Progression-free survival and quality of life in metastatic breast cancer: The patient perspective

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ARTICLE INFO

Keywords:
- Breast cancer
- Metastatic
- Quality of life
- Progression-free survival
- Patient-centered
- Qualitative research

ABSTRACT

Introduction: Treatment advances for metastatic breast cancer (mBC) have improved overall survival (OS) in some mBC subtypes; however, there remains no cure for mBC. Considering the use of progression-free survival (PFS) and other surrogate endpoints in clinical trials, we must understand patient perspectives on measures used to assess treatment efficacy.

Objective: To explore global patient perceptions of the concept of PFS and its potential relation to quality of life (QoL).

Materials and methods: Virtual roundtables in Europe and the United States and interviews in Japan with breast cancer patients, patient advocates, and thought leaders. Discussions were recorded, transcribed, and analyzed thematically.

Results: Lengthened OS combined with no worsening or improvement in QoL remain the most important endpoints for mBC patients. Time when the disease is not progressing is meaningful to patients when coupled with improvements in QoL and no added treatment toxicity. Clinical terminology such as “PFS” is not well understood, and participants underscored the need for patient-friendly terminology to better illustrate the concept. Facets of care that patients with mBC value and that may be related to PFS include relief from cancer-related symptoms and treatment-related toxicities as well as the ability to pursue personal goals. Improved communication between patients and providers on managing treatment-related toxicities and addressing psychosocial challenges to maintain desired QoL is needed.

Conclusion: While OS and QoL are considered the most relevant endpoints, patients also value periods of time without disease progression. Incorporation of these considerations into the design and conduct of future clinical trials in mBC, as well as HTA and reimbursement decision-making, is needed to better capture the potential value of a therapeutic innovation.

1. Introduction

Breast cancer is the most common cancer diagnosed worldwide, with an estimated 2.3 million new cases in 2020 alone \cite{1,2}. Incidence rates have historically been elevated in higher human development index (HDI) countries in North America and Western Europe, reflecting a longstanding prevalence of reproductive, hormonal, and lifestyle risk factors in these regions \cite{3}. However, breast cancer incidence has been rising in high-income Asian countries like Japan, where rates have historically been low \cite{2} (see Fig. 1)

Metastatic cancers, including distant metastases found at diagnosis (de novo) and those occurring later in the disease course (recurrent), are incurable, albeit treatable, and constitute the most advanced forms of the disease \cite{4}. Since the 1990s, there have been several advancements...
in the management of metastatic breast cancer (mBC), but few have led to substantial increases in survival. Median overall survival (OS) in mBC is about 3 years, with variation by breast cancer subtype, patient characteristics, and access to treatment [5–7]. Between 1990 and 2010 alone, median OS among mBC patients increased from 21 months to 38 months [8]. However, recently reported data have demonstrated a trend of lengthened OS in specific types of mBC with certain therapies; for example the MONALEESA-2 (ML-2) phase III trial reported a statistically significant median OS of 63.9 months in HR+/HER2-negative mBC patients treated with front-line endocrine therapy (ET) ± ribociclib (RIB) [9].

While most stakeholders agree that OS is the gold standard in establishing the efficacy of oncology therapies, surrogate endpoints such as PFS have been consistently utilized as primary trial endpoints and OS as a secondary endpoint due to the longer time duration needed to reach OS results. In mBC trials conducted from 2000 to 2012, 60% of trials designated PFS as the primary endpoint, compared to 24% that used OS [10].

Due to the ubiquity of its use as a surrogate endpoint, it is useful to investigate the relationship of surrogate metrics such as PFS with other measures of treatment efficacy, including quality of life (QoL) and symptom burden; and understand the value of these endpoints, if any, to patients living with mBC in their day-to-day lives. Previous work has begun to shed light on the relationship between PFS and treatment efficacy. In a discrete choice experiment survey study of mBC patients and providers who treat such individuals, MacEwan et al. reported that patients preferred treatments that conferred contiguous periods of PFS, although more research was warranted to understand the reasons for PFS having a positive value [11]. Another study examining patient preferences for chemotherapy in mBC found that patient’s age, relationship status and travel time to treatment was significantly associated with preferences for PFS. Yet, in a rapidly evolving treatment landscape, more work is needed [12].

