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DETERMINANT OF ANTIRETROVIRAL THERAPY ADHERENCE THROUGH THE HEALTH BELIEF MODEL THEORY IN PEOPLE LIVING WITH HIV/AIDS: A SYSTEMATIC REVIEW

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ABSTRACT
Human Immunodeficiency Virus (HIV) and Acquired immunodeficiency syndrome (AIDS) are still threats to public health. Indonesia ranks third highest in the number of people living with HIV/AIDS (PLWHA) and new infection cases in the Asia-Pacific region after India and China. One of the sustainable development targets to improve health and well-being is to end the AIDS epidemic by 2030 which refers to the global policy of "Getting to Zeros" using antiretroviral therapy (ARV). This study aims to analyze the determinants of HIV/AIDS treatment adherence through ARV therapy using the Health Belief Model (HBM) theory. Methods: This study used Preferred Reported Items for Systematic Reviews and Meta-Analyses (PRISMA) for systematic review through keyword searches on 10 relevant articles. Databases used include journals from ScienceDirect, Google Scholar, and PubMed. Article submission took place in May–June 2023. The article used is an article that contains research in the range of 2015–2023. Results and Discussions: The findings of the article are then screened, filtered, and critically appraised through several inclusion and exclusion criteria. The search results found as many as 10 suitable articles. The results showed a relationship between perceived barriers, perceived benefits, self-efficacy, and cues to action with adherence to ARV therapy in PLWHA. Non-adherence to ARV treatment has multidimensional consequences at both the individual, community, and policy levels. Individually, it can lead to an uncontrolled viral load, increasing the risk of resistance and other factors, including mortality. Conclusions: So it is necessary to increase awareness of the importance of ARV therapy for PLWHA through HBM theory. In addition, it is expected for the closest people to always provide positive support to PLWHA to be compliant in carrying out ARV therapy.

Keywords: ARV therapy adherence; health belief model; HIV/AIDS; systematic review

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INTRODUCTION

Human Immunodeficiency virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) are still a serious threat to public health. Data from the World Health Organization (WHO) shows that the HIV incidence reached 0.26 per 1000 population, while in Indonesia it was 0.19 per 1000 population. This figure shows an average that is lower than the global figure, but still above the average figure for the Southeast Asia region, namely 0.08 per 1000 population. Indonesia ranks third highest in the number of people living with HIV (PLHIV) and cases of new infections in the Asia Pacific region after India and China. Based on WHO data, deaths due to AIDS in Indonesia are reported to have increased by up to 68% in 2018. One of the sustainable development targets to improve health and welfare is to end the AIDS epidemic by 2030 (Sri 2018). The HIV-AIDS control policy aligns with the global initiative known as 'Getting to Zeros.' The Indonesian government has implemented various strategies to manage HIV-AIDS, which include enhancing early detection of HIV cases, expanding the coverage and retention of antiretroviral therapy (ARV) and chronic care, increasing access to CD4 and viral load (VL) examinations, including Early Infant Diagnosis (EID), at secondary service facilities to ensure that more PLHIV receive prompt ARV care and treatment through

patient referrals or examination specimen referrals. Moreover, the government is committed to improving service quality by implementing clinical monitoring in hospitals and health centers and advocating for local governments to reduce the associated costs of HIV-AIDS testing and treatment services.

Treatment for PLHIV using ARVs aims to reduce the proliferation or replication of the HIV virus, increase the number of CD4 cells, slow the progression of the disease, reduce the risk of drug resistance, improve quality and survival, improve overall health and reduce the risk of HIV transmission (Althoff et al. 2019; Brégigeon-Ronot et al. 2017; Pariaribo 2015; Pudjiati 2016; Seyoum et al. 2017). According to WHO data in the world in 2019, it is estimated that 81% of PLHIV know their status, 67% are receiving antiretroviral therapy (ART) and 59% have achieved HIV viral suppression without the risk of infecting other people. Data at the end of 2019 shows that 25.4 million people accessed ART. Between 2000 and 2019, new HIV infections fell 39% and HIV-related deaths fell 51%, with 15.3 million lives saved due to ART (Kemenkes 2020). Data in Indonesia as of December 2016, the cumulative number of people infected with HIV was 143,590 people and those receiving ARV therapy were 77,748 (33.5%) of the cumulative number while there were 31,415 who had not received ARVs, 31,487 lost follow-up and 2,940 stopped ARVs (Kemenkes 2020).

