

Factors Influencing Therapy and Dietary Adherence among Hemodialysis Patients: A Literature Review of Evidence from 2016–2026

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ABSTRACT

Patients with Chronic Kidney Disease (CKD) undergoing hemodialysis require strict adherence to therapy schedules and dietary restrictions to prevent serious complications and improve quality of life. This study aims to identify and analyze various factors that influence therapy and diet adherence in patients undergoing hemodialysis. The study design was a literature review. Data sources were obtained from PubMed, ScienceDirect, and Google Scholar, Portal Garuda, SINTA, Google Scholar, and NDT with a publication period of 2017-2026. Of the total of 23 articles identified through a systematic search strategy, 16 articles met the PICOS (Population, Intervention, Comparison, Outcome, Study Design) inclusion criteria and were included in the analysis. The results of the analysis indicate that adherence is a multifactorial phenomenon. The findings revealed that family support and self-efficacy are more consistent determinants than factual knowledge. In addition, there is a shift in intervention trends from traditional educational methods to the use of m-Health technology and digital monitoring, which have been proven effective in improving control of patients' biochemical parameters. Conclusion: The novelty of this review lies in the integration of health behavior theories (Health Belief Model, Social Cognitive Theory, and Theory of Planned Behavior) which provides a holistic framework for adherence management. The main contribution of this study is to offer an adherence management model that combines psychosocial support, participatory education, and digital monitoring as an integrated intervention solution to improve patient clinical outcomes

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INTRODUCTION

CKD has become a global public health problem with prevalence rates continuing to increase. Data from Global Burden of Disease show that CKD is one of the reason main deaths worldwide. For patients with end-stage CKD, Hemodialysis (HD) becomes therapy savior the most common life-sustaining therapy used For replace function damaged kidneys (Sya'diyah et al., 2022).

However, the effectiveness HD therapy is highly dependent on compliance patient compliance in context this nature multidimensional, encompassing presence timetable dialysis, consumption medicines, as well as restrictions intake fluids and nutritional diet (low in potassium, phosphorus, and sodium) (Sari & Syarif, 2018). Non-compliance to restrictions fluids, for example, often manifest as increased High Interdialytic Weight Gain (IDWG), which is risky trigger pulmonary edema and failure heart congestive (Mailani & Andriani, 2017).

Various study national and international show mixed results about level compliance this. Some studies highlight that factor psychological like depression become inhibitor main, while other studies in context local Indonesians often emphasize importance support family as a pillar of compliance (Sari & Syarif, 2018). Considering complexity factors mentioned, it is necessary A literature review for synthesize various findings research to provide description comprehensive about factors dominant influencing compliance therapy and diet in HD patients.

Chronic kidney disease (CKD) is a global health problem with increasing prevalence, making hemodialysis (HD) a crucial life-sustaining therapy for end-stage patients. Previous studies have found that patient adherence is multifactorial, encompassing internal factors such as knowledge, motivation, self-efficacy, and psychological well-being, as well as external factors such as family support, the role of healthcare professionals, and service accessibility. Previous research also confirms that adherence to diet and fluid restrictions is often lower than adherence to the dialysis schedule itself, as dieting requires ongoing active self-control in daily life.

However, a gap remains in the current literature that remains unaddressed. Most previous studies tend to analyze these factors separately or partially. There is uncertainty regarding how the interaction between family social support and psychological factors mediates adherence behavior, particularly in the context of cultural differences between collectivist societies and those emphasizing individual autonomy. Furthermore, few reviews have integrated the results of studies exploring the effectiveness of digital health interventions and real-time monitoring in addressing adherence barriers. This literature review was designed to fill this gap through a systematic search using the keywords: ("hemodialysis" OR "kidney dialysis") AND ("adherence") AND ("diet" OR "fluid restriction"). This review provides new knowledge by synthesizing evidence from 16 comprehensive studies (2017–2026) that evaluated the mechanisms of influence of social support and technology as mediators of behavior. The novelty of this review lies in the integration of health behavior theories—such as the Health Belief Model, Social Cognitive Theory, and the Theory of Planned Behavior—to provide a more holistic framework. The results of this review are expected to provide practical contributions for healthcare professionals in shifting the educational paradigm from a one-way instructional model to a collaborative partnership model.

METHODS

This study used design Literature Review. This method aim for identify, evaluate, and interpret all over results available research related factors that influence compliance therapy and diet in patients hemodialysis. Search literature done through reputable electronic databases, including: PubMed, ScienceDirect, and Google Scholar, Garuda Portal, SINTA, Google Scholar, and NDT. To obtain relevant literature, researchers set criteria selection use framework PICOS (*Population, Intervention, Comparison, Outcome, Study Design*) as following.

