



FACTORS INFLUENCING ADHERENCE TO HORMONAL THERAPY IN BREAST CANCER PATIENTS: A SCOPING REVIEW

¹Mar'atus Sholihah, ²Muhamad Zulfatul A'la, ³Nurfika Asmaningrum

¹Master Student of Nursing Study Program, Faculty of Nursing, Jember University

²Faculty of Nursing, Jember University

³Faculty of Nursing, Jember University

Mar'atus Sholihah; Jember University and 242320102029@mail.unej.ac.id; 0817364246

ABSTRACT

Background: Breast cancer is the most common cancer among women worldwide, with rising incidence rates. Hormonal therapy is essential in treating hormone receptor-positive breast cancer, yet adherence remains a challenge. Non-adherence increases the risk of recurrence and negatively affects outcomes. This review explores factors influencing adherence to hormonal therapy in breast cancer patients, **Methods:** A scoping review was conducted by systematically analyzing studies published from 2015 to 2025. Literature was sourced from PubMed, Scopus, Web of Science, Google Scholar, ScienceDirect, and DOAJ using Boolean keywords: ("hormonal therapy adherence" OR "compliance") AND ("breast cancer") AND ("factors" OR "determinants") AND ("review"). Studies discussing factors affecting hormonal therapy adherence were selected based on predefined inclusion and exclusion criteria, **Results:** Sixteen studies were included. The most frequently reported influencing factors were patient-related (75%), followed by disease-related (62.5%), clinical (56.25%), and demographic (50%). Healthcare provider-related (43.75%) and family-related (37.5%) factors also played significant roles in adherence, **Conclusions:** Adherence to hormonal therapy is shaped by various interrelated factors. Comprehensive, targeted interventions are needed to improve adherence and support better quality of life and treatment outcomes for breast cancer patients.

Keywords: Adherence, Breast cancer, Hormonal therapy, Scoping review

Introduction

Breast cancer is the most common type of cancer among women worldwide. According to the Global Cancer Observatory (GLOBOCAN) data from 2020, breast cancer accounts for approximately 11.7% of all newly diagnosed cancer cases, with over 2.3 million new cases reported annually (Sung et al., 2021). In Indonesia, breast cancer is also the leading cause of cancer-related

death among women, with an incidence rate that continues to rise (RI, 2022).

The treatment of hormone receptor-positive (HR+) breast cancer typically includes adjuvant hormonal therapy or endocrine therapy. This therapy aims to suppress the effects of estrogen and progesterone, which can stimulate the growth of cancer cells (Burstein et al., 2019). The use of adjuvant hormonal therapies such as tamoxifen and aromatase inhibitors (anastrozole, letrozole, exemestane) has been proven



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effective in reducing the risk of recurrence and improving survival rates in breast cancer patients (Francis et al., 2019).

Although the effectiveness of hormonal therapy has been well documented, patient adherence to this therapy remains a significant challenge. Several studies have shown that adherence to hormonal therapy declines significantly during the first few years of treatment. A systematic review by Yussof et al (2022) reported a 25.5% decrease in adherence from the first year to the fifth year. Another study by Pourcelot et al. (2018) showed that patient adherence to hormonal therapy reached only 68.6%, with key factors for non-adherence including age, side effects of the therapy, and the presence of comorbidities.

Non-adherence to hormonal therapy can have serious consequences on patient treatment outcomes. Research shows that patients who do not complete hormonal therapy have a higher risk of breast cancer recurrence compared to those who follow the therapy as recommended by their doctor (Guedes et al., 2017; Murphy et al., 2012). Therefore, understanding the factors that influence patient adherence to hormonal therapy is crucial in order to develop more effective intervention strategies.

Several factors have been identified as influencing patient adherence to hormonal therapy. Previous research has highlighted various factors affecting adherence to hormonal therapy in breast cancer patients. However, most studies have focused more on individual, clinical, and socio-economic factors, with some psychological factors and social support being overlooked.

Research on the impact of coping strategies on adherence, as described in the article by Chatoo & Lee (2022), indicates that adaptive coping can play a significant role in improving adherence. However, this research is still limited in the context of breast cancer patients. These studies identify that drug side effects and communication with healthcare providers affect adherence rates, but few have directly linked patient coping strategies and other psychological factors to adjuvant hormonal therapy. This research gap highlights the need for further investigation into how both problem-focused and emotion-focused coping strategies can enhance adherence to adjuvant hormonal therapy in breast cancer patients, with a particular focus on psychosocial interventions and education tailored to the individual patient's condition.

Based on the various factors mentioned above, an analysis of the factors influencing adherence to hormonal therapy in breast cancer patients is necessary in order to develop more effective intervention strategies. This study aims to conduct a literature review using a scoping review approach to explore the factors affecting adherence to hormonal therapy in breast cancer patients. The results of this study are expected to provide deeper insights into the factors involved in hormonal therapy adherence, and serve as a foundation for the development of more effective intervention strategies to improve adherence rates among breast cancer patients.

Methods

This study uses a scoping review methodology, which is a systematic



approach to identify, examine, and analyze relevant literature on the factors influencing adherence to hormonal therapy in breast cancer patients. The scoping review method was chosen because it allows for a comprehensive exploration of a broad topic by identifying existing evidence, clarifying key concepts, and highlighting existing research gaps. (Peters et al., 2020).

This approach follows the framework developed by Arksey & O'Malley (2005) and updated by the Joanna Briggs Institute (JBI) for Scoping Reviews (Peters et al., 2020). The main steps in this Scoping Review include:

1. Identifying the research question, which in this case focuses on the factors influencing adherence to hormonal therapy in breast cancer patients.
2. Systematically searching the literature from various credible sources.
3. Selecting studies based on the established inclusion and exclusion criteria.
4. Extracting data that includes key information from each relevant article.
5. Analyzing and synthesizing the findings to identify patterns, research gaps, and clinical implications of the factors contributing to adherence to hormonal therapy.
6. Reporting the results following the PRISMA-ScR guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews).

