

Enhancing Symptom Management and Coordination of Breast Cancer Care at Secondary Hospitals in Saudi Arabia

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ABSTRACT

The passage highlights the complexity of integrated breast cancer care and the importance of effective communication in ensuring treatment compliance, reducing errors and complications, and managing comorbidities. It emphasizes the need for clarity in the role of the care director to prevent patients from getting lost across different departments.

Digital tools are recognized as valuable resources for improving care communication, but their directives and integration within the care team need to be clearly defined. Multidisciplinary team meetings are essential for driving care planning, establishing directives, and collecting structured data. Nurse navigators play a pivotal role in ensuring care continuity and assuming the director's role in the complex landscape of breast cancer care. While AI-driven planning can facilitate their tasks, human intervention remains crucial for providing psychosocial support and addressing unexpected urgencies.

The allocation of patients across different healthcare centers is often managed manually and through phone communication, resulting in time-consuming processes and discontinuous system solutions. Privacy rules and competition among providers further limit the effectiveness of current solutions. Additionally, the collection of comprehensive outcome information is currently limited to specific collaborative networks.

To address these challenges, AI tools can play a role in facilitating care allocation and predicting risks by leveraging data continuity over time. This can help identify non-compliance issues caused by factors such as limited local resources, distance, and costs. However, it is essential to conduct applied research to bring AI modeling into clinical practice and promote well-coordinated, patient-centric cancer care within the complex healthcare landscape.

KEYWORDS: Care coordination, Symptom management, Predictive tools, Care allocation, Nurse navigator

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INTRODUCTION

Saudi Arabia's "Vision 2030" aims to develop the country's economy and achieve national growth. As part of this vision, the Kingdom launched a national transformation program (NTP) in 2016, which includes healthcare transformation. The goal is to modernize the healthcare system to align with Vision 2030. Communication challenges in cancer care has become an area of focus. Digital platforms and technologies are being developed to improve coordination, streamline processes, and enhance patient experience throughout the cancer care journey.

One key aspect of digital solutions in cancer care is the implementation of centralized scheduling systems. These systems aim to improve the coordination of appointments across different departments and clinics involved in a patient's care. By centralizing scheduling, healthcare providers can better manage and allocate resources, reducing waiting times and optimizing the overall care pathway.

In addition to scheduling, digital platforms can facilitate improved communication between care providers involved in a patient's treatment. These platforms can enable secure and efficient sharing of medical records, test results, and

treatment plans among the multidisciplinary team. By enhancing communication and information exchange, digital solutions help to minimize errors, ensure continuity of care, and reduce patient anxiety resulting from miscommunication or delays.

Moreover, digital tools can support patients in accessing information and resources related to their condition. Online portals and mobile applications can provide personalized educational materials, appointment reminders, medication tracking, and symptom management tools. These tools empower patients to actively engage in their own care, improve adherence to treatment plans, and enhance their overall well-being.

Furthermore, telemedicine and remote monitoring have gained prominence in cancer care. These technologies allow patients to receive consultations and follow-ups from the comfort of their homes, reducing the need for frequent hospital visits. Remote monitoring devices can collect real-time data on patients' vital signs, symptoms, and treatment responses, enabling healthcare providers to intervene promptly when needed and ensure timely adjustments to treatment plans.

Overall, the integration of digital solutions in cancer care holds great potential to address the complexity, coordination, and communication challenges faced by patients and healthcare providers. By streamlining processes, enhancing communication, and empowering patients, these technologies aim to improve the overall quality of care and patient outcomes in the field of cancer treatment.

DEFINITION

Breast cancer is a type of cancer that develops in the cells of the breast. It is the most common cancer among women worldwide, but it can also occur in men, although it is much less common. Breast cancer occurs when abnormal cells in the breast grow and divide uncontrollably, forming a tumor. This tumor can invade surrounding tissues and potentially spread to other parts of the body through the lymphatic system or bloodstream.

The exact causes of breast cancer are not fully understood, but certain factors can increase the risk of developing the disease. These risk factors include age (the risk increases with age), family history of breast or ovarian cancer, certain genetic mutations (such as BRCA1 and BRCA2), hormonal factors (such as early menstruation or late menopause), exposure to estrogen (such as hormone replacement therapy), previous radiation therapy to the chest, and lifestyle factors (such as alcohol consumption, obesity, and lack of physical activity).

Early detection and screening play a crucial role in the management of breast cancer. Common screening methods include mammography, clinical breast examination, and breast self-examination. These screening methods aim to detect breast cancer at early stages when it is more treatable.

