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DITERMINANT FACTORS OF HEMODIALYSIS COMPLIANCE IN CKD PATIENTS IN THE HOSPITAL: A SYSTEMATIC REVIEW

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ABSTRACT
Chronic kidney disease (CKD) is a global health problem with increasing prevalence, particularly in end-stage patients requiring renal replacement therapy in the form of hemodialysis. The success of hemodialysis is greatly influenced by patient adherence to the treatment regimen, including dialysis attendance, fluid restriction, diet, and medication use. However, patient adherence remains variable and tends to be low, particularly with regard to diet and fluid restriction. This study aims to identify and analyze the determinant factors that influence the compliance of CKD patients in undergoing hemodialysis in hospital. This study used a systematic review with PRISMA guidelines. A literature search was conducted through electronic databases covering the period 2015–2025. Literature searches were obtained from Google Scholar, Semantic Scholar Proquest, and ScienceDirect . The keywords used were CKD, hemodialysis , determinant factors, adherence, hospital . Of the 1,145 articles obtained, 10 met the inclusion criteria and were subjected to further analysis. The results of the study showed that the dominant factors influencing patient compliance were economic factors (p = 0.009) , patient knowledge and education (p = 0.001) , and family support (p = 0.000) . In addition, the factor Occupation (p = 0.026) , duration of hemodialysis (p = 0.000) , and psychological aspects such as sleep quality (OR = 3.36) and depression also significantly contribute to patient compliance. These factors play a multidimensional role and interact with each other in influencing patient compliance. Adherence to hemodialysis in CKD patients is influenced by a combination of economic factors, knowledge, family support, sociodemographic factors, and psychological conditions. Interventions that emphasize financial support, increased health literacy, and active family involvement are crucial for increasing adherence, improving quality of life, and producing better clinical outcomes in hospitalized CKD patients.

Keywords: chronic kidney disease; compliance; determinant factors; hemodialysis; hospital

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INTRODUCTION

Chronic Kidney Disease (CKD) is a global health problem with increasing prevalence, particularly in end-stage patients requiring renal replacement therapy such as hemodialysis. Hemodialysis is the primary therapy for patients with End-Stage Renal Disease (ESRD), but its success rate is highly influenced by patient adherence to the regimen, which includes attendance at dialysis sessions, medication use, fluid restriction, and diet. Patient non-adherence to this regimen has been shown to contribute to increased morbidity, mortality, and decreased quality of life (Ibrahim et al., 2015; Lins et al., 2018). Although hemodialysis can clinically extend patient life expectancy, non-compliance remains a major challenge. Several studies report patient compliance rates ranging from 52% to 64%, with non-compliance most frequently occurring in dietary and fluid restriction (Naalweh et al., 2017; Mohamedi & Mosha, 2022). This situation demonstrates that in addition to medical factors, social, economic, and psychological determinants contribute to the success of therapy.

Several cross-national studies have identified determinants associated with hemodialysis patient adherence. Research in Saudi Arabia has shown that sociodemographic factors, such as marital status, transportation, belief in the importance of dialysis scheduling, and medical advice, are significantly associated with adherence (Alzahrani & Al-Khattabi, 2021). Meanwhile, studies in Ethiopia and Benin have emphasized the importance of economic factors, the number of medications consumed, and the use of alternative therapies as determinants of adherence (Kefale et al., 2018; Tokpanoude et al., 2023).

In addition to socioeconomic factors, quality of life also plays a crucial role. Research in Japan has shown that good sleep quality improves adherence to drug therapy in dialysis patients (Nagasawa et al., 2018). This suggests that the psychological dimension and quality of life of patients cannot be ignored in efforts to improve adherence. Family support and patient knowledge have also been shown to play a significant role, as demonstrated by research in Indonesia that emphasized the importance of health education in improving adherence to hemodialysis and diet (Simbolon & Simbolon, 2019; Fitriyanti et al., 2025).