Many factors influence PLWHA's compliance in taking ARVs, including internal and external factors. Internal factors include individual characteristics (gender, marital status, employment, economic status), attitudes towards side effects (Kioko and Pertet 2017), perceptions related to the definition of health and illness, knowledge, risk behavior (drug abuse), psychosocial and commitment to oneself, religious beliefs regarding treatment. External factors consist of social support from family, friends and staff, support for coming to clinics and improving behavioral skills for PLHIV, competent and professional health workers, availability of infrastructure, clinic policies and procedures, effective counseling programs (Kioko and Pertet 2017).This study aims to analyze the determinants of adherence to HIV/AIDS treatment through ARV therapy using the Health Belief Model (HBM) theory. Where the constructs from the Health Belief Model include perceived barriers, perceived benefits, perceived threats, self-efficacy, and cues to action.

METHOD

This research uses a systematic review method using quantitative data. The data used in this research is secondary data, namely data obtained not from direct observation, but obtained from the results of research conducted by previous researchers. Secondary data sources obtained were articles of national and international reputation from the Science Direct, Google Scholar and Pubmed journal databases. Inclusion and exclusion criteria are used in the literature study selection process which will be used as a source of research data to select articles. Inclusion criteria are determined based on population, concept, and concept rules, including, populations: (1) teenagers and adults (12-64 years) and (2) women and men; concept: (1) factors related to ARV therapy compliance and (2) perceived threat, perceived benefit, perceived barrier, and self-efficacy; context: (1) during the period 2015-2023. Exclusion criteria included age other than 12-64 years, research conducted before 2015, paid articles and not full text. Search for articles using a combination of the keywords ARV therapy adherence, perceived threat, perceived benefit, perceived barrier, and self-efficacy in the search box. The use of keywords is combined with the use of Boolean operators (OR, AND, and NOT) to expand or specify the search process, making it easier to determine which journal or article to use. Based on the results of literature searches in three databases, namely Google Scholar, Science Direct, and Pubmed and using adjusted keywords, researchers found 22,452 articles that matched the keywords. Then the researchers carried out screening and

filtration based on the title (n= 7,130), abstract (n= 25), and full text (n= 20) which corresponded to the topic of the literature review in this study. And after carrying out a critical appraisal, 10 articles were obtained that met the criteria used.

