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Impact of Clinical Pharmacist-Led Interventions on Short Term Quality of Life among Breast Cancer Women Taking Chemotherapy

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Abstract

Drug toxicity and chemotherapeutic adverse effects negatively impact the quality of life of breast cancer patients. The study's objective was to evaluate the outcomes of clinical pharmacist Interventions on the quality of life (QOL) among breast cancer women receiving chemotherapy. A pre-post clinical pharmacist interventional study was carried out at the chemotherapy ward of Alhabobi Hospital in Alnasiriyah City. Eligible patients received comprehensive pharmaceutical care and a self-compiled Breast Cancer Patients Medication Knowledge Guide pamphlet. Each patient received two sessions, the first after filling the quality of life questionnaire (EORTC QLQ-C30) by the patients at baseline and the second after 7, 14, or 21 days, depending on the next dose of chemotherapy. Each session lasted for approximately 15-30 minutes. Participants were asked to refill the questionnaire after study time.Fifty women with breast cancer were enrolled in the study, and all of these patients ultimately completed the study. At the end of the study, the five functional scales (physical, role, emotional, cognitive, and social) were significantly increased after the intervention by the clinical pharmacist. Among symptoms scales (fatigue, nausea/vomiting, and pain) significantly decreased after the study. In addition, six individual measurement project scores were decreased at the end of the study. However, the constipation adverse effect was not affected by the intervention. Finally, the study concludes that the clinical pharmacist-led educational intervention may enhance the quality of life of breast cancer patients and play a crucial role in reducing chemotherapy-related complications and adverse effects.

Keywords: Chemotherapy, Clinical Pharmacist-led interventions, Quality of life, Pharmaceutical care, Adverse effects.

Introduction

In all national cancer registers, breast cancer is the most common female malignancy[1–3]. In addition, it is the second leading cause of death for women after lung cancer[4]. One method of managing breast cancer is chemotherapy. Drug toxicity and adverse drug reactions (ADRs) frequently happen during chemotherapy[5]. ADRs typically lower the QOL for cancer patients[6], lengthen their hospital stays, and place a greater financial burden on them[7]. Severe ADRs often discontinue chemotherapy and can even fail[8]. Notably, patients experience a "trend-avoid" psychological conflict due to their worries about the side effects of chemotherapy and their expectations for the treatment's success[9]. Patients' physical conditions are impacted by treatment, which worsens physical symptoms, including hair loss, nausea, fatigue, appetite loss, and breast cancer-related anaemia affects QOL, and decreases survival[10–12]. Additionally, it affects interpersonal relationships, the way patients view their situation and themselves, their ability to carry out daily activities (independence and autonomy), and the risk of emotional and psychological instability; there is a fear of living with the challenges that disease and treatment bring and the stigma of a cancer diagnosis being connected to death, these potential changes impact future aspirations and, in turn, QOL[13]. QOL is the individual's perception of his position relative to his goals, expectations, standards, and concerns within the context of his cultural system and society[3]. In other words, QOL is associated with satisfaction in family, social, and environmental life[14]. QOL is a multidimensional construct that includes impressions of the good and bad sides of dimensions, including physical, emotional, social, and cognitive functions, as well as the bad sides of somatic discomfort and other symptoms produced by an illness or its treatment[15]. So we found it important to conduct a study regarding the impact of clinical pharmacist-led intervention (PI) on short term QOL in women with breast cancer receiving chemotherapy.

Materials and Methods

Study design

This was a pre-post interventional study on a sample of 50 breast cancer patients receiving chemotherapy who were admitted and treated in the chemotherapy ward of Alhabbobi Hospital in Alnasiriyah City, south of Iraq, between October 2022 to May 2023. This center is a referral center in Dhi Qar province. **Eligible Patients:** Patients with pathologically diagnosed breast cancer, according to pathology reports, who have been taking chemotherapy, adult patients between the ages of 18 and 60, and patients who agree to participate in the study. While the exclusion criteria were: (1) Patients who did not consent to participate. (2) Patients with hearing, speech, or cognition problems might have difficulty understanding the questions. (3) Breast cancer patients who have not been prescribed chemotherapy. (4) Patients who provided incomplete information during the completion of the questionnaire were also excluded from the study.

