NARRATIVE REVIEW

Impact of multidisciplinary team care in breast cancer treatment planning

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Abstract

Globally, breast cancer remains the most prevalent cancer among women, with multidisciplinary team care emerging as the gold standard for its management. The multidisciplinary team care integrates expertise from diverse specialists, including oncologists, radiologists, pathologists and nurses, to develop individualised, evidence-based treatment plans. This collaborative approach improves diagnostic accuracy, enhances patient outcomes, and fosters holistic care by addressing both medical and psychosocial needs. Studies show that multidisciplinary team involvement leads to better survival rates, reduced treatment variability, and improved quality of life. However, challenges, such as resource limitations, logistical barriers and communication inefficiencies, can hinder its effectiveness, particularly in low-resource settings. Advances in telemedicine and virtual multidisciplinary teams are improving access and streamlining collaboration, especially in underserved areas. To optimise multidisciplinary team care, ongoing training, patient-centred decision-making and technological integration are essential. Multidisciplinary team care ensures comprehensive breast cancer treatment, enhances patient satisfaction, and sets the foundation for continued improvements in cancer management.

Keywords: Breast cancer, Multidisciplinary treatment, Patient-centered care, Quality of life.

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Introduction

Breast cancer ranks as the most prevalent cancer among women globally, with 2.3 million women being diagnosed with cancer in 2022.[1] Through routine screening and treatment advances, breast cancer is fortunately curable and is no more the predominant cause of cancer deaths among women.[2] Nonetheless, breast cancer treatment is complex, involving systemic and loco-regional management lasting over a significant duration of time.[3]

Keeping in mind the multifaceted treatment strategy for breast cancer, multidisciplinary treatment (MDT) planning has become the standard of care in the management of this condition. It involves the collaboration of various healthcare professionals, such as surgical, medical and radiation oncologists, pathologists, radiologists, geneticists and nurses, with specialised skills and knowledge working as a team to collaborate and develop the most appropriate treatment plan for any given patient.[4]

With the continuous improvement in therapeutic strategy (surgery, chemotherapy, radiotherapy, endocrine therapy, targetted therapy and immunotherapy) and MDT discussions, majority of non-metastatic breast cancers are curable.[5] Nevertheless, the overall complexity of the plan often acts as a hindrance to the management and treatment outcomes. Based on these observations, the current narrative review was planned to assess the impact of MDT care in breast cancer treatment planning and its role in ensuring comprehensive treatment for improving patient outcomes and enhancing patient satisfaction.

Materials and Methods

The current narrative review comprised search on Medical Literature Analysis and Retrieval System Online (MEDLINE), Scopus and Google scholar databases for peer-reviewed articles in the English language. Articles published between January 2014 and June 2024 were identified using the following search terms: 'breast cancer' AND 'multidisciplinary treatment'. Additional studies were identified using the articles in the references, and all the articles were critically reviewed.

Structure of MDT care in breast cancer: MDT is defined by the United Kingdom Department of Health as a 'group of people of different healthcare disciplines, which meets together at a given time (whether physically in one place, or by video or teleconferencing) to discuss a given patient, and who are each able to contribute independently to the diagnostic and treatment decisions

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about the patient.[6]

Breast cancer MDT primarily comprises certain core individuals, like surgical and medical oncologists, radiation oncologist, radiologist, pathologist and specialist (breast care) nurse. Gone are the days when breast cancer management fell solely under the surgeon's domain and beyond the above-mentioned specialists. Currently, there are several others who form an integral part of an MDT, including genetic counsellors, psychologists, dietitians, physiotherapists and plastic (reconstructive) surgeons as and when needed.[7]

Typically, in tertiary care hospitals, majority of MDT meetings for breast cancer are held on a weekly basis and are attended by the core members. Cases of individual patients are discussed in detail, and customised treatment plans are developed based on evidence-based guidelines. Certain institutions across the globe even encourage patients to attend their case-specific meetings, though that is not a routine.[4]

Communication strategies within the MDT are essential to ensure effective collaboration and reduce delays in treatment initiation.[4] This integrated approach is recognised as the gold standard for cancer care, and has been shown to improve outcomes by ensuring continuity of care, reducing treatment variability, and addressing patients' holistic needs.