Navigating cancer treatment remains daunting for patients and its impact on QoL is well-documented [13]. Specifically, a review of the trends in QoL for mBC indicates that there has not been a significant improvement in patient QoL since 2004 [6]. Patients with mBC may also have different treatment and survival priorities than patients living with earlier stage disease [14]. Furthermore, disease progression, recurrence, and death remain the greatest fear among patients with mBC [15].

Facing treatment-related decisions in addition to facing an incurable illness that requires continuous treatment can introduce great psychosocial distress for both the patient and their loved ones [16,17]. Yet, in clinical trials for patients with mBC, patient experience and quality of life may be overlooked, despite evidence that treatment confers impact. For example, a 2016 review of the use of patient-reported outcomes (PROs) in mBC clinical trials found that 39% of publications reported deterioration in PRO outcomes from baseline [18]. Another review conducted by the Setting International Standards in Analyzing Patient Reported Outcomes and Quality of Life Endpoint Data for Cancer Clinical Trials (SISAQOL) Consortium found that just 12% of breast cancer trials that assessed PRO data included a specific PRO research hypothesis [19]. A more comprehensive understanding on QoL impacts in specific mBC populations, such as elderly individuals, whose treatments are often modified from guidelines established for younger patients, are critically needed. For example, prior research has also demonstrated that in older adults living with breast cancer, chemotherapy has both a clinically and statistically significant negative impact across several QoL domains [20]. Yet, well-recognized and critically needed population-specific considerations, such as those recently updated in guidance by the International Society of Geriatric Oncology (SIGO) and European Society of Breast Cancer Specialists (EUSOMA), are often unaccounted for in the conduct of clinical trials [21]. Such considerations for older adults with breast cancer include geriatric assessments, competing risks of mortality due to comorbidities, and patient preferences [21].

In this study, we sought to explore global patient perceptions of and experiences with the concept of PFS, including its consideration in treatment decision-making and its impact on patients’ daily lives. We convened roundtables and conducted interviews with mBC patients and patient advocates representing key advocacy organizations in Europe, Japan, and the United States, and performed qualitative data analysis to identify and synthesize key themes across the discussions.

This article provides a collective summary of participant perspectives on the value of PFS in relation to QoL and activities of daily living in mBC.

2. Material and methods

2.1. Study design and data collection

In preparation for the roundtables and interviews, we conducted a targeted review of the literature. We included studies published between 2010 and 2020 describing mBC patient preferences for surrogate survival endpoints and treatment as related to QoL, productivity impacts, and caregiver burden.

We collaborated with the European Cancer Patient Coalition (ECPC) for participant recruitment in Europe, and the Metastatic Breast Cancer Network (MBCN) and SHARE Cancer Support for recruitment in the United States. In both Europe and the United States, ECPC and MBCN and SHARE identified and issued e-mail invitations to English language proficient members of their constituencies to assess interest in participation. Interested participants were directed to a designated contact at the participating partner organization to coordinate availability for the scheduled roundtables that were being conducted in English. In Japan, we approached three prominent patient advocacy organizations (Cancer Survivors Recruiting Project, Cancer Solutions, and Japan Association of Medical Translation for Cancer) and invited their participation in individual in-depth interviews to capture Japanese patient perspectives. In advance of the roundtables and interviews, all participants were provided a pre-read packet with background on the literature review conducted and roundtable or interview discussion questions.

Roundtable and interview discussion topics were divided into segments and all questions were posed to patients, patient advocates, and healthcare professionals. Discussion questions (Table 1) were developed based on concepts identified in the published literature, identified gaps, and in consultation with representatives from the ABC Global Alliance, ECPC, MBCN and SHARE. In this paper, we predominantly report findings from the Treatment-related quality of life and Perspectives on PFS terminology domains, although also report limited findings from the other domains as relate to both.

We convened virtual roundtables in Europe (October 2020) and the United States (January 2021) and virtual in-depth interviews in Japan (February 2021). Interviews were conducted as an alternative to roundtables in Japan due to differences in communication styles in East Asia, particularly around potentially sensitive subjects such as cancer. Discussants and interviewees included mBC patients, mBC patient advocates, and/or healthcare professionals. Roundtables and interviews were moderated by study team members with graduate training in qualitative data collection. Discussions were audio recorded and transcribed verbatim, supplemented with observational field notes recorded by study team members. The roundtables in Europe and the United States were conducted in English and interviews in Japan were conducted in both Japanese and English, with an interpreter present for live translation.