Data Sources

Article searches were conducted in academic databases with broad coverage in the fields of health and oncology, including: PubMed, Scopus, Web of Science, ScienceDirect, Google Scholar, and DOAJ (Directory of Open Access Journals). These databases were chosen because they contain publications from highly reputable journals and provide access to studies that have been verified within the scientific community. The search keywords used a Boolean strategy that combined key terms related to chemotherapy adherence and the measurement tools used, such as:

("hormonal therapy" OR "hormone therapy" OR "endocrine therapy") AND ("compliance" OR "adherence" OR "medication adherence" OR "treatment adherence") AND ("breast cancer" OR "breast carcinoma") AND ("factors" OR "determinants" OR "influences" OR "barriers" OR "predictors") AND ("patient" OR "patients" OR "oncology patients" OR "cancer patients") AND ("factors influencing adherence" AND "hormonal therapy" AND "breast cancer") AND ("psychosocial factors" AND "hormonal therapy compliance") AND ("barriers to hormonal therapy adherence in breast cancer patients") AND ("economic factors" AND "hormonal therapy adherence") AND ("patient-physician communication" AND "breast cancer treatment adherence").

The researcher accessed all databases on February 24, 2025. Below is the list of database links:

Table 1. Database Links



No.	Database Name	Link
1	PubMed	https://pubmed.ncbi.nlm.nih.gov
2	Scopus	https://www.scopus.com/
3	Web of Science	https://www.webofscience.com
4	Google Scholar	https://scholar.google.com
5	ScienceDirect	https://www.sciencedirect.com
6	DOAJ	Doaj.org

The search strategy was carried out by filtering articles based on keywords and combinations of terms relevant to this study in order to obtain the most appropriate articles for the research objectives.

Inclusion and Exclusion Criteria

Inclusion criteria were established to ensure that only relevant and high-quality studies were included in the analysis. The selected studies must meet the following criteria: studies that discuss factors influencing or contributing to adherence to hormonal therapy in breast cancer patients, involving breast cancer patients with hormone receptor-positive (HR+) status undergoing adjuvant hormonal therapy at various therapy stages (early, intermediate, or advanced), conducted across different geographical settings, including populations from both developed and developing countries to obtain a broader picture of adherence, published within the last 10 years (2015–2025) to ensure the data used is still relevant to current conditions and challenges in hormonal therapy adherence, published in English or Indonesian to ensure they can be comprehended and analyzed effectively, and available in full-text format to ensure

thorough analysis. On the other hand, the exclusion criteria were used to eliminate studies that were not relevant or had methodological limitations, such as: studies that do not explicitly investigate adherence to hormonal therapy factors, such as those that only discuss the effectiveness of hormonal therapy without addressing factors affecting patient adherence, experimental studies focusing solely on clinical trials without analyzing patient adherence, studies discussing triple-negative breast cancer or other types of cancer not dependent on hormonal therapy, studies focusing only on biomarkers or biological mechanisms of hormonal therapy without addressing patient adherence, grey literature that is not validated, such as non-peer-reviewed articles, unpublished theses, or editorial opinions, and studies that are not available in English or a translatable language, as well as articles only available in abstract form or not fully accessible, preventing in-depth analysis.

Data Selection and Extraction Process

In this Scoping Review study, the data selection and extraction process was conducted systematically and rigorously to



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ensure that only relevant articles meeting the inclusion criteria were further analyzed. This process involved several key stages, including initial literature search, screening based on titles and abstracts, full-text assessment, and data extraction and synthesis. The process was carried out in accordance with the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews) guidelines, which help ensure transparency and replicability of the research methods (Tricco et al., 2018).

The first step in literature selection is a systematic search using various academic databases, such as PubMed, Scopus, Web of Science (WoS), ScienceDirect, Google Scholar, and DOAJ (Directory of Open Access Journals). The search is conducted using keywords and Boolean operators combined with variations of terms to enhance the relevance of the search results. After the initial search, the articles obtained from the different databases are compiled using reference management software like Zotero or Mendeley to avoid duplication of results and streamline the screening process.

Once the articles are collected, the next step is to filter the search results based on titles and abstracts. At this stage, the articles are evaluated to ensure that the topic and scope of the research align with the objectives of this study based on the inclusion and exclusion criteria. After screening based on titles and abstracts, the articles that pass the initial selection will undergo further analysis by reading the full text. Articles that do not provide sufficient information or

are not relevant to the focus of this study will be excluded from further analysis.

After selecting the articles that meet the inclusion criteria, the next stage is data extraction. Data extraction aims to gather key information from each article to be analyzed and compared.

Data extraction is carried out by noting the main information from each study that meets the inclusion criteria. The variables collected in the extraction table include: Article identity and characteristics, key findings from the study (e.g., primary results related to hormone therapy adherence, clinical factors affecting adherence, psychosocial factors, economic factors, patient-doctor communication factors, and research limitations), as well as the correlation with the ongoing research. To ensure consistency, data extraction is performed using a standard table designed to organize and compare the research findings systematically. All extracted data are then compared and analyzed to identify patterns and key themes contributing to patient adherence or non-adherence to hormonal therapy.

Data Analysis and Synthesis

After the data extraction is complete, the next step is to conduct thematic analysis of the collected research results. This analysis is done by categorizing the factors influencing adherence into main categories, namely: patient factors (age, psychological condition, history of previous treatments, coping strategies, and patient knowledge), disease factors (disease stage and comorbidities), clinical factors (drug side effects, type of therapy, and treatment



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duration), demographic factors (marital status, education, income, and health insurance), healthcare provider factors (patient-doctor communication and professional support), and family factors (family support, relationships with family, and social environment). The results of this analysis are then used to formulate evidence-based recommendations for improving patient adherence to hormonal therapy.

Justification for Method Selection

The Scoping Review approach was chosen because it allows for a comprehensive exploration of the factors influencing adherence to hormonal therapy among breast cancer patients, without limiting the scope to specific study designs. This method enables researchers to synthesize information from various perspectives and supports the development of evidence-based recommendations that can be utilized by healthcare professionals and policymakers to improve patient adherence to hormonal therapy. Thus, the selection of the Scoping Review method is based not only on its practicality but also on its appropriateness for the research objectives, the type of data required, and the complexity of the factors to be analyzed.

Results

The results of this Scoping Review summarize a range of factors affecting adherence to hormonal therapy in breast cancer patients. Based on a review of several studies, it was found that patient adherence to hormonal therapy tends to decline over the long term. The analysis of the collected literature revealed that no single factor determines patient adherence.

