CANCER CARE TEAM EDUCATION AND ORAL ANTICANCER MEDICATION ADHERENCE

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Abstract

Background: The transition of cancer treatment delivery from IV to OAM has led to issues with adherence as the patient is self-administrating their OAM outside of the infusion center with no nursing supervision. The expansion of oral chemotherapy treatment options reveals the need to improve strategies for assessment, patient education, adverse side-effect management, and ongoing monitoring of care. The cancer care team can empower patients with interventions to improve symptom self-management activities, therefore enhancing patient's confidence in being able to take care of themselves.

Purpose/Specific Aims: The purpose of this quality improvement project was to evaluate and expand the cancer care team's knowledge of oral anticancer medication. The aim of the project was to expand their knowledge by providing a focused review of literature with an educational program derived from the American Society of Clinical Oncology (ASCO) and Oncology Nursing Society (ONS) recommendations.

Methods: A pre and post survey design was used to evaluate a focused educational intervention. Participants watched a 30-minute prerecorded educational presentation. The program was derived from 2016 ASCO/ONS administration safety standards.

Results: Improvement in the pre- and post-intervention survey scores confirms the educational learning program is a valuable tool to educate the cancer care team. Post-education survey responses noted expanision of knowledge and confidence.

Conclusion: The cancer care team utilizing evidence-based interventions to inform best practices for patients managing their treatment at home on oral anticancer medication has the potential to optimize oncology patient care and support. The improvement in the survey scores confirms the educational learning program derived from 2016 ASCO/ONS administration safety standards is a valuable tool to educate the cancer care team

Key Words: oral chemotherapy; oral anticancer agent/therapies; adherence; medication adherence; patient education; nursing interventions; cancer care team

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CANCER CARE TEAM EDUCATION AND ORAL ANTICANCER MEDICATION ADHERENCE: A QUALITY IMPROVEMENT PROJECT

Background and Significance

Cancer treatment is constantly evolving with the advancement of medical technology. The administration of chemotherapy drugs has shifted dramatically in the past 15 years from parenteral infusion to oral administration, with oral cancer therapy accounting for 10% of treatments in 2010 and rising to 25% of all cancer therapies in 2013 (Bellomo, 2016). Historically, the only treatment options were intravenous (IV) chemotherapy, but with the development in medications, there are numerous oral anticancer medications (OAM) available. Advances in oral therapies have not only improved outcomes and survival in patients with cancer but also reduces the burden of care by allowing for convenient dosing outside of the hospital without the need for nurse administration and IV infusion (Greer et al., 2016). OAM offers many advantages to patients, including autonomy and a sense of control over their disease, ease of administration, and better quality of life, when compared to receiving traditional IV chemotherapy (Divakaruni et. al., 2017). Although the chemotherapy is in a pill form, the medication is comparatively as potent as IV chemotherapy with similar adverse side-effects. Patients may prefer the convenience of taking their OAM in the comfort of their own home rather than making frequent visits in the outpatient clinic, however, this may lead to issues with adherence.

The World Health Organization (WHO) defines adherence as “the extent to which a person’s behavior-taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from a healthcare provider.” (World Health

Organization, 2003, p. 17). Adherence is a complex phenomenon that is often difficult to assess due to lack of gold standard measurement, and several barriers influencing adherence. Nonadherence is defined as when patients intentionally or unintentionally delay or do not start a prescribed medication, take less than the prescribed dose, or stop taking a prescribed medication (World Health Organization, 2003, p. 18).

The standard of care for IV chemotherapy is for an oncology nurse to administer the medication in an ambulatory setting. While the chemotherapy is infusing the patients have an increased opportunity to ask disease related questions during their infusions. This allows the nurse an opportunity to reinforce the importance of adherence to their treatment and provide education on symptom management. During this interaction the oncology nurse is closely monitoring for adverse side effects while performing an oncology assessment. Since the administration of cancer treatment increasingly moves from the hospital to the home, the cancer care team and their patients face new challenges in ensuring optimal adherence to treatment. The responsibility of medication administration is placed on the patient and or caregiver who often have limited or no experience in healthcare.

A common misconception of OAM adherence is that cancer is a serious and life-threatening disease, therefore one would expect a higher rate of medication adherence. Although, the literature demonstrate patients may adjust their doses without informing their healthcare provider. For example, some cancer patients may exhibit over-adherence to self-administered medication, increasing the dose because of perceived ineffectiveness or because they believe more is better (D'Amato, 2008). A patient is considered to be nonadherent if he or she misses

doses, takes additional doses to those prescribed, or takes doses either in the wrong quantity or at the wrong time (Tokdemir & Kav, 2017).

A systematic review of adherence to OAM by Greer et al. (2016) reported adherence estimates ranged widely across studies from 46% to 100%. The consequences of non-adherence include increased health care utilization; poor disease outcomes such as, relapse and decreased survival time; and lack of patient satisfaction (Divakaruni et. al., 2017). Inadequate adherence can result in a disruption of the therapeutic index of drug needed to eradicate the cancer. Hence, it is critical to develop individualized interventions that encourage patients to adhere to oral cancer chemotherapy and thus increase their chances of survival (Schneider et al., 2014).

The transition of cancer treatment delivery from IV to OAM has led to issues with adherence as the patient is self-administrating their OAM outside of the infusion center with no nursing supervision. With the development of OAM, the cancer care team will need to make practice changes to provide patients with the knowledge and support necessary for safe administration, side effect monitoring and reporting safe drug handling, and accurate dosing following medication specific guidelines (Matthews & Caprera, 2014).

Within the context of cancer care, adherence to medication has become a high priority given the development of new oral therapies in recent years and accumulating evidence demonstrating poor adherence to these medications (Greer et al., 2016). The American Society of Clinical Oncology (ASCO) and National Community Oncology Dispensing Association (NCODA) standards for medically integrated dispensing were developed by a multidisciplinary panel. The standards include evidence-based review of interventions to improve outcomes of patients who are being prescribed an OAM and supportive care medication in an outpatient

setting (Dillmon et al., 2019). The objective of the patient-centered quality standards is to provide guidelines intended to optimize the quality and safety of dispensing of OAM. The advancement of treatment demonstrates a need to develop improved strategies for assessment, patient education, adverse side-effect management, and ongoing monitoring of care.

The purpose of this quality improvement project is to evaluate and expand the cancer care team's knowledge on OAMs. The project will include a pretest to evaluate the care team's knowledge of OAMs. Next the participants will receive a focused review of literature with an educational learning program derived from 2016 ASCO and Oncology Nursing Society (ONS) administration safety standards (Neuss et al., 2017), followed by a post intervention test. The educational program will include three main themes: oral chemotherapy, patient education and optimal medication adherence. The learning objective for this quality improvement project is to provide an educational learning program to further expand the cancer care team's knowledge of OAMs by identifying and implementing interventions that may enhance medication adherence, and improve patient education based on current guidelines.

Literature Review

The literature review was conducted using the CINAHL, Medline, Oncology Nursing Society, Google Scholar, and PubMed. Key search terms included oral chemotherapy, oral anticancer agent/therapies, adherence, medication adherence, patient education, nursing intervention and multidisciplinary oncology team.

The State of Cancer in the United States

The American Society of Clinical Oncology defines cancer as the uncontrolled growth of abnormal cells in the body. Cancer develops when the body's normal control mechanism stops working, as the old cells do not die and instead grow out of control, forming new, abnormal cells in which form a mass of tissue, called a tumor. The article State of Cancer Care in America reports there were more than 14 million cancer survivors in 2014, and 1.7 million new diagnoses were expected in 2015. Cancer does not discriminate as the disease will inflict patients from all different demographics including race, age, gender, educational level, or socioeconomic status. In 2015, the United States made significant improvements in cancer care, as evidenced by declining incidence and mortality rates for many types of cancer, the growing number of new drugs and technologies available to patients, and advancements in precision medicine (American Society of Clinical Oncology, 2016).

As a result of the advancement in cancer care, millions of Americans who develop and survive cancer will require long-term care and monitoring to detect and treat recurrence or new cancers. They may also require support for long-term physical, emotional, psychosocial, and financial adverse effects as a result of their treatment. Since, the patients are living longer with cancer an increasing proportion of new cancer cases occur in patients with a previous history of

cancer. Approximately 19% of cancers diagnosed from 2005 to 2009 were not first cancers, compared with only 9% diagnosed from 1975 to 1979 (American Society of Clinical Oncology, 2016). The National Cancer Institute report as of January 2019, there were an estimated 16.9 million cancer survivors in the United States and the number of cancer survivors is projected to increase to 22.2 million by 2030. The new development of treatment options allows the opportunity for patients to live longer with cancer therefore increasing the incidence of cancer while decreasing the mortality. Cancer is becoming more prevalent as the prognosis of cancer is improving with the expansion of cancer treatment options.

Advancement of Chemotherapy

In 2015, the FDA added 15 new drugs and biologic therapies to its list of more than 180 approved anticancer agents and expanded use for 12 previously approved treatments (American Society of Clinical Oncology, 2016). The development of OAM has revolutionized cancer treatment. The pipeline of oral oncology drugs is growing with almost half of 300 medications in phase II and III clinical trials are oral medications (Tipton, 2015). The standard of care for intravenous chemotherapy includes the patient visiting an oncology practice or ambulatory infusion center to receive treatment. After meeting with the oncologist, the patient would require a certified oncology nurse to obtain intravenous access, perform a nursing assessment and then administer the chemotherapy. The treatment is given in a safe, structured, and controlled environment with providers on site. As a result of the transition from IV to oral form, the responsibility of proper administration and medication adherence shifts from the oncology nurse to the patient and or caregiver. This change in the treatment of cancer has led to new concerns for patients and caregivers, healthcare providers, and healthcare systems (Tipton, 2015). The

OAM is only therapeutic if the patient is taking the medication properly. Poor adherence to OAM is consistently associated with worse disease outcomes, including lower likelihood of response of therapy and a higher mortality (Greer et. al., 2016).

Challenges in Oral Chemotherapy Administration

Matthews and Caprera (2014) performed a study focusing on the challenges with oral medication adherence. The authors conducted 17 educational in-service programs with a roundtable discussion. The participants included about 200 oncology nurses, infusion coordinators, advanced practice nurses involved in clinical care and in supervisory positions, practice managers, pharmacists, and pharmacy industry consultants. Preceding the in-service program, the participants were informally surveyed regarding their current policies and procedures on educating patients prescribed oral chemotherapy, how confident they felt in providing patient teaching for oral chemotherapy if that was their responsibility, and what resources they used for self-education and patient education. During the roundtable discussion, the participants identified the need for a user-friendly resource that includes essential information about oral chemotherapy in a condensed chart.