1.1 Care coordination nurse

In order to improve individual care coordination and symptom management in breast care, it is important to address the challenges associated with fragmented care and lack of central coordination. One approach to addressing these challenges is to establish a central coordinator, such as a nurse navigator, who can oversee and guide the patient's care journey.

The central coordinator plays a crucial role in ensuring that the patient receives the necessary input and adjustments in their care plan based on both medical requirements and individual patient needs. They act as a point of contact for the patient, helping them navigate through the various care providers and services involved in their breast care management. The coordinator collaborates with the multidisciplinary team to ensure that the care provided aligns with evidence-based clinical medicine tailored to each patient's specific needs.

To capture this complex process in a working model, three key facets can be considered:

Clinical Medicine: This facet focuses on identifying and implementing evidence-based medical interventions and treatments that are tailored to each patient's unique circumstances. It involves staying up-to-date with the latest research and guidelines in breast care management and ensuring that the patient receives appropriate diagnostic tests, treatment options, and supportive care services.

Approach to Care: Breast care encompasses a spectrum of patients with diverse needs. The approach to care facet involves understanding and addressing the physical, emotional, and psychosocial needs of patients throughout their care journey. This includes providing support for managing symptoms, addressing side effects of treatments, and offering psychological and emotional support.

The approach to care should be patient-centered, taking into account individual preferences and values.

System Solutions: This facet focuses on implementing human and machine support systems to facilitate the delivery of care goals. It involves developing efficient processes, utilizing digital technologies, and optimizing communication channels to streamline care coordination, reduce errors, and enhance the overall patient experience. System solutions may include electronic health records, telemedicine platforms, decision support tools, and data analytics to improve care quality and enable personalized care delivery.

By considering these three facets and integrating them into a working model, healthcare providers can aim to unravel the complexity of breast care management and improve care coordination, symptom management, and overall patient outcomes. (Narayan, 2020)

You've highlighted important points regarding the benefits of care coordination in healthcare, as well as the lack of uniformity in titles and functions associated with care coordination roles. Care coordination has been shown to reduce healthcare costs by minimizing duplication of services

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and inappropriate resource utilization. The Agency for Healthcare Research and Quality (AHRQ) offers measures of care coordination that can be used for research and quality improvement purposes.

In clinical practice, the terms used to refer to care coordinators can vary, and titles such as case managers or patient navigators may be used interchangeably. However, the specific functions and responsibilities of these roles can differ across healthcare settings. Patient navigators often focus on assisting patients in navigating the healthcare system and overcoming barriers to care. On the other hand, care coordinators typically oversee multidisciplinary teams, provide information to multiple providers, and participate in monitoring and evaluating the care delivered. (Mora-Pinzon, 2019)

1.2. Solvable barriers in allocation and timing

When it comes to allocation and timing in healthcare, there are several solvable barriers that can be addressed to improve the process. Here are a few examples:

Manual and time-consuming processes: The manual allocation of patients across centers and the reliance on phone communication can be inefficient and time-consuming. Implementing digital solutions, such as centralized scheduling systems or online platforms, can streamline the allocation process and reduce delays caused by manual coordination.

Discontinuous system solutions: Fragmented or incompatible systems used by different healthcare providers can impede effective allocation and timing. Developing interoperability standards and promoting data exchange between systems can enhance continuity and enable seamless coordination of care across different healthcare settings.

Limited access to complete patient information: Lack of access to comprehensive patient information can hinder efficient allocation and timing decisions. Implementing electronic health records (EHRs) that can be securely accessed and shared across providers can improve the availability of relevant patient data, allowing for more informed and timely allocation decisions.

Resource scarcity and availability: Limited availability of resources, such as specialized equipment or healthcare professionals, can create challenges in allocating patients and scheduling appointments. Developing resource management strategies, including workload balancing, cross-training of staff, and predictive analytics, can help optimize resource allocation and improve timing for patient care.

Communication gaps and coordination challenges: Inadequate communication and coordination among healthcare providers can lead to delays and inefficiencies in patient allocation and timing. Enhancing communication channels, such as secure messaging platforms or telehealth solutions, and promoting multidisciplinary collaboration can improve information sharing and coordination, ultimately facilitating timely allocation of patients.

Privacy and data security concerns: Privacy rules and regulations can sometimes hinder the smooth exchange of patient information necessary for allocation and timing decisions. Developing standardized protocols and frameworks for data sharing that prioritize patient privacy and adhere to regulatory requirements can help address these concerns and facilitate more efficient allocation processes.