Rather, adherence results from the interaction of multiple factors, which can be categorized into six main domains: patient-related factors, disease-related factors, clinical factors, demographic factors, healthcare provider factors, and family-related factors.

The researchers used six primary search platforms for this study: PubMed, Scopus, Web of Science, Google Scholar, ScienceDirect, and DOAJ. During the identification stage, 857 articles were retrieved from all databases. These articles were then filtered to include only those published between 2015 and 2025, available in full-text format, and written in English. These criteria narrowed the selection down to 450 articles.

Further screening was conducted based on the titles and abstracts of articles deemed relevant to the research topic. Articles employing designs such as literature reviews, scoping reviews, and systematic reviews were excluded. Duplicate articles were also removed at this stage. This subsequent screening resulted in a smaller set of articles that were reviewed in more detail to ensure compliance with the inclusion criteria. In the end, 16 articles were included in the final review.

The complete PRISMA procedure is illustrated in the flow diagram below.

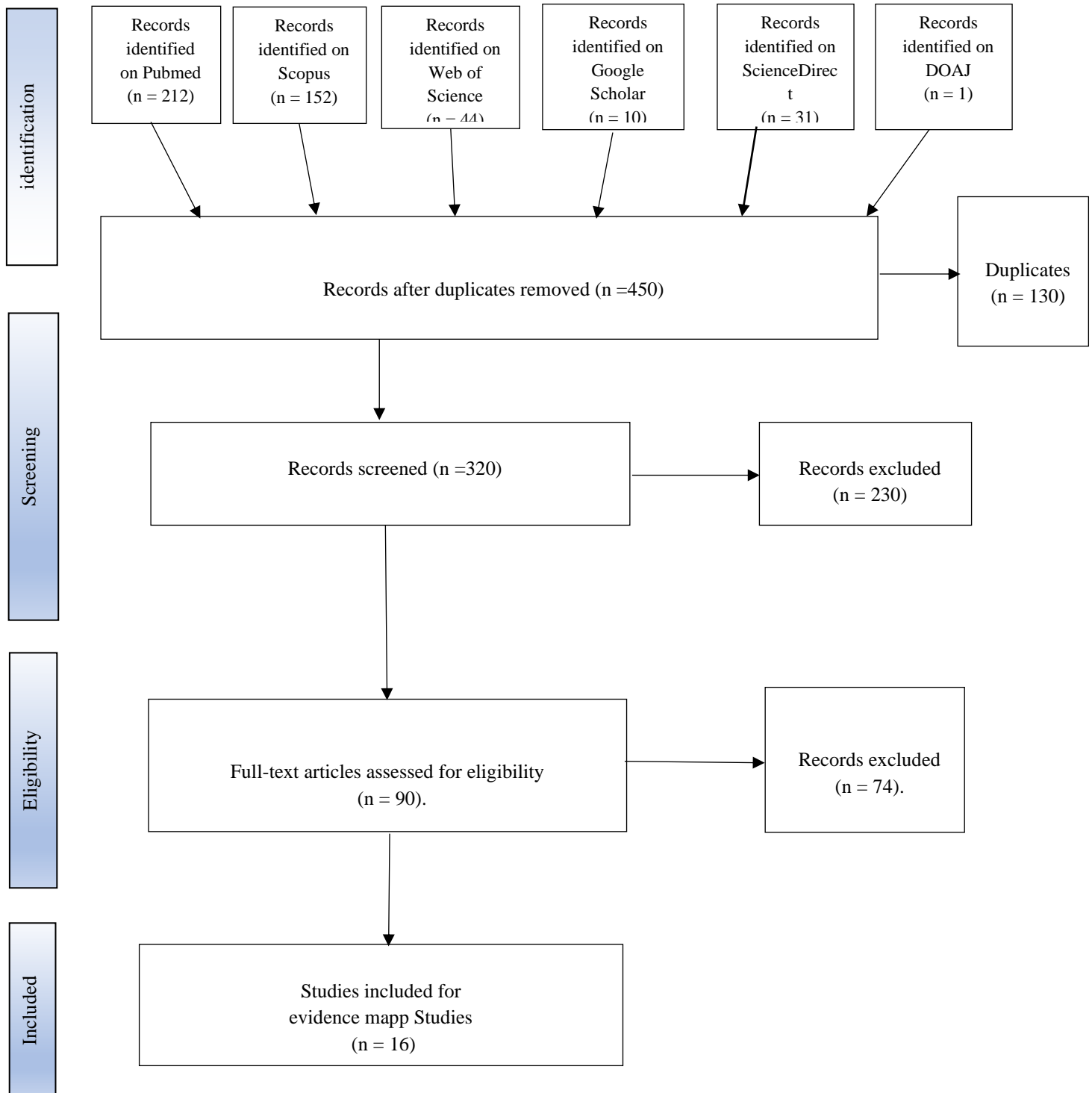


Figure 1. PRISMA Flow Diagram

During the screening phase, 230 articles were excluded due to irrelevance based on their titles and abstracts—such as studies

not focused on breast cancer, hormonal therapy, or adherence-related outcomes. At the eligibility stage, 74 full-text articles



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were excluded for various reasons, including lack of access to full text, use of non-English language, duplication, non-primary research design, and failure to address adherence factors as a core objective. The selection process was

conducted independently by two reviewers, and any disagreements were resolved through discussion or consultation with a third reviewer to maintain methodological rigor.

