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Factors Associated with Antiretroviral Therapy Adherence in Patients with HIV at a Public Hospital in Central Jakarta, Indonesia

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Abstract

Patients with human immunodeficiency virus (HIV) are required to take antiretroviral therapy (ART) to suppress the virus. However, suboptimal adherence remains a critical barrier that can lead to treatment failure and persistent transmission risks. This study aimed to identify factors associated with ART adherence in patients with HIV. This quantitative study with a cross-sectional design consisted of patients with HIV aged >18 years who received care at the voluntary counseling and testing clinic of a public hospital in Jakarta, Indonesia. Purposive sampling was used. This study used HIV care and ART overview forms as instruments. Data were analyzed using multiple logistic regression. The results showed that among 266 patients with HIV, 213 (80.1%) reported adherence to ART. This study found that age ≥44 years (adjusted POR 2.631; 95% CI 1.059–6.533), higher education level (adjusted POR 4.407; 95% CI 1.948–9.973), and CD4 count ≥200 (adjusted POR 2.593; 95% CI 1.219–5.517) were associated with higher adherence. Conversely, patients with an ART duration of 1–5 years (adjusted POR, 0.259; 95% CI, 0.100–0.673) and those who had never experienced drug side effects (adjusted POR, 0.108; 95% CI, 0.014–0.860) were less likely to be adherent. The dominant factor was the experience of drug side effects, suggesting that adherence should be enhanced through proactive counseling.

Keywords: adherence, antiretroviral therapy, drug side effects, human immunodeficiency virus, voluntary counseling and testing

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Introduction

Human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) is an infectious disease that remains a public health problem because it is incurable and chronic, and people living with HIV (PLWH) can transmit the virus throughout their lives. To suppress the viral progression, PLWH must routinely receive antiretroviral therapy (ART). ART is not considered to cure the disease, but it can prolong a patient's life, reduce HIV transmission, and reduce the likelihood of progression to AIDS.[1] ART is essential for suppressing viral progression and improving the quality of life of PLWH.[2] ART works by stopping HIV replication; if treatment is stopped, the virus replicates and can develop resistance to the previous regimen.[3] Adherence to ART is essential to achieve treatment success in HIV patients.[4]

Adherence to antiretroviral therapy can be measured using various methods, but there is no single gold standard, as each assessment has strengths and weaknesses.[5] Most used methods include patient self-reporting,[6–8] pill count,[9,10] the proportion of days covered,[11–13] and combined approaches.[14,15]

Over 70% of the identified studies employed self-reported questionnaires, making self-reported questionnaires the most frequently used method for assessing medication adherence.[16] However, self-reporting is a subjective method; therefore, to minimize reporting bias, this study employed an objective measurement through the pill count method. Adherence was assessed by counselors during clinical visits by physically verifying the remaining antiretroviral medication. Patients were classified as adherent if they met a threshold of >95%, defined as fewer than 3 missed doses in the last 30 days. Evidence shows that pill count is effective in public healthcare settings across developing countries, particularly for patients with HIV and tuberculosis who experience stigma and discrimination.[17]

Adherence to antiretroviral therapy in patients with HIV may be affected by several factors. A previous study suggest that adherence is influenced by the number of years on ART.[9] Patients with HIV who had been on ART for more than 3 years were 10.5 times more likely to be non-adherent than those on ART for 1–3 years (adjusted OR 10.568; 95% CI 2.781–40.156).[9]

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The long duration of ART is one of the factors that contribute to treatment non-adherence, as patients may face barriers such as hopelessness that are further exacerbated by the physiological and social complexities of aging.[9] This study specifically examines the 5-year threshold as it marks the transition into the long-term maintenance phase, whereas the initial years of therapy focus on clinical stabilization. In addition, factors associated with ART adherence include age, cluster of differentiation (CD) 4 cell count, World Health Organization clinical stage, comorbidities or opportunistic infections, stigma, and discrimination.[10,14,18,19]

Based on global data from the Joint United Nations Programme on HIV/AIDS, by 2023, there are approximately 39.9 million PLWH, 1.3 million new HIV infections, 630,000 deaths from HIV-related diseases, and 30.7 million people accessing ART.[20] These figures highlight the massive scale of the global HIV response. As more individuals access therapy, ensuring long-term adherence becomes essential for reducing HIV-related mortality and preventing new infections.