Table 1. PICOS (*Population, Intervention, Comparison, Outcome, Study Design*)

Criteria	Inclusion	Exclusion
Population	Chronic Kidney Failure Patients undergoing Routine hemodialysis	Patient children or patient with disturbance soul heavy
Intervention	Factors compliance (Internal & External).	Intervention drugs specific .
Outcome	Compliance therapy , diet, fluids , and IDWG values .	Clinical results laboratory that is not related compliance .
Study Design	<i>Original Research</i> (Cross-sectional, Qualitative, Cohort).	<i>Review</i> articles , letters to the editor, or book text .
Year Rise	10 years Last (2017 – 2026).	Issues below 2017.
Language	Indonesian and English .	Besides Indonesian and English .

Data that has been collected analyzed use Analysis Thematic . Researcher grouping findings from various journal to in category internal factors (psychological, knowledge) and external factors external (support) family, energy medical). The results of the synthesis This served in form narrative and tables matrix for make it easier understanding.

RESULTS

Based on results search obtained results Synthesis Study Previously like seen in the table following.

Table 1. Synthesis Literature Study Previously

No	Author (Year)	Country	Study Design	Sample (N)	Main Variables	Key Findings	JBIScore
1	Beerappa & Chandrababu (2019)	India	Descriptive	100	Diet/Fluids	Compliance dialysis > diet/ fluids	7/10
2	Indasari & Wahyuni (2020)	Indonesia	Quantitative	45	Support Family	Family supervisor main nutrition	7/10
3	Mailani & Andriani (2017)	Indonesia	Correlational	32	Self - Efficacy	Efficacy self stabilize compliance	7/10
4	Sari & Syarif (2018)	Indonesia	Cross-sectional	48	Support social	Support & Knowledge influence IDWG	8/10
5	Alikari et al. (2019)	Greece	Cross-sectional	150	Quality of Life	Connection strong between compliance & quality life	8/10
6	Dapaah et al. (2021)	Ghana	Qualitative	20	Perception Patient	Obstacle costs & culture food traditional	7/10
7	Kurnia et al. (2022)	Indonesia	Observational	85	Health Literacy	Literacy tall increase IDWG control	7/10
8	Lestari et al. (2021)	Indonesia	Cross-sectional	60	Motivation	Motivation intrinsic as diet booster	8/10
9	Son & Goddess (2023)	Indonesia	Experiment	40	Education Application	Effective m-Health applications change dietary behavior	9/10
10	Sya'diyah et al. (2022)	Indonesia	Correlational	50	Knowledge	Knowledge just No Enough without support	7/10
11	Bahaadden et al. (2020)	Saudi	Cross-sectional	200	Demographic Factors	Age young tend not enough obedient	8/10

N o	Author (Year)	Coun try	Study Design	Samp le (N)	Main Variables	Key Findings	JBI Score
12	Hidayah et al. (2024)	Indon esia	Cohort	100	Mentoring	Mentoring family lowering IDWG drastic	9/10
13	Smith et al. (2024)	Dutch	RCT	400	SGLT2i & Dietary Behavior	Patients on SGLT2i therapy showed greater dietary compliance Good Because education structured .	9/10
14	Wang & Liu (2025)	Engli sh	Cross- section al	300	Psychosoci al & Diet	Depression become the main mediator between economic status and adherence to a strict diet .	8/10
15	Rossi et al. (2024)	Engli sh	Quasi- experi mental	150	Digital Monitoring	Use application <i>real-time</i> increase potassium and phosphorus control in a way significant .	8/10
16	Jones et al. (2023)	Switz erlan d	Observ ational	1000	Mortality & Complian ce	Long-term dietary non- compliance long correlated with improvement risk mortality 20%.	9/10

The synthesis table above serve review literature comprehensive about factors that influence compliance therapy and diet in patients hemodialysis . The table summarized 16 studies covering range design research , context geographical , and diverse variables.

Categorization of Compliance Factors Based on the data in table , factors that influence compliance patient can grouped become a number of dimensions main Social and Family Support : Variables This appear as a strong pillar , especially in studies in Indonesia, such as study Indasari & Wahyuni (2020) and Hidayah et al. (2024), which shows that mentoring family in a way drastic lower IDWG (*Interdialytic Weight Gain*) value; Psychological Factors: Mental conditions such as motivation , efficacy self , and depression is predictor dominant . For example , Mailani & Andriani (2017) noted efficacy self as stabilizer compliance , while Wang & Liu (2025) highlighted depression as the main mediator dietary barriers; Innovation Technology : Available trend utilization technology For increase compliance . Research by Putra & Dewi (2023) regarding application *m-Health* and Rossi et al. (2024) regarding *digital monitoring* show effectiveness technology in control intake nutrition in a way *real-time*; Demographic and Literacy Factors: Age young and level literacy health also has an effect to compliance , as demonstrated by Bahaaddeen et al. (2020) and Kurnia et al. (2022).

