

Evaluation of prescribed medication pattern and adherence to treatment plans among breast cancer patients at KHCC

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ABSTRACT

Adherence to treatment plans as per the prescribed medication pattern is essential to ensure better treatment outcomes. However, unfortunately, a large sum of patients often disregards this area and tend to show non-compliance to this behavior, leading towards worst treatment scenarios. The current work is dedicated to the evaluation of prescribed medication patterns and adherence to treatment plans among breast cancer patients. The study is designed on a survey approach. The study sample involved 80 participants (55 breast cancer patients and 25 breast surgeons) enrolled at the King Hussein Cancer Center (KHCC) in Amman, Jordan. In order to accumulate the required data, a questionnaire was designed and sent to the respondents in KHCC. The respondents were asked to reflect on their experience and identify the primary aspects leading to non-adherence to treatment plans among patients. After separately analyzing the questionnaires', responses submitted by the patients and surgeons, it was noted that patients consider psychological and social factors to be the primary cause of non-adherence behavior, whereas the surgeons attributed this behavior as a result of medication side effects and the complexity of treatments. Hence, it has been concluded that consideration must be paid to alleviating the aspects leading towards these causes so as to ensure patients' maximum participation in their medication plans and augment the efficacy of therapies.

Keywords: Breast Cancer, Cancer Patients, Medication Pattern, Treatment Plans

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1. Introduction

Adherence to treatment plans, specifically among cancer patients, is decisive to optimize health outcomes as the opposite can lead to high mortality and decreased survival rates. However, even after the visible indication of the severe consequences, a lot of patients still tend to be inclined towards non-adherence behavior. In the case of breast cancer, the majority of the patients who are diagnosed with this disease are 50 or above 50 years old [1]. Owing to the age factors, approximately half of such populations are also likely to develop other chronic conditions like diabetes, dyslipidemias, hypertension, and so forth that can even worsen their prognosis and survival [2, 3]. For instance, breast cancer patients having diabetes grow high risks of breast cancer recurrence or mortality, as Lipscombe et al. (2008) reported around a 40% increase in mortality within the first five years following breast cancer in their study. Therefore, in consideration of these facets, it is even more pivotal for breast cancer patients to conform to the prescribed medication patterns to alleviate the risk of any major disorder. However, as indicated before, the increasing age factors, such as barriers related to illness, treatment procrastination, etc., can induce hurdles while adhering to these routines [4].

Research scholars have attributed non-adherence to prescribed medication patterns to numerous factors. Manning and Bettencourt (2011) proclaimed that there is an association between depression and medication adherence among breast cancer survivors. The authors further asserted that attitudes are among the most conclusive aspects that influence behavioral intentions. Thus, interventions addressing the effectiveness of post-radiation medications can stimulate positive attitudes and hence more favorable intentions. Apart from this, encouraging the breast cancer patients for maintaining a positive sense of control over engaging in treatment behaviors also aids in increasing treatment and medication adherence. Research studies also suggest a linkage between psychological stress and the lower survival rate of breast cancer patients [5].

Another potential mainspring behind the discontinuation of treatments is the extensive delays between therapies. Nekhlyudov et al. (2011) identified that the extended gaps between medication patterns are most likely associated with reduced probability of resuming therapy. Thus, it can be implied that interruptions in therapies after treatment initiation are also one of the many causes of treatment discontinuation. Therefore, clinicians who look after breast cancer patients ought to explicitly explore the underlying barriers to adherence and non-adherence to draw possible solutions and motivations to continue prescriptions [6].

The current study principally intends to focus on the assessment of prescribed medication patterns and adherence to treatment plans among the breast cancer patients. The prime incentive is to get familiar with the most recurrent patterns encouraging this behavior and suggest potential solutions to overcome this attitude.

2. Method

The current study is grounded upon an original research approach. A descriptive analytical design has been adopted to report findings in the given context. The sample population of the study was composed of 80 respondents. A sample involving 55 breast cancer patients enrolled at the King Hussein Cancer Center (KHCC) in Amman, Jordan, and 25 breast surgeons were recruited. In order to accumulate the desired data for the current study, a survey approach has been adopted. The researcher used a questionnaire that was sent to the study population.

A questionnaire was used for collecting the participant's responses which was shared with the study population with slight variances. Before designing the questions, an extensive literature search was done to identify the major themes on the basis of which the variables of the study can be chosen. After hefty research, multiple variables were identified that includes psychological factors, social factors, behavioral intentions, lack of symptoms, procrastination, medication side effects, and complexity of treatments. Once the variables were identified, the questionnaire was prepared accordingly.

