Characteristics of Breast Cancer At Royal Prima Hospital, Medan, 2020-2025

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Abstract.
Background: Breast cancer represents a significant global health burden, particularly in Southeast Asian populations. This study characterizes breast cancer patients in a North Sumatran tertiary hospital. Objectives: To describe demographic characteristics, histopathological classification, and clinical outcomes of breast cancer patients. Methods: A retrospective descriptive cross-sectional study was conducted at Royal Prima Hospital Medan using total enumeration sampling of 19 breast cancer patients with complete medical records from 2020 to 2025. Data on age, gender, histopathological type, and hospitalization duration were extracted from medical records. Descriptive statistics using SPSS software analyzed frequency distributions and percentages. Results: Nineteen patients demonstrated a mean age of 49.3 years, predominantly pre-elderly females (78.95%). Invasive ductal carcinoma and invasive lobular carcinoma were the main histological types. Mean hospitalization duration was 7.5 days, ranging from 2 to 18 days, influenced by surgical complexity and postoperative complications, including seroma formation and wound dehiscence. Conclusion: This institutional characterization provides baseline epidemiological data on breast cancer presentations, emphasizing the need for enhanced screening, early detection programs, and optimized surgical management protocols to improve outcomes.

Keywords: *Breast Cancer; Clinical Characteristics; Epidemiology; Hospital-Based Registry and Retrospective Study.*

I. INTRODUCTION

Phenomenon of Breast Cancer as a Global Health Challenge

Breast cancer has emerged as one of the most significant health challenges confronting women worldwide, establishing itself as the most common malignancy affecting females and the leading cause of cancer-related mortality among women across all countries. In 2022, approximately 2.3 million new breast cancer cases were diagnosed globally, resulting in 670,000 deaths, with this burden disproportionately affecting women in low- and middle-income countries (Freihat et al., 2025). The epidemiological landscape of breast cancer continues to evolve at an alarming pace, with projections indicating that global breast cancer incidence will exceed 6 million cases by 2050, representing a substantial 38 percent increase from 2022 levels (Freihat et al., 2025). Asia represents the region experiencing the most pronounced increase in breast cancer burden, projected to account for 2.0 million new cases by 2050, reflecting not only demographic changes through population aging but also shifting lifestyle patterns associated with urbanization and economic development (Freihat et al., 2025).

In the context of Asian populations, the burden of breast cancer has demonstrated particularly concerning trends. Southeast Asia, in particular, has experienced significant growth in breast cancer incidence and mortality rates over the past decade. In Indonesia, breast cancer represents the second-highest cancer incidence among women after cervical cancer, with the disease claiming substantially more lives relative to other cancer types affecting the female population. Yogyakarta Province, one of Indonesia's primary urban centers, documented an age-standardized incidence rate of 41.9 per 100,000 person-years during the 2008 to 2019 study period, with rapid increases occurring in urban districts at annual percentage changes exceeding 18 percent (Ng et al., 2023). The vast majority of breast cancer cases in this Indonesian cohort were diagnosed at advanced stages, with stage 4 disease accounting for over 40 percent of diagnoses

in some districts, substantially limiting treatment options and diminishing survival prospects (Ng et al., 2023).

Hormonal and Biological Mechanisms Underlying Breast Cancer Development

The pathobiological mechanisms driving breast cancer development are predominantly linked to prolonged and cumulative exposure to endogenous estrogen and related hormonal factors. Approximately 70 percent of breast cancers express estrogen receptors and/or progesterone receptors, underscoring the critical role of hormonal sensitivity in disease pathogenesis and prognosis (Al-Shami et al., 2023). Estrogen and its metabolites exert carcinogenic effects through multiple mechanisms, including direct interaction with estrogen receptors that initiate downstream signaling pathways promoting uncontrolled breast cell proliferation and survival (Al-Shami et al., 2023). Age at menarche, age at menopause, and reproductive history significantly influence lifetime estrogen exposure and consequently modulate breast cancer risk, with earlier onset of menarche and later age at menopause associated with substantially increased disease susceptibility (Al-Shami et al., 2023). The temporal dynamics of hormonal exposure during critical life stages, combined with aging-related changes in tissue microarchitecture and cellular repair mechanisms, create conditions conducive to malignant transformation of breast epithelial cells.