Table 2. Results of Literature Analysis

No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
1	Factors influencing five-year adherence to adjuvant endocrine therapy in breast cancer patients: A systematic review	International	Izzati Yussof, Nor Asyikin Mohd Tahir, Ernieda Hatah, Noraida Mohamed Shah	2022	This study aims to identify the factors influencing long-term adherence to adjuvant hormonal therapy, with observations showing a decline in adherence over five years.	Adherence theory	Systematic review	The factors influencing adherence to hormonal therapy were grouped into several categories: patient factors (age, depression, antidepressant use, and prior medications), therapy factors (type of medication, chemotherapy experience, and side effects), socioeconomic factors (marital status and treatment costs), and healthcare system factors (continuous care and routine consultations). Adherence decreased on average by 25.5% from the first year to the fifth year.
2	Influence of Patient and Treatment Factors on	USA	Catherine M. Bender, Amanda L. Gentry, Adam M.	2014	Psychological factors such as negative mood and physical	Interactionist framework	Repeated measures	The factors influencing adherence to adjuvant endocrine therapy in women



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
	Adherence to Adjuvant Endocrine Therapy in Breast Cancer		Brufsky, Frances E. Casillo, Susan M. Cohen, Meredith M. Dailey, Heidi S. Donovan, Jacqueline Dunbar-Jacob, Rachel C. Jankowitz, Margaret Q. Rosenzweig, Paula R. Sherwood, Susan M. Sereika		symptoms are associated with lower adherence to hormonal therapy.			with breast cancer include psychological conditions, medication, and social aspects. Women who experience negative moods such as depression or anxiety before starting therapy are more likely to be non-adherent to their treatment. Other factors such as disease stage and the complexity of the treatment regimen also worsen adherence, with patients who have more complicated treatments and more advanced disease being less likely to adhere. Therefore, emotional conditions and complex treatments are important predictors of patient adherence to adjuvant endocrine therapy. Adherence significantly declined during the first 18 months. Negative mood and physical symptoms were associated



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
3	Adherence status to Adjuvant Endocrine Therapy in Chinese Women with Early Breast Cancer and its influencing factors: A cross-sectional survey	China	Hui Xu, Feng Jin, Xiu-jie Zhang, Da-qiu Wang, Shao-fen Yu, Ai-ping Wang	2020	The findings show low adherence, particularly during the second and third years of treatment. Factors related to side effects, medication type, and social status are associated with adherence.	WHO adherence framework	Cross-sectional survey	with non-adherence. Factors influencing adherence and treatment persistence include the type of medication, treatment duration, side effects, age, history of radiotherapy, and the presence of a caregiver. Out of 888 patients who started therapy, 769 (86.6%) continued the therapy (persistence), while 119 (13.4%) discontinued therapy. Of the 760 patients who completed the Morisky Medication Adherence Scale, 50.6% showed high adherence, 42% moderate, and 7.4% low adherence
4	Barriers and facilitators of adjuvant hormone therapy adherence and persistence in	International	Zoe Moon, Rona Moss-Morris, Myra S Hunter, Sophie Carlisle, Lyndsay D Hughes	2017	Psychosocial factors such as social support and the patient-doctor relationship are associated with adherence..	Self-efficacy theory	Systematic review	Clinical and demographic factors such as younger age, fewer hospitalizations, and a good relationship between the patient and doctor are associated with better adherence.



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
	women with breast cancer: A systematic review							Several modifiable psychosocial factors, such as social support, self-efficacy in medication, and beliefs about the medication, were also found to be associated with adherence and treatment persistence
5	Factors associated with adherence and persistence to hormonal therapy in women with breast cancer	Brazil	Juliana Barroso Rodrigues, Maximiliano Ribeiro Guerra, Mariana Macedo Alvim, Isabel Cristina Gonçalves Leite	2017	Shows the relationship between disease severity and therapy discontinuity.	No theory explicitly mentioned	Cohort retrospective study	Multivariate analysis revealed that several clinical and demographic factors were associated with an increased risk of therapy discontinuation. Women with advanced cancer stages had 2.24 times the risk of discontinuing therapy compared to those in the early stages (HR = 2.24; 95% CI 1.45–3.45). Adherence reached 85.2%, but persistence decreased to 45.4% in the fifth year. Although the initial adherence rate was high, factors such as disease stage, surgical status, and frequency of hospitalizations need to be



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
								considered to reduce the risk of therapy discontinuation and ensure optimal therapeutic outcomes.
6	Adherence to adjuvant hormonal therapy among breast cancer survivors in clinical practice: a systematic review	International	Caitlin C. Murphy, L. Kay Bartholomew, Melissa Y. Carpentier, Shirley M. Bluethmann, Sally W. Vernon	2012	Identifies the prevalence of adherence to adjuvant hormonal therapy and the factors influencing it.	No theory explicitly mentioned	Systematic review	Factors influencing adherence and therapy persistence include: extreme age (patients who are either very young or very old), increased personal costs, continued care by general practitioners, high CYP2D6 enzyme activity, changes in therapy type, and medication side effects. The prevalence of adherence ranges from 41% to 72%, while the therapy discontinuation (non-persistence) rate ranges from 31% to 73% at the end of five years of treatment
7	Adherence to hormone therapy among women with breast cancer	Brasil	Claudia Brito, Margareth Crisóstomo Portela, Mauricio Teixeira Leite de Vasconcellos	2014	Identifies factors that increase adherence to hormonal therapy, such as age, education, and social support	No theory explicitly mentioned	Retrospective longitudinal study	Factors influencing adherence include: age, education, marital status, type of therapy, medical care, psychological care, clinical factors (disease stage), smoking habits, alcohol



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
								consumption, and continued care. This study shows that about 24% of women with breast cancer are non-adherent to hormonal therapy, putting them at risk of experiencing less optimal clinical response
8	Adjuvant hormonal therapy for early breast cancer: an epidemiologic study of medication adherence	Prancis	Charlotte Pourcelot, Emeline Orillard, Gilles Nallet, Camille Dirand, François Billion-Rey, Garance Barbier, Sarah Chouk, Samuel Limat, Philippe Montcuquet, Julie Henriques, Sophie Paget-Bailly, Amélie Anot, Loïc Chaigneau, Virginie Nerich	2018	Investigates risk factors for non-adherence among early-stage breast cancer patients	No theory explicitly mentioned	Prospective, observational, multicenter survey	Factors affecting adherence to adjuvant hormonal therapy include: the number of medications for comorbidities (more than two), age under 65, and patient management at a university hospital. This study shows that the adherence prevalence is 68.6% (95% CI: 63.1–74.0), indicating a high level of adherence.
9	Adherence to adjuvant	AS, California	Yihang Liu, Jennifer L. Malin,	2012	Examines the role of doctor-patient	Patient-Doctor	Survey with	Factors influencing adherence to adjuvant hormonal