The questionnaire was divided into two main parts. The first part involved primary demographic data for the respondents. The section for demographic details was different for patients and surgeons. Additionally, in order to classify the drugs used in breast cancer treatment, patients were also additionally required to fill in a special section that includes names of different types of drugs for breast cancer treatment and also has the option to add the name of the drug if it was not available on the list. Regarding the main section, the final list of items comprised statements involving all the variables to explore the potential and most cited factors attributable to non-adherence. A total of 30 statements were designed that discuss the potential causes of the factors that can possibly lead towards non-adherence behavior.

For the purpose of validating the research tools, the questionnaire was administered by two senior breast surgeons in the field to guarantee their relevance and suitability to offer appropriate outcomes with regard to the research aim. After expert review and a few modifications that were suggested by them, the questionnaire was sent to the target population.

After gathering the participant's responses and confirming that each questionnaire was completely filled, data analysis was performed. Since the population of the study was different in nature, i.e., surgeons and patients, the results of the questionnaire were analyzed separately to look for similarities or variances between the responses, if any, and further, classify the results into two broad categories. The data were analyzed using SPSS Statistics version 23. Frequency analysis was done to filter out the most cited variables that were opted by the participants as the cause of non-adherence behavior.

Prior to the conduct of this study, all potential ethical considerations were made. The researcher ensured that the participants were not forced to partake in the study. Moreover, written consent was taken from all the respondents. The research aim and focus were clearly communicated to the respondents, and they were also ensured that their confidentiality would be maintained throughout the conduct of this work and even after publication. No identifying or personal information of the participants was mentioned anywhere in this study except for the anonymized primary demographic details that are used for considering the sample characteristics. Lastly, as a concluding measure, it was further well-versed to the participants, and their permission was granted to use the terms “patients” and “surgeons” to distinguish the study population in the text.

3. Results and discussion

With the intention of overviewing the sample characteristics in order to identify the primary background of participants, demographic data was collected. The beginning of the questionnaire included a separate and brief section that encompasses a section to fill in the basic demographic details. Table 1 recapitulates the overall responses gathered from this section for both populations. It was noted that all of the patients were females, and the majority of the patients were aged between 30 to 60 years. Concerning the diagnosis of breast cancer, it was observed that most of them were diagnosed within the last five years. For surgeons, 28% of the sample were male, and the majority (72%) were females. The most cited age group in surgeons was also between 30 to 60 years, and no surgeon was aged older than 60 years. In the last section, surgeons were asked to indicate their experience in the field. It was seen that most of them (68%) were active in the field even before the last five years.

Table 1. Demographic profiles of sampled participants

Characteristics	N	Average (%)
For Patients		
Total Sample Size = 55		
Gender		
Male	-	-
Female	55	100%
Age		
Less than 30	2	3.63%
Between 30 to 60	52	94.54%
Above 60	1	1.81%
Diagnosed with Breast Cancer		
Within the last 5 years	31	56.36%
Before 5 years	24	43.63%
For Surgeons		
Total Sample Size = 25		
Gender		
Male	7	28%
Female	18	72%
Age		
Less than 30	2	8%
Between 30 to 60	23	92%
Above 60	-	-
Active in the Field		
Within the last 5 years	8	32%
Before 5 years	17	68%

As indicated before, the patients also filled in the section which was added to classify the treatment drugs that the patients received for breast cancer treatment. A list of all possible breast cancer treatment drugs was shared, and the respondents were asked to choose from the list. Out of all the drugs, a few names received the highest frequency. It was also permitted to indicate more than one drug in case they received a combination of drugs. Table 2 offers an insight into the data received from this section.

Table 2. Classification of treatment drugs

Treatment Drug	Brand Name	Formula	Average Frequency	Frequency %
Trastuzumab	Herceptin	$C_{6470}H_{10012}N_{1726}O_{2013}S_{42}$	43	34.95
Fulvestrant	Faslodex	$C_{32}H_{47}F_5O_3S$	15	12.19
Everolimus	Afinitor	$C_{53}H_{83}NO_{14}$	2	1.62
Pertuzumab	Perjeta	-	48	39.02
Palbociclib	Ibrance	$C_{24}H_{29}N_7O_2$	10	8.13
Ribociclib	Kisqali	$C_{27}H_{36}N_8O_5$	5	4.06

It was noted that most of the patients were receiving Perjeta (Pertuzumab) (39.02%) and Herceptin (Trastuzumab) (34.95%) as their main medication or treatment drugs while the rest of the patients opted for other drugs from the list. Figure 1 is the illustrative portrayal of the frequency pattern of drug usage.