2.2. Data analysis

Transcripts and chatlogs were imported into Dedoose, a qualitative data analysis software program (Version 8.0.35), to facilitate analysis. We developed a codebook based on discussion guide topics and a review of the transcripts. Codes were further refined by the team into descriptive categories, resulting in a dictionary of eighteen thematic codes.
based on discussion topics and inductive generation. Data were analyzed individually by five members of the study team with graduate training in qualitative data analysis (SGM, KT, KB, MR, SM). We analyzed similarities and differences in participant discussions of their perspectives on and experiences with treatment decision making, tradeoffs and quality of life impacts, using the constant comparative method [22,23]. For the purposes of this paper, we focus our analyses on discussions related to the concept of PFS and its relationship to QoL for patients with mBC.

3. Results

Thirty individuals participated in the virtual roundtables and interviews, representing twenty-six breast cancer advocacy organizations from across thirteen countries. Participants included metastatic breast cancer patients (n = 16), breast cancer patient advocates (n = 12), and breast cancer oncologists (n = 2) who represented a wide range of experiences in mBC.

3.1. Overall survival benefit combined with good QoL remain the most important endpoints for patients with mBC

Consistent with the peer-reviewed literature, participants noted that the single most important endpoint for patients living with mBC is simply living longer. Among our participants, there can be no dispute that patients living with mBC desire to live as long as possible with a good QoL. Although OS is utilized as a clinically meaningful endpoint to gauge the overall efficacy of a given treatment, patients have a much more holistic view of its impact. For patients living with an incurable disease, gains in OS (and to a lesser extent PFS) provide an opportunity to access new and better treatments, particularly when treatment regimens stop being effective. Thus, the gold standard of endpoints for patients is OS because it gives patients more time to live, and potentially more time to live with a good QoL.

3.2. What quality of life means to a patient with mBC

Moderators directly queried participants about what QoL means to patients with mBC and asked them to share their experiences and perspectives around treatment-related QoL. Participants indicated that they valued treatment that could help with maintaining as "normal" a life as possible and the ability to retain independence and overall functioning. Participants from all regions generally agreed that symptom burden associated with breast cancer and its treatment can significantly impact QoL. In the metastatic setting, maintaining, and improving QoL was particularly important due to the incurable nature of the disease and the long-term nature of treatment. Participants described QoL as being able to
to function as close to a pre-diagnosis normal as possible, including working, spending time with family and friends, and maintaining daily activities with minimal disruption. Treatments that contribute to minimizing disruption – such as oral treatments versus painful intramuscular or time-consuming intravenous treatment that require travel to and time at clinics – are preferred. Multiple participants also agreed that pain and fatigue often led to the most detrimental impacts to QoL. Select narrative quotes that illustrate patient perspectives on QoL are detailed in Table 2.

Participants noted that QoL can vary by life circumstances, situations (e.g., career focus, parenthood, retirement), and types of desired activities (e.g., exercise, travel). They described that even within the same patient, QoL is a dynamic construct that is constantly changing throughout the treatment journey, and that priorities and tolerance for disruption to their daily lives can change over time. Therefore, it is important that the impact of the disease and treatment on QoL is discussed regularly during visits with healthcare professionals. Participants highlighted the need to educate providers on viewing patients holistically, taking the time to understand individual patient needs and preferences and considering a treatment’s potential impact on QoL when making treatment recommendations. They also stressed that these issues should be assessed on an ongoing basis, as what matters to patients can change based on their life situation.

3.3. The concept of “progression-free survival” for patients with mBC

Living longer is the priority for patients with mBC, and the time when disease is not progressing is meaningful when coupled with improvements in QoL and no added treatment toxicity. Participants were first asked to review clinical definitions for “PFS” and “stable” disease and asked to discuss their perspectives around patient understanding of these terms. Participants noted that the term “PFS” was a confusing mixture of words, and that patients would only hear the “survival” component. They suggested the term be replaced with a more patient-friendly, patient-centered term that meaningfully conveys the concept of PFS, or periods of time where the disease is not growing or spreading (e.g., “time without disease progression”). Even breast cancer patient advocates, who are often more familiar with clinical terminology than the average patient, expressed confusion around the term.