Study process

The baseline level and the level of QOL after the educational session were assessed for the eligible patients using the European Organization for Research and Treatment of Cancer Core Quality of Life Questionnaire version (3) (EORTC QLQ-C30)[16], convenient sampling method was used to recruit the patients. Afterward, the patients received comprehensive pharmaceutical care and a self-compiled Breast Cancer Patients Medication Knowledge Guide pamphlet. The researcher prepared the handout based on up-to-date medical literature and referenced textbooks[17–19], which were translated into a formal Arabic language for patients to be easily understood by the patients. The researcher performed the translation; the pamphlet was examined and evaluated by five Ph. Ph.D.-holding faculty members in the Department of Clinical Pharmacy, College of Pharmacy, University of Baghdad's scientific committee, using the face validation procedure. Due to a lack of available time for the Master's student to execute alternative methods of validation, this method of evaluation was utilized. The pamphlet contained the following medical information: (1) the purpose of chemotherapy, (2) the prevention and management of adverse drug reactions, (3) caution that should be taken while receiving chemotherapy; and (4) dietary advice. Comprehensive pharmaceutical care includes face-to-face and psychological supporting services that the researcher provides. Each patient received two sessions, the first after filling out the questionnaire by the patients at baseline, where the researcher talked about the purpose of chemotherapy, the prevention and management of adverse drug reactions, and psychological support. And the second after 7, 14, or 21 days, depending on the next dose of chemotherapy (patients come to the hospital just at the time of receiving chemotherapy). In the second session, the researcher talked about the caution that should be taken while receiving chemotherapy, dietary advice, in addition to psychological support. Each session lasted for approximately 15-30 minutes. In addition, the researcher remained in full contact with patients through mobile phones, and the patient could chat with them when he needed to. Participants were asked to refill the questionnaire after the end of study.

Data collection and study instruments

The demographic and clinical characteristics data were collected. The European Organization for Research and Treatment of Cancer Core Quality of Life Questionnaire (EORTC QLQ-C30) was used. The EORTC QLQ-C30 is a set of 30 questions that includes 6 individual items (dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties), 5 functional scales (physical, role, emotional, cognitive, and social), 3 symptom scales (fatigue, nausea/vomiting, and pain), and an overall QOL scale. The raw scores were converted linearly into scores between 0 and 100[20] and were completed in accordance with the recommendations of the EORTC QLQ-C30[16]. A higher score on the functional and global health status/QoL scales represents a higher "better" level of functioning, or higher scores on individual items and symptom scales represent a higher "worse" level of symptoms[21].

Statistical analysis

The statistical software SPSS (version 26.0) analyzed all the data. Continuous variables were expressed as mean ± standard deviation, while categorical variables were expressed as number and frequency. A paired *t*-test was used to compare the changes before and after the intervention within the group. A probability of less than 0.05 was considered significant.

Results

Fifty women with breast cancer were enrolled in the study, and all of these patients ultimately completed the study. The mean age of the participants is 43.48 ± 9.61. As shown in Table 1, most patients were married, had low levels of education, and were in the first stage of breast cancer.

Table 1. Demographic and clinical characteristics.

Variable		Number	Percentage %
Age	(18-29)	3	6.0
	(30-39)	14	28.0
	(40-49)	19	38.0
	(50-60)	14	28.0
Marital Status	Married	46	92.0
	Single	4	8.0
Educational level	Primary	27	54.0
	Secondary	9	18.0
	Graduated	14	28.0
Living place	Urban	22	44.0
	Rural	28	56.0
Cancer staging	Stage 1	32	64.0
	Stage 2	10	20.0
	Stage 3	4	8.0
	Stage 4	4	8.0

In the aspects of QOL data, specifically the five functional scales (physical, role, emotional, cognitive, and social), the results were significantly increased after the intervention by the clinical pharmacist ($P < 0.05$) (Table 2). The three symptom scales (fatigue, nausea/vomiting, and pain) were significantly decreased after the study ($P < 0.05$, Table 2), and 6 individual measurement project scores decreased at the end of the study. However, only constipation adverse effect was not affected by the intervention. ($P > 0.05$, Table 2).

Table 2. Scores of all scales and items of the EORTC QLQ-C30 questions before and after the study.

The overall quality of life scales		Before PI		After PI		*P**
		Mean	±SD	Mean	±SD	
Global QOL		57.66	22.11	72.00	19.10	0.000#
Function scales	Physical functioning	71.73	18.49	80.80	18.20	0.000#
	Role functioning	68.00	29.89	79.33	25.09	0.001#
	Emotional functioning	45.33	29.79	64.66	26.32	0.000#
	Cognitive functioning	63.33	23.08	69.66	22.00	0.040#
	Social functioning	71.33	30.49	84.00	21.28	0.000#
Symptom scales	Fatigue	46.44	27.00	28.22	25.81	0.000#
	Nausea and vomiting	34.66	34.47	18.00	28.13	0.000#
	Pain	37.33	28.48	23.00	26.48	0.000#
Individual items	Dyspnea	33.33	30.11	17.33	27.96	0.000#
	Sleep disturbance	50.00	37.64	30.66	31.47	0.000#
	Appetite loss	50.00	39.41	26.66	29.35	0.000#
	Constipation	25.33	37.22	16.00	22.57	0.051
	Diarrhea	21.33	32.82	12.66	22.22	0.041#
	Financial difficulties	50.66	41.09	28.00	31.12	0.000#

∗ Within group comparison (before versus after study scores), Paired t-test.

