



Treatment Adherence in Low Back Pain Self-Management Care: A Concept Analysis Using the Walker and Avant Method

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Abstract

One of the musculoskeletal conditions that can affect physical function, work productivity, and quality of life is low back pain (LBP). Management of LBP commonly requires individuals to continue recommended care and self-management activities beyond healthcare settings. However, treatment adherence in the context of LBP self-management has not always been conceptually distinguished from related constructs. This study aimed to clarify the concept of treatment adherence in self-management of LBP by identifying its defining attributes, antecedents, consequences, and empirical referents. A concept analysis was conducted using the Walker and Avant framework. A literature search was performed in PubMed, ScienceDirect, and Web of Science selected for their relevant biomedical, clinical, and health-care coverage. Publications from 2020 to 2025 were screened using MeSH terms and keywords. The literature was examined for descriptions of adherence, self-management behaviors, treatment implementation, and maintenance of recommended care in people with LBP. Eligible English full-text articles were synthesized following Walker and Avant, with PRISMA used to report the screening process. Nine relevant studies were identified and analyzed. The defining attributes of treatment adherence were active involvement and personal responsibility. Antecedents included knowledge and understanding of the condition and treatment goals. Consequences included improved symptom control, physical function and activity, maintenance of self-management behaviors, and potentially reduced healthcare utilization. Empirical referents included observable implementation and maintenance of recommended behaviors, exercise participation, activity management, medication use when prescribed, and clinical or functional outcomes. Treatment adherence in self-management of low back pain is a sustained behavioral process characterized by active engagement, consistency, maintenance of recommended treatment behaviors, self-efficacy, and motivation, providing a clear conceptual basis for nursing practice and future adherence measurement.

Keywords: Concept Analysis, Low Back Pain, Self-Management, Treatment Adherence.

INTRODUCTION

Nowadays, the complexity of human physical activity often gives rise to various complaints and reduces physical condition, thus disrupting productivity. One of the most common complaints is low back pain (LBP). LBP is a condition that can be leading cause of disability in worldwide, affecting approximately 619 million people in 2020 and projected to increase to 843 million cases by 2050 as the population grows and ages (WHO, 2023). Low back pain often occurs in productive age groups and



also in women (Zhang et al., 2025). Most cases are non-specific, requiring an effective long-term management approach (WHO, 2023). Data from the Indonesian Neurology Association (PERDOSSIS) at 14 teaching hospitals showed that 4,456 LBP sufferers experienced pain out of a total of 819 visits (Maryanti et al., 2025; Nur et al., 2024). A study by Vraa et al (2022) stated that 72.3% of individuals with LBP experienced activity limitations that impacted quality of life.

Within Orem's self-care perspective, individuals are viewed as having capacities and responsibilities to perform actions that maintain health and functioning. In the context of LBP, treatment adherence can be understood as the extent to which individuals consistently implement recommended self-care and self-management activities as part of ongoing care (Alligood, 2018). From a nursing philosophy perspective, treatment adherence in LBP self-management can be examined through the ontological, epistemological, and axiological dimensions. Ontologically perspective, individual is viewed as an active person who participates in carrying out recommended care. Epistemologically, adherence is influenced by knowledge, clinical evidence, patient experience, education, and understanding of treatment goals. Axiologically, autonomy, responsibility, participation, and partnership with healthcare professionals are important because nursing care should support individuals to sustain appropriate care behaviors (Nkhata et al., 2022).

In nursing practice, treatment adherence in LBP self-management involves the individual's willingness and ability to implement recommended behaviors, maintain them over time, monitor responses, and seek professional support when needed. Thus, adherence is related to self-management but should not be treated as synonymous with the broader self-management concept. It also helps people keep up with taking care of themselves and sticking to good habits for health.