Benefits of MDT care: As highlighted in recent literature, breast cancer treatment is multimodal, and every patient needs an individualised management plan based on recent guidelines. The American Society of Clinical Oncology (ASCO) and the European Society of Medical Oncology (ESMO) endorse the use of MDT care, which has shown to improve treatment decision-making in breast cancer cases through more accurate diagnosis, staging and customised treatment plans.[8, 9]

MDTs enhance coordination of preoperative management and planning, like neoadjuvant treatment, postoperative care and follow-up, addressing potential complications and planning adjuvant therapies in a timely manner. A study demonstrated that MDT care resulted in coordinated, timely and consistent care for all patients undergoing neoadjuvant treatment for early-stage breast cancer. The outcomes were measured through the median time to treatment initiation, time from completion of neoadjuvant chemotherapy (NACT) to surgery, and time from surgery to radiation, all of which were within the recommended intervals for optimal long-term patient outcomes.[10]

A retrospective study determining if compliance with MDT recommendations affects disease outcomes in early breast cancer patients reported that the main reason for non-compliance was patient comorbidity, followed by lack of patient's will. Recommendations by the MDT that were flexible were also a reason for lack of compliance. Adverse events to chemotherapy were the leading cause for changing the chemotherapy regime. Non-compliance with MDT recommendations, histological grade III, tumour size >2cm, axillary lymph node (ALN) positivity, oestrogen receptor (ER) and progesterone receptor (PR) negativity, lymphovascular invasion (LVI) positivity, and Ki-67 labelling index ≥14% were all associated with poor overall survival (OS) ($p<0.05$) in univariate analysis.[11]

Multivariable analysis was then conducted after adjusting for these factors, which demonstrated that non-compliance with MDT recommendations was still an independent risk factor for worse OS (hazard ratio [HR]: 2.48, $p=0.001$). It was also noted that disease recurrence was higher among patients with non-compliance to MDT plans versus patients who were compliant. It was also found that invasive ductal carcinoma, histological grade III and age >70 years were associated with reduced compliance rates. Patient education level of at least high school or above showed a significant association with MDT compliance for targetted therapy (odds ratio [OR]: 0.53, 95% confidence interval [CI]: 0.35-0.80, $p=0.002$).[11]

There is evidence of enhanced diagnostic accuracy with the combined efforts of radiologists, pathologists and oncologists, and personalised treatment plans leading to improved patient outcomes. Tomita et al. described a case of locally advanced luminal type (ER-positive; Allred score 8, PR-negative) invasive ductal left breast carcinoma with bilateral axillary, parasternal and supraclavicular nodal involvement. She was considered for palliative management, but, under an MDT approach, she underwent a personalised treatment regimen which started with primary chemotherapy, followed by radiation therapy. Two months post-completion of radiotherapy the patient underwent a modified radical mastectomy and reconstruction with a rectus abdominus musculo-cutaneous flap. Though wound healing was prolonged, she had remained tumour free, without a recurrence on aromatase inhibitor with luteinizing-hormone-releasing hormone (LHRH) agonist for >7 years.[12]

There is also evidence of improvement in quality of life (QOL) when treatment strategies are modified and personalised taking into account patient factors. An 80-year-old woman with metastatic right breast cancer (multiple lung metastases) was initially managed for 5 years on a palliative chemotherapy regimen. However, her disease continued to progress with skin involvement,

resulting in a 15cm fungating right breast mass which was significantly affecting her QOL due to bleeding and odour, and the need for frequent change of dressings. An MDT plan was formulated, and she underwent treatment with Mohs' paste, and subsequently reduced-dose bevacizumab and paclitaxel were administered. There was a partial response to treatment followed by tumour regrowth, which was managed with radiotherapy, and after reduction in tumour size, she underwent a mastectomy and skin grafting, which significantly improved her QOL in the last 12 months of her life.[13]