Hemodialysis patient non-compliance also directly impacts clinical outcomes. A study in Egypt found that non-compliant patients had increased interdialytic weight gain, higher serum phosphate levels, and worse depression scores, while compliant patients reported better quality of life and nutritional status (Ibrahim et al., 2015). These findings confirm that compliance is not only a behavioral factor but also closely related to patient clinical outcomes. Thus, various evidence suggests that hemodialysis patient adherence is influenced by multidimensional factors, ranging from socio-demographic, economic, psychological, and family support. However, although numerous individual studies have been conducted in various countries, systematic reviews that comprehensively map the determinants of hemodialysis patient adherence in hospitals are still limited. Therefore, this systematic literature review (SLR) was conducted to identify, synthesize, and analyze factors influencing CKD patient adherence to hemodialysis, thereby providing a basis for more effective clinical interventions and health policies.

METHOD

This research is a systematic review *using* the PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-analyses*) method. This method was conducted systematically by following the correct research stages or protocols. The *systematic review procedure* consists of several steps, namely: 1) compile background *and purpose*; 2) *research question:* 3) *searching for the literature;* 4) *selection criteria;* 5) *practical screen;* 6) *quality checklists and procedures;* 6) *data extraction strategy;* 7) *data synthesis strategy* (Ningsih, Adi & Saraswati, 2019). Literature searches were obtained from *Google Scholar, Semantic Scholar Proquest, and Science Direct.* The keywords used were CKD, hemodialysis**,** determinant factors, adherence, hospital**.** In addition to keywords, the article search was based on articles written between 2015 and 2025, resulting in 1,145 journal articles. The final result was that 10 articles met the inclusion criteria. analyzed. Journal articles were selected based on several inclusion criteria. The inclusion criteria in this study include the following: 1) Research articles published in 2015-2025; 2) The type of research design is quantitative, descriptive, cross-sectional; survey; 3) The research study discusses the factors of hemodialysis compliance in patients; 4) implemented in hospitals.