Matthews and Caprera (2014) developed a new tool called the Essentials of Oral Oncolytic Guide (EOOG). The main objective of this tool is to have a condensed summary of useful information about current oral chemotherapy in a simple format. The goal is to be a resource for oncology nurses and clinicians involved in the care for patients prescribed an OAM. The study's participants endorsed the EOOG tool as a brief and concise summary of the medication to be utilized during patient education. The authors emphasized an implication for practice is to enhance knowledge of specific oral oncolytic for the improvement of patient

outcomes. The cancer care team can apply EOOG in their practice especially in telephone triage as the tool includes pertinent need-to-know information of each oral chemotherapy.

An article by D'Amato (2008) stated educating cancer care providers about the issues and barriers to adherence is imperative. Educated providers can then communicate this important information to their cancer patients. Using a shared decision-making process, clinicians make decisions with patients, including discussion of patients' values and preferences with respect to their current situation. Involving the cancer patient in all aspects of decision-making process have been shown to increase patient motivation and adherence. The author highlighted numerous contributing factors impacting medication adherence, therefore utilizing one approach is unlikely to be effective. The World Health Organization, reports although patient-related factors certainly influence adherence, factors beyond the patient's direct sphere of influence are also reported to considerably affect adherence, including socioeconomic-, therapy-, and condition-related, and health system factors. The author endorses the use of a multidisciplinary team approach to promote medication adherence in their cancer patient. The cancer care team consisting of pharmacists, oncology nurses, behavioral specialists, and physicians has been shown to improve patient adherence by facilitating patient related barriers to oral chemotherapy.

Another factor impacting oral chemotherapy administration is adverse side effects from the OAM. Side effects of oral cancer therapies may be different from drugs delivered via IV, but they have the same potential for severity, making patient education and monitoring equally important in both settings. Symptoms can quickly escalate at home, resulting in exacerbation of minor side effects into serious acute conditions and require admission to an inpatient unit for acute management (Winkeljohn, 2010). Patient education provided at the initiation of treatment

must include common side effects with recommendation for symptom control. Since, patients prescribed an OAM are seen less frequently compared to patients receiving IV regimens, it is crucial for all patients to know when, who, and how to contact their healthcare providers during and after clinic hours.

Benefits of Oral Chemotherapy

The landscape of cancer treatment is continuously expanding with the research and development of new OAM. Tipton (2015) reports the expansion of treatment options contributed to an improved understanding of genetic, genomics, and molecular changes which led to the development and use of more targeted oral agents. This author performed an overview of the challenges related to oral agents, advantages and disadvantages of taking an OAM, and the impact of adherence. The article states an estimated 25%-30% of all cancer agents in development are oral medications. The preference of oral therapy often is related to convenience, avoiding the need for insertion of central venous catheter or enduring the difficulties of poor peripheral IV access, and being able take the oral medication at home (Tipton, 2015). The advantage of taking OAM at home considerably decreases the need for transportation and length of stay at the ambulatory infusion center when compared to IV chemotherapy.

The standard of care for patients receiving traditionally IV chemotherapy include an office visit for an appointment with the oncologist and then treatment in the infusion area. The length of time for the appointment with infusion will vary from one to eight hours depending on the cancer type and treatment regimen, which may include multiple medications. The transition from IV to OAM offers many advantages to cancer patients including greater flexibility and convenience, and less disruption of activities of daily living for the patient and family or

caregiver (Bellomo, 2016). Additionally, this offers the patient the opportunity to return to work sooner when compared to traditional IV chemotherapy. Furthermore, this is beneficial for the patients who depend on caregivers for transportation because these patients are seen less in the office therefore requiring less days off work for appointments for the caregivers. Tipton (2015) explained the convenience and flexibility of taking the medication at home may have a positive impact on the patient's quality of life because less time will be spent in the clinic compared to receiving traditional IV chemotherapy.

Disadvantages of Oral Chemotherapy

The article by Tipton (2015) described disadvantages as issues with adherence, communication, bioavailability, and safety. The author identified issues with adherence to OAMs can lead to several consequences, and may have a harmful impact on patient outcomes. The concept of overadherence is imperative to emphasize in oncology care as patients may take more medication than prescribed because of the misconception that more medication will eradicate the cancer. This misunderstanding can lead to an increase in serious adverse side effects, and negative outcomes. Since, the right drug is being administered in the right amount and at the right time in a controlled setting is being taken out of the hands of the oncologist and is being placed on the patient, family, or caregiver (Bellomo, 2016).

The responsibility of medication adherence and monitoring for adverse side effect transfers from the nurse to the patient. Consequently, if the patient is nonadherent to their OAM, this may lead to an undesirable impact on the efficacy of the OAM and overall patient survival. Poor adherence also can affect outcomes such as patient satisfaction and financial outcomes (Tipton, 2015). The author expressed effective and targeted communication is critical for these

patients and caregivers as they are seen less often in clinic. Therefore, establishing a mode of communication between the care team is vital to promote and monitor medication adherence.

Another disadvantage Tipton (2015) described the concern of bioavailability because each medication has specific absorption characteristic with precise instruction on how to take the medication with or without food, or if any drug to drug interaction, may affect drug toxicity or efficacy. In respects to the medication bioavailability, patients taking their medication unsupervised at home may lead to improper medication administration which is a safety concern. For example, *Palbociclib* is an oral chemotherapy indicated for the treatment of stage IV breast cancer. This medication should be taken with food to assist with the absorption. If the patient is not taking the medication as prescribed this may impact the efficacy of the medication and increase toxicities.

Another disadvantage highlighted by the author is managing misconceptions that OAMs are not perceived as powerful and hazardous materials. This misunderstanding can lead to safety concerns including medication errors or improper safe handling of chemotherapy. For example, mishandling of an OAM could lead to inadvertent physical exposure of family members to hazardous substance and environmental contamination (D'Amato, 2008).

Oral Anticancer Medication Adherence

A systematic review by Atkinson et al. (2016) assessed the correlation between patient-reported and objective oral anticancer medication adherence measures. The authors identified significant challenges to accurately monitor patients taking OAM. The study defined the objective measures of OAM adherence were a pill count, pharmacy fill rates, and the use of a Medication Event Monitoring System (MEMS). This consists of an electronic detection of

package entry by incorporating micro-circuitry into pharmaceutical packages of various design, which detects, time-stamps and stores the maneuvers needed to remove a dose of the drug. The patient-reported measures utilized in the study were the medication adherence rating scale and self-report survey. The findings of the study revealed patient-reported OAM adherence rates were equal to or higher than objective OAM adherence across the majority of studies. For example, patients reported that they were adherent to their OAM by taking the medication as prescribed, although when directly compared to the pharmacy fill rate, the OAM prescription had not been filled.

The authors concluded the higher rates of adherence could be impacted by overestimation of adherence. Patients may feel the social desirability to adhere to their medication regimen to be deemed as the "good patient" leading to overinflation to adherence rates. The associations found among adherence measurements is suggestive that patient-reported adherence is a valid method for eliciting this important information (Atkinson et al., 2016). Psychometric research on the efficacy and validity of patient-reported outcomes further supports this viewpoint (Sadahiro et al., 2000). The study's findings provide insight that utilizing patient-reported measures may be indictive of adherence. However, every study reviewed demonstrated varying levels of medication non-adherence. The authors concluded there are several factors contributing to poor adherence, but one of the primary barriers was a lack of affective communication between patients and providers (Atkinson et al., 2016). The authors recommended the utilization of patient-reported measures with nurse led interventions to improve adherence rates to OAM.

The implications for practice from this study indicate that cancer care teams are at the forefront of the patient's overall health care team; therefore, they can potentially be in the

position to help improve OAM adherence. The nursing role in medication teaching may mitigate the disconnect in communication between patients and providers, maximizing medication adherence (Atkinson et. al., 2016). The study's findings suggest that the implications for practice is the cancer care multidisciplinary team is in an ideal position to optimize patient-provider communication and help educate the patient on the importance of adherence.

Intervention Aimed to Improve Medication Adherence

A systematic review by Greer et al. (2016) assessed rates and correlates of adherence to OAM and intervention aimed to improving adherence. The findings of the study suggested benefit of a treatment monitoring program that included oncology nurses, advanced practice providers, and multidisciplinary pharmaceutical care. The authors highlighted that patients prescribed an OAM are seen less in the onsite clinic emphasizing these patients will have less opportunities for the oncology nurse to perform a nursing assessment. Subsequently, the authors recommendation was to provide follow up care remotely via telephonically or electronically. The findings of the study further validated the importance of establishing a treatment monitoring program that could be provided by the cancer care team which includes the nurse practitioner, oncology nurses, and pharmacist.

Patient Perspective on OAM

A prospective research study conducted by Divakaruni et al. (2017) evaluated young adult patients' perceptions regarding medication education, adherence monitoring processes, and identification of patient-reported facilitator and barriers to adherence. More than 80% of patients reported receiving education before starting therapy that included the planned duration and schedule of OAM, short- and long-term side effects, and the purpose and goals of treatment.

However, 24% of patients report not being informed of proper storage, handling, preparation, administration, and disposal of oral chemotherapy. The study's finding highlights the importance of educating the patient and their caregiver at the initiation of treatment providing information about safe handling and storage.

Furthermore, 24% of patients reported they did not have a plan for a missed dose. The American Society of Clinical Oncology and the Oncology Nursing Society administration safety standards recommends a plan of care that includes instruction if they skipped or miss a dose (Dillmon et al., 2019). The findings of the study are concerning as the patients who are unaware of instructions for a missed dose of their OAM have the possibility overadherence by doubling dose. Moreover, this demonstrates a degree of non-adherence for missing a dose, or not taking the OAM at the prescribed time. Previous literature has demonstrated the high rates of nonadherence in the young adult population. For this reason, the involvement of family, caregivers, and others in the education process may provide additional support with a challenging disease state such as cancer (Divakaruni et al., 2017).

The study found 10 out of 17 patients reported adverse side effects hinders their adherence. The authors concluded that side effects should be monitored in every patient to ensure tolerability or to determine the appropriateness of an agent if these effects cannot be mitigated. The oncology nurse is in a unique position to provide early intervention of symptom management that may positively impact adherence. The authors stated previous literature demonstrates the young adult population have higher rates of nonadherence; therefore, the involvement of the family and caregivers during the initial educational session can improve adherence

The authors also observed the need to close the communication gap between providers and patients by utilizing an oncology pharmacist or nurses. The patients taking their OAM at home have decreased communication with providers since they are seen less in the outpatient clinic. Consequently, there may be a breakdown in communication between the patient and provider. This study provides evidence of the importance of initial patient education to increase OAM adherence.

Oncology Nurse Role

With the cancer treatment paradigm shifting from the use of infusion chemotherapy administration in controlled, supervised clinical setting to the use of oral chemotherapy self-administered by patient in the home setting, adherence to therapy and symptom management become a challenge to ensure safe, quality care for cancer patients (Bellomo, 2016). Having a designated nurse to perform follow up care for patient's prescribed an OAM may improve patient safety and help bridge the communication between the patient and provider.