Based on the 2023 data, the percentage of adults living with HIV accessing ART was 77% globally and 67% in Asia.[20] Globally and nationally, the key strategy for HIV prevention and control is to achieve the "Triple 95s" or (95-95-95) by 2030, consisting of 95% of PLWH knowing their status, 95% of PLWH receiving ART, and 95% of PLWH on ART achieving viral supression.[21] As of December 2022, Indonesia was still lagging in achieving these targets, as the first 95% achievement was 81%, and only 41% had received ART, while only 19% of PLWH on ART were virally suppressed.[21] In the HIV/AIDS report for the first quarter of 2023 by the Indonesian Ministry of Health of the Republic of Indonesia,[22] it was noted that the province with the highest number of HIV cases, based on data from 2010 to March 2023, was the Special Capital Region of Jakarta (82,033 cases), with 1,422 cases from January to March 2023, while only 1,215 cases had received ARV therapy.

ART can be obtained through health facilities that provide HIV services. A public hospital in Jakarta offers comprehensive HIV care for adults and children through a voluntary counseling and testing (VCT) clinic. According to the preliminary study, the hospital which becomes this study's location recorded 2,124 outpatients with HIV received care in 2023. The substantial burden of HIV infection at both the global and national levels underscore the critical importance of sustained adherence to ART, highlighting the need to identify factors associated with ART adherence to improve survival outcomes among people with HIV.

Within this context, the novelty of this study lies in its identification of specific determinants of ART adherence at a public hospital in Jakarta, which serves as a major referral center in the country's administrative hub. This setting is particularly salient because the hospital serves a highly mobile urban population characterized by complex social dynamics and heterogeneous healthcare needs. While a previous study was conducted at the national referral center for infectious diseases,[23] patients in such specialized facilities may benefit from a more supportive care environment with lower perceived stigma and greater confidentiality. In contrast, general public hospitals present distinct challenges related to privacy, patient comfort, and continuity of care, all of which may influence adherence behavior among people living with HIV. Moreover, this study contributes to the Indonesian literature by extending insights from earlier work conducted in Denpasar through a more comprehensive examination of factors associated with ART adherence.[24] Therefore, this study aimed to determine the factors associated with ART adherence among patients with HIV at a public hospital in Jakarta.

Method

This study utilized secondary data from hospital records in 2023, and the analysis was conducted from October to December 2024. This study included patients with HIV aged >18 years who received outpatient treatment at a VCT clinic in a public hospital in Central Jakarta. The total study population comprised 580 patients with HIV. Purposive sampling was used. The inclusion criteria were a diagnosis of HIV, receipt of ART for at least 12 months, attendance at the clinic from January to December 2023, and residing in the Special Capital Region of Jakarta Province. The exclusion criteria included incomplete and illegible data on the HIV care and ART summary sheet.

The World Health Organization Sample Size application was used to calculate sample size, using Lemeshow's formula for two-sided hypothesis testing at the 95% confidence level.[25] The purpose was to observe the differences between the two groups when the direction of the effect had not yet been established. Based on the number of samples calculations, the P1 value was 0.84, and the P2 value was 0.67, as reported in previous

research.[8] P1 represented the proportion of ART adherence among exposed participants, whereas P2 referred to the proportion of adherence among unexposed participants. The minimum sample size obtained was 133 participants per group. To satisfy the two-tailed hypothesis, the study required 133 participants per group, yielding a minimum sample size of 266.