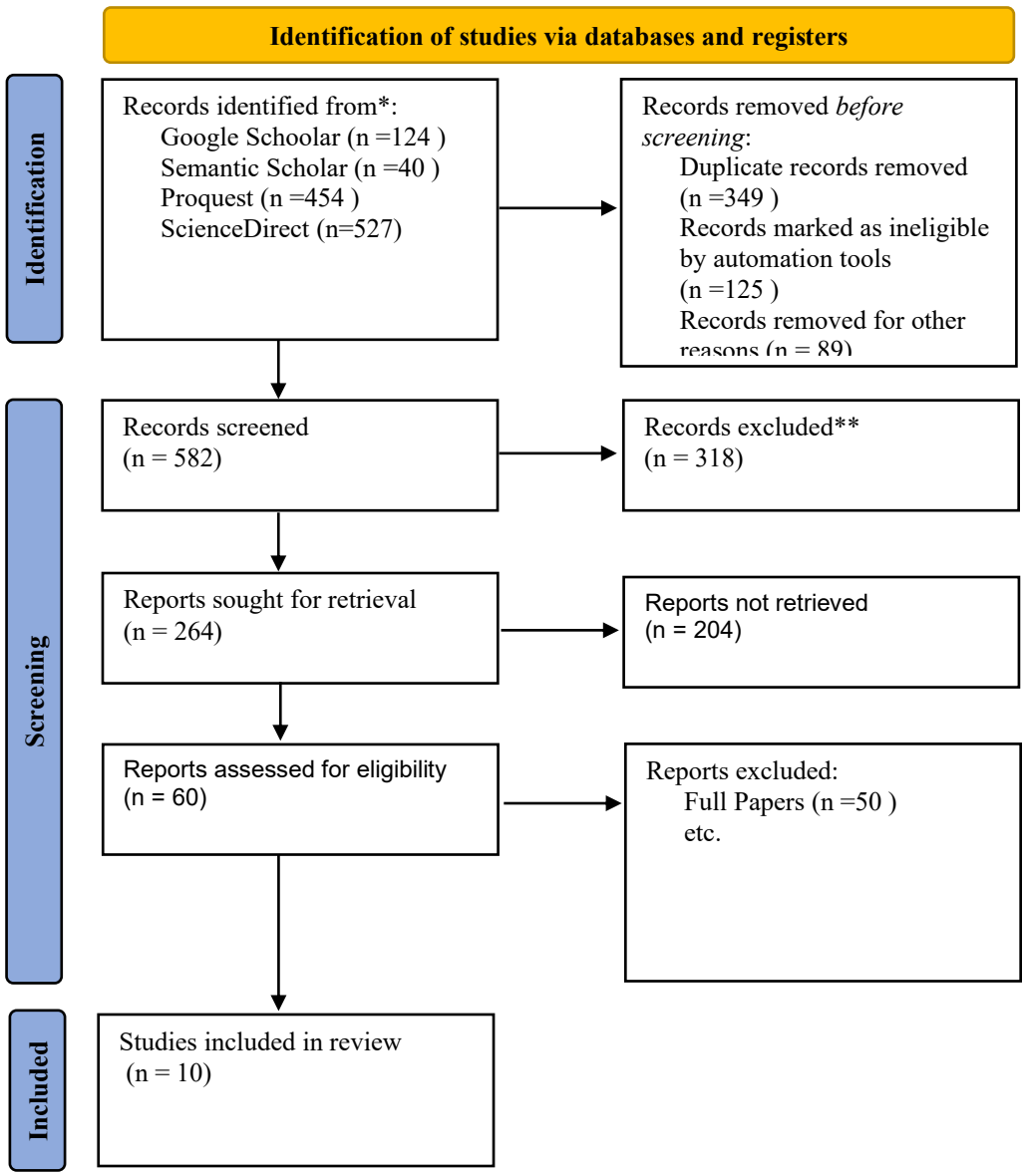

Figure 1. PRISMA

RESULT

Results review literature on article with range time rise year 2015-2025, use Language Indonesia And Language English And overall study found 10 Article based on topic systematic discussion review.

Table 1.
Literature Review

No	Researchers and Years	Country	Research Title	Method	Research Variables	Research result
1	Alzahrani & Al-Khattabi (2021)	Saudi Arabia	Factors Influencing Adherence to Hemodialysis Sessions among ESRD Patients in Makkah	Cross-sectional survey	Sociodemographics, beliefs, transportation, medical advice	Compliance 55.9%; significant factors: marital status, faith, private transportation, medical advice
2	Nagasawa et al. (2018)	Japan	The Effect of Quality of Life on Medication Compliance Among Dialysis Patients	Cross-sectional survey	Quality of life (EQ-5D, KDQOL-SF), medication	Good sleep quality improves medication adherence (OR=3.36)

No	Researchers and Years	Country	Research Title	Method	Research Variables	Research result
					adherence	
3	Simbolon & Simbolon (2019)	Indonesia	Hubungan Pengetahuan Dengan Kepatuhan Pasien PGK Menjalani Hemodialisa	Explanatory survey	Patient knowledge, hemodialysis compliance	There is a significant relationship (p=0.001; OR=22.7) between knowledge and compliance
4	Kefale et al. (2018)	Ethiopia	Management practice, and adherence and its contributing factors among CKD patients	Cross-sectional	Income, number of medications, occupation, therapy compliance	61.3% compliant; non-compliant factors: forgetting to take medication, low income, many medications
5	Lins et al. (2018)	Brazil	Treatment adherence of CKD patients on hemodialysis	Descriptive cross-sectional	HD compliance, medication, diet, fluids	Highest non-adherence HD (32%); highest medication compliance (93.6 %)
6	Mohamedi & Mosha (2022)	Tanzania	Hemodialysis Therapy Adherence and Contributing Factors	Cross-sectional	Source of funds, marital status, occupation, income	Full compliance 64.2%; significant factors: cost, marital status, employment, income
7	Tokpanoude et al. (2023)	Benin	Factors Associated with Non-Compliance among CKD Patients	Cross-sectional	Income, traditional medicine, number of drugs	Non-compliant 57.1%; factors: low income, alternative therapy, multiple medications
8	Fitriyanti et al. (2025)	Indonesia	Faktor yang Berhubungan dengan Kepatuhan Diet pada Pasien HD RS Meilia	Cross-sectional	Gender, occupation, knowledge, family support, duration of HD	88% adhered to diet; significant factors: knowledge, family support, duration of HD
9	Naalweh et al. (2017)	Palestine	Treatment adherence and perception in patients on maintenance HD	Cross-sectional	Diet, fluids, medication, HD session	Compliance: diet 24%, fluids 31%, HD 52%, medication 81%; factors: patient perception & education
10	Ibrahim et al. (2015)	Egypt	Study of Non-Compliance among Chronic HD Patients and its Impact	Cross-sectional	Depression, cognitive function, nutrition, QoL	Non-adherence 36%; associated with high IDWG, high phosphate, depression, low QoL