Clinical Characteristics and Demographic Patterns in Breast Cancer Presentation

Hospital-based studies examining breast cancer patient characteristics have documented consistent demographic patterns associated with disease presentation and outcomes. A comprehensive analysis of 6,405 women diagnosed with invasive breast cancer revealed a strong J-shaped association between age at diagnosis and mortality, indicating substantially worse clinical outcomes in both younger patients below 40 years and older patients exceeding 60 years (Kim et al., 2019). In multivariate analyses adjusting for body mass index, disease stage, and comprehensive treatment parameters including chemotherapy and radiotherapy, the hazard ratio for all-cause mortality was significantly elevated in patients younger than 40 years (hazard ratio 2.03; 95% confidence interval 1.44 to 2.87) and in patients older than 60 years (hazard ratio 2.35; 95% confidence interval 1.63 to 3.39) compared with those aged 40 to 49 years (Kim et al., 2019). The pre-elderly population, encompassing women aged 45 to 59 years, generally exhibits more favorable prognostic indicators than both younger and older age groups, coinciding with optimal hormonal and immunological conditions for disease management and survival (Kim et al., 2019).

Histopathological Classification and Clinical Implications

Breast cancer demonstrates considerable heterogeneity in histological characteristics and biological behavior, with invasive ductal carcinoma (IDC) and invasive lobular carcinoma (ILC) representing the most prevalent histological subtypes. Comparative analyses of these major histological types have revealed distinct survival patterns over time, with patients presenting with ILC demonstrating superior breast cancer-specific survival during the initial five years following diagnosis compared to IDC (hazard ratio 0.71; p less than 0.001), yet exhibiting substantially worse survival outcomes in later years, with hazard ratios progressively increasing from 1.30 in years 6 to 10 through 2.17 in years 16 to 20 (Lin et al., 2024). Patients with ILC present with more advanced disease characteristics, including higher frequencies of stage III disease, T3-T4 tumors, and N2-N3 disease, alongside a higher prevalence of hormone receptor-positive malignancies compared to IDC (Lin et al., 2024). These biological and clinical distinctions underscore the necessity for differentiated treatment strategies tailored to specific histological subtypes to optimize long-term disease control and patient survival.

Postoperative Management, Hospitalization Patterns, and Treatment-Related Factors

The clinical management of breast cancer extends beyond the surgical intervention itself to encompass comprehensive perioperative care, postoperative complications prevention, and timely initiation of adjuvant therapies. The length of hospital stay following breast cancer surgery varies substantially based on the complexity of surgical procedures, disease stage, and occurrence of postoperative complications. Research examining factors affecting postoperative hospitalization duration identified that drain remaining time, total lymph nodes removed, and number of metastatic lymph nodes significantly correlated with length of hospital stay, while patients receiving neoadjuvant chemotherapy exhibited prolonged hospitalization

periods (Gümüş et al., 2015). Postoperative complications following breast cancer surgery, including seroma formation, hematoma, wound infections, and wound dehiscence, independently associate with increased disease recurrence and all-cause mortality, with patients undergoing mastectomy procedures experiencing substantially higher complication rates compared to those undergoing breast-conserving surgery (Mactier et al., 2025). Enhanced recovery protocols incorporating optimized pain management strategies and early mobilization have demonstrated the capacity to reduce hospital length of stay by approximately 1.9 days compared to conventional perioperative management approaches (Sauro et al., 2024).

Research Gap and Clinical Significance of Institutional Patient Characterization

While substantial epidemiological data characterizing breast cancer at national and regional levels have accumulated through cancer registry systems and population-based studies, detailed institutional analyses describing patient characteristics, disease presentations, and clinical outcomes within specific hospital settings remain limited, particularly in Southeast Asian regions. Hospital-based investigations provide critical insights into local disease epidemiology, enabling identification of institution-specific risk patterns and treatment outcomes that inform targeted prevention and management strategies. The characterization of breast cancer patients at individual tertiary care institutions contributes substantially to understanding regional variations in disease burden, treatment patterns, and survival outcomes, facilitating evidence-based resource allocation and development of locally optimized clinical protocols. Such institutional studies assume particular importance in transitioning economies where access to advanced diagnostic and therapeutic resources remains geographically concentrated in tertiary medical centers.

Study Objective and Research Urgency

This study aims to comprehensively characterize breast cancer patients managed at Royal Prima Hospital Medan during the 2020 to 2025 period, with a specific focus on demographic characteristics, including age and gender distribution, histopathological classification of disease subtypes, and clinical outcomes measured through postoperative hospitalization duration and treatment-related factors. The urgency of this research derives from the imperative to establish baseline institutional data regarding breast cancer epidemiology and management outcomes in North Sumatra Province, a region experiencing substantial increases in breast cancer incidence yet lacking detailed institutional characterization studies. By elucidating the specific characteristics of breast cancer patients presenting to a major tertiary referral center, this investigation will facilitate identification of high-risk demographic groups requiring intensive surveillance and targeted preventive interventions, contribute to optimization of institutional treatment protocols based on observed patient populations and outcomes, and provide evidence supporting development of regionally appropriate early detection and patient education initiatives to reduce both disease incidence and mortality in the local population.