By addressing these solvable barriers through the implementation of digital solutions, interoperability standards, improved access to patient information, resource management strategies, enhanced communication channels, and privacy-conscious data sharing, healthcare systems can optimize allocation and timing, leading to better patient outcomes and experiences.

existing tools, such as patient portals, primarily focus on streamlining communication and care planning within a network of care providers. While these tools can be beneficial for coordination within a specific healthcare system, they may not facilitate faster access to opinions, exams, or treatments from neighboring or out-of-center consultation

To address this limitation and enable patients to access care beyond their primary network, some healthcare systems have implemented solutions such as electronic referrals and telemedicine. These technologies can facilitate the transfer of patient information and enable remote consultations with specialists outside the patient's primary care network.s. (Frasier L.L., 2015) (Walsh J., 2010) (Singer S.J., 2011)

1.3 care coordination where to start and end?

breast cancer care should involve a seamless care path that begins with screening and continues with appropriate guidance throughout the survivorship journey. Coordination tools are crucial in linking primary health to specialist care at every stage, ensuring continuity and effective communication between healthcare providers. (Laws A., 2019) (Walsh J., 2010) (Singer S.J., 2011) (Ivanics T., 2019)

The director role in breast cancer care often transitions between the general practitioner (GP) and the secondary hospital care team, including nurse navigators. This handoff of responsibility requires efficient coordination and information exchange to ensure the patient's needs are met at each point in the care continuum.

While current solutions have made strides in empowering patients and putting them at the center of their own care, there is still a need for improved tools that facilitate connectivity and integration among healthcare providers. These tools should enable seamless information sharing, care planning, and coordination among different care teams involved in breast cancer care.

Developing better tools for connectivity and integration is crucial to address the demand for improved coordination and enhance the overall patient experience. These tools should prioritize interoperability, enabling different systems to communicate and share information effectively. They should also support care providers in making informed decisions,

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streamlining workflows, and facilitating real-time communication and collaboration.

By implementing more advanced coordination tools, healthcare systems can enhance connectivity and integration in breast cancer care, improving the overall quality and effectiveness of treatment. These tools can support the transition of the director role between healthcare providers and ensure the patient receives comprehensive, coordinated care throughout their survivorship journey.

It is important for clinical practice to recognize the urgency in developing and implementing these tools to meet the demand for improved connectivity, integration, and coordination in breast cancer care. Continued research, collaboration, and innovation are key to delivering optimal care and improving patient outcomes in the field of breast cancer treatment and survivorship.

1.4. Symptom management

I've highlighted several important issues related to poor care coordination during breast cancer treatment and the impact it can have on patient outcomes and healthcare costs. I'll address each point you've raised:

Medical errors, duplicated tests, lack of supportive care, and poor symptom control: Inadequate care coordination can contribute to these problems, which can negatively affect patient well-being and increase healthcare costs. Effective communication and coordination among care providers are essential to ensure that patients receive appropriate and timely interventions, avoid unnecessary tests or treatments, and receive the support they need to manage symptoms and side effects. (Narayan, 2020) (Frasier L.L., 2015)

Co-morbidity and communication with pertinent care providers: Breast cancer patients often have co-existing chronic conditions that require ongoing management. Effective communication between breast cancer specialists and other relevant care providers (such as those managing co-morbidities) is crucial to ensure comprehensive and coordinated care. This coordination becomes increasingly important as the population ages and the prevalence of chronic diseases rises.

Impact of pre-existent chronic disease on treatment outcomes: Patients with pre-existing chronic diseases may experience sub-optimal curative treatment, higher toxicities, increased hospital admissions, and poorer survival. Coordinating the management of chronic diseases alongside breast cancer treatment is essential to optimize outcomes and minimize adverse events. However, there is a lack of guidelines and standardized approaches for integrating co-morbidity monitoring into breast cancer care plans, and the recording of results is often inadequate.

Challenges in translating evidence-based treatment choices: Elderly women with co-morbidity are often underrepresented in clinical trials, leading to a lack of evidence-based treatment guidelines specifically tailored to this population. Treatment decisions are often based on data from healthier cohorts, making it challenging to apply those findings to patients with

co-morbid conditions. Inclusion of geriatric evaluation and monitoring of specific chronic diseases, such as cardiac, diabetes, or lung conditions, from the outset of breast cancer care can improve the quality of care but also adds complexity to coordination efforts.

Addressing these challenges requires a multidisciplinary approach and a focus on comprehensive care coordination. Improved communication, standardized guidelines for co-morbidity management, better recording and monitoring of results, and increased inclusion of diverse patient populations in research studies are all important steps toward achieving optimal care coordination and improving outcomes for breast cancer patients with co-morbidities.

By recognizing the complexity of care and implementing strategies to address these issues, healthcare systems can enhance care coordination, improve patient experiences, and optimize treatment outcomes for breast cancer patients with co-morbid conditions.