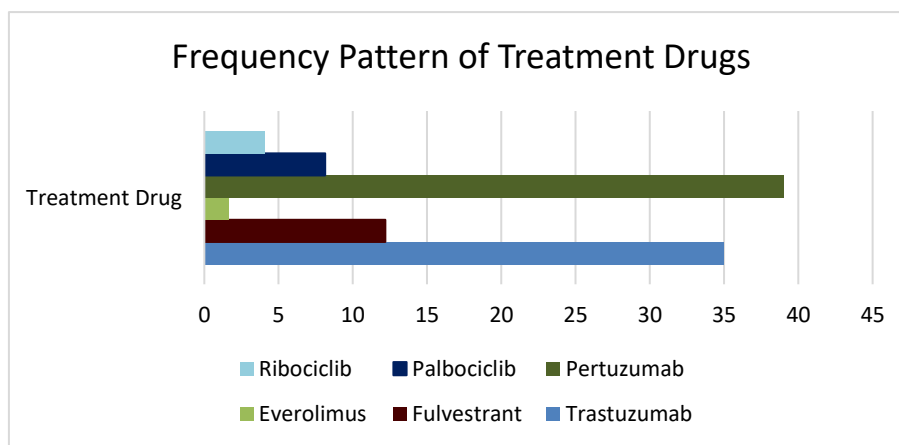


Figure 1. Usage frequency of breast cancer treatment drugs

The second or main section of the questionnaire was designed to fulfill the main aim of this study by exploring the main causes of treatment non-adherence. A 5-point Likert rating (ranging from agree to disagree) was used to record the responses. The data analysis was separately done for both populations. The results of frequency analysis in relation to all five categories of responses for the patients are given in Table 3.

Table 3. Results of frequency analysis for patients' responses

Variables of Study	Frequency of Responses (%)				
	Agree	Slightly Agree	Not Sure	Slightly Disagree	Disagree
Psychological Factors	87.27%	5.45%	7.27%	-	-
Social Factors	78.18%	14.54%	3.63%	3.63%	-
Behavioral Intentions	52.72%	18.18%	12.72%	7.27%	9.09%
Lack of Symptoms	54.54%	30.90%	7.27%	5.45%	1.81%
Procrastination	5.45%	9.09%	36.36%	23.63%	25.45%
Medication Side Effects	41.81%	38.18%	16.36%	1.81%	1.81%
Complexity of Treatments	32.72%	36.36%	10.90%	9.09%	10.90%
Total	50.38%	21.81%	13.50%	7.27%	7.01%

From the results, it was observed that psychological factors and social factors received the highest number of agreements from the participants. The most cited category was psychological factors, with an 87.27% response rate. It was perceived that patients with depression, anxiety, low self-esteem, and other similar psychological factors are more likely to show non-adherence to treatment plans owing to unstable mental health. Therefore, a negative association was reported between psychological factors and treatment non-adherence. On the other

hand, social factors also get the second highest rate, with 78.18% responses in agreement. Breast cancer patients with low levels of social support seem to be inclined towards treatment discontinuation. Thus, in order to decrease treatment non-adherence, it is essential to enhance social support and high levels of communication among patients and healthcare providers to motivate them to comply with their sessions. Also, from the responses, it was also noted that none of the patients disagreed with any of the statements concerning the psychological and social factors, hence, further validating that these aspects are considered the most attributable by all patients. As a second step of the analysis, surgeons' responses were analyzed. The outcomes derived from their responses are summarized in Table 4.

Table 4. Results of frequency analysis for surgeons' responses

Variables of Study	Frequency of Responses (%)				
	Agree	Slightly Agree	Not Sure	Slightly Disagree	Disagree
Psychological Factors	40%	36%	12%	8%	4%
Social Factors	56%	12%	16%	8%	8%
Behavioral Intentions	64%	16%	-	4%	16%
Lack of Symptoms	52%	20%	12%	4%	12%
Procrastination	36%	32%	4%	8%	20%
Medication Side Effects	88%	4%	4%	4%	-
Complexity of Treatments	84%	8%	4%	-	4%
Total	60%	18.28%	7.42%	5.14%	9.14%

The results demonstrated that medication side effect was the most cited factor (88%) that breast surgeons anticipate as the prominent cause of treatment non-adherence. This result suggests that, according to surgeons, patients who experience adverse effects from their medications may be less likely to continue taking them as prescribed. Thus, a negative relationship was perceived between medication side effects and treatment adherence. Another variable that stands out above the rest is the complexity of treatment. As per the high frequency (84%) of voting from surgeons, it can be asserted that patients with complex treatment regimens may have difficulty adhering to multiple medications and treatment schedules. Consequently, such patients chose to pause their treatment therapies. The summary of the comparison of responses from both patients and surgeons is depicted in Figure 2. Lastly, in terms of response rate, the majority of the participants agreed with the given statements, with 50.38% and 60% responses in agreement from the patients and surgeons, respectively.