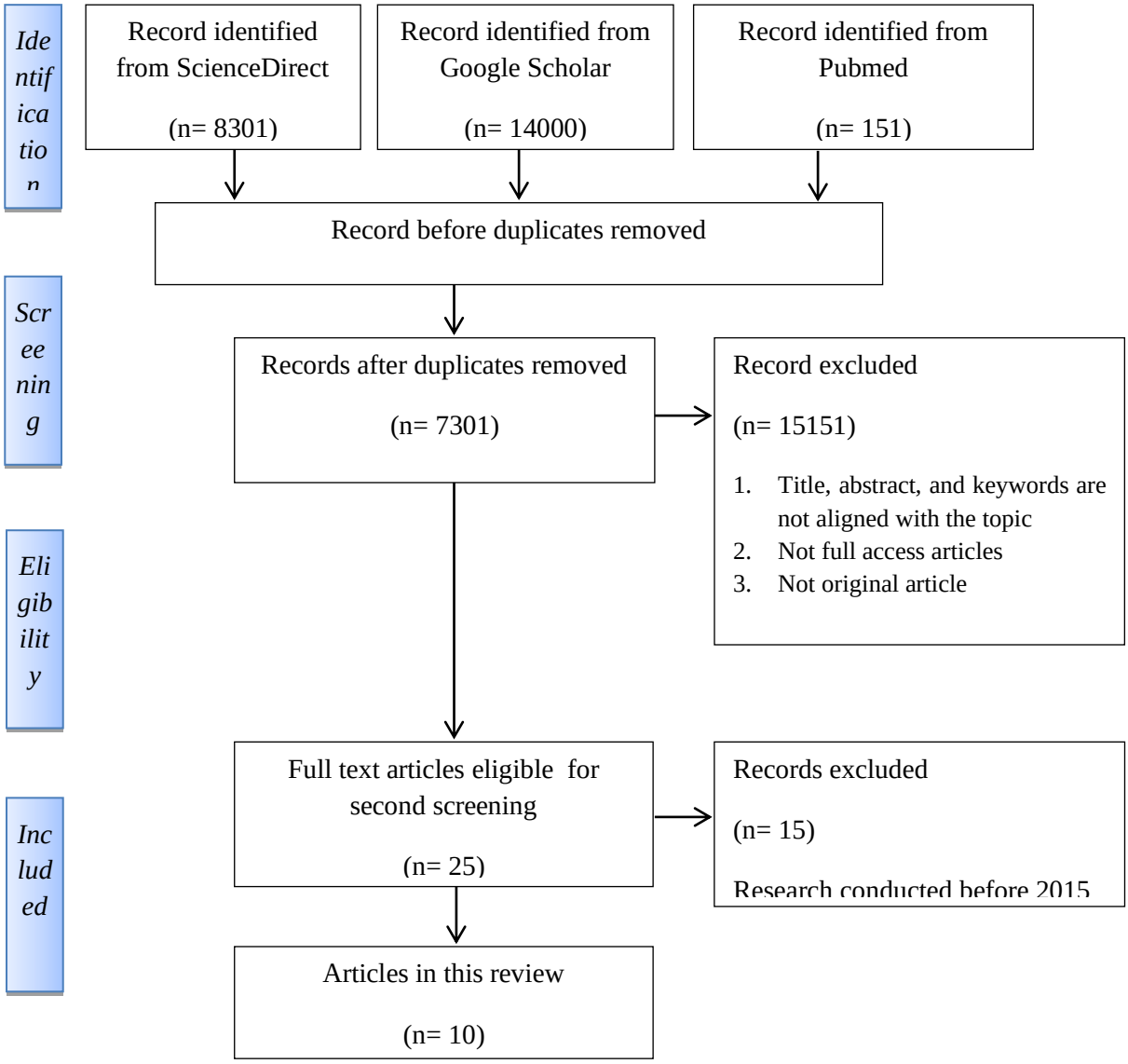

Fig 1. PRISMA flowchart of included articles

RESULT

A total of 10 articles were obtained after going through the screening process. The number of articles published in 2018 was 3 out of 10 articles (30%); in 2020 as many as 2 out of 10 articles (20%) the majority in 2022 as many as 4 out of 10 articles (40%); and in 2023 as many as 1 in 10 articles (10%). Most of the articles used a cross-sectional study design, 5 out of 10 articles (50%). The factors that influence adherence to ARV therapy in PLHIV are mostly self-efficacy factors (9 articles) or almost all articles that examine self-efficacy factors show a significant relationship, followed by demographic factors (age, gender, education), perceived barriers. (4 articles), perceived benefit (3 articles), cues to action (2 articles), and perceived threat (1 article).

Table 1.
Summary of Article Review Results Findings

Author, Year	Title	Design, respondents	Results	Variabels
Sanders et al, 2022	Promising outcomes from a cognitive behavioral therapy text-messaging intervention targeting drug use, antiretroviral therapy adherence, and HIV risk behaviors among adults living with HIV and substance use disorders	Case control 359 people living with HIV in New York City, United States (2014-2017)	There is a significant relationship between the level of knowledge and ART adherence (p= 0.07) There is a significant relationship between self-efficacy and adherence to ARV therapy (p= 0.02)	Demographic factors (age, gender, ethnicity) Self-efficacy
Addo et al., 2022	Factors influencing adherence to antiretroviral therapy among HIV/AIDS patients in the Ga West Municipality, Ghana	Cross-sectional 397 HIV patients over 18 years in Ga West Municipality, Ghana (June 2021)	There is a significant relationship between perceived barriers (p= 0.03) and ART adherence There is a significant relationship between self-efficacy (p= 0.03) and ART adherence There is a significant relationship between cues to action (p=0.03) and adherence to ARV therapy	Demographic factors (age, gender, ethnicity, education, religion) Perceived threat Perceived benefit Perceived barriers Self-efficacy Cues to action
Sued et al., 2022	A small cluster randomised clinical trial to improve health outcomes among Argentine patients disengaged from HIV care	Cluster-randomized clinical trial 360 HIV patients aged 18 years and over who had started ART for at least 6 months in Buenos Aires, Argentina (November 2016- May 2020)	There is a significant relationship between age (p= 0.019), gender (p= 0.001), education level (p= 0.001) and ART adherence There was no significant relationship between self-efficacy (p= 0.215) and adherence to ARV therapy	Demographic factors (age, gender, education level) Self-efficacy
Agustin et al., 2018	A Path Analysis on Adherence to Antiretroviral Therapy among HIV/ AIDS Patients at Dr. Moewardi Hospital, Surakarta using Health Belief Model	Cross-sectional 284 HIV/AIDS patients in Surakarta, Central Java (February 2018)	There is a significant relationship between perceived benefit (p<0.001), perceived barrier (p<0.001), self-efficacy (p<0.001), and cues to action (p<0.001) with adherence to ARV therapy	Perceived benefit Perceived barrier Self-efficacy Cues to action
Gebru et al., 2018	Perceived behavioral predictors of late initiation to HIV/AIDS care in Gurage zone public health facilities: a cohort study using health belief model	Prospective and retrospective cohorts 317 PLHIV in Gurage, Ethiopia (September 2015-November 2016)	Perceived threat (OR= 8,46, CI= 3,92-18,26) Self-efficacy (OR= 2,35, CI= 1,09-5,05)	Perceived threat Self-efficacy
Karimy & Zareban, 2018	Predictors of HIV-Preventive Behavior	Cross-sectional 131 HIV-positive	There is a significant relationship between	Perceived barrier