II. METHODS

Study Design

The present study adopted a retrospective descriptive design, which represents an observational research methodology that systematically examines existing data without intervention or manipulation of variables (Hart et al., 2025; Vandenbroucke et al., 2007). Retrospective descriptive studies are particularly valuable when examining rare diseases or conditions within defined institutional settings, offering cost efficiency while enabling access to comprehensive datasets accumulated over extended time periods (Hart et al., 2025). The cross-sectional design framework was employed, wherein all relevant variables about patient characteristics, clinical presentations, and treatment outcomes were assessed simultaneously based on data documented within medical records during a circumscribed historical period (Vandenbroucke et al., 2007). This methodological approach enabled characterization of the frequency distribution and epidemiological patterns of breast cancer patients managed at Royal Prima Hospital Medan without requiring prospective data collection or patient follow-up.

Study Setting and Timeframe

Data collection was conducted at Royal Prima Hospital, a major tertiary medical center located in Medan, North Sumatra Province, Indonesia. Royal Prima Hospital functions as a primary referral institution

for cancer patients throughout the North Sumatra region, receiving patients with complex oncological presentations requiring advanced diagnostic capabilities and multidisciplinary therapeutic interventions. The study utilized retrospective medical record data spanning the five year period from January 2020 through December 2025, encompassing all documented breast cancer cases managed and hospitalized within the institution during this interval. The research project itself was executed during the period from January through August 2025, with data collection and analysis completed by September 2025.

Study Population and Sampling Procedure

The population comprised all patients diagnosed with breast cancer who received inpatient or outpatient treatment at Royal Prima Hospital during the 2020 to 2025 period and whose information was documented within the institutional medical record system. The study utilized total enumeration sampling methodology, also referred to as complete census sampling, wherein all eligible cases satisfying predetermined inclusion and exclusion criteria were incorporated into the study population (Saunders et al., 2023). This comprehensive sampling approach ensures elimination of selection bias and provides complete representation of the institutional patient population, maximizing generalizability of findings to the specific hospital context. The initial population identified comprised 24 breast cancer patients. Following systematic application of inclusion and exclusion criteria by qualified research personnel, the final study sample consisted of 19 patients with complete and adequate medical record documentation.

Inclusion and Exclusion Criteria

Inclusion criteria specified that all patients with confirmed breast cancer diagnoses, documented within Royal Prima Hospital medical records between January 2020 and December 2025, were eligible for inclusion. Breast cancer diagnosis was defined as histopathological confirmation of malignant neoplasm originating from breast tissue, including invasive ductal carcinoma, invasive lobular carcinoma, and other histological subtypes as recorded in diagnostic pathology reports. Patients were included regardless of disease stage at diagnosis, gender, or age, provided their medical records contained sufficient clinical and demographic information.Exclusion criteria encompassed all patients whose medical records were incomplete or insufficiently documented to provide adequate information regarding the research variables of interest. Specifically, patients lacking documented information concerning age at diagnosis, gender, histopathological classification of disease, type of medical or surgical intervention, or duration of hospitalization were excluded. Additionally, medical records demonstrating significant data gaps or inconsistencies that precluded reliable variable extraction were excluded from the analysis.

Data Sources and Collection Procedure

Data extraction was performed systematically from institutional medical records maintained within Royal Prima Hospital, representing the primary source of information for all study variables. Medical record data included patient demographic information, clinical history, diagnostic findings, pathological reports, treatment documentation, and discharge summaries. A standardized data collection form was developed to facilitate systematic and consistent extraction of information from individual medical records, ensuring completeness and accuracy of captured data while minimizing abstractor errors (Nguyen et al., 2020; Sutton et al., 2024). The data collection instrument organized variables by category, including patient identification and demographics, clinical presentation and diagnosis, pathological classification, therapeutic interventions, and clinical outcomes measured through hospitalization duration. Qualified research personnel, trained in medical record abstraction protocols and variable definitions, performed manual extraction of data from individual patient medical records in accordance with established procedures designed to ensure accuracy and consistency of information captured.Data quality assurance procedures incorporated verification of extracted data through crosschecking of variable values against original medical record documentation to identify and resolve discrepancies. All extracted data were compiled into a secure database accessible only to authorized research personnel, with individual patient identifiers replaced by coded study identification numbers to ensure confidentiality and comply with data protection requirements.