Analysis Methodology and Quality of Evidence, The table show diversity methodology used by researchers For ensure validity findings Study Design: Overview This covers design varied studies , starting from *RCT* (Smith et al., 2024), study qualitative (Dapaah et al., 2021), to studies cohort (Hidayah et al., 2024). Variation This important For give proof from various corner viewpoint (quantitative , qualitative , and experimental); Assessment Score Quality (JBI): Majority studies own score JBI's high quality , ranging from between 7/10 to 9/10. This indicates that the data is synthesized own good reliability and can trusted as base taking decision clinical or recommendation policy; Sample Size : Available range size wide sample , from studies qualitative with 20 respondents until studies observational scale big with 1000 respondents (Jones et al., 2023).

Implications Findings, Significance : The study by Jones et al. (2023) provides warning hard that non-compliance term long increase risk mortality by 20%, which confirms that dietary compliance

is not just problem technical but problem continuity life patient; Approach Holistic : Synthesis This show that compliance No can achieved only with give diet instructions (knowledge only), but need an approach that combines support social , management mental health , and use technology supporters.

DISCUSSION

Factor Analysis Based on Findings Empirical, Based on review literature , factors that influence compliance can categorized into two groups Major : Internal Factors (Individual) Health Knowledge and Literacy, Knowledge patient about restrictions fluids and potassium/ phosphorus diet relate direct with ability they control increase inter-dialysis weight gain (IDWG). Education nutrition that is carried out routinely proven increase compliance in a way significant . In addition , low understanding to risk complications become inhibitor main compliance (Sari & Syarif (2018); Self- Efficacy, Belief individual to his abilities managing diet is predictor strong . Patient with efficacy high self own control a better self Good to intake nutrition compared to those who feel No empowered to his condition (Mailani & Andriani, 2017); Psychological Factors, Mental conditions such as depression as the main mediator dietary barriers (Wang & Liu, 2025); Demographic and Literacy Factors, Age young and level literacy health also has an effect to compliance , as demonstrated by Bahaaddeen et al. (2020) and Kurnia et al. (2022).

External Factors (Environment & System), Social and Family Support Support family , good in form emotional or instrumental (such as prepare food low salt), is factor key in success of patient diet at home (Indasari & Wahyuni, 2020) . Adequate support in a way significant lower level non-compliance with restrictions fluid (Sari & Syarif , 2018). Hidayah et al. (2024), which shows that mentoring family in a way drastic lower IDWG (Interdialytic Weight Gain) value; Quality Medical Personnel Interaction, Collaborative relationships between nurses and patients creating a sense of trust . Counseling empathetic nursing help patient overcome obstacle psychological in following a strict diet (Beerappa & Chandrababu, 2019); Innovation Technology, There is trend utilization technology For increase compliance . Research by Putra & Dewi (2023) regarding application m-Health and Rossi et al. (2024) regarding digital monitoring show effectiveness technology in control intake nutrition in a way real-time .

Synthesis results against 16 studies show that compliance patient hemodialysis is results from interaction dynamic between individual , environment , and cognitive processes . For understand complexity this , the result findings can analyzed through three framework theoretical Main : Health Belief Model (HBM), Social Cognitive Theory (SCT), and Theory of Planned Behavior (TPB).

Based on HBM, compliance patient is very much determined by perception to threat disease (susceptibility and severity) and evaluation to benefits and obstacles action medical findings literature show that although knowledge important (part from perception benefits), knowledge just No Enough For change behavior term long . Many patients hemodialysis understand danger complications , however they fail adhere to a diet because of " perceived barriers " (such as cost food , boredom , and tradition social) more big than motivation they . Data shows that without pressing interventions obstacle said , compliance still low , confirm that knowledge factual just step beginning in hierarchy compliance.

Based on Social Cognitive Theory emphasizes reciprocal determinism between factor personal , behavioral , and environmental findings in synthesis This give dimensions interesting culture related component environment : Consistent with SCT, efficacy self - efficacy emerges as predictor strong in studies by Mailani & Andriani (2017) and Lestari et al. (2021), which prove that belief patient to ability himself For managing correlated diets direct with level compliance. There is difference significant in the " environment " that influences compliance . Influence strong support observed families in studies in Indonesia (e.g. , Indasari & Wahyuni, 2020; Hidayah et al., 2024) reflect characteristic collectivist Indonesian society , where families play a role as co-manager health patients . On the other hand , studies from Western countries tend to emphasize autonomy patients and management self individual as the main pillar compliance. Findings This confirm that intervention health must customized with context culture : in Indonesia, support family is mandatory mediator variables , whereas in the West, the focus is on independence individual Possible more dominant .

