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Implementation of an Online Breast Cancer Counseling Clinic. Will it be a Successful Story?

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1. Abstract

1.1. Background: Breast cancer therapy is a source of economic stress, and the expenditures involved may result in greater death and morbidity rates. Breast cancer prevalence and mortality rates in Egypt are among the highest in the Middle East.

1.2. Aim: The project's goal is to create an online pharmacist-led supportive care clinic where breast cancer patients can get remote symptom management, counseling, and other related services.

1.3. Methodology: Establishment of an online breast cancer counseling clinic through affording medical libraries, computers, and software needed to establish the online clinic program. Also telecommunication, and other related documentary activities will be added.

1.4. Outcomes: The project's outcome is to improve the healthcare services available to breast cancer patients. This will improve the patient's and his family's quality of life while also assisting with treatment adherence. Mortality rates are predicted to fall, which indicates that more patients' lives will be saved for their families and children, particularly young women.

1.5. Conclusion: An online pharmacist–led breast cancer care clinic on a user-friendly and mobile-friendly website would improve medical care management quality and improve patients' overall quality of life. Furthermore, it will lower the incidence of COVID-19 infection and death rates.

2. Introduction

Breast cancer is the most prevalent cancer in women, accounting for more than one out of every ten new cancer cases per year. It is the world's second leading cause of death from cancer in women. Breast cancer often progresses quietly. The majority of patients learn about their condition through regular screenings. Others may present with an unexpected breast lump, a shift in breast shape or size, or nipple discharge [1, 2].

There are seven different risk factors for breast cancer which are age, gender, personal history of breast cancer, histologic risk factors, family history of breast cancer and genetic risk factors, reproductive risk factors, and exogenous hormone use. The median woman age when diagnosed with breast cancer is 61 years [3].

Breast cancer rates by women of different racial and ethnic groups are categorized according to the American Cancer Society (ACS) as follows: Non-Hispanic white with incidence of 128.1 in every 100,000 cases, African American with incidence of 124.3 in every 100,000 cases, Hispanic/Latina with incidence of 91.0 in every 100,000 cases, American Indian/Alaska Native with incidence of 91.9 in every 100,000 cases, and Asian American/Pacific Islander with incidence of 88.3 in every 100,000 cases [3].

Breast cancer grows as a result of DNA disruption and genetic mutations that may be caused by estrogen or estrogen-like drugs exposure [4]. Breast Cancer (BRCA) 1 and BRCA2 are the two most clinically significant genes that have the greatest evidence

in predictive diagnosis [5]. It was shown that BRCA1/2 mutations predict the response to chemotherapy and platinum-containing chemotherapy in the metastatic condition [6].

Breast cancer may be classified as invasive or non-invasive based on its relationship to the basement membrane. Noninvasive breast neoplasms are classified into two types: lobular carcinoma in situ (LCIS) and ductal carcinoma in situ (DCIS). LCIS is considered to be a risk factor for breast cancer development. LCIS is distinguished by its conformity to the outline of the normal lobule, as well by its extended and packed acini. DCIS is more heterogeneous morphologically than LCIS. DCIS is described as distinct spaces filled with malignant cells, with an identifiable basal cell layer made up of presumably normal myoepithelial cells. DCIS if not treated, it normally progresses to invasive cancer [7].

Invasive breast cancers are distinguished by a lack of overall architecture, haphazard cell penetration into a varying volume of stroma, or the development of sheets of continuous and monotonous cells without regard for the shape and function of a glandular organ. Invasive breast cancer is classified into two histologic types: ductal and lobular [8].

The two basic treatment concepts are to minimize the possibility of local recurrence and the probability of metastatic expansion. Local cancer management is achieved by surgery, with or without radiotherapy. Systemic treatment, in the form of hormone therapy, chemotherapy, targeted therapy, or any mixture of these, is indicated where there is a chance of metastatic relapse [9].

A 25% decrease in the risk of relapse was noticed upon using a first-generation chemotherapy treatment such as cyclophosphamide, methotrexate, and 5-fluorouracil (CMF) in a 6-month span over a 10- to 15-year duration. Modern breast cancer treatment regimens include anthracyclines (doxorubicin or epirubicin) and newer agents such as taxanes. Adjuvant and neoadjuvant chemotherapy is administered over a three to six-month cycle [10, 11].

Adjuvant tamoxifen therapy of early-stage HR+ breast cancer over at least 5 years has been shown to minimize recurrence rates in half over the first 10 years and decrease breast cancer mortality by around 30% over the first 15 years. More lately, studies have found that using adjuvant tamoxifen for a longer period of time (10 vs 5 years) decreases the risk of breast cancer recurrence and death. Aromatase Inhibitors (AIs) such as anastrozole can normally be used in the treatment of postmenopausal women with HR+ breast cancer, according to treatment guidelines recommendations [10, 11].

