pilot-tested in a small sample of women (N=9) with breast cancer. They were informed that they were taking part in a pilot-testing that aimed to develop a proper measuring tool and that their responses would not be included in the study.

After pilot-testing a final version of the interview script and an informed consent leaflet were developed and approved by the ethics committee of the Medical University Graz.

The semi-structured interviews inquired seven areas:

- Socio- demographic background information (six questions) related to family status, number of children, education and current employment.
- Tablet intake (four questions) related to type of antihormonal treatment, duration of antihormonal treatment in months, total number of tablets taken and assessment of patient's tolerance towards their treatment (response categories ranged from 1= very good to 5= not at all)
- Doctors' consultation (two questions) evaluating the time spent on the initial consultation and on follow-up visits. Response categories ranged from 1= less than five minutes, 2= six to ten minutes, 3= eleven to fifteen minutes, 4= sixteen to twenty minutes, 5= over twenty minutes
- Side-effects:
  - Twelve questions concerning common side-effects related to antihormonal treatment (thrombosis/embolism, arthralgia, osteoporosis, hot flashes, sleeping disorders, fatigue, loss of appetite, vaginal bleeding/discharge/dryness, loss of sexual desire, pain during intercourse, weight gain, hair loss) and how detailed they had been brought up in consultations. (response categories ranged from 1

    =very detailed to 5= not mentioned at all)
  - One question concerning the most wearing side-effects. Women were asked to quote the most wearing side-effects spontaneously.
  - Self-assessment of the level of information (response categories ranged from 1= very good to 5= not at all)
- Intentional and non-intentional non-adherence
  - Intentional non-adherence: Four questions related to intentional non-adherence (intentionally skipping dosages),(response categories: 1=yes, 2=no), the possibility to be intentionally non-adherent (response categories: 1=yes, 2=possibly, 3=rather not, 4=no) and the willingness to tell the doctor in advance (response categories: 1=100% to 5=0%)
  - Non-intentional non-adherence: Two questions evaluating non-intentional non-adherence (non-intentionally skipping dosages), (response categories: 1=yes, 2=no) and the frequencies of omitted dosages (response categories ranged from 1= at least once in the last month, 2= at least once in the last year, 3= at least once since the beginning of the treatment)
  - Self-assessment of patients' adherence (response categories ranging from 1=very good to 5=very bad)
- Doctor-patient-relationship
  - Four questions evaluating the relationship to the hospital doctors, the gynecologist in private practice and the general practitioner and the patients' willingness to present their problems (response categories: 1= yes, 2= possibly, 3= rather not, 4=no)
  - One question inquiring if patient had been warned about consequences of non-adherence in advance (response categories: 1= yes, 2= no)
  - Self-assessment of doctor-patient-relationship (response categories ranging from 1=very good to 5=very bad)
- Five questions related to sources of information (hospital doctor, gynecologist in private practice, general practitioner, package insert, other media), (response categories: 1= very much, 2=moderate, 3= few, 4= not at all)

- Four questions related to interventions to improve adherence (tablet-diary, seven-day-pillbox, weekdays on blister pack, leaflet containing important information on endocrine treatment), (response categories: 1= very much, 2= moderate, 3= few, 4= not at all)

The interviews were held under the informed consent of the patient and took between twenty minutes and half an hour. [see both in appendix] Patients were usually interviewed during their waiting time to spare them unnecessary layovers in the breast care center.

2.1.2. Measurements

Two standardized questionnaires were used in addition to the semi-structured interviews. The Fragebogen zur Erhebung von Kontrollüberzeugungen zu Krankheit und Gesundheit (KKG) questionnaire based on the Multidimensional Health Locus of Control Scale (MHLOC). This questionnaire is a 21-item scale that produces three subscales assessing the patients' feelings of self-control over their illness and in what way “chance” or “powerful others” influence their health. The KKG score ranges from 7- 42. Reason for including this rather dated questionnaire was that a study with a very similar design had used the MHLOC [51] and we were interested about which attitudes the patient collective in Graz had towards their health.

The Functional Assessment of Cancer Therapy for Patients with Endocrine Symptoms (FACT-ES) scale was designed for patient self-administration and includes five subscales that are summed up to a total. Higher scores indicate a better quality of life (QOL). The highest possible count in the FACT-Es scale was 180. We chose to include a measurement of the QOL due to the fact that patients' QOL and psychological well-being seem to be linked with higher adherence rates. [40, 47, 49, 50, 52]

2.2. Participants

For the interviews, women attending routine follow-up appointments at the breast care center of the Department of Gynecology and Obstetrics of the Medical University Graz were recruited.

Participants were informed about the study and after providing informed consent they were interviewed. The study was approved by the local ethical committee.

Criteria of inclusion was ongoing antihormonal treatment with Tamoxifen or an aromatase inhibitor, the ability to speak German and the ability to render informed consent.

A total of forty-five women were asked to participate. One patient rejected participation in the study during the interview because she did not feel comfortable about it. During the process of developing the interview script a pre-census took place in order to learn if patients comprehended the questions directed at them and were able to answer plainly.

The forty-four women attending the interviews were interrogated during their waiting time before the follow-up appointment. The interviews took between twenty minutes and half an hour. Filling in the KKG and the FACT-ES questionnaires took another five to ten minutes. Only one patient did not have enough time to fill in the standardized questionnaires in the waiting time. Two other patients did not fill in the FACT-ES correctly and one patient failed to fill in the KKG. Those could therefore not be counted in the measurement of quality of life and health locus of control.

All forty-four patients were able to finish the semi-structured interviews and could therefore be counted in the study.

The interviews were accomplished by two interviewers. Interviewer 1 interviewed thirty-five patients. Interviewer 2 interviewed nine patients.

2.3. Statistical analysis

All data were analyzed using SPSS 17.

3. Results

3.1. Demographic data

The sample included 44 women who provided complete data.

The mean age of the women participating in the study was 59.4 (SD± 11.2). The majority were married or in a stable partnership (65.9%). 31.8% were widowed. 95.5% had children. The mean number of children was 2.18 (SD± 1.2)

Amongst the patient sample 63.6% had compulsory school education, 20.5% had achieved secondary school level. Concerning occupation 15.9% had university-entrance diplomas, 32.6% had achieved no professional education, 60.5% had learned a profession and 7% had achieved a university degree.

3.2. Treatment data

For this trial patients were classified by the UICC classification that is based on the TNM system.

To simplify matters we decided to abridge the stadium underparts A and B. In doing so we were able to classify the patients from stage zero to four in five divisions. Table 2 shows the summarized stages as used in our classification in the same background color.

Stage 0	Tis	N0	M0
Stage I a	T1	N0	M0
Stage I b	T2	N0	M0
Stage II a	T3	N0	M0
Stage II b	T4	N0	M0
Stage III a	Every T	N1	M0
Stage III b	Every T	N2	M0
Stage IV	Every T	Every N	M1

Table 2: UICC classification (source: http://www.brustkrebsverlauf.info/staging_mammaca.htm, 1.7.2010 11:00), The background color indicates abridged stages as used in this study.

In our study population 50% initially had stage 0 and 1. 38.6% had stage 2 at time of diagnosis and 11.4% had stage 3. None of the patients were initially diagnosed stage 4, but 9.1% had had a relapse during treatment.

In the course of treatment 81.8% had undergone breast conserving surgery and 15.9% mastectomy. One patient did not have surgery as prior treatment.

With respect to chemotherapy only 9.1% received neoadjuvant chemotherapy and 40.9% received adjuvant chemotherapy.

72.7% of the women had underwent a radiotherapy.

3.3. Antihormonal treatment

For more than half of the patients Tamoxifen (55.8%) followed by Letrozole (18.6%), Goserelin (14%) and Anastrozole (11.6%) was the first line therapy.