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
	hormone therapy in low-income women with breast cancer: the role of provider–patient communication		Allison L. Diamant, Amardeep Thind, Rose C. Maly		communication in improving hormonal therapy adherence	Communication Theory	varied timing	therapy include: patient-centered communication, self-efficacy in interactions with healthcare providers (PEPPI), comorbid conditions, lack of health insurance, and side effects from hormonal therapy. Overall, the adherence rate to hormonal therapy is 88%. However, there is variation based on the quality of communication between patients and healthcare providers as well as patients' perceptions of their self-efficacy in interacting with healthcare providers
10	Potentially Modifiable Factors Associated with Adherence to Adjuvant Endocrine Therapy among Breast Cancer Survivors:	International	Kirsti I. Toivonen, Tamara M. Williamson, Linda E. Carlson, Lauren M. Walker, Tavis S. Campbell	2021	Developing modifiable factors that can improve adherence to adjuvant hormonal therapy	No specific theory mentioned	Systematic review	The two most influential factors affecting adherence to adjuvant hormonal therapy are self-efficacy and decisional balance. Other factors such as side effects, social support, the relationship with healthcare providers, and



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
	A Systematic Review							quality of life were also evaluated, but their associations were more variable and less consistent.
11	Factors associated with disease progression among hormone receptor-positive breast cancer patients treated with endocrine therapy: A 5-year cross-sectional, retrospective follow-up study	Malaysia	Nurul Sahida Rani, Mohd Shahezwan Abd Wahab, Hanis Hanum Zulkifly, Siti Hartinie Mohamad	2021	This study identifies factors influencing disease progression in HR-positive breast cancer patients undergoing hormonal therapy. A relationship was found between therapy adherence and disease progression.	This study uses the medication possession ratio (MPR) model to assess adherence.	Retrospective study with data collection over five years.	Factors related to disease progression include: advanced cancer stage, distant metastasis at initial diagnosis, Medication Possession Ratio (MPR) < 0.8 in the first year of therapy, high comorbidities, and the use of traditional and alternative medicines. The study found that 31.1% of patients experienced disease progression after one year of hormonal therapy.
12	Adjuvant endocrine therapy after breast cancer: a qualitative study of factors associated with adherence	United Kingdom	Jo Brett, Mary Boulton, Debbie Fenlon, Nick J Hulbert-Williams, Fiona M Walter, Peter Donnelly, Bernadette A Lavery, Adrienne Morgan,	2018	Factors influencing patient adherence to post-breast cancer hormonal therapy include side effects, supportive relationships, and perceptions of risk	Theories related to side effect management and the social influence on adherence.	Qualitative study with in-depth interviews with patients.	Factors influencing adherence to adjuvant endocrine therapy (AET) include: the burden of side effects, feelings of lack of support, concerns about long-term AET use, the desire to return to normal life, and perceptions of the



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
			Carolyn Morris, Eila K Watson					risk of cancer recurrence.
13	Clinical factors associated with patterns of endocrine therapy adherence in premenopausal breast cancer patients	Denmark	Kirsten M. Woolpert, Julie A. Schmidt, Thomas P. Ahern, Cathrine F. Hjorth, Dóra K. Farkas, Bent Ejlersen, Lindsay J. Collin, Timothy L. Lash, Deirdre P. Cronin-Fenton	2024	Identifying clinical factors influencing adherence patterns in hormonal therapy for premenopausal breast cancer patients	Theories of long-term adherence patterns and medication behavior analysis.	Longitudinal analysis with trajectory modeling based on cancer registry data	Several clinical factors associated with decreased adherence to AET include: cancer stage, no chemotherapy treatment, Charlson Comorbidity Index score ≥ 1 (vs. 0), and history of chronic non-cancer medication use (vs. none). Three adherence patterns were identified: high adherence (57%), slow decline (36%), and rapid decline (6.9%).
14	Clinical efficacy of combined goserelin and anastrozole in neoadjuvant endocrine therapy for premenopausal women with hormone receptor-positive	China	Xu Han, Hui Li, Shui-Ying Zhou, Sha-Sha Dong, Gang-Ling Zhang	2024	This study evaluates the efficacy of the combination of goserelin and anastrozole in premenopausal HR-positive breast cancer patients	Theories related to neoadjuvant and hormonal therapy combinations for breast cancer.	Retrospective study on 34 patients receiving a combination of goserelin and anastrozole	This study concludes that patients with complete pathology are more likely to have higher adherence. 42.86% of patients showed a stable response, with 25% achieving a complete pathological response.



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No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
	breast cancer							
15	Adherence evaluation of endocrine treatment in breast cancer: methodological aspects	Austria	Anne S Oberguggenberger, Monika Sztankay, Beate Beer, Birthe Schubert, Verena Meraner, Herbert Oberacher, Georg Kemmler, Johannes Giesinger, Eva Gamper, Barbara Sperner-Unterweger, Christian Marth, Bernhard Holzner, Michael Hubalek	2012	This study discusses methods for evaluating adherence to hormonal therapy in breast cancer patients by comparing various approaches.	Theories related to medication adherence measurement and variability in research methods.	Adherence evaluation methods using several approaches, such as self-reporting, medical records, and serum drug concentration determination	This study does not directly identify factors affecting adherence, but its results show that methodological differences in adherence measurement can impact the estimated adherence levels. The low correlation between methods suggests that factors such as patient perceptions, communication with healthcare providers, and patient understanding of therapy may play a role in reported adherence levels
16	Association of Coping Strategies and Medication Adherence: A Systematic Review	United States	Avinash Chato and Suhak Lee	2022	This study aimed to explore and illustrate the association between coping strategies and medication adherence	Lazarus and Folkman's Coping Theory	A systematic review approach was used by accessing the PubMed/MEDLINE database to identify relevant articles.	Overall, four out of five coping strategies—problem-solving/active coping, emotion-focused coping, seeking understanding, and support seeking—were positively associated with medication adherence, while



No.	Research Title	Research Location	Author(s)	Year of Publication	Research Objective	Theoretical Framework	Research Method	Research Findings
								problem avoidance was negatively associated.

Based on the analysis of the 16 articles above, the percentage distribution of various factors influencing adherence to

hormonal therapy in breast cancer patients can be determined..