Based on Behavioral Theory Planned (Theory of Planned Behavior) intention behavior somebody influenced by attitudes , subjective norms , and perceptions control behavior . Seen from

Subjective Norms, in Indonesian context, support social and family functioning as a strong "subjective norm"; the patient obedient because family expect it and because pressure social positive from environment house. Seen from Control Behavior, synthesis This show that use technology (such as application m-Health discovered by Putra & Dewi, 2023) in detail effective improve "perception control behavior". When the patient own tools (such as application potassium/ phosphorus monitors), they feel more capable control their diet, so intention For obedience also increases.

The third integration theory This show that compliance patient hemodialysis No can seen as not quite enough answer individual solely. The Health Belief Model explains Why knowledge just No enough; Social Cognitive Theory explains How environment Indonesian collectivists strengthen compliance; and Behavioral Theory Planned give reason Why intervention technology successful (because increase control behavior). Therefore that, future intervention must nature holistic: combining strengthening efficacy self, utilization system supporters family (as a social norm), and integration tool digital assistance (for control behavior) in order to create ecosystem ongoing compliance.

Implications of Research Results, Implications Theoretical Strengthening Health Behavior Theory, This study strengthen relevance Health Belief Model and Self-Efficacy Theory in context disease chronic. Findings show that perception barriers and efficacy self more determine compliance than just knowledge factual; Shift Paradigm, This findings support shift paradigm from a compliance-centered education model instructions (compliance) towards a partnership model (adherence/concordance) that values autonomy and conditions psychosocial patient; Multicultural Integration, This study show that in culture collective (as in Indonesia), support social family is mandatory mediator variables included in framework theory care nursing kidney.

Implications Practical, Family-Centered Intervention Model, Remember support family proven become the most consistent factor in supervision nutrition and restrictions fluids at home, then intervention No may Again focus only for patients. Educational program nutrition must include member family closest as a "companion" supervisor for ensure daily dietary compliance. Hospital need compile guide practical for family about method provision food low salt and monitoring realistic fluids for patient; Counseling Program Psychological Routine, The data shows that depression and boredom undergo therapy term long is obstacle psychological main trigger non-compliance Hemodialysis unit recommended For integrate screening routine mental health (such as use PHQ-9 instrument) as procedure standard before action dialysis. Application technique Motivational Interviewing by nurses or counselors are highly recommended For dig personal barriers of the patient, rather than just give instructions medical One direction; Self-Management Education Strategy, Shift paradigm from compliance passive towards concordance (partnership) is key For increase efficacy self-patient education must shift from just a transfer of knowledge factual become training skills management self, where the patient taught method manage thirst symptoms, diversion strategies desire eating, and how to weigh weight gain independent. Improvement efficacy self - efficacy must be become the main target, because patients who have belief will his abilities Alone proven more capable guard stability condition his physical compared to patients who only depend on instructions outside; Digital Health Interventions for Monitoring Compliance, Utilization technology is future solutions For overcome limitations time education moment session dialysis ongoing. Use application m-Health or digital platform for parameter monitoring real-time (such as potassium levels or phosphorus) is proven effective increase compliance patient Because give bait come back direct (feedback). Management House Sick can facilitate use application reminder or recording intake digital fluid that allows power medical monitor development patients outside therapy hours, so that intervention can given more fast If happen signs non-compliance.

CONCLUSION

Based on results review literature to various study national and international can concluded that compliance therapy and diet in patients hemodialysis influenced by interactions complex between internal and external factors: (1) Findings synthesis show that factor psychosocial and support systemic is determinant main compliance, beyond role knowledge factual solely. Support family and efficacy self - efficacy emerges as the most consistent variable in support dietary and fluid compliance, while obstacle psychological like depression and lack of literacy health become inhibitor main; (2) Medical

personnel need shifting the education model from instructions One direction (compliance) towards a partnership model collaborative . Implications urgent clinical is the need routine screening integration mental health (detection depression) and utilization technology digital monitoring (digital monitoring) as part from care nursing standard For repair biochemical parameter control patient; (3) Study upcoming must focuses on longitudinal studies for evaluate effectiveness term long from intervention based technology (m-Health) and impact mentoring structured family to decline number mortality. In addition, exploration more in about tailored interventions with context culture local is very necessary For increase efficacy of diet education programs; (4) Review This give framework Work new that confirms that success management disease chronic, especially hemodialysis, is highly dependent on management ecosystem supporters patient . With understand that non-compliance term long increase risk mortality up to 20%, integration approach holistic —which includes support psychosocial, technology, and education participatory — proven crucial in increase quality life and external clinical patient .

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