Moody and Jackowski (2010) performed an exploratory research study to describe the development of the oncology nursing role for patients receiving OAM in an outpatient medical oncology setting. The authors hypothesized the implementation of the oncology nurse may have an impact on patient care with the desired outcome to improve medication safety and adherence for patients receiving an OAM. The role of an oral chemotherapy nurse is to ensure adequate education and support for patients. This designated oral chemotherapy nurse reviewed proper dosage, safe handling techniques, recognition of critical side effects to report, dietary restrictions, drug interactions, and medication adherence.

Prior to the start of each treatment cycle patients are seen by the nurse and they performed a nursing assessment and applied interventions as applicable, allowing the oncology nurse an opportunity to address the side effects, adherence, and provide support. Additionally, the designated oncology nurse conducted telephone triage calls with these patients, which led to earlier interventions in managing common side effects. The nurse documented the interaction in the medical record, which lead to improved documentation of side effects. Nurses designated to care for people taking an OAM can help patients and caregivers understand the importance of adhering to oral chemotherapy regimens, recognize side effects and report immediately, and safely administer and handle oral chemotherapy (Moody & Jackowski, 2010). The study's finding suggests the implementation of a designated oncology nurse to provide follow up care for patients prescribed an OAM can have a positive impact on adherence, and symptoms management.

Advance Practice Nurse-led OAM Education

A randomized clinical trial by Schneider et al. (2014) developed a tailored nurse coaching intervention to identify barriers to and facilitators of taking an OAM, and working with patients to identify strategies that helped patients take medications as prescribed. The study utilized advance practice nurses (APNs) to interview cancer patients at the initiation of their OAM.

During this visit the APNs obtained information that may influence medication adherence. For example, cognitive function, the presence of caregivers or support system, and health literacy. The APNs individualized a coaching intervention based on the results of the assessment utilizing strategies to improve patient knowledge, enhance behavior

skills, and strengthen existing support systems. The control group received the standard of oral chemotherapy education which included a disease specific patient education notebook and instructions on their treatment provided by a clinic nurse. The participants in the intervention group received standard of care in addition to a personalized assessment and tailored intervention plan developed by an APNs, and received weekly telephone follow up calls for the first month of the initiation of treatment. After the first month, the telephone calls are twice a month for six months or until discontinuation of medication.

The study found that the patients in the intervention group had higher rates of adherence in both objective and subjective measures as compared to the control group. The authors found a significant positive correlation between self-report and pharmacy refill rate at the two-month time point. This supports the validity of using self-report as an outcome measure in this study (Schneider et al., 2014). The oncology nurses can utilize the patient reported measures to assess and monitor OAM adherence. Another finding of the study was that APNs were in a vital position for early intervention to mitigate nonadherence by identifying critical barriers to adherence, like timely pharmacy deliveries or preventing medication interaction. Schneider et al. (2014) concluded that the use of APN to promote adherence helps patients manage symptoms and ensures the medication are taken safely and properly. The study demonstrates the need to implement a designated APN who will provide coaching intervention.

Patient's Self-efficacy and OAM Adherence

A quasi-experimental study conducted by Tokdemir and Kav (2017) examined the effects of a structured educational program on medication adherence and self-efficacy of patients who were prescribed an OAM. Bandura (2001) defines self-efficacy is a person's belief in his or her ability to implement behaviors to achieve a desired outcome and includes not only using the required to perform the behavior but also knowing how and when to use them under diverse circumstances.

The authors described self-efficacy as an important feature that determines how individuals feel, thinks, and behaves. The authors hypothesized individualized education increases patient medication adherence self-efficacy. The patients received education on proper administration, drug-specific information, potential interactions, safe handling of the medication, plan for missed dose, and importance of medication adherence by the researcher. Next, the nurse researcher conducted telephone follow up calls at week one and two. During this call the researcher assessed for side effects including nausea, vomiting, fatigue, lack of appetite, skin rashes, constipation or diarrhea, dizziness, and oral mucositis.

The findings of the study indicated that the patients reported an increased self-efficacy on taking their OAM after the post-education compared to pre-education. The medication self-adherence scale reports an improvement from pre-education to post-education, which demonstrated an increase in patient medication adherence. The findings are significant and points to the importance of providing OAM education by a designated provider at the initiation of treatment can improve patient medication adherence.

Additionally, the researchers found a reduction in symptom severity, and perceived symptoms distress from the week one phone contact compared to week two phone contact. In conclusion, a majority of patients (90.2%) reported they had not forgotten their OAM; however, one third stated they did not believe that taking the drug has positive outcomes, which is a risk factor for nonadherence (Tokdemir & Kav, 2017). In response to these findings the indication for designating an oncology nurse to provide education and support at the initiation of treatment increases the patient's perceived self-efficacy in taking their OAM properly and safely.

White et al. (2019) performed an integrative review of current literature on the self-efficacy for the management of symptom and symptom distress in adults with cancer. The literature demonstrated a link between perceived self-efficacy for management of symptoms, symptom distress, and quality of life. Bandura (2001) defines perceived self-efficacy formulates the basis of any decision to act and is defined as the perception of one's own ability to implement behaviors to attain designated types of outcomes such as symptom management. The authors identified the significance of assessment of perceived self-efficacy at initiation of treatment is essential. The review found that higher general self-efficacy was associated with higher symptom management and lower symptom occurrence, symptom distress, improved performance outcomes, and higher quality of life. Perceived self-efficacy for symptoms management can be learned, therefore the cancer care team is well positioned to assess the patient's self-efficacy for symptom management. The author describes the implication to practice is assessment of self-efficacy for symptoms management starting at diagnosis and throughout the treatment process would provide a guide for patient centered interventions.

The cancer care team should incorporate the patient centered interventions to assist with managing symptoms related to cancer and it's treatment. The article identified several nurse-led interventions that are feasible and effective for increasing perceived self-efficacy for symptom management and reducing symptoms severity and distress. The interventions utilized by the nurses to enhance the patient's perceived self-efficacy were described and included direct mastery experience, vicarious experience, social and verbal persuasion, and interpreting inferences from physiologic and psychological (White et al., 2019). For example, many patients show signs of distress when they are anticipating and experiencing alopecia. The nurse can implement the efficacy-enhancing intervention of vicarious experience and social persuasion by referring the patient to cancer survivor support groups and relaying experiences with patients who have undergone distress from alopecia. The findings of the study revealed the presence of high self-efficacy predicted higher physical and emotional well-being and was associated with lower symptoms occurrence and symptom distress, which leads to better overall health and improved quality of life (White et al., 2019).

The cancer care team are well positioned to recognize a knowledge deficit and intervene with patient centered interventions to optimize OAM adherence. Further indicating providing the cancer care team with a focused review of current literature with an educational presentation to identify and implement interventions to promote perceived self-efficacy through patient education to enhance OAM adherence.

Conceptual/Theoretical Framework

Bandura's Self-Efficacy theory is a behavioral theory that is widely utilized in nursing research and has been applied to several studies in oncology care. This behavioral theory explains human behavior using concepts of self-efficacy and outcome expectations. Bandura (1997) defines self-efficacy as a person's belief in his or her ability to implement behaviors to achieve a desired outcome and includes not only using the skills required to perform a behavior, but also knowing how and when to use them under diverse circumstances. The theory describes perceived self-efficacy as the patient's perception of ability to self-manage their care. Bandura (1997) has identified perceived self-efficacy as a powerful mediator of health promoting behaviors which lead to successful outcome attainment. An outcome expectation is defined as person's estimate that a given behavior will lead to a certain outcome (Bandura, 1997, p. 193). The theory appraises the relationship between person's environment, patient factors, cognitive factors, behavior and how they interact and influence each other.

Bandura Self-Efficacy theory believes individuals formulate their self-efficacy by appraising information from direct mastery and vicarious experiences, social/verbal persuasion, and interpreting inferences from physiological and psychological states. Direct mastery experience is defined as performing an activity, and vicarious experience is observing other similar to oneself successfully performing an activity (Hoffman et al., 2003). Social and verbal persuasion is defined as being influenced to believe in the capabilities to achieve a goal. Interpreting inferences from physiological and psychological states indicative of personal strengths and vulnerabilities to reach goals.

The cancer care team is forefront of care to assess the patient's perceived self-efficacy for management of symptom and enhance their perceived self-efficacy by implementing patient-centered interventions to assist with symptom management.

White et al. (2019) performed an integrative review on self-efficacy for the management of symptom distress and concluded self-efficacy and symptom management are vital concepts that affect outcomes for adults with cancer in all stages of treatment. Patients prescribed an OAM are expected to self-manage their symptoms but may not have the self-efficacy to do so. Therefore, providing the cancer care team with a focused review of literature with an educational program including interventions to be utilized to enhance the patient's perceived self-efficacy. This theory is relevant to this quality improvement project as the cancer care team is in a unique position to improve the patient's perceived self-efficacy through patient education.

The project included the four concepts of Bandura's Self Efficacy theory. The PowerPoint presentation includes patient-centered intervention utilizing the concepts of direct mastery experience, vicarious experiences, verbal persuasion, and physiological and affective cues. The presentation also includes the relationship of perceived self-efficacy and the management of symptoms with interventions to control symptoms to potentially improve functional status and quality of life for adults with cancer.

Methods

Purpose

The purpose of this quality improvement project was to evaluate and expand the cancer care team's knowledge of oral anticancer medication. The aim of the project was to expand their knowledge by providing a focused review of literature with an educational program derived from the American Society of Clinical Oncology (ASCO) and Oncology Nursing Society (ONS) recommendations. The program included identifying and implementing interventions to improve the cancer care team knowledge, patient education and enhance oral anticancer medication adherence.

Design

The design used was a quality improvement project that included a pre-education survey, then an educational program reviewing the best practice in patient oral anticancer medication management, followed by a post-education survey.

Sample and Setting

The sample selection was purposive sampling. The participants were recruited from Cancer Care Team at the Hematology & Oncology Associates of Rhode Island. The author invited nine staff members in the office including five registered nurses, one nurse practitioner, one pharmacist, and two medical assistants. The targeted sample size was nine because of the limited amount of staff members in the office. The participants were given an informational document which included the purpose, what data was collected, and how the data will be used. Participation was on a voluntary basis. The director of the Hematology & Oncology Associates of Rhode Island had given permission to conduct this project in the office during normal business hours on a designated day preapproved

by the clinical nurse manager (Appendix A). Inclusion criteria identified staff members who provide care to oncology patients prescribed an OAM, including registered nurses, a nurse practitioner, pharmacist, and medical assistants. Exclusion criteria identified staff members who do not provide care to patients prescribes OAM.