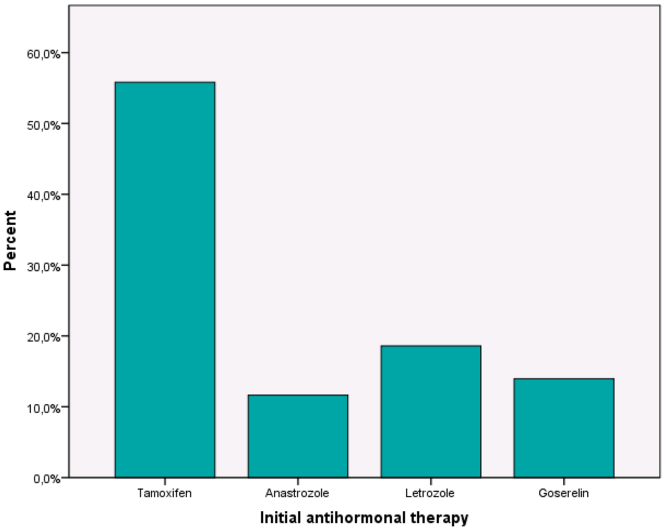

Figure 1: Initial antihormonal therapy (N=44)

As current treatment the majority took Anastrozole (32.6%). A mere 30.2% continued with Tamoxifen. 25.6% were under Letrozole therapy and 11.6% took Goserelin.

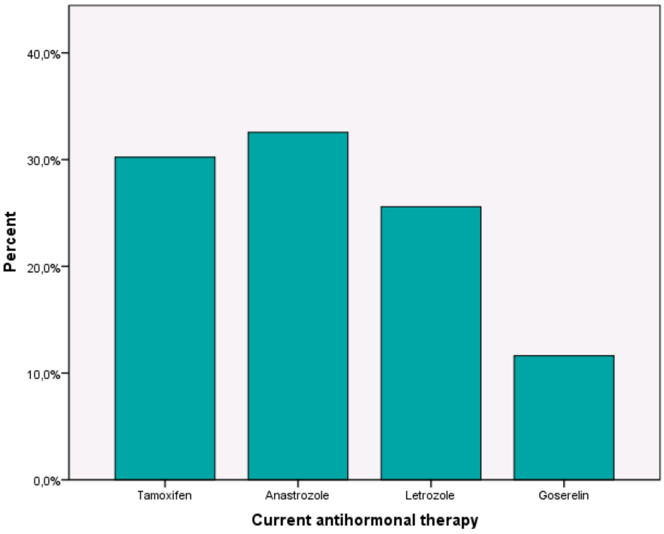

Figure 2: Current antihormonal treatment (N=44)

Median length of medication intake was 28.11 months (SD± 26.9). The patients took an average of 3.2 tablets a day.

Concerning the tolerance of the endocrine treatment 78% reported that they tolerated the treatment very well or well. [figure 3]

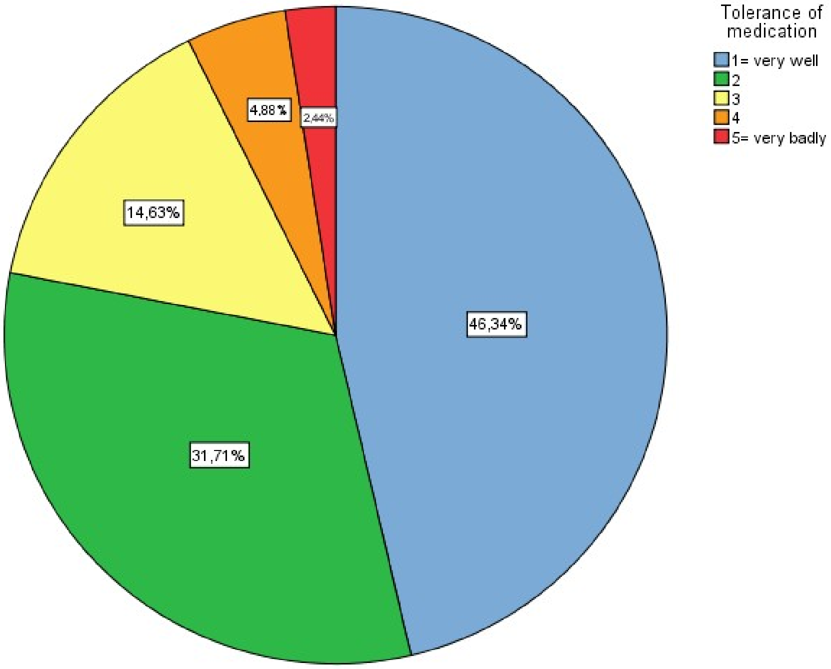

Figure 3: Assessment of tolerance of antihormonal medication (N=44)

3.4. Consultations

When asked to approximate the time consultations had taken prior to the beginning of the antihormonal treatment, 32.6% of women stated that the first consultation had taken between 11 and 15 minutes; 14% reported that the consultation had lasted over 20 minutes and 18.6% estimated that the doctor had dedicated less than five minutes explaining the intended therapy.

It is noteworthy that many women reported there had not been one defined consultation where they had received information about their endocrine treatment but the therapy options had been discussed at several times during their treatment.

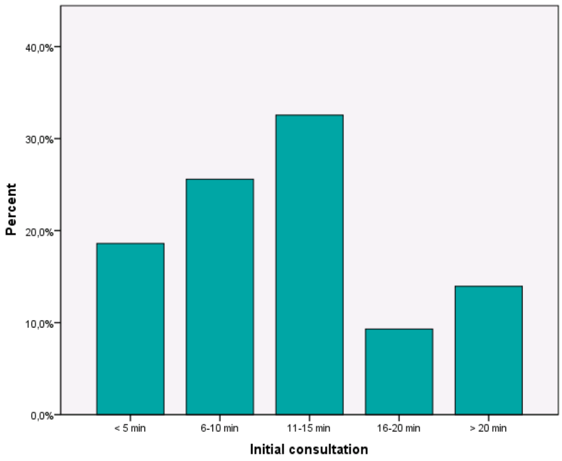

Figure 4: Time spent at initial consultation (N=44)

At the follow-up visits, the majority (43.8%) declared that the consultation took between 6-10 minutes. Twelve women could not answer this question because they were interviewed before the first follow-up visit.

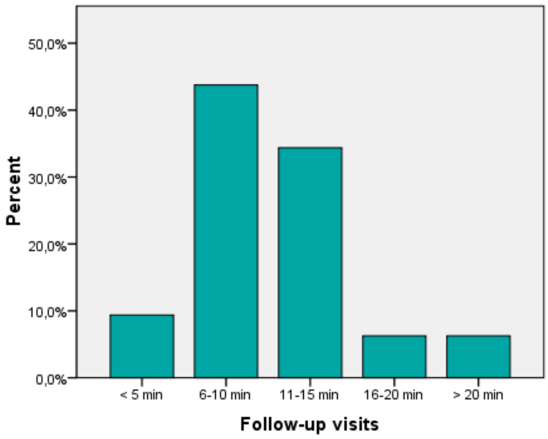

Figure 5: Time for consultation spent at follow-up visits (N=32)

3.5. Side-effects

3.5.1. Information provision about common side-effects

One important aspect of the interview was the question of how detailed common side-effects of endocrine therapy had been explained by the doctor during the first consultation. Women were asked to rate the exactitude of the doctors explanations between 1= 'Very Detailed' and 5= 'Not at All'. [see detailed numbers in table 3]

Side-effects	**1= Very Detailed**	**2**	**3**	**4**	**5= Not at All**
Thrombosis/ embolism	11.4%	15.9%	4.5%	6.8%	**61.4%**
Arthralgia	29.5%	22.7%	9.1%	0%	**38.6%**
Osteoporosis	30.2%	20.9%	11.6%	2.3%	**34.9%**
Hot flashes	**59.1%**	13.6%	6.8%	4.5%	15.9%
Sleeping disorders	29.5%	18.2%	6,80%	2.3%	**43.2%**
Tiredness	25%	20.5%	6.8%	9.1%	**38.6%**
Loss of appetite	11.4%	4.5%	2.3%	0%	**81.8%**
Vaginal bleeding/ discharge/ dryness	23.3%	16.3%	4.7%	2.3%	**53.5%**
Loss of sexual desire	15.9%	9.1%	2.3%	0%	**72.7%**
Pain during intercourse	9.3%	7%	4.7%	0%	**79.1%**
Weight gain	32%	11.6%	11.6%	2.3%	**41.9%**
Hair loss	23.3%	11.6%	9.3%	0%	**53.5%**

Table 3: Information provision about common side-effects of antihormonal treatment.

3.5.2. Comparison between subjective impact and provided information

Subsequently women were asked which of the prior mentioned side-effects they classified as extremely wearing or unsettling.

Women quoted hot flashes (31.8%) and hair loss (22.7%) as the most distressing side-effects.