1.5. Solvable barriers in symptom monitoring

I've provided valuable insights into the current state of breast cancer care, the challenges related to toxicity management, and the potential for AI-driven predictive tools to improve treatment outcomes. I'll address each point you've raised:

Guidelines, clinical trials, and sub-specialists: Breast cancer care benefits from comprehensive national guidelines, an extensive clinical trial network, and certified oncology sub-specialists. These resources contribute to standardized care paths, incorporating monitoring and response evaluation methodologies for different stages of the disease. Specific drugs may require dose-related cardiac testing or other monitoring. These guidelines serve as a foundation for delivering evidence-based care. (Narayan, 2020)

Tailoring treatment based on efficacy and risk of side effects: Treatment customization considering both expected efficacy and the risk of severe side effects is a complex task. AI models based on historical datasets are beginning to unravel risk predictions, but more extensive data is needed to account for multiple variables influencing treatment management. The aim is to use AI predictive tools that leverage characteristics of treatment, patient factors, blood results, and symptom scoring to assist in tailored prescription decisions. While the prescription itself will remain a doctor's decision, risk profiling can help guide dose adjustments and recovery timing parameters.

Computer-supported assessment tools and symptom management: Several projects have shown improved symptom management and survival benefits through the use of computer-supported assessment tools. AI-driven predictive tools can leverage these data to enhance the understanding and management of patient symptoms. However, systematic symptom reporting can lead to data overload, particularly when reporting across different departments. Implementing filters and leveraging AI to redirect symptomatic patients for urgent consultations can help manage the reporting and ensure timely interventions for severe clinical signs.

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Patient communication and information filtering: Patients are eager to communicate, upload, and share information related to their symptoms and concerns. However, they often lack the capability to filter or translate the importance of certain issues, especially during urgent situations. Automated filter tools, such as chatbots or algorithms, can assist in triaging and identifying urgent issues based on predefined criteria or by flagging abnormal lab values. These tools can serve as intermediaries, facilitating communication between patients and healthcare providers.

Clinician adoption and variable workload: The adoption of automated tools by clinicians depends on various factors, including the quality of the tools, the pressure of volume and time constraints, and the evolving landscape of healthcare. The acceptance and utilization of these tools may vary among clinicians, and their adoption may be influenced by the demands of their workload and the perceived benefits of using automated systems.

In summary, integrating AI-driven predictive tools and leveraging computer-supported assessment tools can enhance breast cancer care by tailoring treatment, managing symptoms, and improving patient outcomes. However, challenges related to data overload, patient communication, and clinician adoption need to be addressed for successful implementation. Ongoing research and collaboration are crucial to refine these tools and ensure their effective integration into clinical practice.

CONCLUSION

You're absolutely right that effective breast cancer care coordination and symptom management require close communication and collaboration among various care providers. This includes specialists from imaging, pathology, genetics, and treatment, as well as primary care and supportive care providers. In some cases, input from other specialists, such as geriatric, endocrine, or cardiovascular specialists, may also be necessary to balance treatment benefits and potential risks in patients with comorbidities.

However, one of the challenges in achieving seamless communication and coordination across these different care settings is the issue of data sharing guidelines. Healthcare systems often have regulations and policies in place to protect patient privacy and ensure the secure handling of sensitive medical information. While these guidelines are crucial for safeguarding patient data, they can sometimes create barriers to the efficient exchange of information between care providers.

To address this challenge, efforts are being made to develop system solutions that enable secure and interoperable data sharing across different care settings. One approach is the implementation of health information exchange platforms or electronic health record (EHR) systems that allow authorized healthcare providers to access and share patient information as needed. These systems aim to improve care coordination by providing a comprehensive view of a patient's medical

history, test results, treatment plans, and other relevant information.

Furthermore, advancements in technology, such as standardized data formats, application programming interfaces (APIs), and secure data transmission protocols, are being leveraged to facilitate seamless data sharing while adhering to privacy regulations. These technological solutions aim to promote interoperability and facilitate the secure exchange of patient information among different care providers.

Additionally, efforts are being made to promote collaboration and communication through multidisciplinary tumor boards or virtual conferences, where experts from various specialties can come together to discuss individual patient cases, share knowledge, and make collaborative treatment decisions. These platforms provide a forum for experts to exchange information and insights, bridging the gap between different care settings and promoting a holistic approach to breast cancer care.

While challenges related to data sharing guidelines exist, the healthcare industry is actively working towards developing solutions that balance privacy and security with the need for effective communication and care coordination across different providers involved in breast cancer management.

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