Data Collection and Measurement

The data was gathered in the form of a pre-education and post-education survey total scores. The content of the survey questions was developed based on the best practice in OAM management. The survey questions assessed the participant's knowledge of an OAM. The questions consisted of six multiple choice, including select all that apply, and five questions in the format of a 5-point Likert scale. The pre-education survey was administered at the start of the designated time frame for the education program. The participants were given 15 minutes to complete the survey. The participants watched a 30-minute prerecorded educational PowerPoint presentation. The educational program was derived from 2016 American Society of Clinical Oncology (ASCO) and Oncology Nursing Society (ONS) administration safety standards (Neuss et al., 2017).

The program included guidelines for recommendation to identify and implement interventions to optimize medication adherence and to improve patient education. The participants were given 15 minutes to complete the post-education survey at the end of the educational program. The time frame for this quality improvement project was approximately one hour long with 15 minutes to complete pre-survey and a 30 minute educational program, followed by a 15 minute post survey. The pre and post surveys are in Appendix B.

Ethical Consideration

All participation were voluntary, and no incentives would be offered to participants. There were no vulnerable population involved as the participants are staff members in the Hematology & Oncology Associates of Rhode Island. The risks of participation were no greater than that which is required of typical at-work in-service. A brief statement accompanied the surveys to ensure the surveys were anonymous and confidential. The pre and post surveys were collected at the conclusion of the project. This project was submitted to and approved by the IRB at Rhode Island College.

The study was feasible as Spoelstra et al, (2017) used similar methods and samples to evaluate the implementation of a nurse practitioner intervention to promote patient medication adherence and symptoms management. There were no financial disclosures. No identifiable data was be collected.

Plan for Analysis

The study used quantitative analysis and descriptive statistics to analyze the data.

Dissemination

The findings of the study were disseminated in a quality improvement project poster at Rhode Island College School of Nursing and posted on the RIC Library digital commons platform.

Results

This quality improvement project included a total of nine participants from a multidisciplinary cancer care team. The sample included five registered nurses, one nurse practitioner, one pharmacist, and two medical assistants who completed the pre-test and post-test. The test consisted of six knowledge-based questions utilizing true or false format, multiple choice questions, and select all that apply. Five opinion-based statements utilized a Likert scale to score the responses. The results of the knowledge-based pre-test and post-test scores are displayed below for questions 1-5 in Figure 1, and the results in percentages in Figure 2.

Figure 1. Comparison of Knowledge-based Pre-test and Post-test Scores

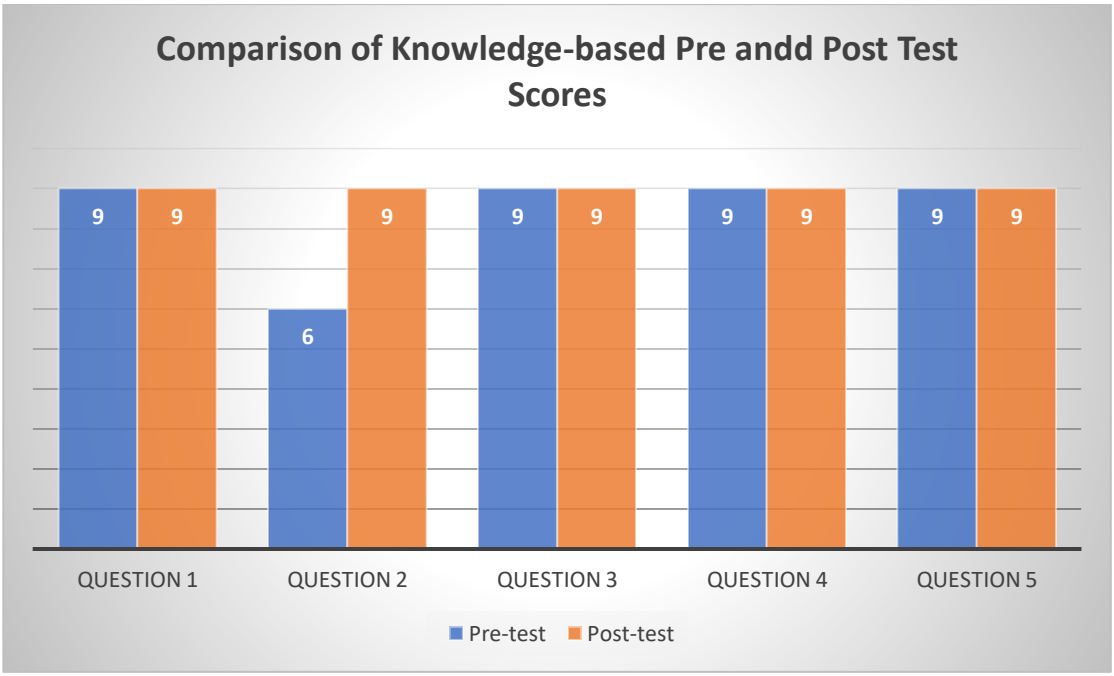

Figure 2. Comparison of Knowledge-based Pre-test and Post-test Scores by Percent

	Pre-test (n=9)	Post-test (n=9)
Question 1	100% (9/9)	100% (9/9)
Question 2	66% (6/9)	100% (9/9)
Question 3	100% (9/9)	100% (9/9)
Question 4	100% (9/9)	100% (9/9)
Question 5	100% (9/9)	100% (9/9)

The scores ranged from 66% to 100% out of a possible 100% for the pretest with an average score of 93.2%. All participants received 100% accuracy in the post-test scores. Questions 1-5 were scored as correct or incorrect for the purposes of data comparison. The test questions are available for review in Appendix B. The pre and post-test scores were analyzed for percent change following the educational intervention. Only question number two was answered incorrectly by three participants in the pretest. This question was in a true or false format, evaluating the participant's knowledge of misconceptions for OAM. The question was evaluating if the patient would adhere to their OAM because their perception of the seriousness of their cancer diagnosis. The post-test scores of the participants were 100 % as compared to 93.2% from the pre-test, demonstrating a positive improvement in responses. The improvement in post-test scores demonstrates that the educational intervention increased the participants knowledge-base on OAM adherence.

Question 6 was a select all that apply format. This question evaluated the participant's knowledge of interventions aimed to improve OAM adherence. The pre-education survey scores demonstrated a knowledge deficit as the results were lower than the post-test scores. The pre-test scores revealed a knowledge deficit as intervention B received 33%, and intervention C and D received 44% correct. Pre and post-test scores were analyzed for a change following the educational presentation. The scores revealed an increase in the participant's ability to identify interventions to promote OAM adherence. The participants correctly identified interventions C and D on the post-education survey. Therefore, validating the educational presentation can be utilized to expand the cancer care team knowledge of interventions to promote OAM adherence. Ultimately, the scores revealed improvement in responses as all the participants post-test scores were 100%. The improvement in the pre- and post-survey scores suggest the educational presentation is a valuable method to educate the cancer care team. The results for question number six of the knowledge-based pre-survey and post-survey scores are displayed below in Figure 3, and the results by percentages in Figure 4.

Figure 3. Comparison of Knowledge-based Pre-test and Post-test Scores for Question 6

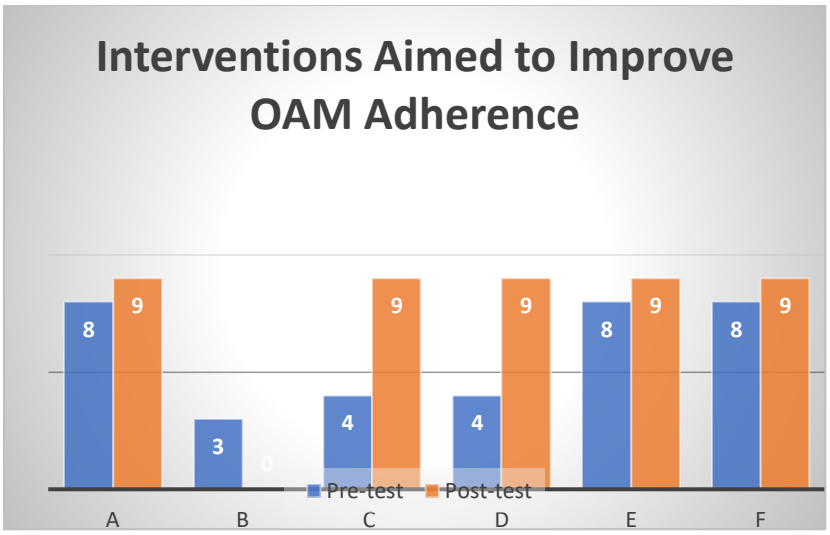
Interventions Aimed to Improve OAM Adherence
8
9
3
0
4
9
4
9
8
9
8
9
Pre-test
Post-test
A
B
C
D
E
F

Figure 4. Comparison of Knowledge-based Pre-test and Post-test Scores for Question 6 in Percentages.

Question 6	Pre-test	Post-test
A	88% (8/9)	100% (9/9)
B	33% (3/9)	100% (0/9)
C	44% (4/9)	100% (9/9)
D	44% (4/9)	100% (9/9)
E	88% (8/9)	100% (9/9)
F	88% (8/9)	100% (9/9)

The next section of the survey were five questions evaluating the participants' understanding of care provided to patients prescribed an OAM utilizing a Likert scale. The questions were assessing the participants' opinion-based on their knowledge, ability to identify interventions, and their confidence level in providing care to patients taking an OAM. The responses were measured by the percentage of participant's responses from the options of disagree, somewhat disagree, neither agree or disagree, somewhat agree, and agree. The percentage was analyzed for each question. The results of pre-survey opinion-based questions 1-5 are displayed below in Figure 5 is the pre-survey results and Figure 6 is the post-survey results. Pre and post survey questions are detailed in Appendix B.

Figure 5. Pre-Intervention Survey Opinion-Based Answers by Percentages and Number of Participants (N=9)

Question #	Disagree	Somewhat Disagree	Neither	Somewhat Agree	Agree
1	11% : 1	33% : 3	11% : 1	33% : 3	11% : 1
2	22 % : 2	11% : 1	0	55% : 5	11% : 1
3	22 % : 2	33% : 3	0	33% : 3	11% : 1
4	33% : 3	0	11% : 1	44% : 4	11% : 1
5	33% : 3	11% : 1	11% : 1	22 % : 2	22 % : 2

Figure 6. Post-Intervention Survey Opinion-Based Answers by Percentages and Number of Participants (N=9)

Question #	Disagree	Somewhat Disagree	Neither	Somewhat Agree	Agree
1	0	0	0	44% : 4	55% : 5
2	0	0	0	44% : 4	55% : 5
3	0	22% : 2	0	33% : 3	44% : 4
4	0	0	0	66% : 6	33% : 3
5	0	0	0	33% : 3	66% : 6

In review of pre-survey question one, the results revealed the participants had varied responses. The question was evaluating the participant's opinion of being knowledgeable of ASCO/ONS chemotherapy and administration safety standards interventions for OAM. The responses ranged from disagree (11%, n=1), somewhat disagree (33%, n=3), neither (11%, n=1), somewhat agree (33%, n=3), and agree (11%, n=1). The pre-survey results describe a knowledge deficit as 44% of the participants report disagree or somewhat disagree for being knowledgeable. The post-survey responses improved as all the participants agree or somewhat agree with being knowledgeable following the educational presentation. The post-survey results were somewhat agree (44%, n=4), and agree (55%, n=5). The improvement from the pre-survey or post-survey results demonstrates the educational presentation is a valuable tool to educate the cancer care team to enhance their knowledge of interventions to improve OAM adherence.

