

substantial role in these side effects. Up to now, less is known about perceived injustice in cancer survivors. Furthermore, no cancer survivors' specific cut-off is available, making further research difficult.

Material and methods: This cross-sectional study assessed the Injustice Experience Questionnaire (IEQ), Numeric Pain Rating Scale (NPRS), Patient-Specific Complaints (PSC), Multidimensional Fatigue Index (MFI), and European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30 (EORTC-QLQ-C30) in cancer survivors from the Netherlands. A clinically relevant cut-off score for cancer survivors was identified based on the 75th percentile of the distribution of the total IEQ scores. Univariate and multivariate regression analyses were performed to explore the relationship between personal characteristics (gender, age, type of cancer, treatment type) and cancer-related rehabilitation factors (pain intensity, daily activity, fatigue, health-related quality of life) with perceived injustice in cancer survivors.

Results: One hundred twenty-one cancer survivors were included from private physiotherapy practices across the Netherlands. A cut-off of ≥ 20 on the IEQ was identified for cancer survivors. In the univariate analyses, chemotherapy ($B = 3.321$ [0.346 to 6.295], $p = 0.029$) and all rehabilitation factors (i.e., NPRS ($B = 0.863$ [0.161 to 1.566], $p = 0.016$), PSC ($B = 0.067$ [0.008 to 0.127], $p = 0.027$), MFI ($B = 0.204$ [0.124 to 0.284], $p < 0.001$), and EORTC-QLQ-C30 (-0.167 [-0.252 to -0.083], $p < 0.001$)) were significantly associated with the total IEQ scores. However, no significant indirect associations were found for gender ($B = 1.520$ [-1.779 to 4.820], $p = 0.363$), age ($B = -0.094$ [-0.208 to 0.019], $p = 0.103$), or type of cancer ($B = 3.982$ [-1.226 to 9.190], $p = 0.133$) with total IEQ scores. The multivariate model included MFI, EORTC-QLQ-C30, NPRS, PSC, type of treatment, age, and cancer type ($p < 0.20$). Only MFI and age maintained a statistically significant direct association with PI, which were respectively $B = 0.205$ [0.125 to 0.285], $p < 0.001$ and $B = -0.086$ [-0.191 to 0.285], $p < 0.001$.

Conclusion: Perceived injustice might be a new cornerstone for cancer survivors. However, its knowledge is scarce and its association with personal characteristics and rehabilitation factors should further be examined through longitudinal studies in a larger population to explore causal relationships.

No conflict of interest.

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Poster

Overview of patient preference sensitive attributes in eHealth interventions for breast cancer-related fatigue

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Background: One of the most disabling long-term effects after breast cancer is cancer-related fatigue (CRF). To prevent CRF from becoming chronic, it is important to start treatment against CRF timely. Fortunately, there are many evidence-based eHealth interventions. However, the effectiveness of these interventions varies per person, depending on patients' personality and preferences. The goal of this research is to create an overview of eHealth interventions for breast cancer patients with CRF and their attributes, with a focus on preference sensitive attributes. This overview can help in providing a more personalized treatment advice, thereby increasing the effectiveness on CRF.

Methods: With a scoping review, we searched systematically through Pubmed, Scopus and Web of Science for eHealth interventions. These eHealth interventions had to 1) be tested in a patient group including breast cancer patients and 2) measure the effect on CRF. Information was extracted on patient preference attributes like duration, intensity, contact with healthcare professionals, peer support, costs, content delivery and study results. Results were synthesized based on different categories of non-pharmacological interventions.

Results: We found 43 articles describing 35 interventions. Interventions were divided into five categories: physical activity, mind-body and psychological interventions, a combination of the previous or "other." Table 1 shows the variation in the attributes duration, intensity, contact with professionals and study results per category. Peer support was included in only seven interventions and in six interventions, information was given on potential

costs. Content was delivered in various ways: information was presented on websites and apps as video, audio and text and also as vignettes, quizzes and graphics.

Conclusion: We created an overview of eHealth interventions for breast cancer patients with CRF and their (preference sensitive) attributes. There was variation between (categories of) interventions, showing possibilities to personalize an intervention advice. The overview hopefully supports professionals in guiding patients to an intervention that fits their preferences, leading to an improved intervention outcome on CRF and improving the quality of life of patients.