Research Variables

The study examined both independent and dependent variables derived from medical record documentation. Independent variables comprised patient demographic characteristics including age at breast

cancer diagnosis and biological sex, clinical classification of disease based on histopathological examination findings, and therapeutic interventions received, encompassing surgical procedures, chemotherapy administration, radiotherapy, or combination treatment approaches. Specifically, independent variables included: (1) age in years at time of diagnosis, (2) gender classified as male or female, (3) histopathological diagnosis including invasive ductal carcinoma, invasive lobular carcinoma, and unspecified breast cancer, (4) surgical interventions including mastectomy, lumpectomy, biopsy, or excisional procedures, (5) systemic therapies including neoadjuvant or adjuvant chemotherapy, and (6) inpatient versus outpatient care status. The dependent variable comprised duration of hospitalization, defined as the total number of calendar days elapsing from hospital admission through discharge for inpatient admissions related to breast cancer diagnosis or treatment. Hospitalization duration was calculated based on admission and discharge dates documented within hospital administrative records and ranged from same-day procedures through extended inpatient stays. Duration of hospitalization was conceptualized as a continuous quantitative variable measured in days, representing the intensity of clinical resource utilization and reflecting disease severity, complexity of surgical intervention, and occurrence of postoperative complications.

Statistical Analysis

Descriptive statistical analysis was employed to characterize study variables and patient population characteristics. Quantitative variables were summarized utilizing measures of central tendency, specifically the mean and median, with accompanying measures of dispersion including minimum, maximum, and range values (Liemiyah et al., 2024). Categorical variables comprising patient demographics, disease characteristics, and treatment modalities were summarized through calculation of absolute frequencies and corresponding percentages of total sample size (Liemiyah et al., 2024). Frequency distribution tables were generated to present the distribution of categorical variables and subcategories of histopathological diagnoses. Cross-tabulation analysis was performed to examine relationships between independent variables and hospitalization duration, examining whether specific demographic characteristics, disease subtypes, or treatment modalities were associated with varying lengths of hospital stay.

Data analysis was performed utilizing SPSS (Statistical Package for the Social Sciences) version 26 or later, a comprehensive statistical software platform designed for management and analysis of research data (Hart et al., 2025). The Descriptive Statistics module within SPSS was employed to generate frequency distributions, percentages, means, medians, standard deviations, and range statistics for all variables. Results were presented as frequency tables and descriptive statistical summaries accompanied by both absolute frequencies and relative percentages, consistent with standard epidemiological reporting conventions for hospital-based cancer registries.

Ethical Considerations

This study was conducted following institutional requirements for human subjects research and in accordance with established ethical guidelines. As a retrospective study utilizing existing de-identified medical record data without patient contact or intervention, the research qualified for administrative review and formal ethical approval by the institutional review committee prior to data access and analysis (Capili et al., 2024). All medical record data were handled according to institutional data governance policies and legal requirements protecting patient confidentiality and privacy. Individual patient identifiers were replaced with coded study identification numbers, ensuring participant anonymity and protecting sensitive health information. Access to study data was restricted to authorized research personnel with demonstrated training in data security and human subjects research ethics.

III. RESULT AND DISCUSSION

Results

This clinical trial, focusing on breast cancer patients, was conducted in September 2025 at Royal Prima Hospital, Medan. Nineteen patients, all diagnosed with breast cancer and registered in the hospital's medical record between 2020 and 2025, comprised the study population. Only patients who met the study's eligibility criteria were included in the sample, selected using predetermined inclusion and exclusion criteria. A review of individual medical records generated study data, including details on age, sex, risk factors, clini-

cal diagnosis, cancer stage, and duration of therapy. SPSS software was used to analyze the data and characterize the breast cancer patients treated at the hospital. The findings of this study are expected to provide a comprehensive overview of the characteristics of breast cancer survivors.

Patient Age Characteristics

Tabel 1. Patient Age

Age	Number	Percentage
Youth	2	10,53
Later Adulthood	5	26,32
Pre-Elderly	8	42,11
Young Elderly	3	15,79
Middle Elderly	l	5,26
Min		20 Tahun
Maks		71 Tahun
Mean		49,3
Median		49 Tahun

The patient's age ranged from 20 to 71 years with an average age of 49.3 years. Based on age classification, the youngest age group was in the adolescent age group (12-25 years) with a total of 2 respondents (10.53%), most of the respondents were included in the pre-elderly group (45-59 years) with 8 people (42.11%), followed by the young elderly group (60-69 years) with 3 people (15.79%), then late adulthood (35-44 years) with 5 people (26.32%), and middle elderly (70-79 years) with 1 person (5.26%). These results indicate that the majority of breast cancer sufferers are in the pre-elderly age group, where the risk of breast cancer begins to increase due to hormonal changes, long-term estrogen exposure, and the aging process of breast tissue. This finding is in line with various literatures stating that the incidence of breast cancer increases in women over 40 years of age, so it is important to carry out screening and early detection in this age group.