The majority of patients (72.7%) received very detailed or detailed information about hot flashes [see figure 6] whereas information about hair loss was discussed very detailed or detailed in only 34.9%. [see figure 8]

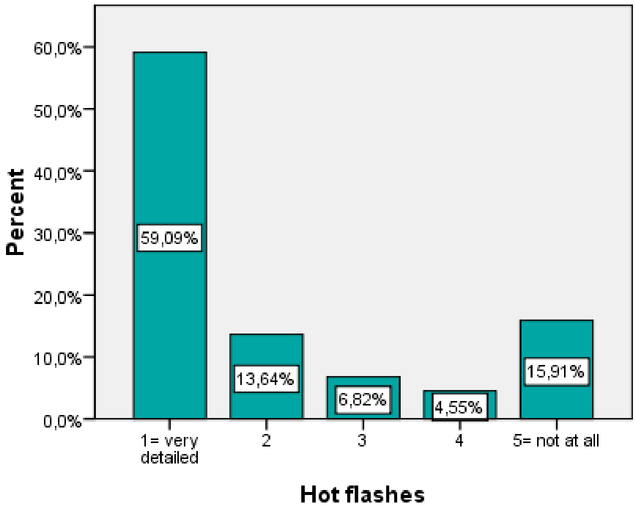

Figure 6: Information provided regarding hot flashes

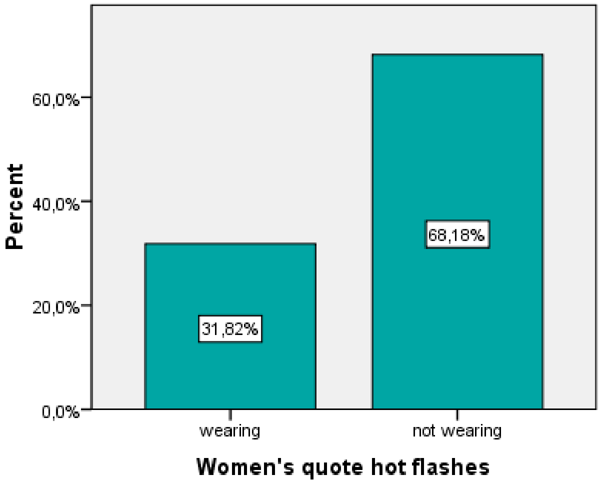

Figure 7: Percentage of women reporting hot flashes as extremely wearing

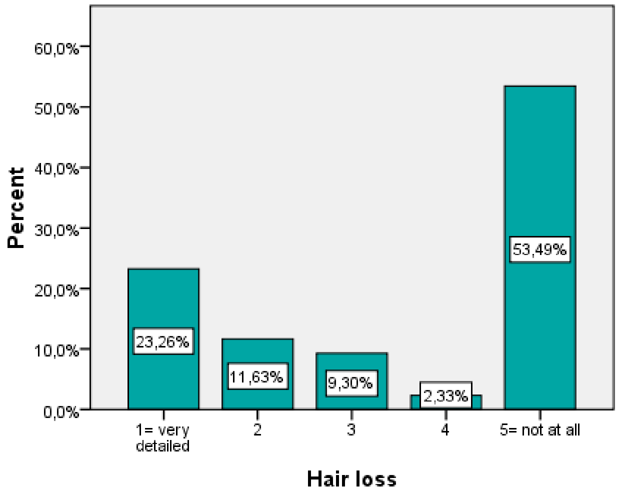

Figure 8: Information provided regarding hair loss

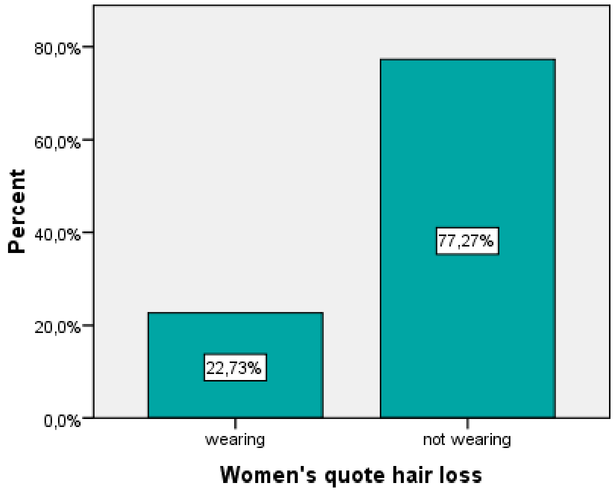

Figure 9: Percentage of women reporting hair loss as extremely wearing

Arthralgia was classified as an extremely impairing side-effect by 13.6% of women. More than a half (51.2%) declared they had been informed very detailed or detailed about this side-effect but 34.9% reported that it had not been mentioned at all. [see figure 10]

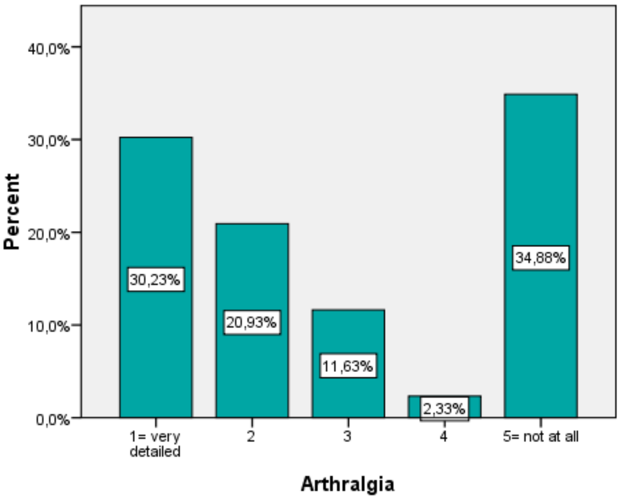

Figure 10: Information provided regarding arthralgia

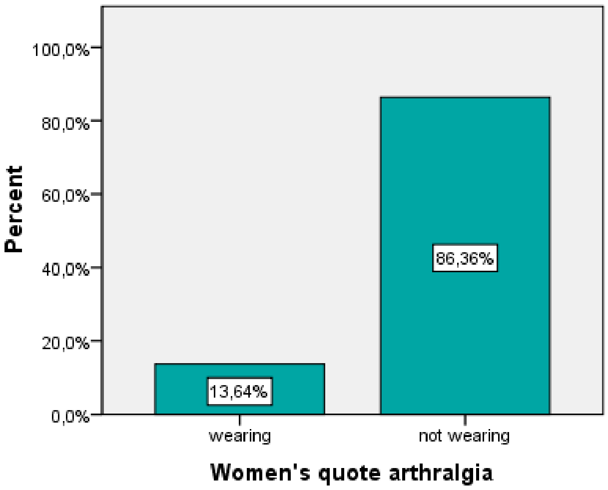

Figure 11: Percentage of women reporting arthralgia as extremely wearing

Sleeping disorders and fatigue were reported by 11,4% as affecting their everyday life but patients had not been informed about this side-effect during approximately 40% of consultations.

Osteoporosis and the possibility of bone fractures were reported as extremely disconcerting by 9.1% of women. During consultations these side-effects were mentioned very detailed or detailed in 51.2%.

A similar result appeared for weight gain. 9.1% of women declared it to be very troublesome. The possibility of gaining weight was mentioned in less than 60% of consultations.

Notably low were the percentages when it came to mentioning side-effects affecting the sexuality. Vaginal bleeding, discharge and dryness were not mentioned in over 50% of consultations. And strikingly in 73% of cases the loss of sexual desire and in 79% pain during intercourse were not mentioned as possible side-effects.