Question one assessed the participants' knowledge compared to question two which evaluated the participants' opinion of their ability to identify interventions to improve OAM. The responses ranged from disagree (22%, n=2), somewhat disagree (11%, n=1), somewhat agree (55%, n=5), and agree (11%, n=1). The pre-survey results revealed 66% of the participants agreed or somewhat agree with their ability of identify interventions to improve OAM management. The pre-survey responses differ from question one and two as 44% of the participants disagreed or somewhat disagreed in being knowledgeable about OAM interventions. Compared to question two, 66 % of the participants agreed or somewhat agreed in their ability to identify interventions. The post-survey results for question two were somewhat agree (44%, n=4), and agree (55%, n=5).

The improvement in responses from the pre and post-survey indicate the educational presentation can be utilized to further expanded the participants ability to identify intervention.

Question three was assessing the participants' confidence level in providing patient education at the initiation of OAM. The pre-intervention survey revealed the participants had various responses ranging from disagree (22%, n=2), somewhat disagree (33%, n=3), somewhat agree (33%, n=3), and agree (11%, n=1). In review of the pre-survey, 55% of the participants disagree or somewhat disagree feeling confident providing patient education. Following the educational presentation, the results improved as 33% somewhat agree and 44% agree demonstrating the presentation increased their confidence in providing patient education. The two participants reporting somewhat disagree were the medical assistants. Patient education is deferred to the other members of the cancer care team of registered nurses, pharmacist, and nurse practitioner.

Question four was evaluating the participants' opinion on their ability to identify patient or treatment related factors influencing medication adherence. In review of the pretest, the responses were disagree (33%, n=3), neither (11%, n=1), somewhat agree (44%, n=4), and agree (11%, n=1). The post-survey results improved as 66% somewhat agree and 33% agree with their ability to identify patient or treatment related factors influencing OAM adherence. Following the presentation all the participants increased their knowledge as the total scores post-survey results improved. The participants who selected disagree in the pre-survey had progressed to somewhat agree. Also, this was seen in the participants who selected somewhat agree then enhanced to agree following the educational intervention. The results of the post-intervention survey demonstrate that

best practice in OAM focused education can be utilize to expand the cancer care team's knowledge, and increase their ability to identifying patient or treatment related factors influencing OAM adherence.

Question five evaluated the participants' confidence level in providing care to patient's prescribed an OAM. The pre-survey results revealed disagree (33%, n=3), somewhat disagree (11%, n=1), neither (11%, n=1), somewhat agree (22%, n=2), and agree (22%, n=2). These results illustrate 55% disagree or somewhat disagree with feeling confident to provide care. In review of the pre-survey results, the responses demonstrates low confidence level leading to an opportunity to educate the participants on providing care to patients prescribed to an OAM. Following the presentation, the scores considerably improved as 66% agree and 33% somewhat agree. The pre-survey revealed 44% agree or somewhat agree, compared to the post-survey results were 100% agree or somewhat agree. Question five's post-survey results further validating the educational presentation as a valuable tool to educate the multidisciplinary cancer care team on OAM management.

The pre- survey results revealed the participants had variable responses. The participants' reports they disagree or somewhat disagree with being knowledgeable of OAM, the ability to identify interventions, and low confidence level in providing care. In review of the post-test scores, the responses for each question considerably improved following the educational presentation. This was confirmed as the participants' responses progress to somewhat agree or agree in the post-test. The only exception was question three, which was evaluating the participant's confidence in providing patient care. Two participants selected somewhat disagree demonstrating an area of improvement for the

educational program. The results revealed the need to improve the cancer care team's confidence in providing care with additional educational material aimed at improving their confidence. Providing patient education is valuable and influences medication adherence. The cancer care team is at the forefront of oncology care and should reinforcing positive behaviors and interventions to promote OAM adherence. Educating all the members of the cancer care team would be beneficial by utilizing best practice interventions to support OAM adherence.

Next the summary and conclusions will be discussed.

Summary and Conclusions

The literature has revealed the development of oral anticancer medications are rapidly evolving with various new emerging treatment options. The advancement in OAM is growing annually, accounting for 40%–50% of new cancer treatments in development (U.S. Food and Drug Administration, 2021). The transition from IV to OAM offers many advantages to cancer patients including greater flexibility and convenience, and less disruption of activities of daily living for the patient and family or caregiver (Bellomo, 2016). The preference of oral therapy often is related to convenience, avoiding the need for insertion of central venous catheter or enduring the difficulties of poor peripheral access, and being able to take the oral medication at home (Tipton, 2015).

The standard of care for intravenous chemotherapy is to be administered by a registered oncology nurse in an ambulatory setting. During their infusion the patients have an opportunity to communicate with the cancer care team at set intervals. These patients have a provider appointment before, during, and after treatment. Throughout these interactions the patients are objectively assessed by the cancer care team. The standard of care for OAM treatment, includes the patient and caregivers will meet with the cancer care team to discuss their treatment plan and provide patient education.

With the paradigm shifting from treatment in a controlled clinical setting to a patient's home has many benefits but is paired with potential challenges including issues with adherence, communication, bioavailability, and safety. Most importantly, the transfer of responsibility of medication adherence has shifted from the cancer care team to the patient and or caregiver at home. The literature illustrates suboptimal adherence can negatively affect treatment efficacy, disease outcomes, and overall survival while

also increasing toxicities (e.g., from over adherence) and healthcare costs, which makes support for adherence a critical clinical priority (Belcher et al., 2022). The expansion of OAM treatment options reveals the need to improve strategies for assessment, patient education, adverse side-effect management, and ongoing monitoring of care.

This quality improvement project utilized a focused review of literature with an educational program derived from the American Society of Clinical Oncology (ASCO) and Oncology Nursing Society (ONS) administration safety standards. The project was created using a pre-intervention survey, a 30 minute educational presentation, and a post-intervention survey. The project was developed to evaluate and expand the cancer care team's knowledge of OAMs and interventions to promote medication adherence. The program included identifying and implementing interventions to improve the cancer care team knowledge, patient education to improve patient's perceived self-efficacy and to enhance OAM adherence. Discussing the importance of adherence may be beneficial because it may spur those with poor adherence to improve it may encourage those with good adherence to continue (Ruddy et al., 2009)

The participants were employed by the Hematology & Oncology Associates of Rhode Island who provides direct care to patients prescribed an OAM. The nine participants included five registered nurses, one nurse practitioner, one pharmacist, and two medical assistants who completed the pre-test and post-test. This quality improvement project was found to be beneficial as evident by the post-intervention scores. The pre and post-survey scores for questions 1-5 were analyzed for improvement and found post-survey scores were 100% as compared to 93.2% demonstrating improvement in knowledge of OAM management following the educational presentation.

Question six evaluated the participant's knowledge identifying interventions aimed to improve OAM adherence. The pre-survey scores demonstrated a knowledge deficit as the results were lower than the post-survey scores. The scores were analyzed for improvement and revealed an increase in the participant's ability to identify interventions to promote OAM adherence. The improvement in the pre and post-intervention survey scores confirms the educational learning program derived from 2016 ASCO and Oncology Nursing Society (ONS) administration safety standards (Neuss et al., 2017) is a valuable tool to educate the cancer care team.

The next section of the survey consisted of five questions evaluating the participants' understanding of care provided to patients prescribed an OAM utilizing a Likert scale. The questions were assessing the participants' opinion-base on their knowledge, ability to identify interventions, and their confidence level in providing care to patients taking an OAM. The participants' responses for the pre-intervention survey were disagree or somewhat disagree with being knowledgeable of OAM, the ability to identify interventions, and low confidence level in providing care. In review of the post-survey scores, the responses for each question considerably improved following the educational presentation. The participants' responses improved to somewhat agree or agree in the post-survey demonstrating the educational presentation expanded their knowledge and confidence in providing care to patient prescribed an OAM. The post-survey results are meaningful since increasing the participants' knowledge in identifying barriers to medication adherence and selecting appropriate interventions as applicable.

For future research, the program would be modified to include additional information on intervention aimed to improve the cancer care team's confidence in providing care. The

participants report 22% somewhat disagree in feeling confident illustrating the need to modify the presentation. The adjustments to the presentation would include additional materials on interventions aimed to improve the cancer care team's confidence. This would allow an opportunity to utilize experts on OAM to validate the educational presentation and identify areas of improvement. The improvement in the pre and post-intervention survey scores confirms the educational learning program with additional interventions aimed to improve their confidence is a valuable tool to educate the cancer care team.

The literature revealed educating the cancer care team about the issues and barrier to adherence is imperative as they can communicate and reinforce important information to their cancer patient (D'Amato, 2008). Providing the cancer care team with a focused review of literature with an educational program derived from the American Society of Clinical Oncology (ASCO) and Oncology Nursing Society (ONS) administration safety standard recommendations to promote adherence is necessary to enhance their knowledge. The significance of the cancer care team utilizing evidence-based interventions to inform best practices for patients managing their treatment at home on OAM to optimize patient care and support.

The cancer care team are in the unique position to promote optimal adherence in patients prescribed an OAM. Establishing trust and communication, providing support and education, instituting effective treatment plans, and providing effective follow-up with patients all contribute to improve patient adherence rates with the intention to improve outcomes (D'Amato, 2008). The improvement in the pre and post-survey scores suggest the educational presentation is a valuable method to educate the cancer care team.

Next, recommendations and implications for future practice will be discussed

Recommendations and Implications for Advanced Practice Nursing

The development of OAMs provides patients with recommended treatment in a less invasive, more convenient form than traditional intravenous cancer therapies. The paradigm change from in-person IV therapy to at-home oral therapy for many cancers requires nurses and other healthcare professionals to develop systems to support patients (Given, 2016). The literature revealed despite this shift in cancer care, healthcare systems are only beginning to set standards and procedures to support patients on OAM regimens. The standard procedure for intravenous chemotherapy is well developed while there are no standards for OAM. Less contact with the cancer care team and fewer opportunities for education on treatment and symptoms management, so patient faces the increase responsibility of maintaining their own healthcare. The literature illustrated given the frequency of contact with on-site clinician consultation may be lower with oral medication then with infusion chemotherapy, much of the ongoing assessment of symptoms, adverse effects, and adherence will need to occur remotely either electronically or telephonically (Greer et al., 2016). Patients tasked with managing their treatment at home leading to the risk of fragmented care.