METHODS

This study uses a concept analysis design with the Walker and Avant (2019) method to clarify and define the concept of treatment adherence in the context of self-management for patients with LBP. The analysis followed eight steps: (1) selection of the concept; (2) determination of the purpose of analysis; (3) identification of all uses of the concept across the literature; (4) determination of defining attributes; (5) identification of a model case; (6) identification of borderline, related, contrary, and invented cases; (7) examination of antecedents and consequences; and (8) identification of empirical referents that provide observable evidence of the concept (Tang et al., 2024).

Search Strategy

A literature search was conducted to identify how treatment adherence is described in the context of self-management among individuals with low back pain (LBP). Data were obtained from two databases, PubMed, ScienceDirect, and Web of Science (WOS) which were selected because they are relevant to biomedical, clinical, and health-care literature aligned with the focus of this concept analysis. The literature search included publications published from 2020 to 2025, using a combination of Medical Subject Headings (MeSH) terms and keywords (Indrayani et al., 2026) related to treatment adherence, concept analysis, low back pain and self-management as presented in Table 1. Articles were considered eligible if they were published in English, available in full text, and relevant to treatment adherence, implementation, or maintenance of recommended care among individuals with LBP. The retrieved literature was subsequently screened and synthesized according to the Walker and Avant concept-analysis framework. The PRISMA flow diagram was used to transparently describe the literature identification and screening processes, while Walker and Avant remained the primary methodological framework guiding the concept analysis (Haddaway et al., 2022).



Table 1. Search terms and algorithms for the database

Database	Syntax Search Strategy
PubMed	("treatment adherence" OR adherence OR compliance) AND ("low back pain" OR LBP) AND ("self-management" OR "self-care")
Science Direct	("treatment adherence" OR "treatment compliance" OR "treatment compliance") AND ("low back pain" OR "chronic low back pain") AND ("self-management" OR "self-care")
Web Of Science	("treatment adherence" OR "exercise adherence") AND ("low back pain" OR "chronic low back pain") AND "self-management"

Data Analysis

Reference management and duplicate removal using Mendeley, and two researchers independently screened titles and abstracts to ensure eligibility. The reviewed articles were then synthesized into a research synthesis as shown on Table 2. Conceptual data were systematically extracted and synthesized according to Walker and Avant's framework and interpreted within the dimensions of nursing philosophy: ontological, epistemological, and axiological, emphasizing a holistic human perspective, evidence-based knowledge, and patient autonomy. Because this study was based on a secondary analysis of publicly available literature, ethics approval was not required, and no statistical tests were applied.