Table 1: Overview of interventions and attributes related to patient preferences

Category	Duration	Intensity	Professional involvement	Studies with significant improvement
Physical activity (n = 5)	6 weeks–6 months	Tailored by user - 3 hours/week - 3 sessions/week	4/5	2/5
Mind-body (n = 7)	4–12 weeks, outlier of 20 weeks	Daily practice of exercises	2/7	4/7
Psychological (n = 13)	6 weeks–6 months	Weekly usage/at own pace, two exceptions: 4x/week and daily use	6/13	9/13
Other (n = 2)	6 months	Own pace - daily usage	2/2	1/2
Combination (n = 8)	8 weeks–6 months	Usage at own pace - once/twice per week - daily use	5/8	8/8

No conflict of interest.

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Poster

Who is at risk of developing breast cancer-related fatigue – a prediction study

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Background: Cancer-related fatigue (CRF) is still experienced by 20% of the breast cancer patients ten years after diagnosis. Although there are interventions against CRF, they should be started on time to prevent CRF from becoming chronic. Therefore, it is important to identify patients at risk of developing CRF to subsequently monitor them actively. The goal of this study is to explore the possibility to determine the risk breast cancer patients have for developing CRF.

Methods: To assess the risk for CRF, the Dutch Primary Secondary Cancer Care Registry (PSCCR) was used. This registry consists of a part with patient reported outcomes (PSCCR-PROFIEL) and a link between data of General Practitioners (GPs) and the Netherlands Cancer Registry (PSCCR). Both have information on breast cancer patient, tumor and treatment characteristics and late effects. In PSCCR-PROFIEL, 23 input variables for 390 patients were available and the patient reported outcomes included the late effect fatigue (yes/no, n = 254). In PSCCR, 12,813 patients were included and GP visits for fatigue were extracted (n = 2224). Fifty-three input variables were used, including information on complaints before diagnosis. Missing data was imputed using Multiple Imputation by Chained Equations. Risk was predicted using machine learning comparing several models: Random Forest Classifier, Logistic Regression, Gaussian Naïve

Bayes, K-Nearest Neighbors and Multi-Layer Perceptron. For extra comparison, a statistical logistic regression model was developed. A nested 5-fold cross validation was used to optimize hyperparameters. The area under the receiver operator characteristic curve (AUC) was calculated to compare model performances.

Results: For PSCCR-PROFIEL, the Logistic Regression machine learning model performed best with an AUC of 0.669 ± 0.040 . The statistical logistic regression model did not do better, with an AUC of 0.629 ± 0.040 . For PSCCR, the best AUC found was 0.561 ± 0.006 , also for the Logistic Regression model and the statistical Logistic Regression did about the same with 0.551 ± 0.008 as AUC. The predicted probabilities were plotted and visually compared with the true value. This showed no difference between the fatigued and non-fatigued patients.

Conclusion: When calculating the risk patients have for CRF, we found relatively low AUCs, meaning that the models have low discriminative abilities. It could be that the variables present in the datasets are not predictive of fatigue and more information is needed (e.g. lifestyle factors). Another reason could be that the binary way fatigue is reported in both datasets is not detailed enough to predict CRF, because CRF is a multidimensional and complex long-term effect. In future studies, lifestyle factors should be included and CRF has to be measured multidimensionally to hopefully better predict the risk an individual has for developing CRF.

No conflict of interest.

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Poster

Depression, loneliness and apathy in older breast cancer survivors: five-year follow-up from the Climb Every Mountain study

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Background: Previous studies have shown a relatively high prevalence of psychological disorders in breast cancer survivors. However, there is a lack of information for the increasing older population. Besides, most studies focus on a period shortly after the diagnosis and treatment. However, for the majority of patients the processing and acceptance of their diagnosis and disease begins when the treatment of their cancer is finished and the follow-up begins. Therefore, the aim of the current study was to assess depressive symptoms, loneliness and apathy in older patients with breast cancer within the first five years after diagnosis.