Author, Year	Title	Design, respondents	Results	Variabels
	Changes Among HIV-Infected Patients in Iran: Application of the Extended Health Belief Model	patients suffering from AIDS in the cities of Saravan, Zarandieh, and Sarbaz in Iran (2018)	perceived barrier (p= 0.001), perceived benefit (p= 0.01), self-efficacy (p= 0.01) and adherence to ARV therapy	Perceived benefit Self-efficacy
Morowatishari fabad et al., 2023	Antiretroviral therapy adherence based on information, motivation, and behavioral skills model and its association with depression among HIV-positive patients: Health promotion strategy towards the 909090 target	Descriptive-correlational study 119 HIV/AIDS patients over 18 years old in Kerman City, Iran (2017)	There is a significant relationship between education level (p= 0.005) and ART adherence There is a significant relationship between self-efficacy (p<0.001) and adherence to ARV therapy	Demographic factors (age, gender, education level) Self-efficacy
Jadgal et al., 2022	Investigating social support, self-efficacy, and factors affecting adherence to medication in people living with HIV/AIDS: application of IMB model	Descriptive correlational study 117 HIV/AIDS patients aged over 18 years in Kerman, Iran (2018)	There is a significant relationship between self-efficacy (p<0.001) and adherence to ARV therapy	Self-efficacy
Areri et al., 2020	Factors influencing self-management of adults living with HIV on antiretroviral therapy in Northwest Ethiopia: a cross-sectional study	Cross-sectional 415 PLHIV aged over 18 years in Northwest Ethiopia (1 April-30 May 2019)	There is a significant relationship between gender (p= 0.005) and education level (p<0.001), There is a significant relationship between self-efficacy (p= 0.018) and adherence to ARV therapy	Demographic factors (gender, education, religion, comorbiditi es)Self-efficacy
Akinoye et al., 2020	Cognitive-behavioural factors associated with adherence to antiretroviral medication among HIV infected patients in Ibadan, Oyo state	Cross-sectional 288 PLHIV in Ibadan, Oyo State, Nigeria (February-March 2020)	There is a significant relationship between perceived benefit (SD= 114) and perceived barrier (SD= 29) with ARV therapy compliance	Perceived benefit Perceived barrier Self-efficacy

DISCUSSION

In a study conducted in Ga West, Ghana, it was found that the majority of PLHIV did not routinely take ARV therapy according to schedule (Addo, Aboagye, and Tarkang 2022). Non-adherence to ARV therapy according to schedule can increase the viral load in PLHIV, thereby increasing the risk of disease severity in PLHIV. There is a direct effect of perceived barriers on PLHIV's compliance with ARV therapy and it has a significant relationship (Agustin, Prasetyo, and Murti 2018). PLHIV who have a high perceived barrier can reduce patient compliance in undergoing ARV therapy. Patients who have obstacles in carrying out ARV therapy are unlikely to change their behavior positively towards ARV therapy. Patients who experience side effects from ARV treatment tend not to want to return to ARV therapy regularly. This is inversely proportional to the results of studies conducted in Ga West, Ghana. PLHIV are still undergoing ARV therapy even though they know the side effects they will cause (Addo, Aboagye, and Tarkang 2022). Likewise with other non-medical side effects such as loss of income due to work holidays. ARV therapy is an unpaid health program