RESULTS

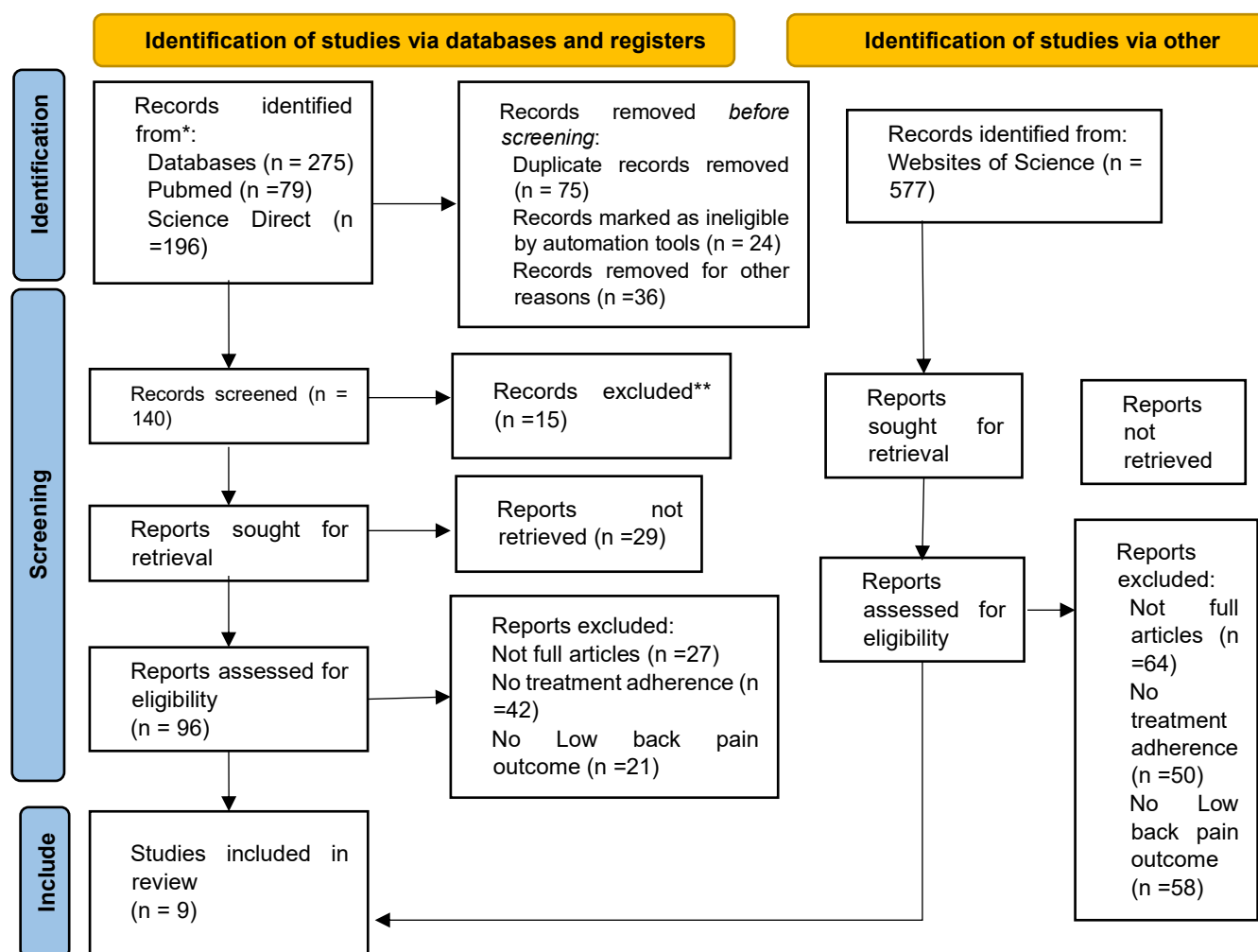


Figure 1. Prisma 2020 of Concept Analysis Avant Method

The selection process is illustrated in Figure 1. Total article that identified from the PubMed (n = 1,153) and ScienceDirect (n = 571) databases were 1,724. After removing 521 duplicate article records resulting from repeated searches, 1,203 articles remained and were screened based on titles and abstracts. At this stage, 980 articles were excluded for irrelevance to the research question. Subsequently, 223 articles were assessed for full-text retrieval; however, 150 articles were unavailable, leaving 73 full-text articles for eligibility assessment. During the eligibility phase, 73 full-text articles were reviewed in detail, of which articles were excluded due to incomplete texts (n = 23), interventions not addressing self-management (n = 20), and outcomes not focused on low back pain (n = 21). Ultimately, nine articles met the inclusion criteria and were analyzed to identify the defining attributes, antecedents, and consequences of the self-management concept in patients with LBP. The analysis identified key elements of the concept, including concept usage, defining attributes, model cases, borderline cases, related cases, contrary cases, antecedents, and consequences. The analysis of nine literature article on the Table 2.