This cross-sectional study was designed to determine the factors associated with ART adherence using secondary data from HIV care and ART summary forms at a public hospital in Central Jakarta. The dependent variable or outcome of this study was ART adherence, which was divided into non-adherent and adherent groups. Adherent patients were seen by the counselor based on the remaining antiretroviral drugs during the visit. Adherence was defined as >95% if only <3 doses were missed in the last 30 days. Independent variables were age (≥44 years and <44 years), sex (female and male), education level (high (higher education) and low (elementary, junior high, and senior high school)), employment status (employed and unemployed), marital status (married and single), ART duration (1–5 years and >5 years), clinical stage (early stage (stages 1 and 2) and late stage (stages 3 and 4)), CD4 count (≥200 and <200), side effects (no and yes), opportunistic tuberculosis infection (no and yes), and drug swallowing supervisor (yes and no).

Data was analyzed from univariate to multivariate using IBM SPSS Statistics Version 31 (full version trial). Univariate analysis aimed to obtain an overview of each research variable's distribution, frequency, and percentage. Bivariate analysis was conducted using the Chi-square test in the next stage, as both the independent and dependent variables were categorical, and determined the multivariate candidates. Variables with a p-value of ≤0.25 were included in the multivariate analysis. In this study, multivariate analysis used multiple logistic regression to examine the relationship between multiple independent variables and a categorical dependent variable. Variables with p-values >0.05 were gradually excluded from the model, starting with those with the largest p-values. This approach allowed identification of independent variables that demonstrated associations, as well as the dominant variable affecting the dependent variable. In the final multivariate model, variables with p-values ≤0.05 were considered statistically associated. Multivariate analysis was conducted to control confounding variables.

Results

Table 1 shows that the proportion of ART adherence in a public hospital in Central Jakarta in 2023 was 80.1%. Most patients were aged <44 years (72.6%), male (75.6%), low-educated (65.8%), unmarried (57.5%), and employed (72.6%). Regarding clinical profiles, 68.8% had been on ART for 1–5 years, 83.1% were in the late stages, and 79.3% had CD4 count ≥200. Furthermore, 42.1% had tuberculosis, 11.7% experienced drug side effects, and 52.3% lacked a drug swallowing supervisor. The factors associated with adherence to ART among patients with HIV at a public hospital in Jakarta are presented in Table 2. Age, education level, ART duration, clinical stage, CD4 count, and drug side effects were significantly associated with ART adherence. Drug side effects were the dominant variable in ART adherence.

Table 1. Participants Characteristics

Variables	n (%)
ART Adherence	
Adherent	213 (80.1)
Non-adherent	53 (19.9)
Age	
≥44 years	73 (27.4)
<44 years	193 (72.6)
Sex	
Female	65 (24.4)
Male	201 (75.6)
Education Level	
High (college/university degree)	91 (34.2)
Low (Elementary/Middle/High School)	175 (65.8)
Marital Status	
Married	113 (42.5)
Single	153 (57.5)
Employment Status	
Employed	193 (72.6)
Unemployed	73 (27.4)
ART Duration	
1–5 years	183 (68.8)
>5 years	83 (31.2)
Clinical Stage	
Early stage (stages 1 and 2)	45 (16.9)
Late stage (Stages 3 & 4)	221 (83.1)
CD4 Counts	
≥200	211 (79.3)
<200	55 (20.7)
Drug Side Effects	
No	235 (88.3)
Yes	31 (11.7)
Opportunistic Tuberculosis Infection	
No	154 (57.9)
Yes	112 (42.1)
Drug Swallowing Supervisor	
Yes	127 (47.7)
No	139 (52.3)

Notes: HIV = human immunodeficiency virus; ART = antiretroviral therapy; CD4 = Cluster of Differentiation 4