P-value less than 0.05 considered significant. **PI** Pharmaceutical intervention, **SD**. Standard deviation

Discussion

In this study, all function scales and global health status/QoL scales scores were significantly increased after PI (p-value < 0.05), this indicates good functioning and effectively enhancing positive emotions and modifying several undesirable behaviors. Besides, all symptom scales and individual items (dyspnea, insomnia, appetite loss, diarrhea, and financial difficulties) scores were significantly decreased after PI (p-value < 0.05); this indicates a lack of symptoms, with the exception of constipation adverse effect was not affected by the intervention (p-value> 0.05) perhaps this belongs to the short period of intervention. In cancer patients, constipation is a significant problem[22]. Constipation associated with cancer has many potential causes, including psychological factors, pharmacological factors, nutrition, and cancer treatment[23,24]. This uncomfortable symptom has a detrimental impact on the patient's quality of life[25,26].

A previous study in Iraq that evaluated breast cancer patients' beliefs about their medications revealed a high level of concern regarding the use of these medications, with the conclusion that physicians should implement educational programs to improve these beliefs, which may have positive consequences on the outcome of the cancer therapy[27]. Indeed, pharmacist interventions could positively impact patients[28], as demonstrated by our study findings. One of the most common symptoms cited by cancer patients is sleep disturbance[29]. Between 15% and 90% of cancer patients and survivors reported having sleep disturbances, including excessive daytime naps, trouble falling asleep, frequent sleep disruptions, and early morning awakenings, contributing to sadness, interfering with daily activities, and lowering the quality of life[30–32]. Indeed, sleep disturbances also decreased cancer patients' compliance with therapy, impacted the effectiveness of that treatment, and may even have increased patient mortality[33,34]. In a previous study, Iraqi pharmacists demonstrated a strong desire to enroll in continuing education courses and provide effective breast cancer patient supporters. This attitude can be utilized to increase their knowledge of chemotherapy and expand their role as patient educators[35].

In accordance with numerous other studies, this investigation demonstrated that pharmaceutical care services could improve total QOL[30–32,36–40]. Yun *et al.* demonstrated that a 12-week Internet-based education program was effective for disease-free cancer survivors with cancer-related fatigue[39]. In addition, Do *et al.* showed that a 4-week multimodal rehabilitation program improved the physical symptoms and QOL and reduced fatigue in patients with breast cancer[38]. Many studies showed that education, counseling, behavioral interventions, relaxation interventions, and nutritional support could significantly allay or alleviate chemotherapy-led nausea vomiting, and pain[36,37]. The results of the current study were consistent with the studies mentioned above.

In terms of lifestyle habits, the majority of women in Iraq did not engage in any form of physical activity, which is similar to a survey finding that showed this to be the case in more than 56.5% of women[41]. The International Agency for Research on Cancer (IARC) considers a sedentary lifestyle to be a risk factor for the development of breast cancer, so it's crucial to be aware of this fact[41]. In addition to acting as a preventive factor, the habit of engaging in physical activity supports patients' physical and mental health while they are receiving treatment[42].

During the study periods, most of the patients' questions were about the side effects and what foods they could eat. They didn't eat foods that contained sugars and didn't eat meat, because they heard from other people that cancer cells feed on sugars only. In addition to the loss of appetite caused by chemotherapy, they avoid eating many foods necessary to build muscles and regenerate cells destroyed by chemotherapy. The fact is that they can eat all foods except those that worsen the side effects, for example, they avoid drinking milk, and foods rich in fiber, In the case of diarrhea, while in the case of constipation, they can take it. These misconceptions might impact QOL indirectly.

The National Cancer Institute provided in its book (Chemotherapy and You)[17], a list of appropriate foods for each chemotherapy adverse effect. Our study's designed booklet was well-received by patients, who changed their perspective on food. In addition, oncologists who read the booklet stated that it would reduce their workload, as the majority of patients' questions are about what they can eat. This has contributed to improving the quality of life of cancer patients, as they can now eat the same foods as other healthy people and live as they normally would.