Interestingly women rarely quoted side-effects affecting the sexuality as especially impairing their everyday life. [see figure 12- 17]

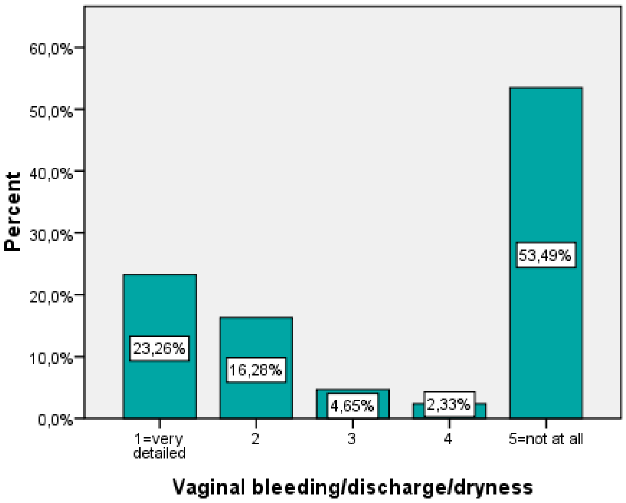

Figure 12: Information provided regarding vaginal bleeding/ discharge/ dryness

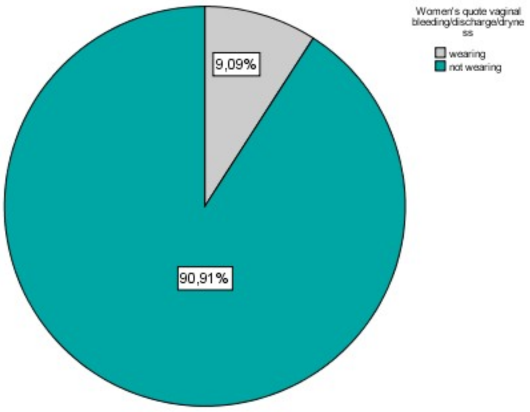

Figure 13: Percentage of women reporting vaginal bleeding/ discharge/ dryness as wearing

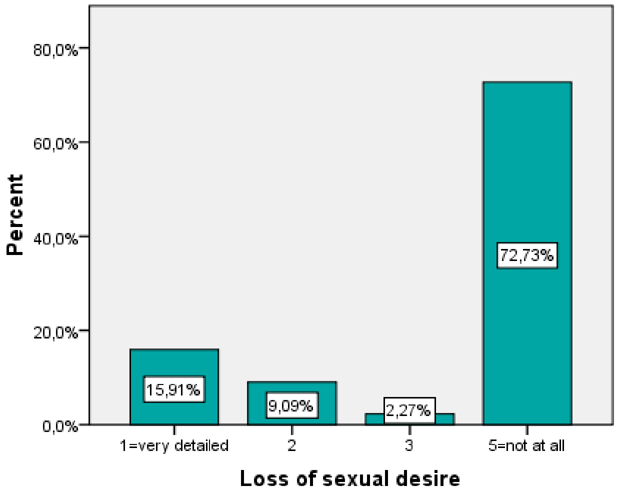

Figure14: Information provided regarding loss of sexual desire

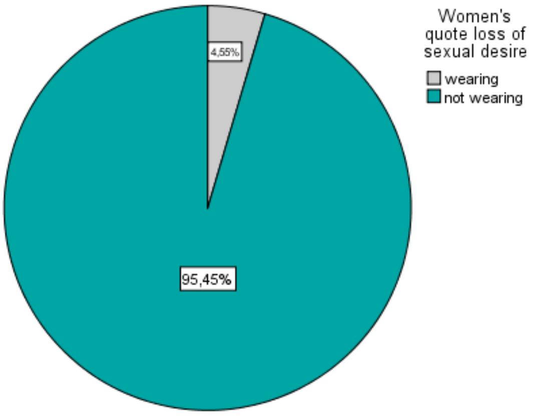

Figure 15: Percentage of women reporting loss of sexual desire as extremely wearing

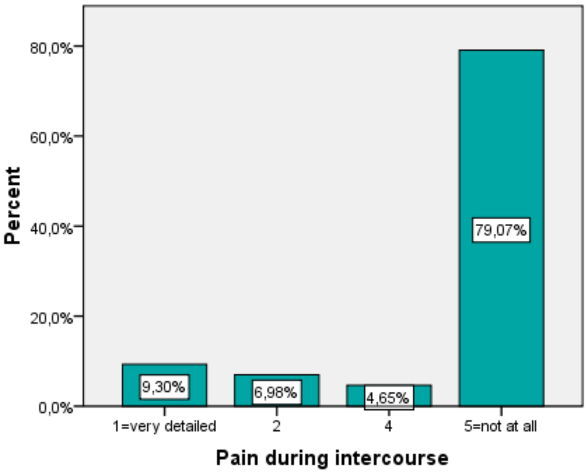

Figure 16: Information provided regarding pain during intercourse

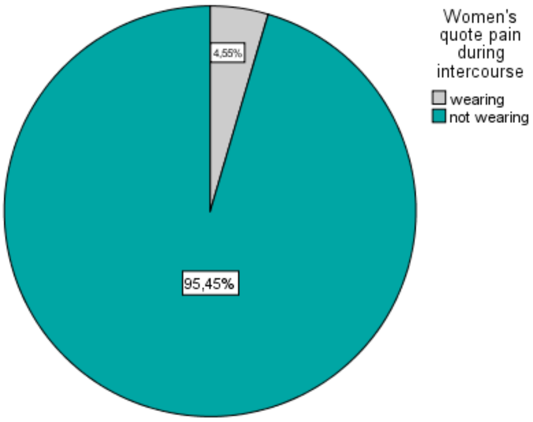

Figure17: Percentage of women reporting pain during intercourse as extremely wearing

3.5.3. Self reported knowledge

Women were asked to assess their knowledge about their current endocrine treatment.

The majority of women rated their knowledge in the middle field. Only 6.8% reported a high level of information and only one patient (2.3%) declared knowing nothing about her treatment.

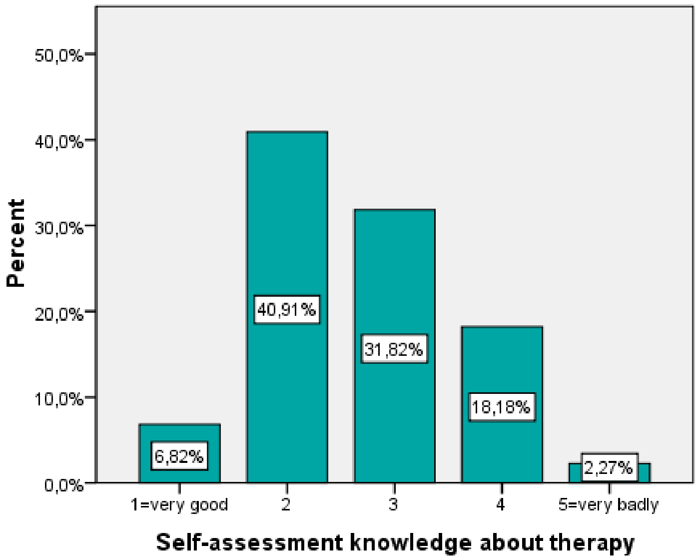

Figure 18: Assessment of the knowledge about antihormonal therapy

3.6. Adherence

We asked women to rate their own adherence. 100% rated their adherence as very good or good.

3.6.1. Intentional non-adherence

One section of the interview was related to the intentional and non-intentional non-adherence.

First, women were asked whether or not they had chosen to take a “tablet break” in the past. Concerning intentional non-adherence three women (6.8%) reported that they had knowingly taken a tablet break for a certain period of time.

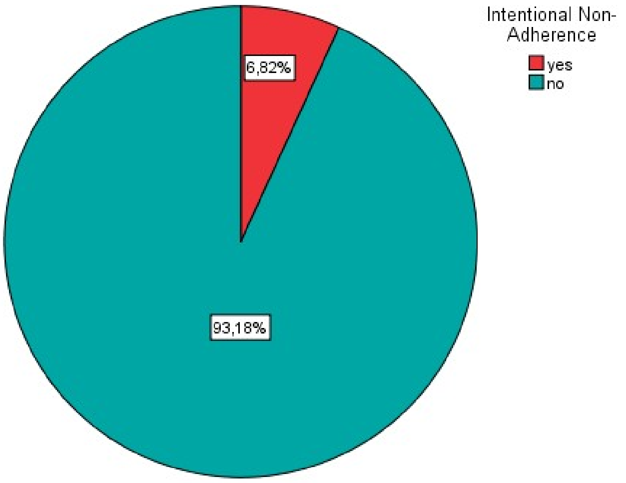

Figure 19: Intentional non-adherence

We asked women if they would skip their medication intentionally if the side-effects became very distressing. Almost 45% answered 'yes' or 'possibly'.