Participants agreed that oncologists seldom ask patients about their primary concerns, and do not adequately explain the disease or full scope of treatment options and considerations specific to their case. Rather than quoting clinical data, providers should ask patients about their primary concerns and explain the full disease scope as well as available treatment options.

Ultimately, while participants felt that PFS and/or periods of time where the disease is not growing or spreading could be important to patients, they noted that gains in PFS should not be at the expense of worsened QoL and/or should relieve cancer-related symptoms. It is within this context that PFS can be valued, putting the concept into perspective with other clinical endpoints such as OS and QoL while explaining the benefits and risks of treatment options.

Lastly, participants emphasized the need to deliver messaging around PFS at the appropriate time in the treatment journey. Participants across all regions noted that discussion of clinical endpoints such as PFS at diagnosis of metastatic disease or immediately following diagnosis is overwhelming for even the most educated patients. Patients are still processing the diagnosis and its impact and disruption to their lives and cannot think about endpoints such as PFS.

3.4. The value of progression-free survival for mBC patients and their caregivers

Participants were also asked to describe how patients with mBC view PFS and the time periods when the disease is not spreading or growing, and in what manner these periods may contribute to improved QoL. Despite the confusing nature of these terms, patients intuitively

Table 2
Exemplar narratives from participants on quality of life.

| Topic | Exemplar Narrative |
|-------|-------------------|
| What quality of life (QoL) means for patients with mBC | “So quality of life is very important. In particular, as for metastatic breast cancer patients, there’s no cure. So the focus becomes how long they extend their life, what kind of treatment is available to extend their life. So when you think about that, getting a very strong treatment, but when you – can’t get out of bed, is that a good quality of life? No. It’s, rather, what they think is, by continuing the treatment, but they want to live the way they have lived, and they want to have a future, think about the future as well.” – Japanese Interview Participant |

Aspects of treatment that strongly impact QoL for patients with mBC

- QoL is individualized and dynamic
- QoL is not always the same for all patients
- Patients may have ongoing, untreated pain, and it impacts their day-to-day life significantly
- Patients appreciate oral medication over painful intramuscular
- Patients want to live the way they have lived, and they want to have a future
- Patients want to extend their life, what kind of treatment is available to extend their life

Mode of treatment administration

- Educating providers on QoL
- Communicating treatment options and considerations specific to their case
- Providing support and resources for patients and caregivers

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connected PFS and times when the disease is not spreading or growing to gains in QoL. As shown in the narrative excerpts in Table 3, participants noted that patients do not view these time periods as defined clinically, but rather about how these periods shape their ability to carry out daily activities, accomplish goals and deepen their personal relationships. This can include traveling, spending time with friends and family, and becoming more active in their communities.

Participants described how such periods of time – when associated with no worsening in or improved QoL – allow patients to resuming some sense of normalcy and independence, including continuing to work. For many patients, employment is often tied to health insurance coverage [in the US] and/or to salary for out-of-pocket expenses, creating a necessity for patients with mBC to be able to work for as long as possible.

Finally, the value of these periods of time when the disease is not growing or spreading and associated with no worsening in or improved QoL extends beyond patients and can provide benefit for caregivers and a reprieve from the potential burden of caregiving for a cancer patient. More generally, participants noted the need to develop resources to support caregivers and identified this as an important and critical unmet need. In Japan in particular, a cancer diagnosis can be stigmatizing, leaving family members to bear the burden of caregiving alone without external support.

4. Discussion

This study sought to better understand mBC patient perceptions of and experiences with the concept of PFS and periods of time where a cancer is not growing or spreading, including its consideration in treatment decision-making and impact on QoL. Consistent with the published literature, participants agreed that improved or maintained QoL is an important endpoint [24,25], although how a patient defines good QoL can vary by age, time since diagnosis, type of treatments received, and life circumstances. Even within an individual patient, QoL is a dynamic construct that evolves throughout the treatment journey [26].