Table 2. Analysis of literature

Authors	Design	Definition	Defining attributes	Antecedents	Consequences	Empirical referents
Söderlund & von Heideken Wågert, 2021	Scoping review	Adherence is defined as the extent to which individuals follow and maintain recommended self-management behaviors over time	Ability to comply with treatment; Consistency of behavior; Self-efficacy; Motivation	Education, supervision, readiness to change, social support	Sustained self-management behavior; Improved pain outcomes	Attendance rates; Follow-up outcome measures
de Campos et al., 2020	Randomized controlled trial	Adherence is reflected in continued performance of prescribed self-management exercises and education	Consistency on treatment plan; Maintenance over time	Recent recovery from LBP; Education and exercise prescription	Reduced care seeking; Prevention of recurrence	Time to recurrence; Self-report follow-ups
Nkhata et al., 2022	Quantitative (pre-post study)	Adherence involves activation and willingness to self-manage back pain using evidence-based strategies	Motivation; Self-efficacy; Active participation	Beliefs about back pain; Knowledge deficits	Improved self-management activation; Positive belief change	Patient Activation Measure; Self-report questionnaires
Pfeifer et al., 2025	Cohort study	Adherence is the completion of recommended exercise sessions	Consistency; treatment completion; sustained engagement.	Pain changes; physical condition; exercise level; psychosocial factors.	Not directly examined.	Training logs; adherence diaries; percentage of completed /scheduled

Table 2. Analysis of literature

Authors	Design	Definition	Defining attributes	Antecedents	Consequences	Empirical referents
Kongsted et al., 2021	Narrative review	during treatment. Adherence refers to patients' ability to integrate self-management strategies into everyday life	Collaboration with healthcare providers; Self-efficacy; Behavior regulation	Patient-clinician partnership; Education	Improved functional outcomes; Patient empowerment	sessions; $\geq 70\%$ adherence. Clinical follow-up outcomes
Jung & Kim, 2023	Quantitative (SEM analysis)	Adherence is defined as sustained self-management behavior supported by self-efficacy and illness perception	Self-efficacy; Active participation; Internal health control	Illness perception; Knowledge; Motivation	Reduced pain recurrence; Improved quality of life	Self-management behavior scales
Geraghty et al., 2020	Randomized controlled trial (protocol)	Adherence is reflected in engagement with digital self-management interventions	Consistency; Self-monitoring; Motivation	Access to digital tools; Professional support	Reduced disability; Improved self-management	RMDQ; Pain intensity scales
Koppenaal et al., 2023	Cross-sectional study	Treatment adherence in self-management LBP is reflected through patient activation, defined as the knowledge, skills, and confidence to manage one's health and healthcare	Self-efficacy; Patient activation; Active engagement; Ability to maintain self-management behaviors	Adequate self-efficacy; Health literacy; Psychological readiness; Individual characteristics (e.g., education level)	Improved self-management capacity; Better pain management; Potential improvement in functional outcomes	Patient Activation Measure (PAM-13); Self-efficacy scales; Pain intensity (NRS); Functional status (ODI)

Concept Selection

Treatment adherence was selected as the concept for analysis because management of LBP frequently requires individuals to implement and maintain recommended care behaviors outside healthcare settings (Kongsted et al., 2021; Oliveira et al., 2012). The literature uses overlapping terms such as self-management, self-care, adherence, compliance, self-efficacy, and maintenance behavior. Clarifying treatment adherence is therefore important to distinguish the act of implementing and



sustaining recommended care from the broader process of self-management. In this analysis, self-management is treated as the broader context in which treatment adherence occurs.

Determine The Purpose of Analysis

The purpose is to review literature and clarify the meaning and scope of treatment adherence in LBP self-management and to identify the defining attributes, antecedent, consequences, and empirical referent. The analysis also aims to distinguish treatment adherence from related concepts, particularly self-management, self-care, self-efficacy, motivation, and patient activation, so that the term can be used more consistently in nursing practice and research.

Identify All Uses the Concept of Treatment Adherence in Low Back Pain Self-Management Care

Walker and Avant's concept of treatment adherence analysis involve identifying defining attributes. A defining attribute describes the characteristics associated with and representing a concept. Through a literature review, the concept of treatment adherence was analyzed, resulting in the identification of defining attributes, antecedents, consequences, and empirical references.