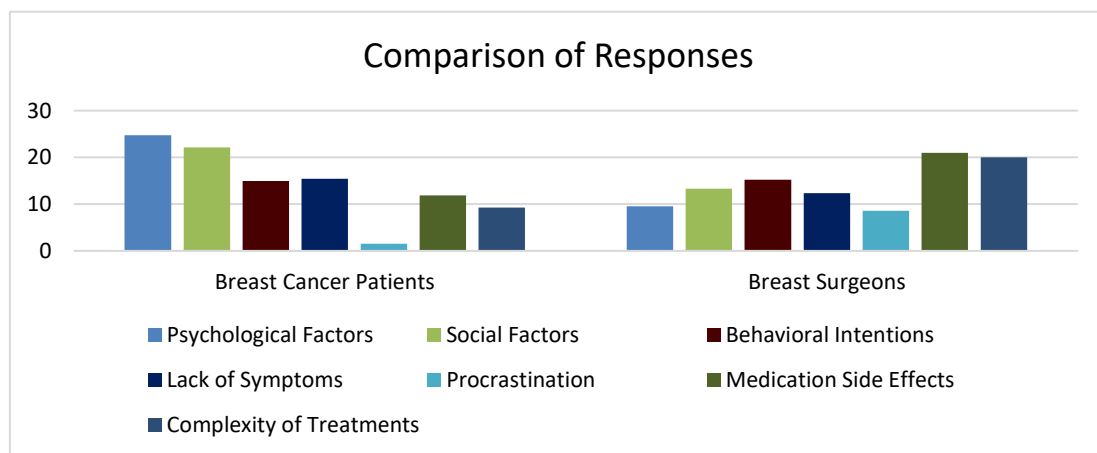


Figure 2. Comparison of responses of breast cancer patients and surgeons

The outcomes of the current study align with those communicated by daCosta DiBonaventura et al. (2014) since they also reported that the primary cause of treatment discontinuation or non-adherence in breast cancer patients was forgetfulness (a psychological aspect) as well as intolerance of medication side effects [7]. The results of the present work are also in line with Atkins and Fallowfield (2006), who reported that the reason for non-adherence behavior in the majority of the breast cancer patients (83.3% of the study population in their case)

was unintentional forgetfulness. Since unintentional non-adherence or forgetting to take medication is one of the psychological aspects, the results can be considered to be similar to the current work [8].

The current results are in non-conformity with those reported by Sedjo and Devine (2011), as in their work, the main indicators of treatment non-adherence were younger age and expensive medications [9]. The given findings also contrast with Wuensch et al. (2015), who revealed a scarcity of information about therapies as a decisive reason for treatment non-adherence. To sum up, the outcomes of the present work are in alignment as well as in contradiction with a lot of previously published works. However, these outcomes can offer new dimensions to the research on breast cancer patients' treatment discontinuation by familiarizing further evidence to the body of research in this paradigm [10-15].

4. Conclusion

In summary, the outcomes of the present work have unveiled that out of all the other variables, psychological factors, social factors, medication side effects, and complexity of treatments have the most significant association with treatment non-adherence behavior. Upon separate analysis of the responses, it was noted that patients consider psychological and social factors to be the major barrier to non-adherence to treatment plans. However, surgeons attributed the medication side effects and complex treatment methods to be the leading cause of non-adherence. From the findings, it was perceived that both the patients and the surgeons referred to different variables and identified them as what they personally believed to be the primary causal aspects that adversely influence the behavior of breast cancer patients and encourage them to ultimately pause their medications.

Keeping in view the current findings, it has been implied that attention should be paid to enhancing the psychological and social support of patients so as to motivate them to actively engage in their treatment with good mental and physical health. Moreover, the research also suggests that surgeons should look forward to finding ways to minimize the medication side effects and make the treatment plans more easier to avoid the issues arising from the complexity of treatments. As future work, researchers can go ahead to designing potential strategies that can upsurge patients' engagement in continuing their medications and also find alternate ways to overcome non-adherence behavior by means of effective measures that should be mostly taken by the breast surgeons determining the nature of outcomes expected.

Declaration of competing interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

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