In about 17% of breast cancers that overproduce the growth-promoting protein HER2/neu, targeted therapy is commonly suggested. The first approved drug, trastuzumab, is a monoclonal antibody that specifically targets the HER2 protein. When paired with chemotherapy in HER2+ early breast cancer, it decreases the chance of recurrence and mortality by 52% and 33%, respectively, compared to chemotherapy alone [10, 11].

The rapid advancement of therapies with new pathways of action, such as molecular-targeted therapies, immuno-oncology therapies, and precision radiation oncology, in recent years has changed the oncology care environment [12]. These advancements also expanded the scope of treatment (therapy combinations) and necessitated changes in the patient pathway (oral treatment intake at home or hospitalization) to ensure quality care. The toxicity profile of novel agents in the real world could not always correspond with those found in clinical trials, resulting in unanticipated toxic effects [13].

The increased use of oral therapies for home administration results in less healthcare monitoring during recovery, while the long-term use of such medications can be correlated with the emergence of new toxic effects [14].

As a result, close observation of adverse events during self-administration of therapies at home is becoming increasingly important in order to encourage timely action to minimize the occurrence and length of these adverse events. Thereby, patients must monitor their symptoms and treatment-related side effects without direct medical monitoring. The timely detection of toxicities in immunotherapeutic therapies is critical since many symptoms may improve with immediate intervention [15].

On the other hand, Patients' noncompliance and administration defects are often increased when anticancer therapies are administered at home [16]. Furthermore, a possible shortage of oncology providers and workforce due to the cancer prevalence and treatment uncertainty has emphasized the need for alternative solutions to ensure that all patients receive optimal treatment and care during the disease's progression [17].

Digital media and medical technology advancements have resulted in the digitalization of healthcare [18]. Increased access to and use of such technology by physicians and patients generates vast volumes of potentially useful data, which, in the light of electronic health records, plays an important role in physicians' decision-making. In healthcare, self-reported data is widely used. Patient-level data provide real-world medical knowledge, allowing for better professional decision-making, patient empowerment, better health outcomes, and cost savings [19].

Tele-health delivery in oncology is expanding, and several studies have demonstrated its practicality and usefulness in improving psychological and social outcomes in cancer patients, as well as access to palliative care services inside the home [20].

Patients with breast cancer may require supportive care for several years following their diagnosis. High-quality multidisciplinary care can assist meet these demands while also reducing the physical and psychological consequences of breast cancer and its treatment [21].

Identification of physical and psychological consequences is re-

quired for treatment measures to be implemented. Fear of recurrence of cancer impairs quality of life and intensifies pain and misery, which has an influence on role functioning. Identification and multimodal management are critical, with referral to psychosocial treatment advised as needed. Exercise advantages include less weariness, greater mental health, and less musculoskeletal complaints, as well as a lower risk of tumor recurrence [21].

Despite breast cancer therapies benefit, most of them cause toxicities, including anemia, neutropenia, nausea, and discomfort. These side effects have a negative influence on patient quality of life and might result in therapy discontinuance. Clinical pharmacist involvement led in positive clinical outcomes in breast cancer patients, such as a reduction in treatment-related side effects and an improvement in quality of life [22].

There are supportive care needs experienced by women with breast cancer, those needs can be managed by clinical pharmacist to help improve patient quality of life. Most common needs that require care are, hot flushes, arthralgia, osteoporosis and genitourinary symptoms, physical and psychological impact on sexual function, alopecia, fear of cancer recurrence, pain, impaired memory, concentration and cognition, deconditioning and suboptimal exercise levels [21].

3. Palliative Care counseling

It is a specialized health care for patients suffering from severe diseases. Its primary goal is to alleviate the symptoms and stress of a severe disease. The objective is to enhance the patient's and family's quality of life [23].

Palliative care has been extensively researched, and studies repeatedly demonstrate that it improves patients' quality of life, leads to improved advance care planning, and increases caregiver satisfaction, all while resulting in decreased health care consumption and hence expenditures [24].

4. Hospice Care Counseling

Hospice care is palliative care delivered towards the end of life that offers patients with complete comfort care as well as assistance for family members. This involves medical treatment, pain management, and emotional and spiritual support that is personalized to the patient's specific needs and desires [25].

Routine hospice care, general inpatient care, continuous home care, and inpatient respite care are the four types of care provided by hospice. The most prevalent form of care level is routine hospice care, which takes place wherever the patient stays on a regular basis, which can be at home, assisted living, long-term care, or an adult board and care facility. General inpatient care is used to treat acute symptoms that cannot be treated in another context. General inpatient care can be delivered in a Medicare-certified hospital, a hospice inpatient facility, or a nursing facility with registered nurses on-call around the clock [23].