Determining and Defining Attributes

Walker and Avant's concept analysis identifies defining attributes as the characteristics that consistently describe and distinguish a concept. Based on the reviewed literature, treatment adherence in low back pain self-management care is characterized by the following attributes:

1. Consistency and maintenance of self-management behavior: Treatment adherence is characterized by the ability to consistently follow and maintain recommended self-management behaviors over time. This includes regularly performing prescribed exercises, completing treatment sessions, and maintaining the treatment plan in daily life (Söderlund & von Heideken Wågert, 2021; de Campos et al., 2020; Pfeifer et al., 2025).
2. Active participation and personal responsibility: Treatment adherence involves patients actively participating in managing their low back pain rather than passively following treatment instructions. This includes taking responsibility for self-management, applying recommended strategies, and integrating self-management activities into everyday life (Nkhata et al., 2022; Kongsted et al., 2021).
3. Self-efficacy and motivation: Confidence in one's ability to perform self-management activities and motivation to continue treatment are important characteristics of treatment adherence. Patients with greater self-efficacy and motivation are more able to sustain self-management behaviors and remain actively engaged in their care (Nkhata et al., 2022; Jung & Kim, 2023; Koppelaar et al., 2023).
4. Adherence to the prescribed treatment regimen: Treatment adherence includes following the recommended frequency, dosage, and duration of prescribed exercises. Adherence is therefore determined not only by whether patients exercise, but also by whether they perform the exercises according to the prescribed treatment plan (Moelands et al., 2025).
5. Self-monitoring and engagement with treatment support: Treatment adherence also involves monitoring one's treatment behavior and maintaining engagement with available support, including healthcare professionals and digital self-management interventions. Collaboration and ongoing support can facilitate the continuation of self-management behaviors (Kongsted et al., 2021; Geraghty et al., 2020).

Identify a Model Case

In the following case, all defining attributes of treatment adherence were included. Mrs. S, a 52-year-old female administrative staff member, had a six-month history of low back pain caused by prolonged poor sitting posture and limited physical activity. a home-based exercise program by a physiotherapist. The patient performs the recommended exercises according to the prescribed frequency and dosage, completes the scheduled sessions, and consistently continues the exercise



program at home. The patient actively participates in managing the condition, monitors pain and exercise progress, and takes responsibility for maintaining the treatment plan in daily life. The patient also has confidence in performing the exercises correctly and remains motivated to continue the program despite occasional fluctuations in pain. After six weeks, pain intensity decreased significantly, and the patient was able to maintain her independence.

Identify Borderline, Related, Contrary Cases

Borderline Case

Borderline cases contain most of the defining attributes of the concepts being examined. In the following cases, the most defined attributes of treatment adherence were included. Mrs. S, a 52-year-old woman, with chronic low back pain performs the prescribed home exercises regularly but does not always follow the recommended frequency and dosage. The patient is motivated and participates actively in self-management but occasionally skips exercise sessions when experiencing increased pain or being busy with daily activities. The patient therefore demonstrates consistency, active participation, and motivation, but does not fully maintain the prescribed treatment regimen. This case represents a borderline case because several attributes of treatment adherence are present, but they are not demonstrated consistently.

Related Cases

Related cases are those that are similar to the concept being studied but are not themselves a concept. In this case, adherence to care is understood as adherence to medication use, with the primary attribute being the patient's ability to take medications as prescribed. Mrs. R, is 42-year-old hospital laboratory staff member, had experienced low back pain for more than six months. After receiving education from a physiotherapist, she began to implement several self-management strategies, including regular back stretching, improving work posture, and seeking routine consultations during pain exacerbations. She also attempted to reduce reliance on passive therapies and became more active in regulating daily activities. However, her engagement was not fully consistent; when workload increased, she often discontinued self-directed exercises and reverted to using analgesics. Her intrinsic motivation fluctuated, with periods of good adherence followed by times of reduced commitment. This represents a related case because it is associated with treatment participation but does not encompass all defining attributes of treatment adherence in LBP self-management care.