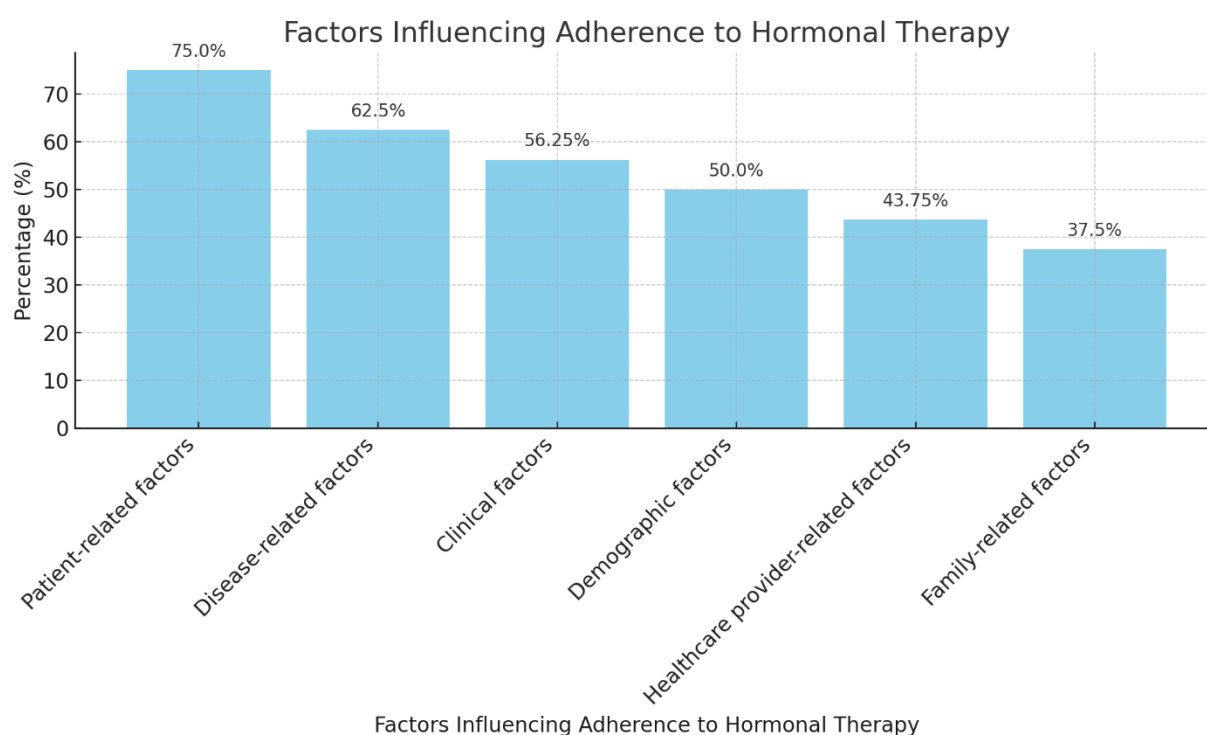


Figure 2. Percentage of Factors Influencing Adherence to Hormonal Therapy

The diagram above provides a clear overview of the prominence of each category in the review concerning adherence to hormonal therapy. The most frequently identified factor influencing adherence to hormonal therapy is patient-related factors (75%), followed by disease-

related factors (62.5%). Clinical factors (56.25%) and demographic factors (50%) also play significant roles, while healthcare provider-related factors (43.75%) and family-related factors (37.5%) contribute to supporting patient adherence to therapy.



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The following is an overview of patient-related factors as the most influential elements affecting adherence to hormonal therapy in breast cancer patients, based on 12 articles (75%) that addressed this factor.

These factors encompass various aspects of patients' conditions and behaviors that may strongly influence their compliance with the prescribed treatment.

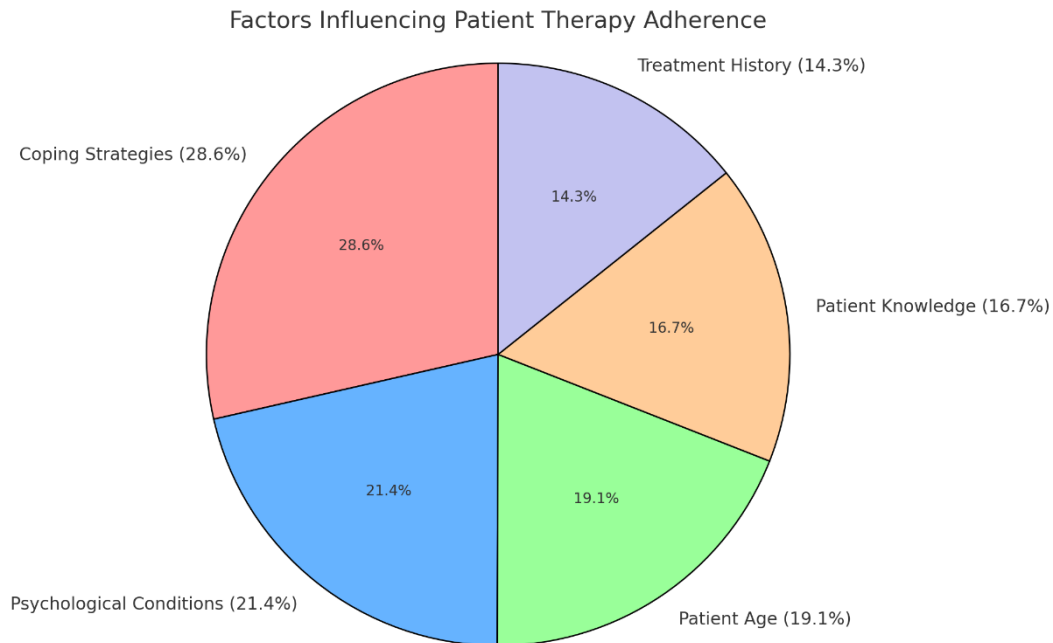


Figure 3. Percentage of Patient Factors Influencing Adherence to Therapy

Discussion

The results of this Scoping Review indicate that breast cancer patients' adherence to hormonal therapy is influenced by various interacting factors. Patient adherence to hormonal therapy significantly decreases in the first few years of treatment, as shown in a study by Yussof et al. (2022), which found a 25.5% decline in adherence during the first five years of therapy. This decline in adherence can directly impact the increased risk of breast cancer recurrence and a reduction in the therapy's effectiveness (Murphy et al., 2012). Below is a more in-depth and detailed description of the factors affecting adherence to

hormonal therapy in breast cancer patients from the literature that has been analyzed.