Belcher et al., (2022) performed a systematic review on ONS guidelines to support patient adherence to their OAM. The author explained the implication to practice of an APRN or pharmacist to lead this change in practice. The APRN can identify strategies such as a gap analysis using a quality improvement project approach can help clinical sites to prioritize what needs to be changed and built in well-working structures that already in place (Belcher et al., 2022). The APRN is at the forefront of patient care and can effectively bridge the gaps of care by facilitating barrier to adherence. Patient-related barrier, such as educational barrier and lack of understanding of the importance of

the medication, potential side effects, and management of side effects can be mitigated by the APRN.

ONS guidelines report an oral chemotherapy management program (i.e., standardized management and documentation of patients receiving OAMs) recently reported lower overall incidence of adverse events, decreased emergency department visits and hospitalizations, and improved medication adherence (Belcher et al., 2022). The APRN role in supervising the processes for prescribing, educating, documenting, and monitoring follow up care for patients taking OAMs have been shown to be valuable. Having a designated APRN for the oral chemotherapy management program would be favorable to have identification of a single APRN may help promote trust with patients and provide them with a single point of contact at the oncology office. The APRN may alleviate the disconnect between the patient and oncologist, and can assist with symptoms management.

The literature revealed the implication of an APRN would be beneficial to the multidisciplinary cancer care team by providing leadership and comprehensive care to patients prescribed an OAM to optimize medication adherence. Although no single intervention has been proved to be the most clinically relevant, studies demonstrated that multiple interventions are available. APRNs have the ability to identify a patient experiencing problems with medication adherence, a follow up evaluation of the diverse an often complex contributing factors will help guide recommendations to improve the patient's medication taking behaviors. The cancer care team, patient, and APRN can collaborate to develop a plan of care with interventions tailored to meet the patient's individual needs as well as the type of medication.

The APRN can apply interventions aimed at risk assessment, ongoing assessment of adherence, and proactive follow-up to promote adherence. Further validating the use of a dedicated provider as the best approach to operationalizing these recommendations into the clinical infrastructure. The APRN can prioritizes what needs to be changed or improved in their organization's standard of care. Additionally, APRN can assist with educating the cancer care team on how they should incorporate these interventions in their clinical practice.

The utilization of an APRN is valuable to provide evidence-based interventions and the development best practice for patients prescribed an OAM. Since these patients are seen less in the clinic, they require supplementary support and effective communication from the cancer care team to ensure optimal treatment adherence. The APRN can be the dedicated provider to optimize patient care by identifying barriers to optimal medication adherence and applying interventions aimed to improve patient care.

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https://www.cancer.gov/about-cancer/understanding/statistic

Appendix A

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Hematology Oncology

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Bristol, RI 02808

Care New England
MEDICAL GROUP

January 27, 2022

To Whom It May Concern:

It is with great pleasure that I write to you in support of Arielle Lee completing her performance improvement project at Care New England Medical Groups Department of Hematology Oncology.

In summary, the project will take place on campus at the designated site of 1220 Pontiac Avenue, Cranston, RI 02920. Details of the timing of the project will be reviewed with Jennifer Rajotte, Nurse Manager. Staffing to be included will be designated to registered nurses, a nurse practitioner, medical assistants, and a pharmacist. The purpose of the quality improvement project will be to complete a comprehensive review of the current literature provided to patients on oral chemotherapy. At completion of the review an educational program will be presented to further expand staff member's knowledge of oral chemotherapy, as well as help improve comprehensive cancer care to patients. The quality improvement project will start with a prequestionnaire to evaluate the staff member knowledge on oral chemotherapy. Then an educational program with material derived from the American Society of Clinical Oncology (ASCO), and the Oncology Nursing Society (ONS). The educational program will review oral chemotherapy, patient education, and medication adherence. Following the program, the staff members will receive the same questionnaire to evaluate any gain, new or expansion of their knowledge of oral chemotherapy.

Should you have any questions regarding my approval of this project or need further information please do not hesitate to call upon me.

Sincerely,

Jessica Perry, BSHCA
Practice Manager
CNEMG, Hematology Oncology

Appendix B

Pre-Post Survey

1) A common patient misconception of oral anticancer medication is that it is less potent comparatively to intravenous chemotherapy.

   A. True

   B. False

2) Some cancer patients adhere to their oral anticancer medication regimen based on their perception of the seriousness of their cancer diagnosis.

   A. True

   B. False

3) The cancer care team may enhance perceived self-efficacy of oral anticancer medication adherence and symptoms management through patient education.

   A. True

   B. False

4) Identify the factors that negatively influence oral anticancer medication adherence.

   A. Healthcare system factors including cost of care, lack of insurance coverage, or access to convenient and efficient clinic

   B. Breakdown in communication between the patient and provider relationship.

   C. Treatment-related factors including the complexity of treatment regimen, and short- and long-term side effects.

   D. All of the above.

5) Consequences of nonadherence to oral anticancer medication include:

   A. Poor disease outcomes such as relapse or decreased survival time

   B. Increased health care utilization

   C. Lack of patient satisfaction

   D. All of the above

6) Which of the following are include in the ASCO/ONS chemotherapy and administration safety standards interventions aimed to improve oral anticancer medication adherence? (Select all that apply)

   A. Calendars or a daily medication checklist, and or a pill diary

   B. The oncology nurse will call the patient when they should take their medication.

   C. Electronic reminders including alarms on clocks, timers and smartphone applications

   D. Home psychological support

   E. Patient and family education

   F. Establishing routine, which includes drug administration

Please circle the corresponding number based your opinion of the following statements:

1. I am knowledgeable of ASCO/ONS chemotherapy and administration safety standards interventions for oral anticancer medications.

1	2	3	4	5
Disagree	*Somewhat Disagree*	*Neither*	*Somewhat Agree*	*Agree*

2. I am able to identify interventions to improve oral anticancer medication adherence?

1	2	3	4	5
Disagree	*Somewhat Disagree*	*Neither*	*Somewhat Agree*	*Agree*

3. I feel confident in providing patient education at the initiation of oral anticancer medication.

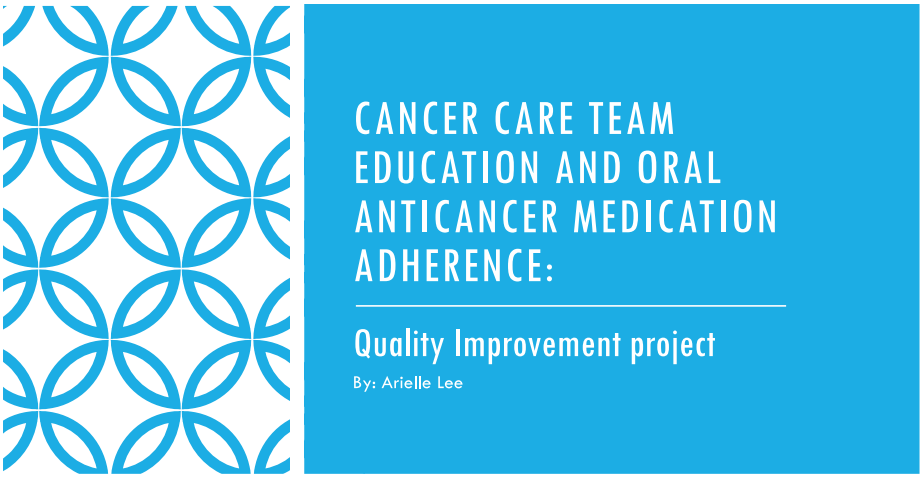
1	2	3	4	5
Disagree	*Somewhat Disagree*	*Neither*	*Somewhat Agree*	*Agree*

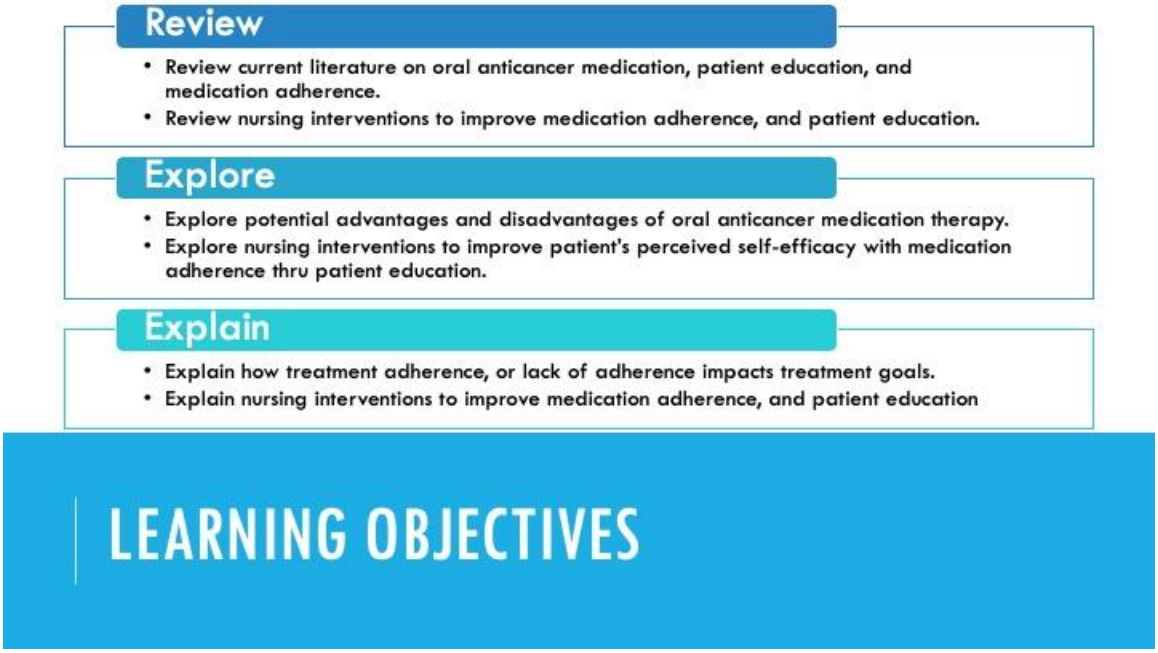
4. I am able to identify patient or treatment related factors influencing medication adherence, and knowledge of interventions to improve medication adherence.