Patient Gender Characteristics

Tabel 2. Patient Gender

Age	Number	Percentage
Male	4	21,05
Female	15	78,95
Total	19	100

Of the breast cancer patients at Royal Prima Hospital Medan, it was found that the majority were women (15 patients) (78.95%), while the remaining two were men (21.05%). This indicates that breast cancer is much more common in women, in line with the theory that the hormone estrogen plays a major role in the process of breast tissue carcinogenesis. However, breast cancer cases in men can also occur, although rarely, because they also have mammary glandular tissue that can undergo changes.

Patient's Cancer Type

Tabel 3. Patient's Cancer Type

Types of Cancer	Number
Breast Tumor	I
Ca Mammae dengan Ko1nplikasi (ARDS, Abses, Pressure Sore, dll)	3
Breast Cancer umum / Ca Mammae tanpa subtipe soesifik	4
Breast Cancer Dextra + Post Mastectomy Sinistra + Wound Dehiscence	l
Post (L) MRM / Post Ooerasi Ca Mammae	2
Post Mastectomy/Ca Mammae Sinistra (dengan transfusi PRC)	I
Multiole Bilateral Breast Neoolasma (ILC)	3
Breast Cancer (IDC)	l
Breast Cancer Dextra (IDC)	3
Total	19

Based on data from 19 patients, all had breast cancer of varying types. Most cases were breast cancer without a histopathological subtype, while others were identified as invasive ductal carcinoma (IDC) and invasive lobular carcinoma (ILC). IDC was found in several patients, including one male patient, while ILC was found in several patients with bilateral involvement. Additionally, there was one case of a benign breast tumor and one case complicated by an abscess due to cancer.

Length of Patient Treatment

Based on the analysis of 19 breast cancer patients treated at Royal Prima Hospital Medan during the 2024-2025 period, it was found that the length of stay ranged from 2 to 18 days, with an average length of stay of approximately 7.5 days. Most patients were treated for 4-10 days, especially in post-mastectomy cases and patients undergoing routine chemotherapy. Patients with short lengths of stay (2-3 days) generally only underwent observation or minor procedures such as biopsies and minor excisions, while patients with medium lengths of stay (4-10 days) usually underwent major surgery such as mastectomies with dissection or vacuum drainage. Meanwhile, the longest lengths of stay (more than 20 days) were found in patients with complex complications, such as pressure sores, abscesses, or repeated hospitalizations due to surgical site infections. Overall, these data indicate that the length of stay for breast cancer patients is influenced by the severity of the disease, the type of surgery, and the presence of post-operative complications.

Study Population and Sample Characteristics

The clinical study examining breast cancer patient characteristics was conducted in September 2025 at Royal Prima Hospital Medan. The study population comprised 19 patients with confirmed breast cancer diagnoses and complete medical documentation meeting inclusion criteria. From an initial identification of 24 breast cancer patients documented within institutional records between 2020 and 2025, 19 patients satisfied predetermined inclusion criteria and provided sufficient medical record data for comprehensive analysis. Individual patient medical records underwent systematic review to extract research variables, including demographic characteristics, clinical presentation, diagnostic findings, histopathological classification, and treatment documentation. Data were subsequently analyzed utilizing SPSS software to generate frequency distributions, descriptive statistics, and characterization of the breast cancer patient population managed within the institution.

Age Distribution and Demographic Characteristics

Patient ages ranged from 20 to 71 years, with a mean age of 49.3 years and median age of 49 years, indicating a population with substantial age diversity spanning from younger adults through elderly patients (Table 1). Age group stratification revealed distinct distribution patterns, with substantial variation in cancer incidence across age categories. The pre-elderly population, defined as individuals aged 45 to 59 years, represented the largest subgroup, encompassing eight patients (42.11 percent of the total sample). This age group demonstrated substantially elevated breast cancer occurrence relative to other age categories, consistent with established epidemiological literature documenting peak breast cancer incidence in women during the perimenopausal and early postmenopausal years. Following the pre-elderly group, late adulthood patients aged 35 to 44 years comprised 26.32 percent of the population (5 patients), representing the second largest age group. Young-elderly patients aged 60 to 69 years constituted 15.79 percent of the sample (3 patients), while adolescent and young adult patients aged 12 to 25 years accounted for 10.53 percent (2 patients). Notably, only one patient (5.26 percent) fell within the elderly category of 70 to 79 years.

The concentration of breast cancer cases within the 45 to 59 year age group aligns with established pathobiological mechanisms linking prolonged estrogen exposure to malignant transformation of breast epithelium. During the perimenopausal and postmenopausal years, cumulative lifetime exposure to endogenous estrogen and related hormonal factors reaches maximal levels, thereby substantially increasing malignancy risk. The favorable prognosis observed in the pre-elderly population relative to younger and older age groups likely reflects optimal hormonal sensitivity, preserved immune function, and reduced comorbidity burden facilitating more aggressive cancer treatment approaches and better tolerance of therapeutic interventions. These findings underscore the critical importance of implementing age-stratified screening protocols targeting women beginning at age 40 to 45 years, enabling earlier disease detection at localized stages with improved treatment outcomes and survival prospects.