Table 2. Factors Associated with Adherence to Antiretroviral Therapy

Variables	ART Adherence		Unadjusted		Adjusted	
	Adherent n = 213 (80.1%)	Non-adherent n = 53 (19.1%)	POR (95% CI)	p-value	POR (95% CI)	p-value
Age						
≥44 years	66 (90.4)	7 (9.6)	2.950 (1.265–6.879)	0.015*	2.631 (1.059–6.533)	0.037*
<44 years	147 (76.2)	46 (23.8)	1		1	
Sex						
Female	54 (83.1)	11 (16.9)	1.297 (0.624–2.697)	0.604	-	-
Male	159 (79.1)	42 (20.9)	1			
Education Level						
High	82 (90.1)	9 (9.9)	3.060 (1.419–6.598)	0.005*	4.407 (1.948–9.973)	0.001*
Low	131 (74.9)	44 (25.1)	1		1	
Employment Status						
Employed	156 (80.8)	37 (19.2)	1.183 (0.612–2.290)	0.743	-	-
Unemployed	57 (78.1)	16 (21.9)	1			
ART Duration						
1-5 years	136 (74.3)	47 (25.7)	0.225 (0.092–0.552)	0.001*	0.259 (0.100–0.673)	0.006*
>5 years	77 (92.8)	6 (7.2)	1		1	
Clinical Stage						
Early stage	40 (88.9)	5 (11.1)	2.220 (0.830–5.933)	0.156	1.841 (0.638–5.311)	0.259
Late stage	173 (78.3)	48 (21.7)	1		1	
CD4 Counts						
≥200	178 (84.4)	33 (15.6)	3.082 (1.588–5.983)	0.001*	2.593 (1.219–5.517)	0.013*
<200	35 (63.6)	20 (36.4)	1		1	
Drug Side Effects						
Yes	30 (96.8)	1 (3.2)	1	0.025*	1	0.036*
No	183 (77.9)	52 (22.1)	0.117 (0.016–0.881)		0.108 (0.014–0.860)	
Opportunistic Tuberculosis Infection						
Yes	88 (78.6)	24 (21.4)	1	0.713	-	-
No	125 (81.2)	29 (18.8)	1.176 (0.641–2.154)			
Drug Swallowing Supervisor						
Yes	99 (78.0)	28 (22.0)	0.775 (0.424–1.147)	0.500	-	-
No	114 (82.0)	25 (18.0)	1			

Notes: ART = antiretroviral therapy, POR = prevalence odds ratio, CI = confidence interval, CD4= Cluster of Differentiation 4 *Statistically associated (p-value ≤0.05)

Discussion

In 2023, the proportion of ART adherence in a public hospital in Central Jakarta was 80.1%. The factors associated with adherence to ART were age, education level, ART duration, CD4 count, and drug side effects. Drug side effects were the dominant factor in ART adherence. Although in the analysis, drug side effects had an OR of 0.1, if reversed, this would be 10 and can be interpreted as indicating that those who had drug side effects had 10 times higher adherence than those who did not have side effects.

The adherence level identified in this study might differ from those reported in previous studies due to variations in operational definitions and methodological approaches.[2,10] One important source of discrepancy is adherence categorization. This study applied a binary classification (adherent vs. non-adherent) to provide clearer and more robust analytical distinctions. In contrast, several studies employed three adherence categories, in which the inclusion of a "moderate adherence" group may dilute the strength of associations between variables.[2,10] Patients with even minor deviations in medication intake were classified as non-adherent under the binary approach. This classification is supported by evidence indicating that adherence levels of ≤95% are associated with an increased risk of virological suppression failure.[26] Thus, the two-category classification offers a more clinically relevant assessment, as suboptimal adherence has been consistently linked to treatment failure and the emergence of drug resistance.

Differences may also arise from the objectivity and recall period of adherence measurement tools. Self-reported measures typically rely on short recall periods, such as the previous 7 days,[7] making them susceptible to the white coat dosing phenomenon. Patients may temporarily improve adherence before scheduled clinic visits to meet the perceived expectations of healthcare providers.[27] In contrast, pill count assessment covered an entire treatment cycle (30 days), enabling the capture of medication-taking behavior during periods of reduced supervision, when missed doses are more likely.