When asked if they would inform their doctor about stopping the treatment almost 95% said 'yes' or 'possibly'. Two women (5%) had intentionally skipped dosages in the past and had not informed their doctor.

Finally the women were asked if they would inform their doctor in advance or after having skipped dosages or having stopped the treatment. 80% said there was a 100% chance they would tell their doctor in advance. 12% said they would tell their doctor after having had a “tablet break”.

3.6.2. Non-intentional non-adherence

Women were asked if they had forgotten to take their tablets in the past.

More than a third (40.9 %) of the patients answered that they had forgotten to take their tablets at least once since they had started treatment.

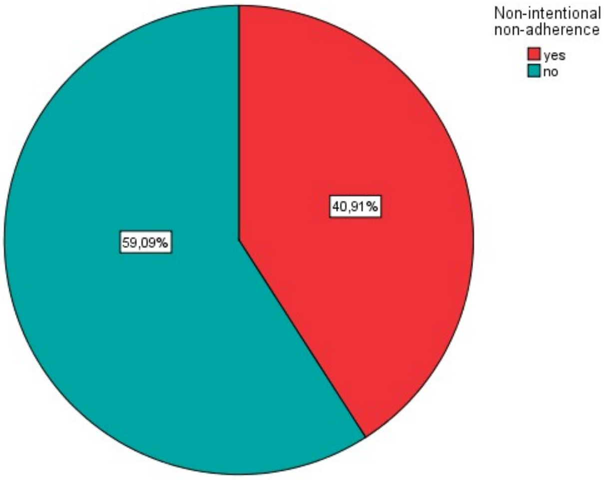

Figure 20: Non-intentional non-adherence

22% of those reported they had forgotten at least one tablet in the last month. 39% said they had forgotten at least one tablet in the past year and another 39% said they had forgotten at least one tablet since taking antihormonal medication.

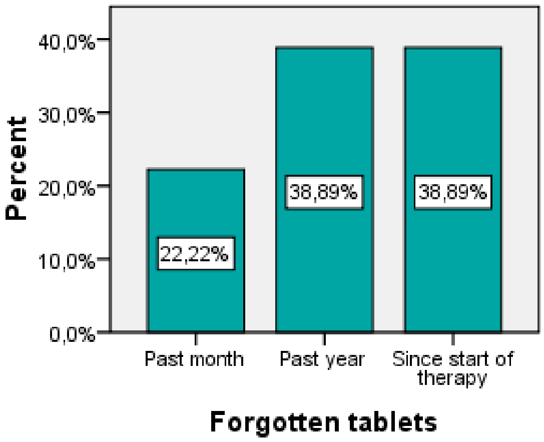

Figure 21: Amount of forgotten tablets

3.6.3. Interviewer related bias

Two interviewers had talked to the patients. In order to exclude an interviewer related bias, we compared the answers collected by both. In the case of the non-intentional non-adherence a difference could be found that seems to be worth description.

Interviewer 1 talked to thirty-five patients. Seventeen (48.6%) of those quoted they had unintentionally forgotten to take their tablets.

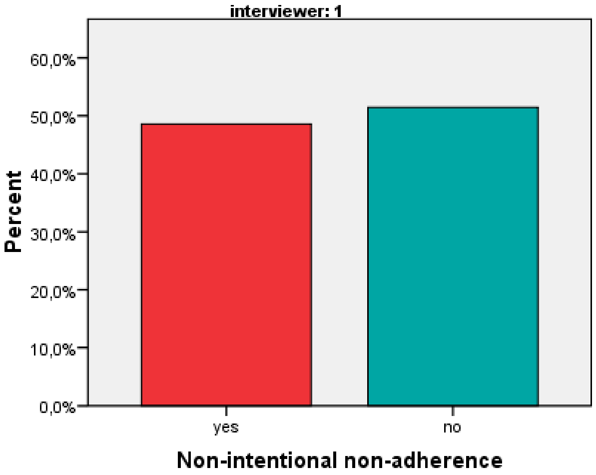

Figure 22: Non-intentional non-adherence in interviews taken by interviewer 1

Interviewer 2 talked to nine patients and only one patient confessed to having forgotten to take her tablets occasionally.

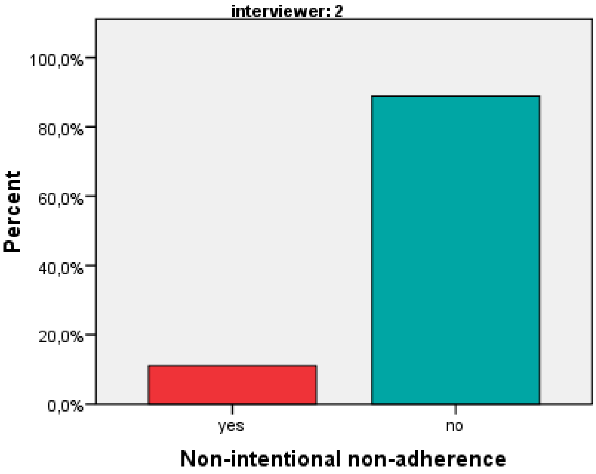

Figure 23: Non-intentional non-adherence in interviews taken by interviewer 2

3.6.3. Group comparisons regarding non-intentional non-adherence

One hypothesis of this study was that women who considered themselves to be well informed would be more adherent. To test this hypothesis two groups were compared. Group 1 included women who classified themselves as very well or well informed; Group 2 included women who classified themselves to be middle-rate to not at all informed.

Table 4 shows no significant difference between the groups.

Non-intentional adherence

Level of information		Frequency	Percent	Valid Percent	Cumulative Percent
Well informed	non-adherent	**9**	42,9	**42,9**	42,9
	adherent	12	57,1	57,1	100,0
	Total	21	100,0	100,0	
Badly informed	non-adherent	**9**	39,1	**39,1**	39,1
	adherent	14	60,9	60,9	100,0
	Total	23	100,0	100,0	

Table 4: Group comparison regarding the level of information and non-intentional non-adherence

Another hypothesis was that a difference between a younger age group and older women could be found regarding adherence-rates. We split the study population into a group younger than 55 years and a group older than 55 years. We chose the age of fifty-five as it has been described as the age limit after which an average European woman is postmenopausal. [55]

Table 5 shows that the women in the younger age group are more likely to be non-adherent than women in the older age group. This is in line with previous research. [44, 50, 51]

Non-intentional adherence

Age-group		Frequency	Percent	Valid Percent	Cumulative Percent
< age of 55 years	non-adherent	**7**	50,0	**50,0**	50,0
	adherent	7	50,0	50,0	100,0
	Total	14	100,0	100,0	
> age of 55 years	non-adherent	**11**	36,7	**36,7**	36,7
	adherent	19	63,3	63,3	100,0
	Total	30	100,0	100,0	

Table 5: Group comparison regarding age and non-intentional non-adherence

3.7. Doctor-patient-relationship

Regarding the doctor-patient relationship a majority of women (84.4%) felt that they were taken seriously.

77.3% said that they felt they could consult their hospital doctor if problems appeared. 79.5% stated they felt they could consult their gynecologist in private practice and their general practitioner if problems appeared.

Concerning the relationship with their treating physicians the vast majority reported having a very good or good doctor-patient relationship.

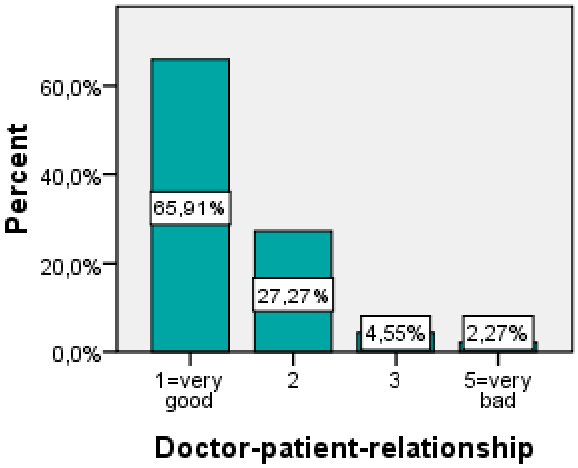

Figure 24: Assessment of the doctor-patient-relationship

3.8. Source of information

The majority of patients reported that the primary source of information was the treating physician followed by the package insert. [see figure 25 and 26]

The general practitioner and the gynecologist played no important role in informing patients about antihormonal treatment. 77.3% quoted they had gotten no information at all by their general practitioner and 45.5% had not been informed at all about their treatment by their gynecologist.