1	2	3	4	5
Disagree	*Somewhat Disagree*	*Neither*	*Somewhat Agree*	*Agree*

5. I feel confident in providing care for patients prescribed an oral anticancer medication.

1	2	3	4	5
Disagree	Somewhat Disagree	Neither	Somewhat Agree	Agree


CANCER CARE TEAM EDUCATION AND ORAL ANTICANCER MEDICATION ADHERENCE:
Quality Improvement project
By: Arielle Lee


Review
Review current literature on oral anticancer medication, patient education, and medication adherence.
Review nursing interventions to improve medication adherence, and patient education.
Explore
Explore potential advantages and disadvantages of oral anticancer medication therapy.
Explore nursing interventions to improve patient's perceived self-efficacy with medication adherence thru patient education.
Explain
Explain how treatment adherence, or lack of adherence impacts treatment goals.
Explain nursing interventions to improve medication adherence, and patient education
LEARNING OBJECTIVES

BACKGROUND & STATEMENT OF THE PROBLEM

- The progression of chemotherapy from intravenous to oral:
- The transition from intravenous (IV) to an oral anticancer medication (OAM) illustrates a shift in delivery of care from ambulatory cancer center to home.
- This patient population are seen less in the office when compared to patient's receiving traditional IV chemotherapy
- Transition the responsibility of medication adherence from the oncology nurse to the patient.
- Knowledge deficit:
  - New advancements in treatment options
  - Limited experience with this type of medications
  - The responsibility of medication adherence relies heavily on the patient.

BANDURA'S SELF-EFFICACY

THEORETICAL FRAMEWORK:

- This behavioral theory explains human behavior using concepts of self-efficacy and outcome expectations.
- Self-efficacy is defined as a person's belief in his or her ability to implement behaviors to achieve a desired outcome and includes not only using the skills required to perform a behavior, but also knowing how and when to use them under diverse circumstances.
- Perceived self-efficacy as the patient's perception of ability to self-manage their care.
- An outcome expectation is defined as person's estimate that a given behavior will lead to a certain outcome
- Bandura (1997) has identified perceived self-efficacy as a powerful mediator of health promoting behaviors which lead to successful outcome attainment.

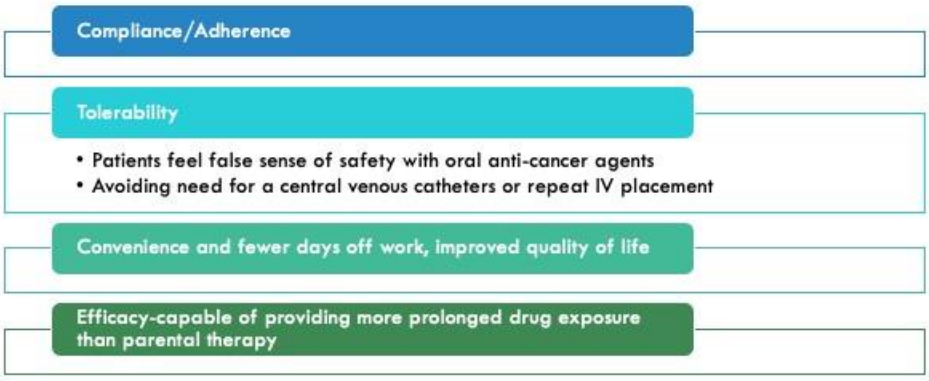
BANDURA'S SELF-EFFICACY THEORY (CONTINUED)

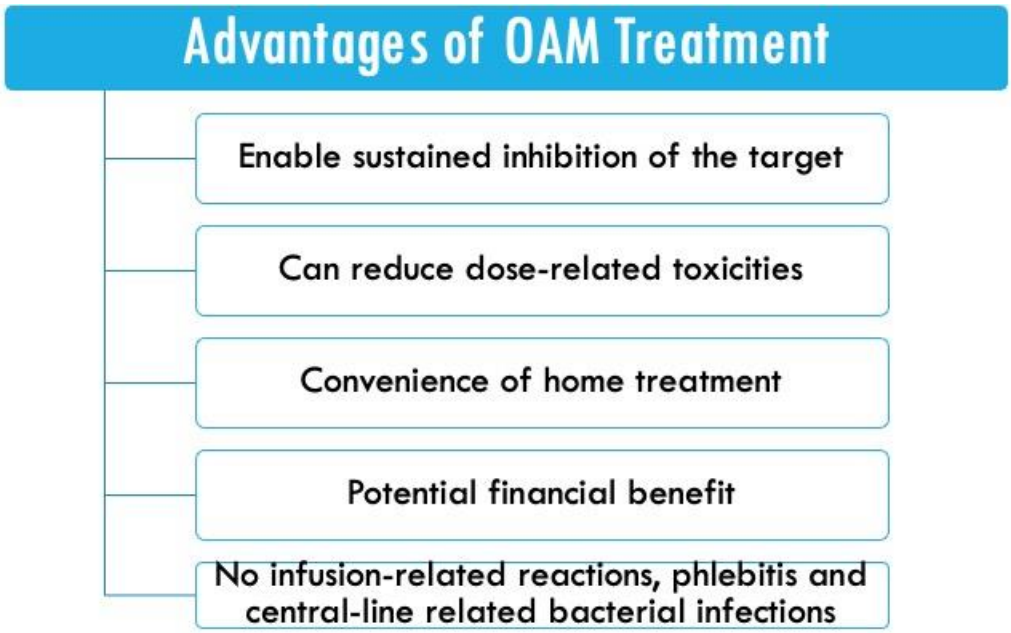
- The theory appraises the relationship between person's environment, patient factors, cognitive factors, behavior and how they interact and influence each other.
- The oncology care team is well positioned to assess the patient's perceived self-efficacy for management of symptom and improve their perceived self-efficacy by implementing patient-centered interventions to assist with symptom management.
- Bandura Self-Efficacy theory believes individuals formulate their self-efficacy by appraising information from
- Direct mastery
- Vicarious experiences,
- Social/verbal persuasion
- Interpreting inferences from physiological and psychological states.

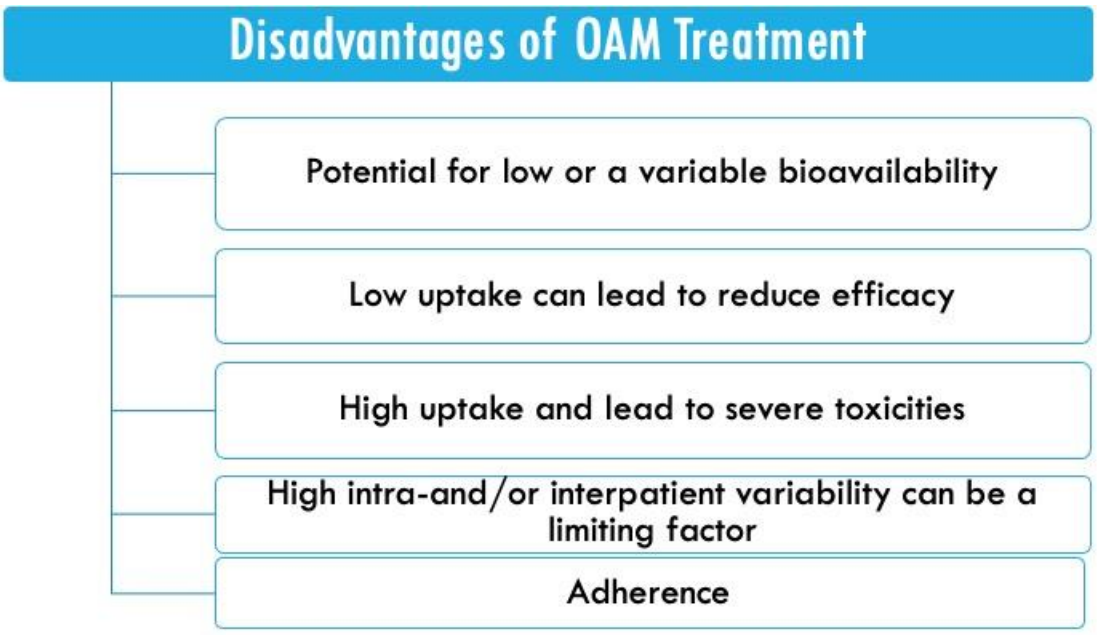
ORAL ANTICANCER AGENT ADHERENCE VIDEO

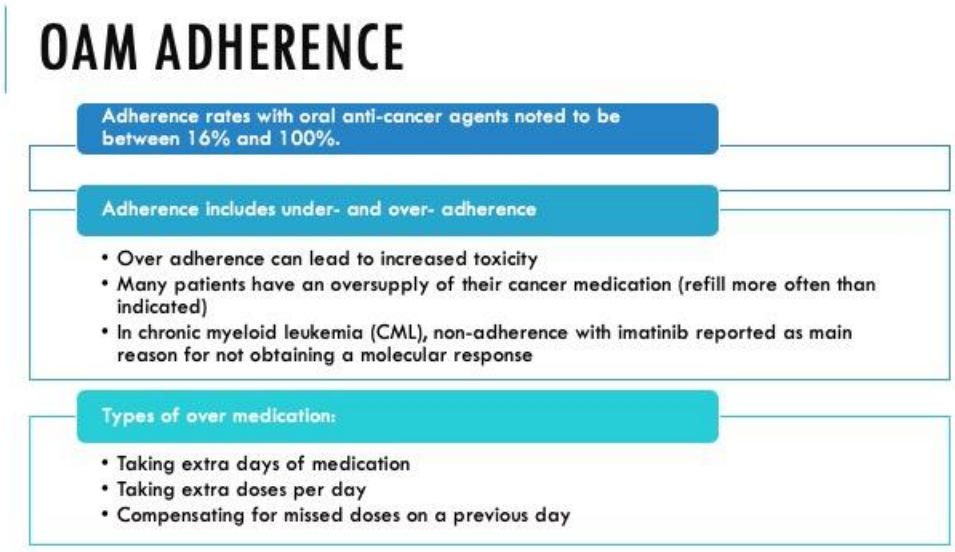
https://www.ons.org/videos/oral-adherence-video

OAM TREATMENT PREFERRED OVER INTRAVENOUS TREATMENT






Disadvantages of OAM Treatment
Potential for low or a variable bioavailability
Low uptake can lead to reduce efficacy
High uptake and lead to severe toxicities
High intra-and/or interpatient variability can be a limiting factor
Adherence


OAM ADHERENCE
Adherence rates with oral anti-cancer agents noted to be between 16% and 100%.
Adherence includes under- and over- adherence
• Over adherence can lead to increased toxicity
• Many patients have an oversupply of their cancer medication (refill more often than indicated)
• In chronic myeloid leukemia (CML), non-adherence with imatinib reported as main reason for not obtaining a molecular response
Types of over medication:
• Taking extra days of medication
• Taking extra doses per day
• Compensating for missed doses on a previous day

CHALLENGES IN OAM ADHERENCE

- Type of dosing regimen
- Living status of patients (those living with a partner, children or someone else) more likely to take their pills
- Believe that treatment could control one's illness varying results in studies
- Toxicity of drugs
- Difficulties obtaining medication
- Cost $10,000-$1000,000/year
- Where dispensed-local pharmacy vs specialty pharmacy

FACTORS INFLUENCING ADHERENCE

Dimension	Barriers
Personal and Patient Factors	• Emotional and mental status • Physical status and comorbid conditions • Social supports • Feelings about disease, self-efficacy and outcome expectation • Socioeconomic status
Treatment-Related Factors	• Goal of therapy • Complexity of treatment regimen • Immediacy and evidence of benefit • Short- and long-term side effects • Cost of medication and copay
Healthcare System	• Relationship with providers • Communication with providers • Education of patient and caregivers • Satisfaction with care • Insurance coverage • Access to convenient and efficient clinic

CANCER CARE TEAM'S ROLE IN OAM ADHERENCE

An article by D'Amato (2008) stated educating cancer care providers about the issues and barriers to adherence is imperative.