Notwithstanding the above, participants emphasized that OS remains the most important outcome for the mBC patient, closely followed by QoL. To be meaningful for patients, improvements in PFS and time periods without tumor growth or spread must be accompanied by no worsening in or improved QoL and symptom control, and/or decreased treatment toxicity.

This study also identified gaps in communication about PFS between mBC patients and their care team. For most patients, PFS is unfamiliar as a term and a difficult concept to grasp. If even discussed, it is often not properly explained or contextualized for patients with participants noting that patient-physician dialogue surrounding PFS, QoL, and other endpoints merit substantial improvement. Put simply, few patients understand the concept of “progression-free survival”; the term elicits confusion, with many patients focusing exclusively on the word “survival” and conflating it with “overall survival”. Thus, more patient-friendly terminology is needed. Previous research has also shown that clinical trial language is oftentimes not comprehensible to patients [27]. This situation is further compounded by an abundance of literature documenting the negative impacts of poor patient and provider communication in oncology care delivery, although recent studies suggest that when providers focus on patient priorities, communication and patient outcomes can significantly improve [28–34].

Towards that end, many studies have documented the misaligned considerations of oncologists and patients, with providers often focused on tumor response and managing side effects while potentially ignoring important concerns for patients such as treatment-related financial toxicity, personal goals, and family dynamics [35–39]. We also found

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Table 2 (continued)

| Topic | Exemplar Narrative |
|-------|--------------------|
| where they have decided to just forgo (i.e. stop) treatment altogether because of these quality-of-life concerns and thinking it’s just gonna be too disruptive to my life, I’d rather not even take it on. – MBCN/SHARE Participant |

Table 3

| Topic | Exemplar Narrative |
|-------|--------------------|
| Importance of progression-free periods for patients with mBC | “That time is extremely important for patients. The mind and the body are connected. So when you’re feeling good about your body, your body feels good. You’ll have higher motivation, and you want to do more. And the progression free time period, there are people who create lists of things that they want to do... And that progression-free time period is extremely important for them. It’s a very concentrated time, the time period they want to utilize to the maximum.” – Japan Interview Participant |
| Maintain some sense of normalcy, including working | “Me, as a patient, I’m not thinking in terms of if is the tumor shrinking from this size to another or is it stable and not growing? As long as it doesn’t impact my daily life, my family life, I would prefer to have it stable instead of shrinking.” – ECPC Participant |

Table 3 Exemplar Narratives from Participants on the Value of PFS Associated with Good Qol for mBC Patients and their Families.
that patients would prefer their physician to take a more holistic approach to care by considering individual circumstances and QoL impact when discussing treatment options. While survival and treatment efficacy remain key considerations, participants shared that over the course of their treatment journey, patients increasingly valued freedom from pain, the ability to engage in daily activities without fatigue, and absence of financial stressors. Downstream effects of treatment such as late emerging and chronic side effects can also confound significant impacts on long-term QoL. [40].

These discussions underscore the importance of consistently incorporating comprehensive QoL measures as an endpoint in breast cancer clinical trials and developing novel PRO instruments specifically for mBC. Findings from our study – whereby participants placed great emphasis on maintaining good QoL during their mBC treatment journey further support this critical unmet need. Particularly in the mBC setting, there is a need for increased emphasis on QoL in the evaluation of cancer therapies - with a treatment’s potential efficacy and survival benefit carefully considered alongside its toxicities and impact on QoL. Although investigating quality of life may not be the primary goal of a clinical trial, the integration of QoL metrics as (co-)primary endpoints, rather than as a secondary endpoint as is often the case, is needed order to assess the benefits and risks of new cancer agents more holistically.

Lastly, participants believed emphatically that any treatment offering PFS gains should not worsen QoL, and it was noted that periods of time where disease is not growing or spreading may be able to provide some QoL benefits such as symptom relief, prolonged ability to work (which may ameliorate financial concerns), and the pursuit of personal goals such as traveling or participating in meaningful family events. This is consistent with a new concept of treatment-related time toxicity recently posited by Gupta et al. whereby patients may value treatments differently if they knew precisely how much time they would need to spend pursuing cancer-directed therapy that would disrupt normal activities of daily living and negatively impact QoL relative to gains in survival or day-to-day functioning [41].