Other media was rarely used. 50% declared they had not informed themselves at all using other media.

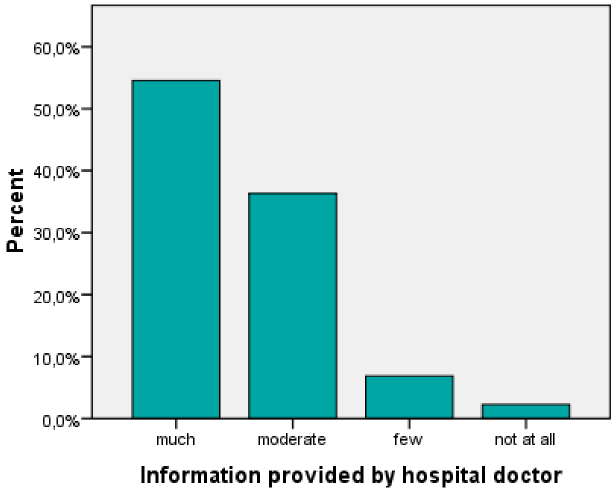

Figure 25: Information provided by hospital doctor

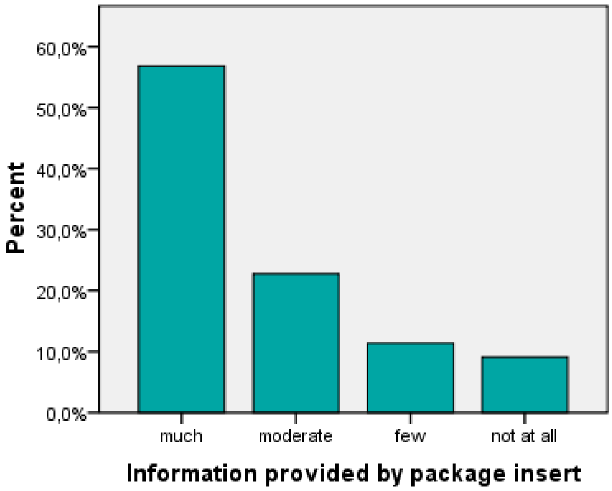

Figure 26: Information provided by package insert

3.9. Possible interventions to improve adherence

Concerning interventions that might improve the adherence 61.4% of women rated the tablet diary as not at all useful and 50% said the 7-day-pillbox was of no use for them.

On the other hand, weekdays on the blister-pack found more approval. 43.2% classified this intervention as very or moderately useful. Still 56.8% classified it as less or not at all useful.

A majority of patients (70.5%) classified leaflets it as very or moderately useful. [see figure 27]

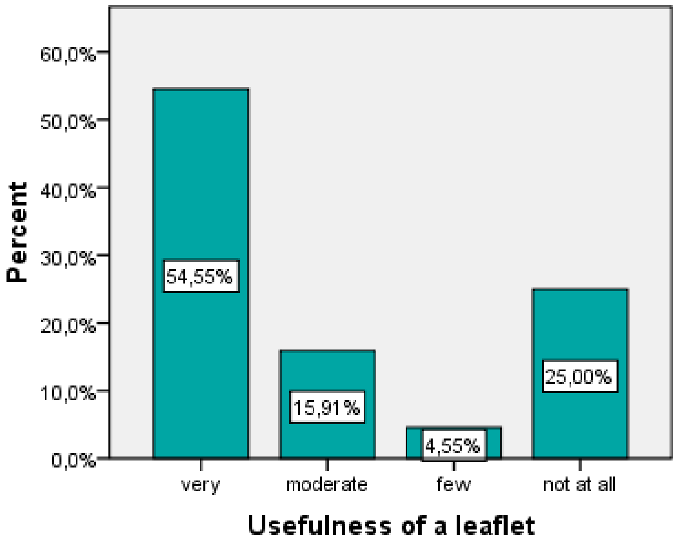

Figure 27: Evaluation of the usefulness of a leaflet

3.10. Results of the FACT-Es and the KKG

Table 6 shows the results for the whole study population. The mean total score of the FACT-Es was 146 indicating a high level of quality of life.

Regarding the KKG the mean score on the subscale "Internal" was higher compared to the subscales "Powerful others" and "Chance". This indicates a feeling of self-control over their illness and responsibility for their own health amongst the study population.

Results of the FACT-Es and KKG for the whole study population

	N	Minimum	Maximum	**Mean**	Std. Deviation
Total score FACT-Es	41	89,00	170,00	**146,2317**	17,75883
KKG Internal	42	13,00	42,00	**28,1190**	5,91073
KKG Powerful others	42	15,00	39,00	**25,5000**	5,56667
KKG Chance	42	8,00	39,00	**22,5476**	7,39876

Table 6: Total score of FACT-ES and the KKG subscores adverted to the whole study population

A comparison between patients with a high level of information and a poor level of information showed higher quality of life scores (FACT-Es 151.6 versus 141.6) in the well-informed group.

Also the KKG showed a difference between well informed and moderately to poorly informed patients. The well informed patients had a strong leaning towards 'Internal' (29.5), which means they had a strong feeling to control their own health.

Moderately to poorly informed women had the same score for 'Internal' (26.8) and 'Powerful others' (26), indicating a feeling of less control over their own health and that for example doctors could influence their wellness in the same way as they could themselves.

A comparison by age-groups showed that neither in quality of life nor in the locus of control a relevant difference could be described. The numbers resembled the results for the study population.

4. Discussion

We performed a small interview-based study including forty-four women with hormone-receptor-positive breast cancer currently undergoing endocrine treatment. We interviewed women visiting the breast care center of the Department for Gynecology and Obstetrics of the Medical University Graz for regular follow-up visits. Of those approximately 40% were non-intentionally non-adherent and 6.8% were intentionally non-adherent.

Similarly Fallowfield et al. [54] found that 48.7% of women admitted to sometimes forget their tablets, which is in line with our findings. 13.1% had reported skipping dosages intentionally which resembled our definition of intentional non-adherence.

Another study reported a 55% non-adherence rate in a population of 131 patients. 83.3% of those were unintentionally non-adherent. [51] Interestingly we furthermore detected that our interviews were subject to an interviewer related bias that might have lowered the non-adherence rates in our population. The bias has to be interpreted with caution, as it concerns a very low number of patients (N=9).

It is remarkable that although nearly 45% of respondents admitted a willingness to skip dosages due to distressing side-effects, 95% reported they would inform their doctor about it. 80% stated there was a 100% chance they would inform their doctor in advance. It has been described that self-reporting has a tendency to over-report certain aspects because patients want to conceal “bad” behavior. [37] Possibly this bias is also relevant for our results in respect to the willingness of patients to tell their doctor about “tablet breaks” in advance. Of the three patients who reported deliberately omitting dosages, only one had told her doctor about it beforehand.

Historically, the level of information has always been linked to enhanced self-care behavior. [23] We could not find a difference between well-informed and poorly informed patients regarding the non-intentional non-adherence. A possible explanation could be the splitting mode used. It is worth mentioning that certain patients attributed to the poorly-informed group assessed themselves as moderately informed.

Interestingly, a difference could be described between the well-informed and the poorly-informed patients regarding the QOL and the health locus of control. Patients who rated themselves as very well or well informed had a higher score in the QOL (151 to 141). Additionally they had a high score in the KKG subscale 'Internal' which implies a feeling of control over their own health. Patients who felt to be moderately or poorly informed had the same scores for 'Internal' and the external score 'Powerful Others'. These results imply that women in this group might tend to give responsibility for their health into the hands of a doctor. People in this group would probably be less interested in the mode of action of their medication but would still be adherent to their treatment.

The lower QOL in the lesser-informed group is still exceptional and should not be ignored. A lower QOL might have an impact on the psychological well-being. Previous research has shown a relationship between a low psychological well-being and lower adherence rates and more therapy interruptions. [47, 49]

When comparing the age groups we found a tendency of the younger group to be less adherent. This phenomenon has been reported in literature before and has recently been described in a trial using pharmacy records that included 8.769 patients. The authors described that younger women (<40 years) were much more likely to discontinue their treatment or to be non-adherent. [56]

Regarding the QOL and the health locus of control, no difference between younger and older patients could be described.