Material and methods: Women aged 70 years and older who had been diagnosed with early-stage breast cancer were included from the prospective, multicentre Climb Every Mountain cohort study. Linear mixed models were used to assess longitudinal changes of depression (according to the 15-item Geriatric Depression Scale), loneliness (according to the De Jong Gierveld Loneliness Scale) and apathy (using the Starkstein Apathy Scale) over time at 3, 9, 15, 27 and 60 months follow-up.

Results: In total, 299 patients were included. At 3 months follow-up, shortly after the acute treatment, 12% of patients had significant depressive symptoms, while apathy was present in 23% and almost a third of all patients experienced loneliness at that point. Depression, apathy and loneliness scores showed no clinically significant change over time. However, patients who were classified as frail at baseline developed more depressive symptoms than patients who were not frail within the first five years after diagnosis.

Conclusions: Depressive symptoms, apathy and loneliness are relatively rare among older breast cancer survivors. However, patients who are frail at baseline are more prone to developing depressive symptoms within the first 5 years after diagnosis, leading to a reduced quality of life.

No conflict of interest.

164 (PB-077)

Poster

Exploring timely perspectives of embodiment in women diagnosed with breast cancer undergoing oncoplastic breast surgery: A qualitative study from a plastic- and breast surgical outpatient clinic

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Background: Women diagnosed with breast cancer in Western countries are increasingly offered oncoplastic breast surgery as part of breast cancer treatment. As the number of breast cancer survivors grows due to development in surgical and medical treatment, long-term outcomes and the experiences of individuals with breast cancer, such as quality of life related to satisfaction and body image, have become increasingly important components of breast cancer treatment and rehabilitation. Previous research indicates that women who undergo breast reconstruction after breast cancer treatment report the highest long-term satisfaction with their breasts. This could indicate that reconstruction should be recommended for all women diagnosed with breast cancer. However, the standardizing tendencies of evidence-based practice can overrule individual deviations, cultural wishes, preferences and rights. Therefore, women's bodily experiences might be a more multifaceted and individual phenomenon than modest satisfaction outcomes. This study aimed to investigate women's experiences of oncoplastic breast surgery and how cancer treatment affect their body image over time.

Material and Methods: The study was guided by a qualitative descriptive approach and thematic analysis inspired by Braun and Clarke. Fourteen in-depth interviews with seven women diagnosed with breast cancer were conducted from August 2018 to March 2019. In this qualitative study, data analysis was inductively performed parallel with data construction as a process aimed at making sense of data. We framed the discussion of the findings within a theory of embodiment inspired by Merleau-Ponty coherent with the construct of exploring human experiences to generate meaningful knowledge for applied practice.

Results: The analysis resulted in two overall themes: "Treatment is required for life-threatening cancer," and "Striving for a new normal body." Common to the themes were patients feelings of being on a pendulum reflecting on who they were in the past, their current rationale and transitioning their life ahead from their breast cancer with a changed body.

Conclusions: The participants in the study expressed broad levels of satisfaction with the results of the oncoplastic breast surgery. Participants particularly valued that the constructed breast had weight and volume even if it was no longer a natural breast.

An implication for future practice is that nurses and physicians caring for women with breast cancer who are candidates for oncoplastic breast surgery need to provide person-centered care and information. That being throughout the breast cancer treatment process, from diagnosis to surgery, to medical treatment and into recovery, to engage with women's lived experiences of embodiment and body image and to recognize the importance of these experiences in women's transitions.

No conflict of interest.

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Poster

Evaluation of fertility preservation in young breast cancer patients

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Background: Cancer treatment can be gonadotoxic and reduce significantly reproductive potential of young women. Oncofertility has emerged as a very important field in oncology which allows cancer survivors to have biological children and maintain their quality of life.

The aim of this study was to evaluate fertility issues and attitude towards fertility preservation in young breast cancer patients.

Material and methods: A survey regarding fertility issues and concerns was conducted from 1st of January to 10th of May 2019. Among breast cancer survivors aged 40 years or younger treated at University Hospital for Tumors in Zagreb, Croatia.

Results: Our research included 52 patients with a mean age of 36 years. At the time of diagnosis 85% of patients were informed about cancer treatment impact on fertility and potential premature ovarian insufficiency, 75% were informed about available fertility preservation options, 55%