These findings emphasize the complexities of treatment decision-making and highlight how the value of all endpoints needs to be communicated in relatable and tangible terms to patients. Further, while perspectives on QoL were generally consistent across regions, some region-specific considerations in treatment decision-making were noted. In the US and Europe, patients have more autonomy in treatment decision-making. However, countries like Japan still operate under a more paternalistic health care system whereby patient autonomy is considered within the context of the triadic relationship of patient, family, and physician [42-44]. Women, in particular, have limited autonomy in decision-making, combined with a culture that prioritizes deference to doctors and to the male head of household. However, Japanese participants noted that with the younger generation, the landscape is evolving.

This study has several limitations. First is a sample size of 30 participants; while by established qualitative research guidelines [45] this is deemed sufficient to provide the necessary diversity of opinion and experiences and to confirm and validate shared views, we acknowledge that these findings may not be generalizable to the broader mBC patient population. In addition, although we were able to capture diverse perspectives across different regions, we recognize that this does not fully capture the heterogeneity of the mBC patient population. Specifically, patient perspectives on various themes that emerged during the discussion may differ by demographic characteristics, including those related to social determinants of health, which we were not able to address given the smaller sample size. Lastly, as this study was focused on capturing the perspectives and opinions of patients themselves, we did not include the perspectives of oncology care nurses. We note the large body of published evidence highlighting the role of oncology nurses in patient care, and in particular their sensitivity to the impact of disease and treatment on patient health and well-being. Future work exploring this subject would benefit from inclusion of oncology nurse perspectives [46-48].

Although mBC remains an incurable disease, the changing treatment landscape has led to slow but consistent improved outcomes for many patients, especially for HER2+ and ER+ subtypes. Patients desire treatments that help them to live longer with good QoL. In the absence of a cure for mBC, our work further highlights the need for better communication between patients and healthcare professionals on treatment decision-making to manage toxicities and maintain/improve QoL. Further research is needed to better understand how mBC patients make treatment decisions over time, such as avoiding treatment toxicities and valuing periods of time that cancer is not spreading relative to other treatment attributes.

5. Conclusion

While overall survival is considered the most important endpoint, patients also value periods of time without disease progression, as long as quality of life during this time period is not adversely impacted. There remains an unmet need for more patient-centered clinical terminology for PFS (such as time without disease progression), more holistic care throughout the treatment journey, and a greater focus on the dynamic construct of QoL. Incorporation of these considerations into the design and conduct of future clinical trials in mBC, as well as HTA and reimbursement decision-making, is needed to better capture the potential value of a therapeutic innovation beyond clinical endpoints, as such endpoints must also be meaningful from the patient’s perspective.

Funding disclosure

This manuscript was sponsored by Sanofi, United States. The roundtables and interviews which inspired the development of this article were also funded by Sanofi, United States. None of the authors received honoraria to write this article.

Author disclosure

Shirley Mertz, Christine Benjamin, Charis Girvalaki, Antonella Cardone, and Paulina Gono report no conflict of interest. Suepattra G. May, Ki-yi Sin Than, Kelly Birch, Meaghan Roach, and Sky Myers are or were employees of PRECISIONeHeor, a consulting firm that received funding from Sanofi in relation to this project. Suepattra G. May owns equity interest in PRECISIONeHeor’s parent company, Precision Medicine Group.

Medha Sasane, Liat Lavi, Erin Comerford and Anna Cameron are employees of Sanofi and may hold Sanofi stock.

Fatima Cardoso has personal financial interest in form of consultancy role for: Amgen, Astellas/Medivation, AstraZeneca, Celgene, Daiichi-Sankyo, Eisai, GE Oncology, Genentech, Gilead, GlaxoSmithKline, IQVIA, Macrogenics, Medscape, Merck-Sharp, Merus BV, Mylan, Mundipharma, Novartis, Pfizer, Pierre-Fabre, prIME Oncology, Roche, Sanofi, Samsung Bioepis, Seagen, Teva, Touchime.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors would like to thank the participants of the roundtables and interviews for their time and thoughtful insights, and the many women living with mBC who contributed significantly to this research through their direct participation in this study and in studies that this work references.
References