launched by the government. So that PLHIV are not charged, however, there are still other costs that must be covered independently, such as transportation and other accommodation. Barriers that arise can be physical and material or social and psychological barriers to different people and environments. These obstacles can cause someone to engage in conflicting behavior and create behavior that poses a risk to their illness (Karimy and Zareban 2018). Barriers that may reduce a patient's willingness to undergo ARV therapy include financial barriers, social barriers, and geographic factors, where access to ARV treatment is limited by road facilities and the long distance from home to health facilities providing ARV therapy services (Addo, Aboagye, and Tarkang 2022). The results of research in Ibadan, Nigeria show that PLHIV have concerns that other people will find out their HIV status if they go to an HIV/AIDS treatment service facility (Akinoye, Amosu, and Amodemaja 2020). So they tend to choose not to go to health facilities to get ARV therapy. This increases patient non-compliance with ARV therapy. Apart from that, other obstacles that cause PLHIV to not comply with ARV therapy are the lack of support from family and the long distance to health facilities that provide ARV therapy.

There is a direct effect of perceived benefit on the compliance of PLHIV patients in carrying out ARV therapy and it has a significant relationship (Agustin, Prasetyo, and Murti 2018). Patients who believe that ARV treatment can have a positive impact on themselves will be more compliant in undergoing ARV therapy. They will rule out various side effects and obstacles that may occur, so they will try to carry out ARV therapy regularly according to schedule. Increasing perceived benefits is an important factor in the positive behavior of PLHIV towards routine HIV/AIDS treatment (Karimy and Zareban 2018). PLHIV who believe that ARV therapy has great benefits will try to eliminate or override existing obstacles in undergoing regular ARV therapy. Self-efficacy greatly influences the willingness of PLHIV to undertake ARV therapy regularly. PLHIV who have good self-efficacy have high self-confidence compared to perceptions related to negative effects arising from ARV therapy (Addo, Aboagye, and Tarkang 2022). Self-efficacy is an important motivator for PLHIV to undertake ARV therapy. So that it can increase PLHIV's awareness of the importance of routine ARV therapy. Self-efficacy is a person's confidence in their individual ability to perform their best abilities in certain actions in order to achieve maximum results. There is a direct effect of self-efficacy on the compliance of PLHIV patients in carrying out ARV therapy and it has a significant relationship. Self-efficacy can help PLHIV patients to make behavior changes. If they have high self-confidence that their behavior can change their health condition, then PLHIV patients' willingness to undertake ARV therapy will also be greater (Agustin, Prasetyo, and Murti 2018). Self-efficacy can be built from the surrounding environment. PLHIV patients who have good knowledge of ARV therapy need to be supported by confidence in the patient's ability to carry out therapy to avoid drop-out.

Research conducted in the cities of Saravan, Zarandieh, and Sarbaz in Iran shows that self-efficacy in patients can have a significant influence on their behavior (Karimy and Zareban 2018). Self-efficacy is an important factor that is useful in reducing high-risk behavior related to HIV/AIDS, such as non-adherence to ARV therapy. Self-efficacy has an important role in changing a person's behavior. Self-efficacy makes a person pay more attention to opportunities from the environment and is motivated to achieve their goals and benefit from the treatment they receive. PLHIV who have high self-efficacy have strong commitment, so that when they fail, they will increase their efforts to achieve their goals. PLHIV who do not have perceived benefits from ARV therapy and loss of self-efficacy are significantly related to delays in undergoing ARV therapy (Gebru, Lentiro, and Jemal 2018). Loss of self-efficacy and perceived benefit may be the effect of social stigma, low knowledge, or the belief that medical treatment is not useful in curing HIV/AIDS. There is a direct effect of cues to action

on the compliance of PLHIV patients in taking ARV therapy and it has a significant relationship (Agustin, Prasetyo, and Murti 2018). Good knowledge regarding HIV/AIDS treatment needs to be accompanied by support from those closest to you. PLHIV who live alone and far from their families will tend to ignore their treatment and stop taking ARV therapy before it is time to stop. PLHIV patients who receive regular medication schedule reminder messages tend to have high adherence to ARV treatment (Addo, Aboagye, and Tarkang 2022). Reminder messages act as a stimulus for PLHIV patients to have a strong will to undertake ARV therapy.

CONCLUSION

The variables that are often found and analyzed in research are perceived barriers, perceived benefits, self-efficacy, and cues to action. The results of several studies in the findings article show that there is a significant relationship between perceived benefit, perceived barrier, self-efficacy and cues to action on adherence to ARV therapy in HIV positive patients. This research has limitations in the data sources for research results that have been conducted in Indonesia, so in the future it is necessary to have other research results in Indonesia that contain similar topics as comparative information. It is hoped that the results of research using this systematic review will increase public awareness, especially PLHIV, regarding the importance of adherence to ARV therapy.

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