Challenges and limitations of MDT care: The effectiveness of MDT care often depends on the institution's resources, team dynamics, and adherence to standardised practices. For example, well-organised MDTs with clear guidelines and robust communication tools have shown better outcomes than those operating without a structured approach.[14]

There is no uniform format of an MDT, and it varies vastly based on the region and hospital it is set up in. Coordinating MDT meetings involves significant logistical challenges, especially in large institutions, or for patients seeking care across multiple hospitals. A study described the various formats where in certain centres MDT decisions are considered as recommendations, while at others they are implemented as the final treatment plan. European respondents were more likely than their Asian counterparts to perceive the MDT opinion as final (29% vs. 12%).[4]

One limitation of the MDTs is that the treatment recommendations made, do not always consider the social and psychological issues that determine the patients' preferences. As a result, patients often receive more conservative treatment than initially planned, as the teams fail to account for patient-specific factors, such as comorbidities and individual preferences.[14,15] This is at times overcome by including the patient in the MDT meetings, but this practice is mostly limited to some centres in Eastern Europe.[4]

Resource constraints, particularly in low-resource settings, can limit access and infrastructure for key MDT management. In such set-ups, there may be a limitation when it comes to the availability of experienced radiologists, oncologists or pathologists. This may lead to incomplete or less comprehensive discussions, potentially affecting treatment quality and outcomes. In settings like India, where cancer care systems are still developing, the adoption of MDT care is limited by the availability of well-funded regional centres.[16]

Furthermore, coordinating MDT meetings involves significant logistical challenges. This is especially a concern among patients seeking care across several hospitals. Time constraints, scheduling conflicts among specialists, and incomplete case information often hinder the efficiency of these meetings. This is particularly challenging when patients seek second opinions, or travel between institutions, as timely communication between facilities is often lacking. Disagreements among experts may also arise, particularly in complex cases lacking clear guidelines. This may lead to delays in decision-making, adding to patient anxiety and delaying the therapy.[16,17]

Overall, while MDT care is a critical aspect of breast cancer management, addressing these challenges requires improved coordination, investment in resources, and standardised practices to ensure equitable and effective care across all settings.

Patient-centred outcomes: MDT care in breast cancer management was introduced as early as the 1980s in the UK, but it was not until 2001 that the national cancer peer review programme provided measurable standards to assess teams' adherence to the guidelines.[18, 19]

MDT care fosters patient engagement by involving individuals in treatment decisions and offering tailored options. This collaborative approach ensures that treatment plans align with patients' preferences and values, leading to increased satisfaction and adherence. A study reported that 97% of the respondents believed MDTs improve clinical decision-making, and 93% felt they enhance the overall quality of treatment, highlighting the role of MDTs in patient-centred care.[4] A review highlighted that MDT care results in better provider satisfaction with treatment recommendations, improved efficiency, and coordination among staff, which indirectly benefits patients' psychosocial wellbeing.[20]

Shared decision-making is a collaborative process where patients and clinicians jointly deliberate on the best treatment options, considering medical evidence and patient preferences. Implementing shared decision-making within MDTs has been shown to improve patient satisfaction and treatment adherence.[10] Hargraves et al. emphasised that patients involved in decision-making experience higher satisfaction levels and reduced decisional conflict. Shared decision-making involves collaborative conversations that seek to align treatment decisions with patient preferences, thereby improving patient adherence to treatment.[21]

By incorporating specialists, such as psych-oncologists, physiotherapists, social workers and rehabilitation

therapists, MDTs ensure that patients receive holistic care that addresses both medical and emotional needs. Such a comprehensive approach addresses the patients' psychosocial issues, and provides mental health support, rehabilitation and patient counselling (genetic counselling for screening and for family members and offspring). This integrative approach can lead to improved QOL and better overall outcomes for breast cancer patients.