ART adherence in this study varied compared to findings from other settings. A previous study integrated self-reported adherence questions.[6] The self-report component, which relied on a 1-week recall period, yielded an adherence rate of 88.2%.[6] This figure is higher than that in this study (80.1%), which can be explained by the short recall window and susceptibility to the white coat adherence phenomenon.[27] Nevertheless, this study's findings demonstrated close alignment with adherence

levels reported in other major urban settings in Indonesia. The adherence rate of 80.1% observed in this study was comparable to the 81.1% reported at the national referral center of infectious diseases.[23] Although specialized, the similarity in adherence levels suggests that patients in Jakarta experience comparable sociodemographic pressures and structural stigma. Given that both institutions serve dense metropolitan populations, shared urban stressors and similar regional support systems may contribute to this convergence in adherence outcomes. A similar pattern was observed in Denpasar, where an adherence rate of 84.16% was reported.[24] Similar to Jakarta, Denpasar is a heterogeneous urban area with substantial international exposure and tourism, which are factors that influence local social dynamics and health-seeking behaviors related to HIV treatment.

Education level was associated with ART adherence in patients with HIV. This was consistent with several studies showing that patients with higher levels of education were more adherent than those with lower levels.[13,18] The level of education may increase access to health information, thereby increasing health-related knowledge and awareness, such as adherence to ART.[28] Patients with higher education are more capable of understanding medical information from health workers or other sources, so that they know the benefits and risks of adhering to ART. Patients with low education have limited access to information about the disease and its treatment, which affects adherence.[29] Therefore, health communication strategies should be adapted to varying health literacy levels. Hospitals may enhance adherence by incorporating simple visual-oriented educational materials to ensure that key messages regarding lifelong ART adherence are communicated across diverse educational backgrounds.

Age was associated with adherence in this study. The result was consistent with a previous study, which found that patients aged ≥40 years were more likely to adhere to ART than patients aged 30 years.[6] Patients in the middle-age group tend to be concerned about their health status due to sociocultural pressures to survive, so they are more careful and accept instructions and counseling from health workers, including serious medication adherence.[28] Patients aged ≥44 years were at risk of comorbidities; therefore, they take their health seriously and live longer with HIV. However, a previous study found that 18–24-year-olds were 57% less likely to be adherent than patients aged >44 years.[14] This may be because young patients are more likely to engage in substance abuse, leading to non-adherence, and there may be a fear of stigma and discrimination.[14] The higher adherence observed among patients aged ≥44 years suggested that hospitals could leverage their treatment experience by involving them in peer mentorship programs for younger or non-adherent patients.

ART duration was associated with ART adherence in patients with HIV. A previous study found that patients on long-term treatment for more than 5 years had better adherence.[30] Patients who have been on ART for more than 5 years have developed better adherence routines and habits. These patients understand the importance of adherence in maintaining good health. In contrast, patients who have only been on ART for 1–5 years may still be in the adjustment phase and face challenges in maintaining ART adherence. However, several studies have found that patients on ART for >5 years are at risk of non-adherence.[3] Based on this study, patients on ART for >5 years demonstrated better adherence, suggesting that hospitals should leverage these experienced patients as peer mentors to support those in the earlier stages of therapy, who may be more vulnerable to inconsistent adherence.

The clinical stage variable did not show a statistically significant association with the clinical stage. A previous study also reported no significant association between clinical stage and ART adherence.[8] This may occur because the HIV patient support program at a public hospital in Jakarta encourages each patient to maintain similar levels of adherence regardless of disease stage. Furthermore, the higher proportion of patients with late-stage HIV than early-stage HIV may explain the lack of association, as early-stage HIV cases are often detected late due to mild or absent symptoms. Social stigma and fear of discrimination also contribute to delayed testing, resulting in more patients being diagnosed at advanced stages.