DISCUSSION

Sociodemographic Factors

Sociodemographic factors are a key determinant of CKD patient adherence to hemodialysis therapy. Research in Saudi Arabia found that marital status was significantly associated with adherence, with married patients more likely to adhere to their hemodialysis schedule than unmarried patients. This may be explained by the greater emotional and social support available to married patients, which encourages regular attendance at dialysis sessions (Alzahrani & Al-Khattabi, 2021).

Besides marital status, employment type also influences adherence. A study in Ethiopia showed that patients with formal employment, such as teachers or private sector workers, were more adherent than those with farmers. Informal sector employment often requires long and irregular hours, increasing the risk of patients missing dialysis appointments. These findings underscore that adherence is not solely determined by medical factors but is also closely related to the patient's socioeconomic status and employment type (Kefale et al., 2018).

Transportation is also a contributing sociodemographic factor. Patients with access to private transportation are more compliant than those who rely on public transportation. This is because private transportation allows patients to organize their travel schedules more flexibly and reduces logistical barriers to reaching hemodialysis centers (Alzahrani & Al-Khattabi, 2021). Thus, sociodemographic factors, including marital status, employment, and transportation access, have been shown to significantly influence hemodialysis adherence in CKD patients.

Economic Factors

Economic factors are a major determinant of adherence in CKD patients undergoing hemodialysis therapy. High treatment costs, including transportation, medications, and supportive measures, often hinder patients from maintaining adherence. A study in Ethiopia reported that patients with middle- to high-incomes were more likely to be adherent than those with very low incomes (Kefale et al., 2018). This suggests that economic constraints can directly impact patients' adherence to dialysis sessions and other therapy regimens.

In addition to individual income, hemodialysis financing also plays a significant role in patient adherence. A study in Tanzania found that patients whose therapy was covered by insurance or a health insurance provider were more compliant than those who covered their costs independently (Mohamedi & Mosha, 2022). This indicates that an adequate healthcare financing system can improve the accessibility and continuity of services, making it easier for patients to maintain adherence to their hemodialysis schedule.

Economic factors encompass more than just income and financing, but also relate to additional, often unexpected, expenses. Research in Benin shows that low-income patients tend to seek alternative traditional or herbal treatments, contributing to high rates of non-adherence (Tokpanoude et al., 2023). This situation demonstrates that low economic capacity not only reduces access to formal healthcare but also drives patients to choose alternative therapies that can interfere with consistent hemodialysis. Therefore, economic factors play a crucial role and require serious attention in formulating policies and interventions to improve adherence in CKD patients in hospitals.

Patient Knowledge & Education

Patient knowledge about chronic kidney disease (CKD) and hemodialysis therapy is a crucial factor influencing adherence to treatment regimens. Research in Medan showed that patients with good knowledge were up to 22 times more likely to adhere to hemodialysis compared to those with poor knowledge (Simbolon & Simbolon, 2019). This suggests that adequate understanding of the benefits of hemodialysis, the consequences of non-adherence, and self-care procedures can strengthen patient motivation to regularly follow therapy.

Furthermore, education provided by healthcare professionals plays a strategic role in improving adherence. A study in Palestine found that low levels of patient counseling regarding the importance of completing the full course of dialysis contributed to increased non-adherence (Naalweh et al., 2017). Continuous education regarding diet, fluid restriction, and medication use has been shown to increase patient awareness, thus optimizing adherence to various aspects of the hemodialysis therapy regimen.

Patient knowledge also does not exist in isolation, but is closely linked to family support and the healthcare system. Research in Depok confirmed that a good level of knowledge, coupled with family support, was significantly associated with dietary adherence in hemodialysis patients (Fitriyanti et al., 2025). Therefore, holistic educational interventions, involving families, and utilizing culturally appropriate learning media, could be an effective strategy to improve adherence in CKD patients in hospitals.