Contrary Case

In the following case, defining attributes of treatment adherence were not included. Mr. Brown is A 50-year-old man with low back pain completely delegated pain management to healthcare professionals and did not actively engage in self-care. He refused to perform self-directed exercises, made no modifications to activities that triggered pain, and relied solely on analgesic medication whenever symptoms occurred without following the education or recommendations provided. The patient showed no motivation to learn self-management strategies and frequently discontinued therapy without clear reasons. This case represents the absence of treatment adherence, as the defining attributes of consistency, active participation, motivation, adherence to the prescribed regimen, and self-monitoring are not demonstrated.

Identify Antecedents and Consequences

Antecedents

According to Walker and Avant's concept-analysis framework, antecedents are events or conditions that must occur before the concept can occur (Tang et al., 2024). Based on the reviewed literature, treatment adherence in LBP self-management is preceded by several factors precede treatment adherence in LBP self-management care. Education and knowledge provide patients with an understanding of self-management strategies and the importance of following the recommended

treatment plan. Self-efficacy, motivation, and readiness to change also support patients' willingness and confidence to participate actively in self-management. In addition, social support, professional supervision, and patient-healthcare provider collaboration facilitate adherence by providing guidance and continued support during treatment (Söderlund & von Heideken Wågert, 2021; Nkhata et al., 2022; Kongsted et al., 2021).

Other antecedents include health literacy, illness perceptions, psychological readiness, and access to professional or digital support, which may facilitate patients' ability to understand, initiate, and maintain self-management behaviors. The prescribed characteristics of treatment, particularly exercise frequency and dosage, are also relevant to adherence, as higher prescribed frequency and dosage were associated with lower adherence (Moelands et al., 2025; Jung & Kim, 2023; Geraghty et al., 2020; Koppenaal et al., 2023).

Consequences

According to Walker and Avant's concept-analysis framework, consequences are events or outcomes that occur as a result of the occurrence of the concept. Based on the reviewed literature, treatment adherence in LBP self-management that treatment adherence is associated with sustained self-management behavior and greater patient engagement in managing LBP. Adherence may also be accompanied by improved pain outcomes, reduced pain recurrence, better pain management, and improved functional outcomes (Söderlund & von Heideken Wågert, 2021; Jung & Kim, 2023; Koppenaal et al., 2023). Other reported consequences include reduced disability, improved self-management capacity, patient empowerment, and positive changes in beliefs about LBP. Continued adherence to self-management strategies has also been associated with reduced care-seeking and prevention of recurrence (de Campos et al., 2020; Nkhata et al., 2022; Kongsted et al., 2021; Geraghty et al., 2020).

In summary, the antecedents of treatment adherence are mainly related to education and knowledge, self-efficacy and motivation, readiness to change, social and professional support, health literacy, and appropriate treatment conditions, while its reported consequences include sustained self-management, improved pain and functional outcomes, reduced disability and recurrence, and greater patient empowerment.