Gender Distribution and Sex-Specific Disease Patterns

Gender analysis of the patient population demonstrated pronounced female predominance, with 15 women (78.95 percent) compared to 4 men (21.05 percent) diagnosed with breast cancer (Table 2). This substantial gender differential substantially exceeds the baseline male to female breast cancer ratio in developed nations, where men represent approximately 1 percent of breast cancer cases, though lower

percentages occur in certain Asian populations. The female predominance reflects the pronounced role of estrogen and progesterone in driving breast epithelial proliferation and malignant transformation, with women possessing substantially greater hormone production and correspondingly elevated lifetime cancer risk relative to men. Despite the marked female predominance, the presence of four male patients in the study cohort demonstrates that breast cancer represents a disease affecting both sexes, albeit with substantially different epidemiological patterns and biological characteristics.

Male breast cancer typically presents with distinctly different clinical characteristics compared to female disease, including later age at diagnosis (median age 63.4 years versus 44 years for female disease), more advanced stage at presentation, lower histological grades, and higher prevalence of estrogen receptor positive phenotypes. Men with breast cancer generally exhibit worse overall survival compared to women at equivalent disease stages and treatment intensities, with adjusted overall mortality 19 percent higher in men than women even after accounting for demographic characteristics, disease stage, and treatment parameters. This survival disadvantage in male breast cancer appears attributable to delayed diagnosis resulting from lower clinical awareness, advanced disease stage at presentation, and potential inadequate treatment intensity. The findings in this institutional cohort emphasizing female predominance while acknowledging male cases reinforce the necessity for enhanced clinical awareness among healthcare providers and the general public that breast cancer, while predominantly affecting women, can develop in men and warrants prompt diagnostic evaluation and appropriate oncological management in both sexes.

Histopathological Classification and Disease Subtypes

Comprehensive analysis of tumor histopathology revealed considerable heterogeneity in disease classification and presentation patterns across the patient cohort (Table 3). Among 19 patients with confirmed breast cancer diagnoses, the distribution encompassed multiple histological subtypes and diagnostic categories. General breast cancer without specific histopathological subtype documentation represented the most frequent category, identified in four patients, reflecting cases where detailed pathological classification was not explicitly documented in available medical records. Invasive Ductal Carcinoma (IDC) was identified in four patients, including one male patient, comprising approximately 21 percent of the total sample. IDC represents the most common histological subtype of invasive breast cancer, accounting for approximately 70 to 80 percent of invasive breast cancers globally, and typically presents as moderately differentiated tumors with varying prognosis depending on additional pathological features and molecular characteristics. Invasive Lobular Carcinoma (ILC) was documented in three patients presenting with bilateral disease involvement, representing approximately 16 percent of the sample. ILC accounts for 10 to 15 percent of invasive breast cancers and demonstrates distinct biological behavior compared to IDC, including later age at presentation, greater propensity for bilateral disease, and higher rates of bone metastasis.

Comparative analysis of IDC and ILC in this cohort and broader literature demonstrates important biological and prognostic distinctions warranting differential therapeutic strategies. ILC patients demonstrate superior breast cancer specific survival during the initial five years following diagnosis compared to IDC patients (hazard ratio 0.71; p less than 0.001), yet exhibit substantially worse survival in later years, with hazard ratios progressively increasing from 1.30 in years 6 to 10 through 2.17 in years 16 to 20. ILC patients present with more advanced disease characteristics including higher frequencies of stage III disease, T3-T4 tumors, and positive regional lymph nodes (N2-N3 disease) compared to IDC patients, alongside higher prevalence of hormone receptor positive phenotypes. These distinct survival trajectories underscore the necessity for tailored treatment approaches specific to histological subtype, with particular attention to extended surveillance protocols in ILC patients given their late recurrence patterns.

Additional diagnostic categories identified included three patients with breast cancer complicated by concurrent conditions or post-operative states, specifically those with post-mastectomy status or cases involving wound complications such as dehiscence. Three patients presented with complications including abscess formation, acute respiratory distress syndrome, and pressure sores, representing cases with significant morbidity and complex clinical courses. One patient presented with benign breast tumor without malignant characteristics. The diversified histopathological presentations within this institutional cohort

reflect the considerable biological heterogeneity characterizing breast malignancies and underscore the necessity for comprehensive pathological assessment informing individualized treatment planning.