The cancer care team consisting of pharmacists, oncology nurses, behavioral specialists, and physicians has been shown to improve patient adherence to oral chemotherapy.

The cancer care team can empower the patients with interventions to improve symptom self-management activities, therefore enhancing patients' confidence in being able to take care of themselves.

Involving cancer patients in all aspects of decision-making process have been shown to increase patient motivation and adherence

Through communication and interaction, the cancer care team may mitigate the disconnect in communication between patients and providers, therefore maximizing medication adherence. This allows the patients opportunities to raise questions and concerns such as symptom distress and uncertainty.

CANCER CARE TEAM'S ROLE IN PROVIDING PATIENT EDUCATION

The cancer care team is well positioned to ensure adequate education and support for patients

Providing patient education has been shown to impact patient care with the desired outcome to improve medication safety and adherence for patients receiving an OAM.

Education includes family, caregivers, or others on the basis of the patient's ability to assume responsibility for managing therapy.

Educational activities will be performed on the basis of the patient's learning needs, abilities, preferences, and readiness to learn.

ACCORDING TO AMERICAN SOCIETY OF CLINICAL ONCOLOGY/ONCOLOGY NURSING SOCIETY CHEMOTHERAPY ADMINISTRATION SAFETY STANDARDS

PATIENT EDUCATION MUST INCLUDES THE FOLLOWING:

Patient's diagnosis.
Goals of treatment, that is, cure disease, prolong life, or reduce symptoms
Planned duration of treatment, schedule of treatment administration, drug names and supportive medications, drug-drug and drug-food interactions, and plan for missed doses.
Potential long-term and short-term adverse effects of therapy, including infertility risks for appropriate patients.
Symptoms or adverse effects that require the patient to contact the health care setting or to seek immediate attention.
Symptoms or events that require immediate discontinuation of oral or other self-administered treatments
Procedures for handling medications in the home including storage, safe handling, and management of unused medication.
Procedures for handling body secretions and waste in the home.
Follow-up plans, including laboratory and provider visits.
Contact information for the health care setting, with availability and instructions on when and who to call.
The missed appointment policy of the health care setting and expectations for rescheduling or cancelling.

INTERVENTIONS AIMED TO IMPROVE OAM ADHERENCE

PATIENT'S PERCEIVED SELF-EFFICACY & OAM ADHERENCE

White et al. (2019) performed an integrative review on self-efficacy for the management of symptom distress and concluded self-efficacy and symptom management are vital concepts that affect outcomes for adults with cancer in all stages of treatment.

The study found a link among self-efficacy, management of symptoms and symptom distress, and quality of life. The presence of self-efficacy predicted higher physical and emotional well-being and was associated with lower symptom occurrence and symptom distress, which leads to better overall health and improved quality of life

A quasi-experimental study conducted by Tokdemir and Kav (2017) examined the effects of a structured educational program on medication adherence and self-efficacy of patients who were prescribed an OAM. The authors hypothesized individualized education increases patient medication adherence self-efficacy

The findings of the study indicated that the patients reported an increase in confidence on taking their OAM after the post-education compared to pre-education.

The literature provides evidence on significance of assessment of perceived self-efficacy for symptoms management starting at diagnosis and throughout the treatment process to deliver patient-centered intervention.

MASTERY OF EXPERIENCE

INTERVENTIONS TO ENHANCE THE PATIENT'S PERCEIVED SELF-EFFICACY

Mastery experiences included the discussed self-care strategies for managing common symptoms related to cancer chemotherapy, the use of the audio tape to practice relaxation techniques and the booklet for reinforcing knowledge.

VICARIOUS EXPERIENCE

INTERVENTIONS TO ENHANCE THE PATIENT'S PERCEIVED SELF-EFFICACY

Vicarious experiences included providing examples of patients who had experienced similar symptoms and successfully used self-management skills to reduce their distress.

CCT shares stories of patients who experienced similar symptoms as the research participants and who successfully used self-management skills to reduce symptoms distress

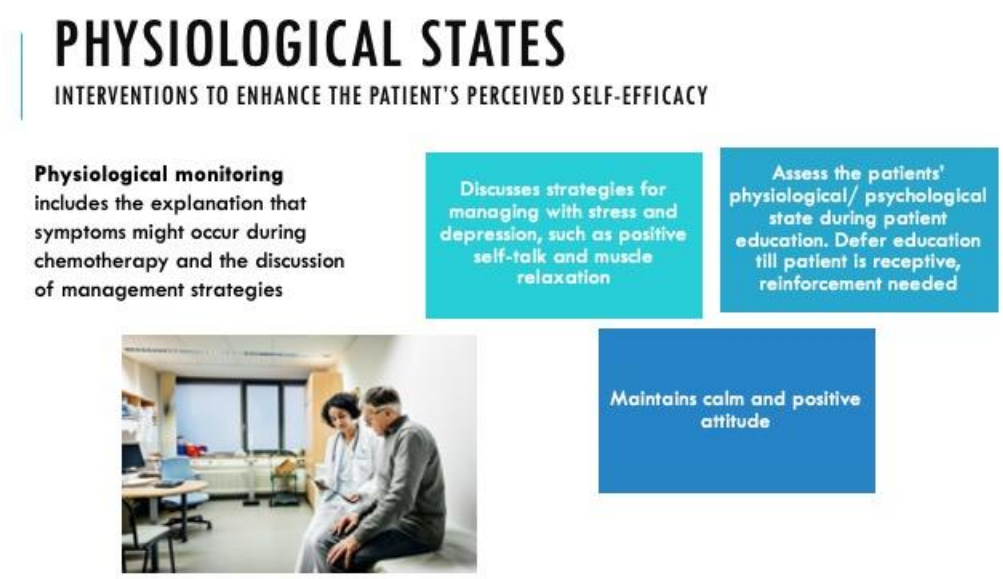
CCT demonstrates skills or procedure in self-management.

VERBAL PERSUASION

INTERVENTIONS TO ENHANCE THE PATIENT'S PERCEIVED SELF-EFFICACY

- Describes the benefits of symptom self-management
- Reasserts to patient's capability for symptom self-management
- Reinforces patient's past and present successes or accomplishments
- Provides positive feedback for the patient's effort and gives verbal encouragement for self-management activities

Verbal persuasion includes providing encouragement and acknowledging the patient's ability to manage their symptoms



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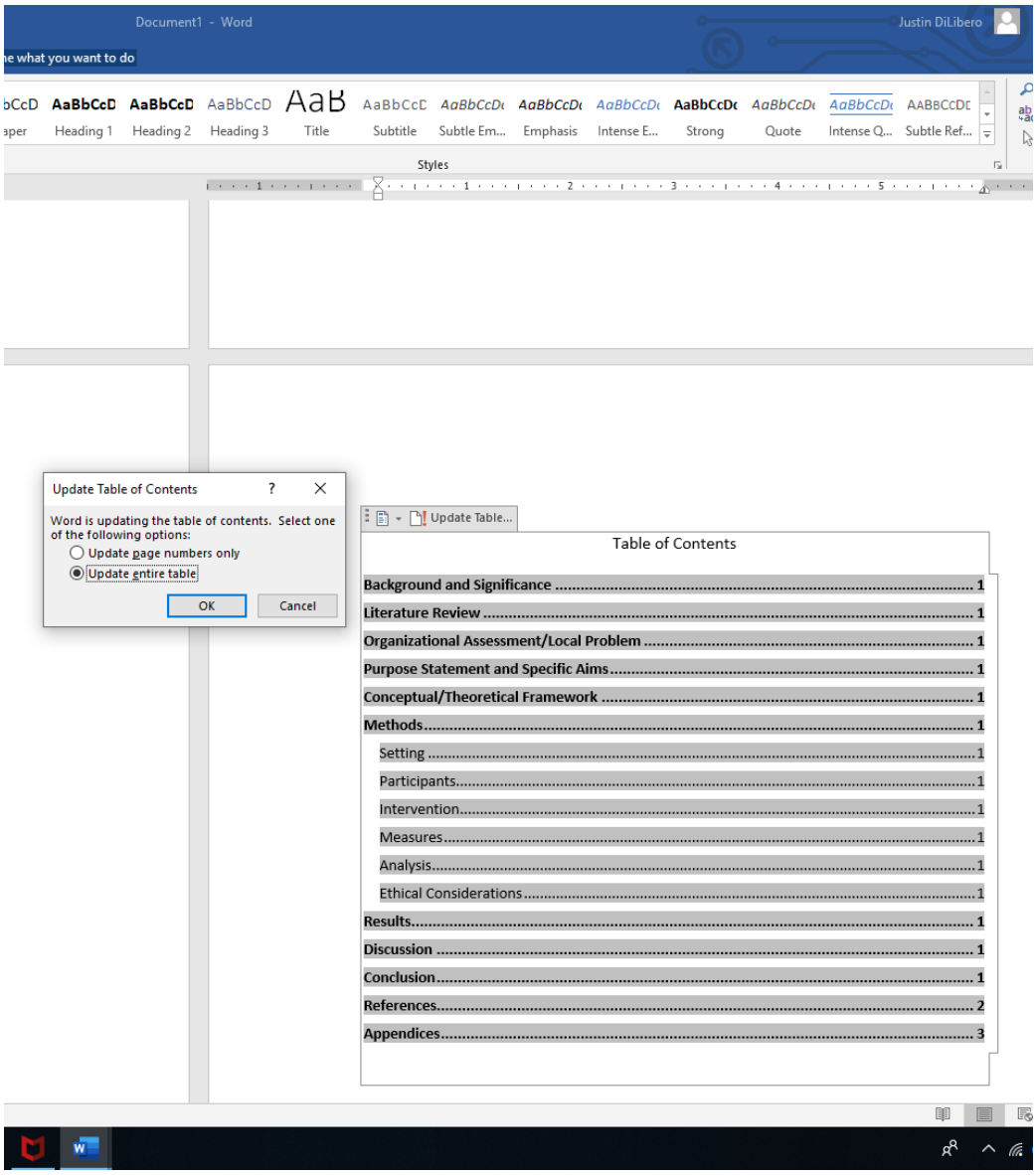
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