[1] Cancer facts & figures 2021. Atlanta: American Cancer Society; 2021.
[2] Sung H, Perflaj J, Siegel RL, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin 2021;71(3). https://doi.org/10.3322/caac.21660.
[3] Ibaray F, McCarron P, Parkin DM. The changing global patterns of female breast cancer incidence and mortality. Breast Cancer Res 2004;6(229).
[4] Mancis E, Etzioni R, Hurlbert M, Penberthi L, Mayer M. Estimation of the number of women living with metastatic breast cancer in the United States. Cancer Epidemiology, Biomarkers & Prevention. 2017;6(26).
[5] Sundquist M, Brudin L, Tejler G. Improved survival in metastatic breast cancer 1985-2016. Breast 2017;31:46–50.
[6] Cardoso F, Spence D, Mertz S, et al. Global analysis of advanced/metastatic breast cancer: decade report (2005–2015). Breast 2018;39:131–138.
[7] Kohanyi K, Ito Y, Matsumura M, et al. Impact of immunohistochemical subtypes on the long-term prognosis of patients with metastatic breast cancer. Surgery today. 2016;46(7):821–6.
[8] Caswell-Jin JL, Plevritis SK, Tian L, et al. Change in survival in metastatic breast cancer with treatment advances: meta-analytic and systematic review. JNCI Cancer Spectr 2018;4(1). pky062.
[9] Haltobagyi GN, Stemmer SM, Brusis HA, et al. LBA17 Overall survival (OS) results from the phase III MONALEISA-2 (ML-2) trial of postmenopausal patients (pts) with hormone receptor positive/human epidermal growth factor receptor 2 negative (HR+/HER2–) advanced breast cancer (ABC) treated with endocrine therapy (ET) + ribociclib (RIB). Ann Oncol 2021;32:S1290–1.
[10] Kakemi M. Clinical implications of the progression-free survival endpoint for Treatment of hormone receptor-positive advanced breast cancer. Oncol 2016;21:922–30.
[11] MacEwan JP, Doctor J, Mulligan K, et al. The value of progression-free survival in metastatic breast cancer: updated recommendations of the international society of geriatric oncology (SIGO). J Cancer Educ 2018;33(2):360–7.
[12] Spunch S, Kinder J, Hetjes S, Fuxius S, Gerhardt A, Sütterlin M. Patient preferences regarding chemotherapy in metastatic breast cancer—a conjoint analysis for common taxanes. Front Oncol 2018:8.
[13] Mokhtari-Hessari P, Montazeri A. Health-related quality of life in breast cancer patients: a systematic review. Cancer Nurs 2019;42(1).
[14] Thorne SE, Stajduhar KI. Patient perceptions of communications on the threshold of cancer survivorship: implications for provider responses. J Cancer Surviv. 2012;6(2):229–37.
[15] Zeuner R, Frosch DL, Kuzemchak MD, Politik MC. Physicians’ perceptions of shared decision-making behaviours: a qualitative study demonstrating the continued chasm between aspirations and clinical practice. Health Expect : An International Journal of Public Participation in Health Care and Health Policy. 2015;18(6): 2465–76.
[16] S. Mertz et al.
[17] Bray F, McCaron P, Parkin DM. The changing global patterns of female breast cancer incidence and mortality. Breast Cancer Res 2004;6(229).
[18] Sung H, Ferlay J, Siegel RL, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin 2021;71(1):46–51.
[19] Morkhtari-Hessari P, Montazeri A. Health-related quality of life in breast cancer patients: a systematic review. J Cancer Educ 2018;33(2):360–7.
[20] Gnjatic S, Nakash O, Aziz S, Shapira S, Ben-David MA. Oncology health care professionals’ perspectives on the causes of mental health distress in cancer patients. Psycho Oncol 2019;28(8):1695–701.
[21] HSC, Pai MS, Fernandes DJ. Oncology nurse navigator programme - a narrative review. Journal of Health and Allied Sciences NU. 2015;5(1):103–7.
[22] Liu FX, Witt EA, Ebbinghaus S, Dibonaventura Beyer G, Basuro E, Joseph RW. Patient and oncology nurse preferences for the treatment options in advanced melanoma: a discrete choice experiment. Cancer Nurs 2019;42(1), International Society for Pharmaeconomics and Outcomes Research. 2017;20(2): 169–9.