Future directions: Advancements in technology are reshaping the landscape of MDT care, particularly through telemedicine and virtual MDTs. This was of key importance during the coronavirus disease-2019 (COVID-19) pandemic when virtual MDTs were an effective and pragmatic tool that was employed to minimise interpersonal contact and reduce the potential for virus transmission.[22] Since then, virtual MDTs are proving invaluable in rural or resource-limited settings, enabling healthcare professionals to collaborate without the demands of physical proximity. This is especially beneficial in rural or underserved areas, where access to specialised care is limited. Virtual MDTs allow for real-time discussions, shared decision-making, and coordinated care plans, thereby enhancing patient outcomes.

Jing et al. performed an observational study to determine if the use of a smartphone-based app can improve adjuvant treatment adherence to MDT decisions in patients with early-stage breast cancer. Patients were divided into 3 cohorts: the Pre-App cohort comprising patients who received a diagnosis between March 2013 and October 2017; the App Non-use cohort comprising patients who received a diagnosis between November 2017 and May 2019 without using the app; and. the App-Use cohort comprising patients who received a diagnosis between November 2017 and May 2019 and who had applied the smartphone-based app within the adjuvant treatment setting. The results revealed that app use was independently associated with adherence to adjuvant treatment. Patients in the third cohort were less likely to deviate from MDT recommendations compared to patients in the Pre-App cohort.[7]

Ongoing training and education for MDT members are crucial to maintaining effective collaboration and ensuring the successful adoption of new treatment strategies.

Conclusion

MDT care is the gold standard in breast cancer management, improving diagnostic accuracy, individualised treatment plans and patient outcomes. By integrating expertise from various specialists, MDTs enhance survival, QOL and patient satisfaction while addressing psychosocial needs. Challenges, including logistical issues and resource limitations, can hinder effectiveness, especially in low-resource settings. Nonetheless, telemedicine and virtual MDTs have emerged as solutions, improving access to care in underserved areas and enabling real-time collaboration. To optimise outcomes, ongoing training for MDT members and the integration of evolving technologies are essential.

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References

1. World Health Organization (WHO). Breast cancer. [Online] 2022 [Cited 2024 December 20]. Available from URL: https://www.who.int/news-room/fact-sheets/detail/breast-cancer
2. Wilkinson L, Gathani T. Understanding breast cancer as a global health concern. Br J Radiol 2022;95:20211033. doi: 10.1259/bjr.20211033.
3. Waks AG, Winer EP. Breast cancer treatment: a review. JAMA 2019;321:288-300. doi: 10.1001/jama.2018.19323.
4. Saini KS, Taylor C, Ramirez AJ, Palmieri C, Gunnarsson U, Schmoll HJ, et al. Role of the multidisciplinary team in breast cancer management: results from a large international survey involving 39 countries. Ann Oncol 2012;23:853-9. doi: 10.1093/annonc/mdr352.
5. Harbeck N, Gnant M. Breast cancer. Lancet 2017;389:1134-50. doi: 10.1016/S0140-6736(16)31891-8.
6. Biganzoli L, Marotti L, Hart CD, Cataliotti L, Cutuli B, Kühn T, et al. Quality indicators in breast cancer care: an update from the EUSOMA working group. Eur J Cancer 2017;86:59-81. doi: 10.1016/j.ejca.2017.08.017.
7. Yu J, Wu J, Huang O, Chen X, Shen K. A smartphone-based app to improve adjuvant treatment adherence to multidisciplinary decisions in patients with early-stage breast cancer: observational study. J Med Internet Res 2021;23:e27576. doi: 10.2196/27576.
8. Woeckel A, Albert US, Janni W, Scharl A, Kreienberg R, Stueber T. The screening, diagnosis, treatment, and follow-up of breast cancer. Dtsch Arztebl Int 2018;115:316-23. doi: 10.3238/arztebl.2018.0316.
9. Henry NL, Bedard PL, DeMichele A. Standard and genomic tools for decision support in breast cancer treatment. Am Soc Clin Oncol Educ Book 2017;37:106-15. doi: 10.14694/EDBK_175591.
10. Bhardwaj PV, Mason H, Kaufman SA, Visintainer P, Makari-Judson G. Outcomes of a multidisciplinary team in the management of patients with early-stage breast cancer undergoing neoadjuvant chemotherapy at a community cancer centre. Curr Oncol 2023;30:4861-70. doi: 10.3390/curroncol30050367.
11. Yang X, Huang J, Zhu X, Shen K, Zhu J, Chen X. Compliance with multidisciplinary team recommendations and disease outcomes in early breast cancer patients: an analysis of 4501 consecutive patients. Breast 2020;52:135-45. doi: 10.1016/j.breast.2020.05.007.
12. Tomita M, Oura S, Makimoto S. A case of locally advanced breast cancer successfully treated with multidisciplinary therapy. Case Rep Oncol 2020;13:261-5. doi: 10.1159/000506012.
13. Yamaguchi K, Matsunuma R, Hayami R, Tsuneizumi M. Large breast tumor ulceration and quality of life in an 80-year-old