5. Background / Problem Definition

Breast cancer treatment is a well-known source of financial toxicity, and the costs associated with it may lead to higher mortality and morbidity rates. In Egypt, the prevalence and death rates for breast cancer are among the largest in the Middle East. Late-stage diagnosis is common, and illness manifests itself at a younger age than in Europe or North America [26].

On the other hand, patients often exhibit a variety of symptoms that may be due to the tumor, complications or side effects of treatment regimen, or long-term side effects of chemotherapy and targeted therapy. Most of these signs are commonly ignored because healthcare professionals are overburdened by treating too many people, and patients prefer to ignore these symptoms because they believe they are less significant than the tumor itself.

Furthermore, because of the COVID-19 pandemics, cancer patients' access to health care providers has been reduced because they are immune-compromised and can be rapidly infected with a poor prognosis. This will lead to more complicated breast cancer patients' management and worsen their quality of life.

6. Goals / Objectives

The aim of the project is to establish an online pharmacist-led breast cancer counseling clinic that can provide remote symptomatic management and counseling to breast cancer patients. Services provided by the online clinic will be:

1. Meets palliative care needs of patients living with cancer.

2. Meets supportive care needs of patients living with cancer

3. Facilitates earlier referrals for through integration into primary care and subspecialty practices.

4. Providing / aiding in supplying the necessary unavailable medications in market.

5. Provides follow-up for palliative care patients returning to the community.

6. Adjusting medication therapy for pain and symptom management with prescribing privileges as authorized under a collaborative service agreement.

7. Assessment for drug interactions.

8. Patient Counseling.

9. Assessment of duplications in therapy.

10. Providing a consult (includes answering drug information questions).

11. Side-effect management.

12. Organizing fills/refills (includes appropriate scheduling of opioid dispensing to patients).

13. Assessment of lack of efficacy.

14. Detection of untreated conditions.

15. Tele-health Services.

7. Methodology

1. Establishment of an online breast cancer counseling clinics through affording medical libraries, computers and software required for development of the online program.

2. Establishment of a land hotline and call center for telecommunication, monitoring, and care support.

3. Development of patient management approved local protocol in collaboration with expert oncologist and clinical pharmacist.

4. Training of the clinical pharmacists about the essential activities that need to be performed with cancer patients through the online clinic.

5. Documentation of all the activities and services performed.

6. A screening activity will be performed to reach for breast cancer patients in the community, clarifying for them the importance of their participation in such online service.

7. A patients' information will be collected to construct a cancer patient data base that includes all his personal information, medical status, and history, besides his medication history and current treatments used.

7.1. How the patient will use the online service?

• The online website will be developed to cover all the aforementioned goals and objectives in a user friendly way. Also, the website will be mobile friendly.

• The patient is provided with a user name and password on his e-mail, or by an SMS after registration and collecting all his required personal and medical data.

• The patient log in to the site through his personal computer or his mobile phone using his user name and password to access all the available services provided.

• The available services will include:

1. Side effects and adverse events reporting, and management request.

2. Assessment and review of current therapeutic protocol request.

3. Patient counseling and education request.

4. Palliative care service and follow up request.

5. Pain management request.

6. Ineffective medication management request.

7. Referrals request (to the nearest breast cancer health care facility).

8. Reservation of an examination appointment.

9. Medication fills and refills scheduling.

10. Financial assistance.

• After requesting and finishing the required service, a phone call, or an e-mail survey will be sent to the patient to collect his evaluation for the provided service.

8. Expected Outcomes

The project's outcome is an improvement in the healthcare services offered to breast cancer patients. This will have an impact on the improvement of the patients' quality of life, besides supporting treatment compliance. Mortality rates are expected to decrease, that means saving more patients' lives for their families and children especially those young women.

These expectations were supported by previous trials for using online based supportive care for cancer patients. A trial included 257 breast cancer patients were assigned in a random fashion to access breast *cancer high quality internet resources* (as a control group), and *Comprehensive Health Enhancement Support System* for 5 months. *Comprehensive Health Enhancement Support System* is a one simple interface and integrated information, communication, and skills services that provide a personal access for every patient to get benefit from different provided services [27].

The provided services by *Comprehensive Health Enhancement Support System* include Information services, Communication services, Decision services

8.1. The information services include

1-Questions and Answers. 2-Instant Library (full articles on breast cancer. 3-Consumer Guide (descriptions, identifying a good provider, and being an effective consumer of key services. 4-Referral directory, that provide descriptions of and contacts for breast cancer organizations. 5-Web links to high-quality content in health-related and non-health-related sites.