1. Patient-related Factors

Patient-related factors include their physical and psychological condition, as well as how they manage the stress resulting from the disease and the therapy they have to undergo. Among the 16 articles analyzed, 12 articles (75%) discussed various aspects of patient factors related to hormonal therapy adherence, including:

a. Age

Age is an important factor in adherence to hormonal therapy. Research shows that



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extreme ages, both young and old, tend to be associated with lower adherence. Younger patients often face fertility issues, concerns about quality of life, and psychological disturbances that affect their decision to continue therapy. In contrast, older patients tend to have comorbidities (other diseases besides cancer) and cognitive function problems, which can complicate long-term therapy management. Both young (<40 years) and elderly (>70 years) patients tend to have lower adherence levels, with a significant decrease in adherence observed in both age groups (Yussof et al., 2022).

b. Psychological Condition (Depression and Anxiety)

The psychological condition of patients, such as depression and anxiety, significantly influences adherence to therapy. Patients experiencing mood disorders or diagnosed with depression have lower motivation to continue treatment. Patients with anxiety or depression may neglect their medication or fail to continue therapy properly due to feeling anxious or uncertain about the benefits of the treatment. Depression and other mood disorders, such as anxiety, become significant factors influencing adherence levels. Patients with depression have low motivation to follow therapy and are more likely to discontinue hormonal therapy due to feelings of hopelessness and lack of emotional support. About 40% of patients with depression report decreased therapy adherence (Murphy et al., 2012).

Psychological issues such as depression and anxiety have a major impact on therapy adherence. Patients who experience

psychological disorders tend to feel hopeless or uncertain about the outcome of the treatment, making them less motivated to continue therapy. This is further exacerbated by concerns about possible side effects. Bender et al. (2017) stated that patients experiencing depression or anxiety are more likely to be non-compliant with hormonal therapy. Negative feelings about the treatment or low expectations regarding treatment outcomes may lead them to perceive the therapy as ineffective or too difficult to follow. Moon et al. (2017) also confirmed that ongoing anxiety about the disease or treatment can cause patients to be more likely to stop their therapy earlier. Anxious patients find it more difficult to maintain a regular and consistent medication regimen.

c. Previous Treatment History

Patients who have had positive experiences with prior medication use tend to be more compliant with therapy. This experience boosts patients' confidence in the treatment and provides a sense of control over the healing process. Patients who have undergone medical treatments before (e.g., chemotherapy or hormonal therapy) are more likely to adhere to therapy better, as explained in the article by Moon et al. (2017). Patients who have had chemotherapy previously demonstrate a 25% higher adherence rate compared to those who have not undergone chemotherapy.

d. Coping Strategies

The coping strategies employed by patients in dealing with the stress associated with treatment greatly influence their adherence to hormonal therapy. Patients with adaptive



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coping strategies, such as problem-focused coping and emotional management, are more likely to continue their therapy. In contrast, patients with maladaptive coping strategies, such as avoidance or denial, may discontinue therapy.

Chatoo & Lee (2022) stated that patients using adaptive coping strategies, such as problem-focused coping, are more likely to adhere to their hormonal therapy. These coping strategies help them focus on the benefits of the therapy and ways to address challenges that arise. Brett et al. (2022a) also emphasized that social support, particularly from family, plays an important role in improving adherence in patients using healthier emotional coping strategies. Patients who feel supported by family and friends are better able to manage stress and maintain adherence to therapy. Patients with more positive coping strategies have a 20%-40% higher adherence rate compared to those using less effective coping strategies.

e. Patient Knowledge

A patient's understanding of their disease and the importance of the therapy plays a crucial role in adherence. Patients who understand the benefits of the therapy and how it supports the healing process are more likely to comply with their treatment. Education about the disease and treatment can improve adherence, with more informed patients tending to be more compliant. About 55%-60% of the articles show that a high level of knowledge is directly related to adherence.

As shown in Figure 3, the factors influencing patient therapy adherence, with

each factor contributing differently. The most dominant factor is coping strategies (28.6%), which highlights the importance of how patients manage stress and challenges during therapy. Next, psychological conditions (21.4%) also play a significant role, where mental factors such as anxiety or depression can impact a patient's willingness to continue therapy. The patient's age (19.1%) also affects adherence, as younger or older patients may face different barriers during treatment. Patient knowledge (16.7%) becomes a significant factor, as a good understanding of the disease and therapy can enhance adherence. Finally, treatment history (14.3%) shows that the patient's experience with prior therapies can influence their attitude toward the current treatment. Overall, psychological factors and the patient's ability to cope with issues play a critical role in determining the level of adherence to therapy.

2. Disease Factors

Disease factors, especially the cancer stage and the presence of comorbidities, significantly influence adherence to therapy. Patients with advanced cancer stages or multiple comorbidities are more likely to have lower adherence to hormonal therapy. Out of the 16 articles analyzed, 10 articles (62.5%) discuss disease factors that affect adherence.

a. Disease Stage

Patients with more advanced cancer stages are more likely to stop therapy because they feel that the treatment is no longer effective or because they experience a sense of hopelessness regarding the prognosis of their disease. In contrast, patients in the



early stages of cancer are more likely to continue therapy as they have higher expectations for the success of the treatment. Guedes et al. (2017) demonstrated that patients with advanced cancer stages tend to be less compliant with hormonal therapy. Patients in advanced stages may feel that therapy will not improve their condition. Woolpert et al. (2024) also noted that patients with cancer in earlier stages are more likely to continue therapy because they have higher hopes for recovery.

b. Comorbidities

Comorbidities, or the presence of other underlying health conditions, increase the complexity of treatment and can reduce adherence to hormonal therapy. Patients with multiple comorbidities often feel overwhelmed by the treatment they are undergoing. Pourcelot et al. (2018) mentioned that patients with multiple comorbidities are more likely to be noncompliant with hormonal therapy due to the management of multiple diseases and more complex treatments. Woolpert et al. (2024) also revealed that patients with comorbidities are more likely to not follow hormonal therapy due to the more complicated nature of their treatment, which requires more time and attention.