Surgical Management and Therapeutic Interventions

Treatment approaches across the cohort encompassed diverse surgical interventions reflecting variable disease presentations and therapeutic strategies. Comprehensive mastectomy procedures, both modified and total, represented a substantial portion of surgical interventions performed. Breast-conserving procedures including lumpectomy and limited excisions were also documented. Postoperative complication documentation indicated management of wound-related complications including dehiscence, requiring reconstructive intervention and extended hospitalization. Blood transfusion requirements, specifically packed red cell (PRC) transfusion, were documented in select patients, indicating significant intraoperative bleeding necessitating hematologic support.

The distinction between breast-conserving surgery (BCS) and mastectomy carries substantial implications for both immediate surgical outcomes and long-term oncological prognosis. Recent meta-analytic evidence demonstrates improved overall survival for patients undergoing BCS with adjuvant radiotherapy compared to mastectomy alone, with pooled hazard ratio of 0.72 (95 percent confidence interval 0.68 to 0.75, p less than 0.001). Five-year overall survival following BCS with radiotherapy approximates 92.5 percent compared to 79.8 percent following mastectomy with radiotherapy, and ten-year overall survival reaches 81.2 percent following BCS with radiotherapy versus 63.4 percent following mastectomy with radiotherapy. BCS patients demonstrate substantially reduced operative times, lower blood loss, shorter incision lengths, reduced drainage volumes and times, and shorter hospital stays compared to mastectomy patients. The overall postoperative wound complication incidence in BCS patients is significantly lower than in mastectomy patients at one month following surgery.

Postoperative Complications and Hospitalization Patterns

Duration of hospitalization ranged from two to 18 days with mean hospitalization duration of 7.5 days, demonstrating substantial variability in required inpatient resource utilization reflecting differences in disease severity, surgical complexity, and postoperative complication occurrence (Table 4). The majority of patients (approximately 58 percent) required hospitalization of 4 to 10 days, consistent with typical duration for patients undergoing major surgical procedures including mastectomy with axillary lymph node dissection or managing postoperative chemotherapy cycles. Patients with brief hospitalization durations of 2 to 3 days generally underwent minor diagnostic or surgical procedures including biopsy and limited excisional procedures requiring minimal inpatient observation.

Patients with extended hospitalization periods exceeding ten days frequently presented with complex postoperative courses including significant complications. Complication categories documented included seroma formation with accompanying hematoma, representing the most frequent postoperative complication identified in breast cancer surgical series, with reported incidence rates ranging from 15 to 90 percent depending on surgical extent and drainage management strategies. Abscesses representing surgical site infections necessitated extended antimicrobial therapy and drainage procedures. Pressure sores developing during extended hospitalization reflected immobility and nutritional complications in severely ill patients. Wound dehiscence requiring reconstructive intervention necessitated prolonged hospitalization and delayed initiation of adjuvant therapies.

Postoperative complication occurrence substantially influences hospital length of stay through multiple mechanisms. Seroma formation, while occasionally self-limited, frequently necessitates percutaneous aspiration, delayed drain removal, and extended hospitalization, with average drain duration extending from standard protocols of five to seven days to extended periods of 9.59 days in complicated cases. Surgical site infections markedly increase hospitalization duration, delay chemotherapy initiation, and substantially elevate disease recurrence and all-cause mortality. The presence of drainage devices, paradoxically, demonstrates association with elevated surgical site infection incidence through multifactorial mechanisms, necessitating careful drain management. Enhanced recovery after surgery protocols incorporating optimized perioperative pain management, early mobilization, and coordinated

multidisciplinary care have demonstrated capacity to reduce hospital length of stay by approximately 1.9 days relative to conventional perioperative management approaches, potentially reducing healthcare resource utilization while maintaining comparable oncological outcomes.

Systemic Therapy and Treatment Sequencing

Documentation within medical records indicated that patients received diverse systemic therapeutic approaches including chemotherapy administered in both neoadjuvant and adjuvant settings. Neoadjuvant chemotherapy, administered preoperatively to reduce tumor burden and facilitate surgical downstaging or convert inoperable disease to resectable status, appeared indicated in select patients with locally advanced disease presentations. Neoadjuvant chemotherapy administration avoids the necessity for mastectomy in approximately 25 percent of patients who would otherwise require total glandular removal, thereby potentially enabling breast-conserving approaches in eligible candidates. Adjuvant chemotherapy administration following definitive surgical intervention represents standard of care for patients with node-positive disease, high-grade tumors, or specific adverse prognostic features.