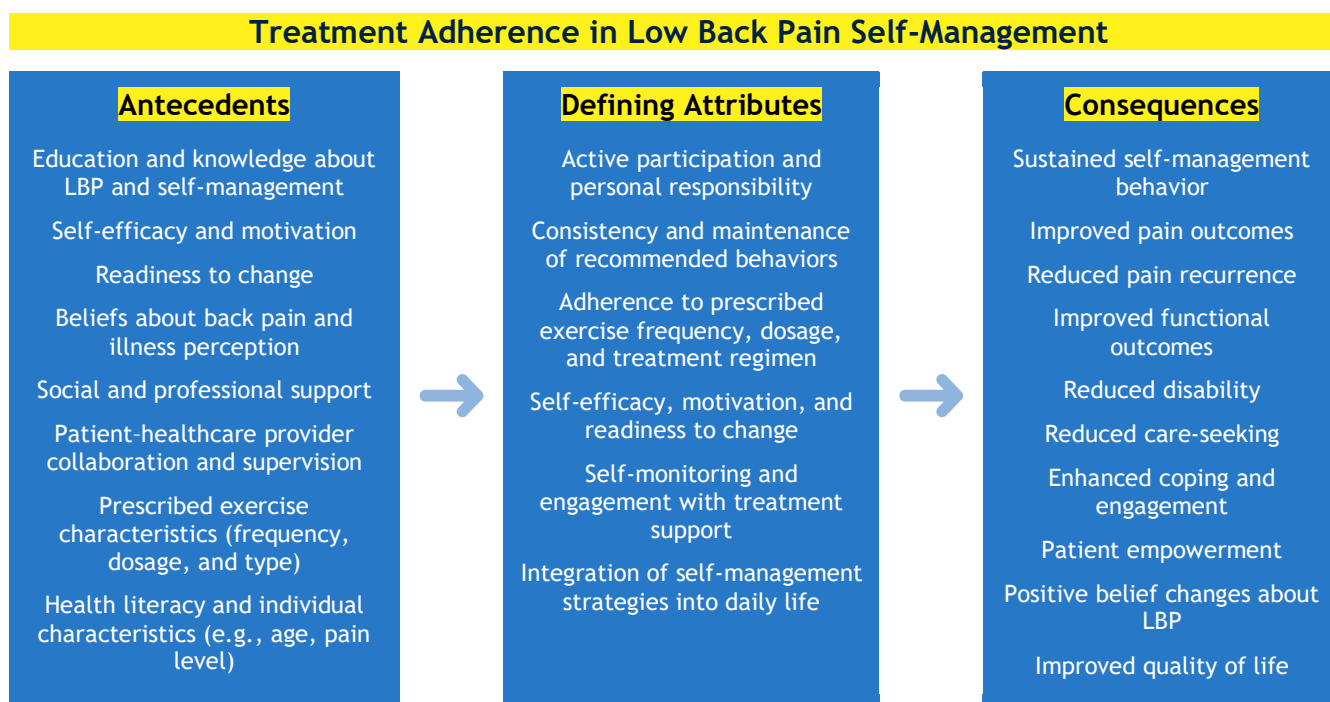


Figure 2. Conceptual Framework

Empirical Reference Definition

Based on Walker and Avant's adherence concept, an empirical reference is an indicator that represents a concept in practice (Tang et al., 2024). Treatment adherence can be identified through exercise adherence scores, attendance rates, training logs, adherence diaries, and the percentage of completed compared with scheduled exercise sessions. Self-management behavior, patient activation, and self-efficacy can also provide measurable evidence of patients' engagement in managing their condition (Söderlund & von Heideken Wågert, 2021; Nkhata et al., 2022; Koppelaar et al., 2023). More specifically, adherence may be measured using the Exercise Adherence Scale (0-100), repeated assessment of adherence during physiotherapy sessions, and documentation of completed exercise sessions. Training logs and adherence diaries can also be used to calculate the proportion of completed versus scheduled sessions, with a $\geq 70\%$ threshold used to classify adherence in one study (Moelands et al., 2025; Pfeifer et al., 2025). Therefore, the empirical referents of treatment adherence in LBP self-management care include Exercise Adherence Scale scores, training logs, adherence diaries, attendance rates, completed-to-scheduled exercise-session percentages, patient activation measures, and self-management behavior or self-report scales (Söderlund & von Heideken Wågert, 2021; Nkhata et al., 2022; Pfeifer et al., 2025; Koppelaar et al., 2023).