The QOL for the whole population was relatively high (FACT-Es total score 146.2). The health locus of control showed a tendency towards 'Internal' which implies that the participants had a desire to control their own health. [see table 6]

Regarding the doctor-patient relationship we found that participants in our study assessed the relationship to their doctors generally positively. A majority (65.9%) described the relationship to their doctors as very good. The initial consultations lasted more than ten minutes in the majority of cases and also the follow-up visits took mostly between five and fifteen minutes.

However side-effects of the antihormonal treatment were not mentioned in a high number of initial consultations. Only hot flashes were mentioned in detail in the majority of cases. The residual eleven common side-effects alluded to in the interviews were mostly not mentioned in the consultations.

It should be noticed that the reliability of these data are highly dependent on the memory of the women participating in the study. It is possible, that more side-effects might have been mentioned during consultations which patients may not remember anymore at a later stage. The ability to recall could however be influenced by the high amount of information and the distress level after receiving the severe diagnosis of breast cancer. [25, 31] As 70% of the participating women stated that a leaflet containing information about their medication and possible side-effects would be useful it should be considered to make this an available tool for doctors.

We also asked women to spontaneously name the side-effects they experienced as most distressing. The most frequently reported side-effect was hot flashes closely followed by hair loss. However, doctors also did not mention hair loss in over 50% of consultations which can most certainly be attributed to the fact that its impact for patients as a constant reminder of their illness is underestimated.

Gaining weight seems to be another troublesome side-effect for women but is not recognized as a severe side-effect by doctors. It was mentioned in less than 60% of consultations.

It has been described that doctors tend to focus on potentially life-threatening side-effects. [47] In spite, a striking number of women (61.4%) reported that they had not been informed about the possibility of thrombosis or embolism. Furthermore almost 40% reported they had not been informed about the increased risk of developing osteoporosis.

Another frequently quoted side-effect was arthralgia that appeared mostly during aromatase inhibitor treatment. [47] 60% of our patient population currently took Anastrozole or Letrozole and 52.2% said they had been informed about this side-effect in a very detailed or detailed manner. Around 14% classified it as extremely impairing to their everyday life.

Sleeping disorders and fatigue were as well among the side-effects described as especially distressing and were not mentioned in more than a third of consultations. It seems important to give these side-effects more value as sleeping disorders can result in mood disturbances and decreased QOL. This in turn may influence adherence and persistence to endocrine treatment. [47, 50]

Sexual complaints like vaginal bleeding, discharge and dryness, loss of libido and pain during intercourse have been ignored in a majority of initial consultations. These results resemble the results of previous research. [49]

Most women did not experience these side-effects as extremely troublesome. Sexuality is a sensitive subject. Women in our study population were relatively young with a mean age of 59 years and almost 66% were married or in a stable partnership. Possibly sexuality did not play an important role in the time when the were interviewed but could become an issue in the course of time.

These findings indicate that additional work needs to be done to improve the education of patients in respect to their medications' side-effects.

Although communication of common side-effects could be improved almost half of the women felt very well or well informed. For the majority of patients the hospital doctors and the package insert were the main source of information. Gynecologists in private practice, general practitioners and media like internet, books or support groups did not play an important role in the provision of information about antihormonal treatment.

When asked about implements that might make the daily tablet intake easier, more than 50% favored the option to be handed a leaflet containing information about their treatment. This should contain information regarding mode of action and intake as well as possible side-effects. This could be a simple and inexpensive intervention that might improve adherence of treated women as well as the relationship between doctor and patient.

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6. Appendix

6.1. Semi-structured Interview

Fragen zur Adherence:

[1] Nummer:

[2] Geburtsdatum: [3] Datum:

Sie werden in der Frauenklinik wegen einer Tumorerkrankung mit antihormonellen Medikamenten behandelt und kommen zum Erst- oder Folgegespräch.

Beantwortung der folgenden Fragen:

(**DEMO1**)Alter:

_____

(**DEMO2**) Familienstand:

(1) Ledig
(2) verheiratet/ feste Partnerschaft
(3) verwitwet/ geschieden/ getrennt lebend

(**DEMO3**)Kinder:

° Ja (**DEMO4**) Anzahl: ____ ° Nein

(**DEMO5**)Schulabschluss:

(1) kein Abschluss
(2) Volks-/ Hauptschulabschluss
(3) Mittlere Reife/ Realschulabschluss
(4) Matura/ Fachmatura

(**DEMO6**) Berufsausbildung:	(DEMO7) Zur Zeit berufstätig:
(1) keine	(1) Ja
(2) abgeschlossene Berufsausbildung	(2) Nein
(3) Hochschul-/ Universitätsabschluss	(3) Pensioniert

(**MED1**) Dauer der bisherigen Medikamenteneinnahme:

________ Jahre ________ Monate

(**MED2**) Wieviele Tabletten nehmen sie derzeit insgesamt ein? (nicht nur antihormonelle Medikamente)

____

(**MED3**) Welches antihormonelle Medikament nehmen Sie derzeit ein?

Adherence Breast Cancer

Wieviel Zeit hat sich ihr/e Arzt/Ärztin für das Aufklärungsgespräch genommen?

(AUFK1) Erstgespräch:

(1) bis 5 (2) 6-10 (3) 11-15 (4) 16-20 (5) >20 Minuten

(AUFK2) Folgegespräch:

(1) bis 5 (2) 6-10 (3) 11-15 (4) 16-20 (5) >20 Minuten

(**MED4**) Wie vertragen Sie Ihre antihormonelle Therapie?

Sehr gut Überhaupt nicht

1 2 3 4 5

Wie genau wurden sie über folgende Nebenwirkungen einer antihormonellen Therapie im Vorfeld informiert?

Sehr ausführlich Gar nicht

- (WSTNW1) Thrombose/ Embolie 1 2 3 4 5
- (WSTNW2) Gelenkbeschwerden 1 2 3 4 5
- (WSTNW3) Knochenbrüche / Osteoporose 1 2 3 4 5
- (WSTNW4) Wallungen 1 2 3 4 5
- (WSTNW5) Schlafstörungen 1 2 3 4 5
- (WSTNW6) Müdigkeit 1 2 3 4 5
- (WSTNW7) Inappetenz 1 2 3 4 5
- (WSTNW8) Vaginale Blutungen, Ausfluss, 1 2 3 4 5 vaginale Trockenheit
- (WSTNW9) vermindertes sexuelles Verlangen 1 2 3 4 5
- (WSTNW10)Schmerzen beim 1 2 3 4 5 Geschlechtsverkehr, verminderte Orgasmusfähigkeit
- (WSTNW119 Gewichtszunahme 1 2 3 4 5
- (WSTNW12) Haarausfall 1 2 3 4 5

(NW+Abk. der betreffenden Nebenwirkung) Welche Nebenwirkungen stellen für Sie eine besondere Belastung dar?

(**NW2**) Wie schätzen Sie ihren Wissensstand über die Antihormonelle Therapie ein?

Sehr gut Sehr schlecht

1 2 3 4 5

(**ADH1**) Legen Sie manchmal eine „Tablettenpause“ ein?

° Ja ° Nein

(**ADH2**) Könnten Sie sich vorstellen, das zu tun, wenn die Nebenwirkungen zu belastend werden?

(1) Ja (2) Eventuell (3) Eher nicht (3) Nein

(2)

(**ADH3**) Würden Sie Ihren Arzt/ Ihre Ärztin darüber informieren?

(1) Ja (2) Eventuell (3) Eher nicht (3) Nein

(**ADH4**) Wie wahrscheinlich würden Sie es einschätzen, dass Sie eine Tablettenpause mit Ihrem Arzt im Vorhinein besprechen?

100%	75%	50%	25%	0%
1	2	3	4	5

(**ADH5**) Vergessen Sie ab und zu Ihre Medikamente zu nehmen?

° Ja ° Nein

(**ADH6**) Wenn ja, wie oft:

(1) mindestens einmal im letzten Monat

(2) mindestens einmal im letzten Jahr

(3) mindestens einmal seit Sie die Tabletten nehmen

(**OADH1**) Wie reagieren Sie, wenn Sie Ihre Medikamente einmal vergessen haben?