Assessment of pathological response to neoadjuvant chemotherapy carries major prognostic and therapeutic significance. Patients achieving complete pathologic response (pCR) following neoadjuvant chemotherapy experience substantially improved outcomes including increased disease-free survival and overall survival compared to patients demonstrating residual disease following chemotherapy. Notably, the association of pCR with reduced recurrence risk demonstrates comparable magnitude between patients receiving adjuvant chemotherapy (66 percent lower recurrence likelihood) and those not receiving additional adjuvant therapy (64 percent lower recurrence likelihood), suggesting that achieving pCR may obviate necessity for additional chemotherapy intensification in select patient populations. Response rates to neoadjuvant chemotherapy vary substantially from 15 to 30 percent depending on tumor histological type and chemotherapy regimen employed, with superior response observed in triple-negative breast cancers and HER2-positive breast cancers compared to hormone receptor positive tumors.

Clinical Implications and Institution-Specific Findings

The comprehensive characterization of breast cancer patients managed at Royal Prima Hospital Medan between 2020 and 2025 demonstrates that the institutional patient population exhibits predominantly female representation with premenopausal and postmenopausal age distributions concentrated in the 45 to 59 year age stratum. This age concentration aligns with established breast cancer epidemiology in Southeast Asian and Indonesian populations, where increased incidence occurs at approximately 10 to 15 years later than in Western populations, likely reflecting both demographic differences and reduced screening prevalence in younger age groups. The substantial presence of patients with advanced disease presentations and complex postoperative courses suggests referral patterns characteristic of tertiary cancer centers receiving patients with challenging clinical presentations requiring multidisciplinary oncological expertise. The variable histopathological presentations encompassing IDC, ILC, and unspecified breast cancer classifications reflect diverse disease biology and prognostic heterogeneity requiring individualized treatment planning.

Mean hospitalization duration of 7.5 days compares favorably to national and international benchmarks for breast cancer surgical management, though substantial variability dependent on surgical approach, complication occurrence, and systemic therapy administration suggests opportunities for further optimization through implementation of enhanced recovery protocols. The documented postoperative complications including seroma, abscess formation, and wound dehiscence reflect actual morbidity patterns observed in institutional surgical practice and emphasize the necessity for meticulous surgical technique, appropriate drainage strategies, and vigilant postoperative surveillance to minimize complication-related morbidity and prolonged hospitalization.

IV. CONCLUSION

This institutional study characterizing breast cancer patients managed at Royal Prima Hospital Medan during 2020 to 2025 identified several key findings with significant implications for clinical practice and public health surveillance in North Sumatra Province. The study population demonstrated marked

female predominance at 78.95 percent, with mean age of 49.3 years concentrated within the pre-elderly demographic stratum of 45 to 59 years, reflecting peak breast cancer incidence patterns documented in Southeast Asian populations. Histopathological analysis revealed heterogeneous disease presentations encompassing invasive ductal carcinoma, invasive lobular carcinoma, and unclassified breast cancer cases, underscoring the considerable biological diversity characterizing institutional patient presentations. Mean hospitalization duration of 7.5 days reflected variable clinical courses dependent on disease severity, surgical complexity, and postoperative complication occurrence, with documented complications including seroma formation, abscess development, and wound dehiscence substantially prolonging inpatient stays. These findings establish institutional baseline data regarding breast cancer epidemiology and treatment outcomes at a major tertiary referral center, providing critical information for understanding local disease burden patterns and informing resource allocation decisions within the healthcare system.Significant study limitations warrant acknowledgment when interpreting these findings and considering their application to broader populations.

The relatively small sample size of 19 patients, derived from initial population of 24 after application of inclusion and exclusion criteria, substantially restricts the statistical power to detect associations between variables and limits generalizability to the broader institutional patient population and regional breast cancer epidemiology. Retrospective study design inherently depends upon accuracy and completeness of medical record documentation, with potential for missing data, incomplete variable documentation, and recording errors that may bias results toward underestimation or overestimation of specific findings. Single-center design limits external validity, as patient populations at individual institutional settings reflect local referral patterns, sociodemographic characteristics, and healthcare access factors that may not be representative of regional or national breast cancer epidemiology. Prospective multicenter studies with substantially larger sample sizes should be prioritized to establish comprehensive epidemiological profiles of breast cancer across diverse institutional settings within Indonesia and Southeast Asia. Future investigations should incorporate patient-reported outcome measures assessing quality of life, psychological well-being, and functional status, addressing the patient-centered outcomes that substantially influence treatment satisfaction and long-term survival outcomes. Implementation of enhanced recovery after surgery protocols demonstrating capacity to reduce hospitalization duration while maintaining comparable oncological outcomes represents a practical intervention warranting institutional adoption to optimize resource utilization and clinical efficiency. Enhanced clinical awareness regarding breast cancer affecting both male and female populations, combined with targeted screening initiatives and public education emphasizing early detection importance, represents critical priorities for reducing disease burden and improving survival prospects among high-risk demographic groups in the North Sumatra region.

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