8.2. The Communication services include

1-Discussion Groups. 2-Ask an Expert. 3-Personal stories from real-life text and video accounts of how others coped with breast cancer.

8.3. Decision services include

1-Assessment of emotional status and tailored advice on coping. 2-Health charts that tracks health status and links material addressing specific health concerns. 3-Decision aid that provides options, values, and consequences for key decisions. 4-Action plan, evaluates plans for change and suggests improvements.

The study showed that subjects accessed *Comprehensive Health Enhancement Support System* had more social reinforcement during the intervention and scored better regarding quality of life, health-care competence, and social support results at 4, and 9 months after the intervention ended. *Comprehensive Health Enhancement Support System* participants also outperformed those with internet connectivity during the intervention period, but not noticeably after it ended [27].

Another study listed a sixty-six trials and incorporated them into a qualitative analysis. Studies advocated the use of 38 digital health solutions for gathering electronic patient-reported outcomes and enabling online surveillance. The digital solutions used are sup-

posed to provided advantages for cancer patients in terms of symptom reporting and treatment, symptom pain reduction, unplanned hospitalizations and associated costs reduction, and increased quality of life and survival. Of the 38 digital solutions, 21 offered meaningful symptom relief, improved quality of life, efficacy, and reassurance to cancer patients' self-management [28].

The advantages of digital solutions use from patient prospective may include, ease of use; reassurance; high usability and usefulness; improved communication with health care professionals; correct generation of system alerts and fast response to alerts; patient empowerment; and convenience of real-time reporting of symptoms [28].

On the other hand, some limitations of use include; problems with technology or connectivity; limited usefulness; lack of clarity of the language used; and generation of false alerts [28].

A random sample of 12 cancer patients were asked about how they used online communities in compared to typical supportive care. The results showed that (31.5%) of people utilized online communities. On the other hand, Lack of necessity (48%), self-efficacy (30%), trust (24%), and awareness (20%) were the most common reasons for non-use of online communities. The survey results mentioned that cancer patients utilized online communities to attain unmet needs during stressful and uncertain times. By addressing the unmet needs of breast cancer patients, online communities have the potential to fill gaps in supportive care [29].

A standardized questionnaire was used to interview 117 of the 133 breast cancer patients selected by universal sampling. The psychological domain had the largest unmet supportive care needs (Mean = 53.31), followed by the physical domain (Mean = 38.16). The most common unmet needs were future uncertainty (78.6%), worry about the disease growing (76.1%), emotions of grief (69.2%), sentiments about death (68.4%), concerns about people close to the patient (65.0%), and feeling down or depressed (65.0%) [30]. That is why online supportive care service may play an important role in fulfilling the unmet supportive care needs.

Tele-health enables safe and appropriate care by reducing physical contact at health care institutions for cancer patients who are at risk of death from infection with COVID-19 [31].

A review of 29 studies involving 3698 individuals that investigated exercise Tele-health interventions using mobile apps, Messaging Service (SMS), telephone, and web-based platforms among cancer patients revealed reasonable compliance, symptom relief, and a positive experience [32].

Tele-rehabilitation is a growing field of Tele-health that involves using information and communication technology to provide rehabilitation services such as speech or physical therapy to patients, clients, and clinicians in rural and geographically isolated regions. Furthermore, Tele-rehabilitation offers persons with appropriate medical care access in the comfort of their homes or other living situations, expands the reach of clinicians, and decreases the need for face-to-face rehabilitation, especially in areas with limited manpower and financial resources [33].

Cancer patients are more prone and susceptible to Coronavirus Disease 2019 (COVID-19) due to their systemic immunosuppressive condition. There are currently no therapy guidelines for cancer patients who have COVID-19. Until new information emerges, it is proposed that COVID-19 infection in cancer patients be managed using the same treatment regimen as the general population [34].

It is worthy to mention that, emerging evidences indicate that Single Nucleotide Polymorphisms (SNPs) genotyping act as valid predictors for some chemotherapy induced adverse effects like peripheral neuropathy in breast cancer [35]. This play an important role in planning to manage or trying to overcome expected side effects that may occurs before starting chemotherapeutic treatments.

9. Conclusion

An online pharmacist–led breast cancer counseling clinic for remote management of breast cancer patients in a user and mobile friendly website expected to provide a better quality for medical care management, save time and effort, and enhance patient's overall quality of life. Moreover, the online breast cancer clinic will decrease the overburden on health care providers during the current COVID-19 pandemic or during any other pandemic and will reduce the probability of COVID-19 infection for cancer patients, and so a reduction in mortality rates, and enhancement for patient's personal and family life.

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