3. Clinical Factors

Among the 16 articles analyzed, 9 articles (56.25%) discuss clinical factors that affect adherence to hormonal therapy in breast cancer patients. All of these articles provide valuable insights into the clinical factors influencing adherence to hormonal therapy, such as cancer stage, type of therapy, side effects, and other medical conditions.

a. Medication Side Effects

Side effects caused by hormonal therapy can reduce patient adherence, particularly if the side effects significantly disrupt the patient's quality of life. Moon et al. (2017) demonstrated that side effects such as fatigue and nausea are associated with lower adherence rates in patients undergoing hormonal therapy. Murphy et al. (2012) also noted that patients who experience disruptive side effects tend to discontinue therapy earlier.

b. Type of Therapy

The type of therapy administered to breast cancer patients plays a role in treatment adherence. Therapies such as tamoxifen tend to have higher adherence rates compared to aromatase inhibitors, which are often associated with more severe side effects. Guedes et al. (2017) found that tamoxifen use was more frequently associated with better adherence compared to other therapies such as aromatase inhibitors. Woolpert et al. (Woolpert et al., 2024) also reported that patients using tamoxifen showed higher adherence due to its relatively milder side effects.

c. Duration of Treatment

A longer duration of treatment can be a contributing factor to reduced adherence to hormonal therapy. Patients often experience fatigue or become weary of undergoing long-term treatment. Guedes et al. (2017) noted that prolonged treatment duration is associated with lower adherence, as patients may feel exhausted by the extended course of therapy. Brett et al. (2018) also mentioned that uncertainty regarding the duration of treatment



increases the likelihood of patients discontinuing therapy prematurely.

4. Demographic factors

Demographic factors also play an important role in adherence to hormonal therapy. Variables such as marital status, education level, income, and access to health insurance are associated with patients' adherence to treatment. Of the 16 articles analyzed, 8 articles (50%) discussed the influence of demographic factors on adherence to hormonal therapy.

a. Marital Status

Patients who are married or have a partner tend to have higher levels of adherence to therapy. Support from a spouse provides motivation and reduces the sense of loneliness that patients often experience, especially when dealing with the side effects of treatment. Brito et al. (2014) revealed that married patients tend to adhere better to therapy because they receive emotional and practical support from their partners. Liu et al. (2020) also noted that patients who are unmarried or without a partner find it more difficult to adhere to therapy, especially when lacking adequate social support.

b. Education

Patients' level of education is associated with their understanding of the importance of therapy and disease management. More educated patients tend to be more adherent to therapy because they comprehend the benefits and potential side effects of treatment and are better able to follow medical instructions. Brito et al. (2022b) showed that women with higher

educational levels were more likely to adhere to hormonal therapy. They have a better understanding of their illness and treatment, which makes them more disciplined in following the treatment schedule. Moon et al. (2017) also noted that patients with higher education were more capable of understanding the medical information provided by doctors, which helps them adhere to therapy more effectively.

c. Income and Health Insurance

Patients with low income or without health insurance are more likely to be non-adherent to hormonal therapy. High treatment costs or the inability to access medications can hinder adherence. Liu et al. (2017) stated that patients without health insurance or with low income tend not to adhere to hormonal therapy because they cannot afford the necessary medications or treatment costs. Pourcelot et al. (2018) also showed that patients without health insurance had lower adherence to hormonal therapy, as financial barriers often become a significant obstacle.

5. Healthcare Provider Factors

Out of the 16 articles analyzed, 7 articles (43.75%) discussed healthcare provider factors influencing adherence to hormonal therapy in breast cancer patients. These articles consistently emphasize the critical role of healthcare providers, particularly in effective communication, side effect management, and emotional support, to improve adherence to hormonal therapy in breast cancer. Effective communication between patients and healthcare professionals, along with the support provided by medical staff, plays a vital role



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in the level of adherence to hormonal treatment.

a. Patient–Doctor Communication

Good communication between patients and doctors is essential to ensure that patients understand their treatment and feel supported throughout the process. Patients who receive clear and comprehensive explanations are more likely to adhere to therapy. Liu et al. (2022) showed that effective communication between patients and doctors enhances adherence to therapy. Patients who feel their doctors understand their concerns are more likely to follow the recommended treatment. Moon et al. (Moon, Moss-Morris, et al., 2017) also stated that physicians who provide detailed explanations about the side effects and benefits of therapy can improve patient adherence.

b. Professional support

Ongoing professional support from both doctors and nurses enhances patients' trust in the treatment and helps them adhere to the therapy more consistently. Brito et al. (2014) demonstrated that patients who received continuous professional support from medical personnel were more likely to adhere to hormonal therapy. Murphy et al. (2012) also confirmed that support from a competent medical team helps patients continue therapy even when facing challenges.

6. Family Factors

Out of the 16 articles analyzed, 6 articles (37.5%) discussed family-related factors in adherence to hormonal therapy among breast cancer patients. All of these articles emphasized the crucial role of family

support in improving adherence to hormonal therapy in breast cancer patients.

a. Family Support

Support from family members—particularly spouses and children—is vital in maintaining adherence to hormonal therapy. Patients who receive strong family support feel more motivated and are better able to cope with the challenges of treatment. Brett et al. (2018) demonstrated that family support increases patients' motivation to adhere to hormonal therapy and manage its side effects. Liu et al. (2022) also noted that emotional support from family members can strengthen patients' determination to continue therapy despite any obstacles that may arise.

b. Relationships with Family and Social Environment

Relationships with family and the broader social environment—such as close friends or support groups—have a significant impact on patients' adherence to therapy.

Conclusion

This review reveals that adherence to hormonal therapy among breast cancer patients is influenced by various key factors, including patient-related factors, demographic factors, disease-related aspects, the role of healthcare providers in offering emotional support and effective communication, family support, and the patients' clinical condition—all of which affect the patients' decision to continue therapy. These factors are interrelated and collectively contribute to the level of adherence to hormonal therapy.



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This review also has some limitations. The inclusion of only English-language studies and publications from 2015 to 2025 may have excluded relevant research published in other languages or outside this time range. Additionally, this scoping review did not include a formal assessment of methodological quality of the included studies, which may influence the interpretation of results. Despite these limitations, the review provides a useful synthesis of factors influencing adherence and a foundation for future research.

Based on these findings, it is recommended to implement concrete actions in clinical settings, such as enhancing patient-provider communication, providing individualized counseling, strengthening family involvement, and ensuring long-term follow-up. These efforts may help patients manage treatment side effects and expectations, thereby improving adherence, quality of life, and treatment outcomes.

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