(1) Ich unternehme nichts und lasse die Dosis einfach aus

(2) Ich nehme die vergessene Dosis sobald mir auffällt, dass ich sie vergessen habe

(3) Ich nehme die doppelte Dosis am nächsten Tag

(**OADH2**) Hat man Sie darauf hingewiesen nicht die doppelte Dosis ihrer Medikamente einzunehmen, auch wenn Sie einmal eine Dosis vergessen haben?

° Ja ° Nein

(**SADH**) Wie würden Sie die Gewissenhaftigkeit Ihrer Tabletteneinnahme einstufen?

Sehr Überhaupt nicht

1 2 3 4 5

(**APB1**) Fühlen Sie sich von Ihrem Arzt/ Ihrer Ärztin in Ihren Problemen ernst genommen?

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**APB2**) Haben Sie das Gefühl mit Ihrem Arzt/ Ihrer Ärztin im Spital über Ihre Probleme mit möglichen Nebenwirkungen sprechen zu können?

(1) Ja (2) Eventuell (3) Eher nicht (4) Nein

(**APB3**) Haben Sie das Gefühl mit Ihrem Hausarzt/ärztin über Ihre Probleme mit möglichen Nebenwirkungen sprechen zu können?

(1) Ja (2) Eventuell (3) Eher nicht (4) Nein

(**APB4**) Haben Sie das Gefühl mit Ihrem niedergelassenen Gynäkologen/in über Ihre Probleme mit möglichen Nebenwirkungen sprechen zu können?

(1) Ja (2) Eventuell (3) Eher nicht (4) Nein

(2)

(**APB5**) Wurden Sie über die möglichen Konsequenzen eines Nicht- Einhaltens der Therapievereinbarung aufgeklärt?

°Ja ° Nein

(**APB6**) Wie würden Sie allgemein Ihr Verhältnis zu Ihrem behandelnden Arzt/ Ärztin einstufen?

Sehr gut Sehr schlecht

1 2 3 4 5

Woher haben Sie ihre Informationen erhalten:

(**INFO1**) Aufklärung durch Arzt/ Ärztin bei Verschreibung

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**INFO2**) Aufklärung durch Hausarzt/ärztin

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**INFO3**) Aufklärung durch niedergelassenen Gynäkologen/in

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**INFO4**) Information über Beipackzettel

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**INFO5**) Information aus sonstigen Medien (Internet, Bücher, Bekannte...)

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**HILF1**) Würden Sie ein Tagebuch, in dem Sie Ihre Tabletteneinnahme dokumentieren hilfreich finden?

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**HILF2**) Fänden Sie eine 7-Tage-Tablettenbox, in der Sie ihre wöchentliche Dosis haben sinnvoll?

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(**HILF3**) Fänden Sie es hilfreich, wenn auf der Tablettenpackung die Wochentage stehen würden?

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

(HILF4) Fänden Sie eine schriftliche Zusammenfassung der möglichen Nebenwirkungen (Broschüre, Informationsblatt...) nützlich?

(1) Sehr (2) Mäßig (3) Wenig (4) Überhaupt nicht

6.2. Informed consent leaflet

Adherence (Einhaltung der Therapievereinbarung) von Mammakarzinompatientinnen unter antihormoneller Therapie

Sehr geehrte Patientin!

Sie werden derzeit an der Frauenklinik wegen einer Tumorerkrankung mit einer antihormonellen Therapie behandelt und kommen zum Erstgespräch oder einem Folgegespräch in die Brustambulanz. Wir möchten Sie gerne einladen an einer Befragung über Ihren Umgang mit der regelmäßigen Einnahme der Ihnen verschriebenen Medikamente teilzunehmen. Wir möchten auf diese Weise das Einhalten der Therapievereinbarung der Patientinnen ermitteln.

Ihre Teilnahme ermöglicht es uns Rückschlüsse auf die Arzt- Patienten- Kommunikation und auf mögliche Schwierigkeiten von Patientinnen bei der regelmäßigen Einnahme der antihormonellen Therapie zu ziehen. Wenn Sie sich bereit erklären an der Befragung teilzunehmen, würden wir Sie bitten, die Einverständniserklärung zu unterschreiben und die Fragen zu beantworten.

Die Teilnahme ist freiwillig und mit einem zeitlichen Aufwand von ca. 20 Minuten verbunden. Sie haben von dieser Befragung keinen Nutzen und kein Risiko zu erwarten. Ihre Angaben werden streng vertraulich behandelt und in anonymisierter Form (ohne Verwendung von Namen) ausgewertet. Beim Umgang mit Ihren Daten werden die Bestimmungen des Datenschutzgesetzes beachtet.

Zu dieser klinischen Prüfung, sowie zur Patienteninformation und Einverständniserklärung wurde von der zuständigen Ethikkommission eine befürwortende Stellungnahme abgegeben.
Sie bekommen eine Kopie dieses Informationsblattes und ihrer Einverständniserklärung.

Wir würden uns freuen, wenn Sie an dieser Befragung teilnehmen würden und danken Ihnen schon jetzt ganz herzlich!

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0650/8256030

Adherence Breast Cancer

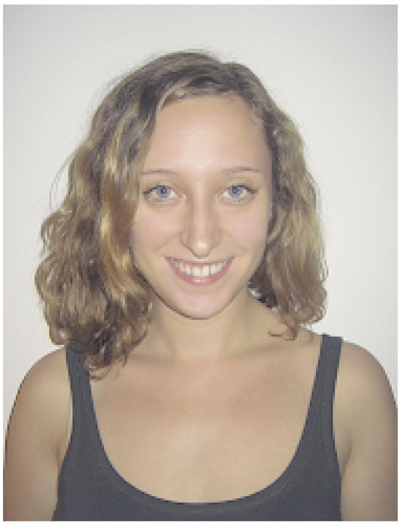
Einverständniserklärung

Ich wurde über die Studie informiert und bin bereit an dieser Befragung teilzunehmen.

Datum Unterschrift

Lebenslauf

Persönliche Daten:



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Bisherige Ausbildungen:

Juni 2002:	AHS Matura (BRG Linzerstraße 146, 1140 Wien)
September 2002 – Juli 2003:	Studium Italienisch (Institut für Romanistik, Universität Wien)
September 2003 – Januar 2011:	Studium Humanmedizin (Medizinische Universität Graz)
November 2004 – Mai 2005:	Ausbildung zum Rettungssanitäter (Rotes Kreuz Steiermark – Dienststelle Graz)
März 2009:	Tutorentraining für Anamnesegruppentutoren (Charité Berlin)
Mai 2009:	Fortbildung: Palliativmedizin, Treffen der Anamnesegruppen (LMU München)
März 2009- Juni 2009:	Sprachkurs „Medical English in Clinical Practice”

Bisherige Anstellungen:

Juli 2000:	Ferialpraktikum im Pflegeheim der Caritas, Haus Klosterneuburg
September 2002 – Juli 2003:	Kindermädchen (privat, Wien)
September 2004:	Ferialpraktikum im Pflegeheim der Caritas, Haus Clemens Wien

April 2004 – Juni 2008: Rettungssanitäter (Rotes Kreuz Steiermark, Dienststelle Graz)

Juli 2009: Medizinstudent in Pflege an der Abteilung für Innere Medizin - Kaiser Franz Joseph Spital Wien

März 2005- Juni 2010: Studienassistentin am Institut für Medizinischen Psychologie (Medizinische Universität Graz)

Praktika:

Oktober 2005: Famulatur an der Abteilung für Innere Medizin (LKH West Graz)

September 2007: Famulatur Nyakato Hospital (Mwanza, Tanzania)

September 2008: Famulatur an der Abteilung für Onkologie und Hämatologie (Wilhelminenspital Wien)

September 2009: Famulatur an der Universitätsklinik für Psychosomatik und Psychotherapie Bad Aussee

März- April 2010 Praktisches Jahr – Abteilung für HNO, Elisabethinen Graz

April- Juni 2010 Praktisches Jahr – Abteilung für Thoraxchirurgie, Universitätsklinikum Graz

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Diplomarbeit:

„Adherence of Breast Cancer Patients under Antihormonal Treatment“

Abteilung für Gynäkologie und Geburtshilfe, Medizinische Universität Graz

Sprachkenntnisse:

Englisch

Französisch

Italienisch

Interessen:

Chorgesang (Schulchor Via Lentia, Chor der Stadtpfarrkirche Graz)

Klettern, Bergsteigen, Tauchen (Advanced Open Water Diver)