woman. Case Rep Oncol 2021;14:580-4. doi: 10.1159/000515584.
14. Taylor C, Munro AJ, Glynne-Jones R, Griffith C, Trevatt P, Richards M, et al. Multidisciplinary team working in cancer: what is the evidence? BMJ 2010;340:c951. doi: 10.1136/bmj.c951.
15. Blazeby JM, Wilson L, Metcalfe C, Nicklin J, English R, Donovan JL. Analysis of clinical decision-making in multidisciplinary cancer teams. Ann Oncol 2006;17:457-60. doi: 10.1093/annonc/mdj102.
16. Pramesh CS, Badwe RA, Borthakur BB, Chandra M, Raj EH, Kannan T, et al. Delivery of affordable and equitable cancer care in India. Lancet Oncol 2014;15:e223-33. doi: 10.1016/S1470-2045(14)70117-2.
17. Pillay B, Wootten AC, Crowe H, Corcoran N, Tran B, Bowden P, et al. The impact of multidisciplinary team meetings on patient assessment, management and outcomes in oncology settings: a systematic review of the literature. Cancer Treat Rev 2016;42:56-72. doi: 10.1016/j.ctrv.2015.11.007.
18. Shrestha A, Wyld L. Breast cancer in older patients. In: Breast Cancer Management for Surgeons: A European Multidisciplinary Textbook. 2018;529-40.
19. Foyle L. The impact of health and social policy on cancer and palliative care education. In: Delivering Cancer and Palliative Care Education. Boca Raton, Florida: CRC Press, 2018; pp 1-20.
20. Shao J, Rodrigues M, Corter AL, Baxter NN. Multidisciplinary care of breast cancer patients: a scoping review of multidisciplinary styles, processes, and outcomes. Curr Oncol 2019;26:e385-97. doi: 10.3747/co.26.4713.
21. Hargraves I, LeBlanc A, Shah ND, Montori VM. Shared decision making: the need for patient-clinician conversation, not just information. Health Aff (Millwood) 2016;35:627-9. doi: 10.1377/hlthaff.2015.1354.
22. Sidpra J, Chhabda S, Gaier C, Alwis A, Kumar N, Mankad K. Virtual multidisciplinary team meetings in the age of COVID-19: an effective and pragmatic alternative. Quant Imaging Med Surg 2020;10:1204-7. doi: 10.21037/qims-20-638.