Family & Healthcare Support

Family support plays a central role in improving adherence in CKD patients to hemodialysis therapy. Research in Depok found that family support was significantly associated with dietary adherence in hemodialysis patients (Fitriyanti et al., 2025). Active family involvement in reminding patients about therapy schedules, helping with dietary needs, and providing emotional motivation can strengthen patients' commitment to the therapy regimen. Without family support, patients are more likely to neglect their dialysis schedules and dietary guidelines.

In addition to family support, the role of healthcare professionals is also crucial. A study in Saudi Arabia confirmed that the frequency of advice and counseling provided by healthcare professionals directly correlated with patient adherence to dialysis schedules (Alzahrani & Al-Khattabi, 2021). Consistent education not only increases patient knowledge but also fosters confidence in facing the physical and psychological challenges posed by their illness. Thus, healthcare professionals serve as both facilitators and motivators in improving patient adherence.

The combination of family support and healthcare provider intervention creates a conducive environment for patients to maintain long-term adherence. A study in Palestine showed that poor counseling on the importance of completing dialysis regimens contributed to non-adherence (Naalweh et al., 2017). This emphasizes that the role of healthcare providers needs to be complemented by family involvement in establishing a comprehensive support system. Therefore, strategies to improve adherence in CKD patients should focus on a multidimensional approach that integrates healthcare provider education and the active role of families.

Quality of Life & Psychological Factors

The quality of life of CKD patients undergoing hemodialysis is often affected by physical, psychological, and social factors, which impact adherence to therapy. A Japanese study showed that good sleep quality was significantly associated with medication adherence in dialysis patients, with patients with good sleep quality being more than three times more adherent than those with poor sleep quality (Nagasawa et al., 2018). This confirms that psychological aspects such as sleep, often overlooked, can be a crucial determinant of the success of long-term treatment regimens.

In addition to sleep quality, other psychological factors such as depression, stress, and anxiety have been shown to be associated with patient adherence. A study in Egypt found that non-compliant patients had higher depression scores than compliant patients and experienced a lower quality of life (Ibrahim et al., 2015). Depression can reduce patient motivation to attend regular hemodialysis appointments or adhere to dietary and fluid restrictions. Therefore, psychosocial interventions are an integral component of efforts to improve patient adherence.

On the other hand, research in Brazil confirms that adherence to hemodialysis therapy regimens is dynamic and requires ongoing monitoring. The domain with the lowest adherence rate was attendance at dialysis sessions (32%), while medication adherence was relatively high (93.6 %) (Lins et al., 2018). These findings confirm that psychological factors not only influence clinical aspects but also influence patients' daily behaviors in managing their lives under long-term therapy. Therefore, multidimensional interventions that include quality of life monitoring, psychological support, and ongoing counseling need to be integrated into hemodialysis services to improve adherence in CKD patients.

CONCLUSION

A systematic review of 10 articles showed that CKD patients' adherence to hemodialysis is influenced by various multidimensional factors. Sociodemographic factors, such as marital status, are also important. And employment , proven to be significant with compliance ($p = 0.026$) as well

as access to transportation that makes it easier for patients to attend the dialysis unit. Economic variables was a dominant factor, with low monthly income consistently associated with non-adherence (p = 0.009) and patients who received insurance coverage were more compliant than those who self-financed. Patient knowledge was also significantly associated with non-adherence (p = 0.001), with patients with good knowledge significantly more likely to adhere. Furthermore, family support significantly influenced adherence (p = 0.000), particularly in terms of diet and therapy attendance. Length of hemodialysis was also significantly associated with adherence (p = 0.000). Psychological factors such as depression and poor sleep quality also increased the risk of non-adherence, although not all studies reported detailed p values.

Based on the review results, interventions to improve hemodialysis adherence in CKD patients in hospitals need to focus on three dominant variables: economics, knowledge/education, and family support . From an economic perspective, the government and healthcare providers need to strengthen financing schemes, such as expanding health insurance coverage or subsidizing hemodialysis costs, to minimize financial barriers for patients. From a knowledge perspective, healthcare workers must continuously provide comprehensive education on the importance of adherence to dialysis schedules, diet, fluid restrictions, and drug therapy, using methods that are easy to understand and culturally appropriate.

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