The widespread acceptance of clinical pharmacists as patient medication educators[43]and psychological supporters was notable in the current study. The majority of patient consultation issues were about chemotherapeutic adverse effects. Patients with cancer would like to learn as much as they can[44]. The patient's social demographic profile, the illness's stage, and the course of therapy significantly impacted pharmacological care's effectiveness. The early stage of breast cancer might have impacted the positive results of our study since most of the

participants in this study were with stage I. and is consistent with randomized controlled trials that assessed the effectiveness of psychological interventions for women with early-stage breast cancer, where positive results have been seen particularly in terms of depression, anxiety, mood disorders, stress, and the QOL of breast cancer patients[45]. Therefore, when implementing a comprehensive pharmaceutical care service, consideration should be given to each patient's unique characteristics and measurements. In a word, comprehensive care can greatly improve the quality of life for cancer patients[42]. A significant proportion of pharmacists in Iraq hold positive attitudes toward patient counseling and ongoing pharmacy education programs. This positive attitude could be utilized in oncology wards to improve patients' acceptance of his therapy[35].

Limitations

The study's main limitations were the small sample size, the short study period, the single-center study, although the selected center received patients from different governorates, and three different time durations between the first and second sessions. The researcher encountered challenges in coordinating the meeting date with the patient due to varying protocols regarding the timing of treatment administration.

Conclusion

A clinical pharmacist-led educational intervention may enhance the quality of life of breast cancer patients and play a crucial role in reducing chemotherapy-related complications and adverse effects.

Acknowledgment

None.

Conflicts of Interest

None declared.

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Ethics Statements

Approval was obtained from the Scientific and Ethical Commit (approval number: REAFUBCP5122022). Additionally, approval from the Ministry of Health was obtained. Patients' consent to participate in the current study was obtained verbally.

Author Contribution

The first author contributed to collecting, analyzing, and writing some parts of the study. The second author contributed to supervising the study and writing and revision some parts of the study.

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تأثير تدخل الصيدلي السريري على جودة حياة النساء المصابات بسرطان الثدي اللاتي يتلقين العلاج الكيميائي

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الخلاصة

سمية الدواء والآثار الجانبية للعلاج الكيميائي تؤثر سلبًا على جودة حياة مرضى سرطان الثدي. الهدف من الدراسة هولتقييم فعالية تدخلات الصيدلي السريري على جودة الحياة (QOL) بين النساء اللواتي يتلقين العلاج الكيميائي لسرطان الثدي .تم إجراء دراسة قبل وبعد تدخل الصيدلي السريري، في جناح العلاج الكيميائي بمستشفى الحبوبي في مدينة الناصرية. تلقى المرضى المؤهلون رعاية صيدلانية شاملة وكتيبًا تم تجميعه ذاتيًا لمرضى سرطان الثدي. تلقى كل مريض جلستين، الأولى بعد ملء استبيان جودة الحياة (EORTC QLQ-C30) من قبل المرضى عند الخط الأساس، والثانية بعد ٧ أو ١٤ أو ٢١ يومًا اعتمادًا على الجرعة التالية من العلاج الكيميائي. استمرت كل جلسة لمدة ١٥-٣٠ دقيقة تقريبًا. طُلب من المشاركين إعادة ملء الاستبيان بعد وقت الدراسة.

وكانت اهم النتائج التي تم التوصل اليها تم تسجيل خمسين امرأة مصابة بسرطان الثدي في المجموعة التداخلية ، وجميعهن أكملن الدراسة، في نهاية الدراسة كانت المقاييس الوظيفية الخمسة (الجسدية والدور والعاطفية والمعرفية والاجتماعية) قد ازدادت بشكل ملحوظ بعد تدخل الصيدلي السريري. انخفضت مقاييس الأعراض الجانبية الثلاثة (التعب والغثيان / القيء والألم) بشكل ملحوظ بعد الدراسة. بالإضافة إلى ذلك تم تخفيض ستة من المشاكل التي تواجه المرضى. إلا أنه لم يكن لتدخل الصيدلي السريري تأثير على حالة الإمساك عند المرضى.

وبالنهاية توصلت الدراسة الى نتيجة أساسية وهي انه قد يؤدي التدخل التعليمي بقيادة الصيدلاني السريري إلى تحسين جودة حياة مرضى سرطان الثدي ويلعب دورًا مهما في الحد من المضاعفات المرتبطة بالعلاج الكيميائي والآثار السلبية.

الكلمات المفتاحية: العلاج الكيميائي، تدخلات الصيدلي السريري، جودة الحياة، الرعاية الصيدلانية، الآثار الجانبية.