DISCUSSION

This concept analysis clarifies the meaning of treatment adherence in self-management of low back pain (LBP) using the Walker and Avant method. The analysis indicates that treatment adherence should be understood as a behavioral component of LBP self-management. Walker and Avant's approach is particularly useful for distinguishing a concept from related concepts by identifying its defining attributes, antecedents, consequences, and empirical referents (Tang et al., 2024), particularly in nursing disciplines over decade (Indrayani et al., 2026).

The analysis indicates that adherence is not simply completing an exercise session. Patients are expected to follow the recommended frequency, dosage, and treatment plan, while maintaining participation during the treatment period. Adherence is particularly important when patients continue exercises independently outside professional supervision (Moelands et al., 2025; Pfeifer et al., 2025). Several antecedents support treatment adherence, including education, knowledge, self-efficacy, motivation, readiness to change, social support, professional supervision, and collaboration with healthcare providers. Health literacy, illness perception, and psychological readiness may also influence patients' ability to initiate and maintain self-management behaviors (Söderlund & von Heideken Wågert, 2021; Nkhata et al., 2022; Kongsted et al., 2021; Jung & Kim, 2023; Koppelaar et al., 2023).

The consequences associated with treatment adherence include sustained self-management, improved pain and functional outcomes, reduced disability or recurrence, and greater patient empowerment. Positive changes in beliefs and improved self-management capacity have also been reported (de Campos et al., 2020; Nkhata et al., 2022; Kongsted et al., 2021; Geraghty et al., 2020). The empirical referents demonstrate that treatment adherence can be assessed using attendance rates, training logs, adherence diaries, completed-to-scheduled exercise sessions, Exercise Adherence Scale scores, and self-management or patient activation measures. These indicators provide observable evidence of whether patients maintain the recommended treatment behaviors (Söderlund & von Heideken Wågert, 2021; Moelands et al., 2025; Pfeifer et al., 2025; Nkhata et al., 2022). Overall, the findings clarify that treatment adherence in LBP self-management care is the sustained and active engagement of patients in recommended self-management behaviors, performed consistently and according to the prescribed treatment regimen. This definition distinguishes treatment adherence from simple treatment attendance because it includes the behavioral,



motivational, and self-management aspects required to maintain treatment over time. Using the method of Walker and Avant (2019), adherence to care can be more fully understood and used as a basis for designing self- management nursing interventions for LBP patients.

Implications for Nursing Practice

For nursing practice, treatment adherence should be assessed based on actual implementation and maintenance of recommended behaviors, rather than knowledge of treatment recommendations alone. Nurses can strengthen adherence by addressing self-efficacy, motivation, readiness, knowledge, and perceived barriers through individualized education, goal setting, follow-up, and collaborative communication. This approach positions nurses as facilitators of sustained treatment and patient independence rather than merely providers of treatment information.

Study Limitation

This study was limited by the restricted number of databases searched, which may have resulted in some relevant studies being missed. However, the search included literature published up to 2025 to incorporate recent evidence on treatment adherence in LBP self-management care. The use of relevant keywords, synonyms, and predefined inclusion and exclusion criteria was applied to minimize the risk of missing relevant evidence. Future studies should expand the number of databases and use broader search strategies to provide more comprehensive evidence and further validate the concept of treatment adherence in LBP self-management care.

CONCLUSION

This concept analysis clarifies treatment adherence in self-management of low back pain (LBP) using the Walker and Avant method. Treatment adherence is characterized by active engagement, personal responsibility, consistency, maintenance of recommended treatment behaviors, self-efficacy, and motivation. The identified antecedents include knowledge, education, readiness, health literacy, psychological factors, and social or professional support, while the consequences include sustained treatment behavior, improved pain and functional outcomes, reduced recurrence, and improved quality of life. The empirical referents include treatment implementation, consistency, continued participation, follow-up, and maintenance of recommended behaviors. These findings provide a clearer conceptual foundation for understanding and assessing treatment adherence in LBP self-management and support the development of adherence-focused nursing interventions.

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