Nevertheless, several studies have highlighted the theoretical mechanisms by which severe clinical stages may reduce adherence. A previous study found that patients with stage 4 HIV who had poor adherence to ART were likely to develop virological failure.[26] Virologic failure is common among patients with poor ART adherence because low adherence leads to suboptimal drug concentrations and a loss of therapeutic effects in suppressing viral replication, which consequently accelerates disease progression, increases HIV transmission risk, triggers drug resistance, and ultimately leads to premature death.[26] Furthermore, treatment fatigue has been increasingly recognized as a barrier to long-term adherence. Treatment fatigue refers to the psychological and physical exhaustion associated

with daily ART use over a lifetime. A previous study reported that regimen fatigue among patients with HIV was significantly associated with poor medication availability and comorbidities, both of which reduced the motivation to adhere.[31]

CD4 count showed an association with adherence to ART. A previous study found that patients with CD4 counts ≥200 (categories 200–499 and ≥500) were more likely to have good adherence compared to patients with CD4 counts <200.[10] If the CD4 count is <200, there is severe damage to the immune system, so the patient's condition can become weak.[32] The physical weakness of the patient decreases daily activities, resulting in the patient's inability to comply with ART in health services. In contrast, patients with a CD4 count ≥200 have higher immunity, so they can move and go to health services. The association between CD4 counts ≥200 cells/mm^3 and ART adherence suggests that clinical improvement may function as a reinforcing factor for sustained treatment engagement. Immune status improvements can enhance patients' confidence in therapy effectiveness, thereby strengthening motivation to continue long-term ART. Hospital health workers play a critical role in translating clinical indicators into meaningful feedback during routine counseling sessions by emphasizing immune recovery. For patients with CD4 counts <200 cells/mm^3, intensive counseling and sustained motivation are essential, especially during periods when clinical improvement may not yet be obvious.

Among all variables analyzed, the experience of drug side effects emerged as the most dominant factor associated with ART adherence. A previous study reported a similar association, which also identified a significant relationship between side effects and adherence behavior.[33] This result reflects a paradoxical but clinically relevant phenomenon. Another study reported that the most common side effects were nausea and headache.[34] Side effects can be caused by immune hyperactivation factors, metabolic changes in the body, cytokine profiles, oxidative stress, and genetic predisposition.[35] Some side effects may appear during the first few weeks after ART, such as gastrointestinal symptoms, including nausea, vomiting, and diarrhea.[36] Mild side effects are temporary and may not be experienced by every patient. In addition, if side effects occur, the drug regimen cannot be easily changed.

In the public hospital setting of this study, patients who report side effects typically receive closer clinical attention, including targeted counseling, symptom management, and support from healthcare providers, non-governmental organizations, and peer support groups. This enhanced interaction may strengthen patient–provider relationships and improve treatment literacy, thereby promoting adherence despite adverse effects. Nevertheless, side effects remain a potential cause of treatment interruption for some patients, particularly when physical discomfort interferes with daily activities or work capacity.[37] Side effects that affect daily life are a barrier to optimal adherence.[38]

The association between side effects and adherence to ART highlighted the need for proactive, continuous counseling. While several previous studies have reported that side effects are associated with poorer adherence, this study's findings suggested a more nuanced relationship: patients who do not experience side effects may develop a false sense of clinical stability. Therefore, these findings underscore the importance of continuous monitoring and early supportive interventions to ensure that patients perceive mild side effects as manageable and temporary rather than reasons to discontinue therapy. Anticipatory counseling should be provided to all patients, including those who report no symptoms, to reinforce the understanding that treatment interruption is not justified by the absence of adverse effects.

This study had several limitations. The use of secondary data restricted the analysis to variables available in the summary forms for HIV and ART patient care. Other factors theoretically associated with adherence could not be examined. The findings of this study were most applicable to health facilities similar to a public hospital. The results provided a specific and valuable benchmark for other tertiary hospitals or regional referral centers that function as referral centers and manage patients with higher disease severity and complex clinical conditions. Health facilities with comparable clinical environments and patient profiles may use these findings to refine management strategies and improve ART adherence within their own settings. This targeted generalizability ensured that the generated evidence is particularly relevant for strengthening clinical practice in specialized HIV care units. Multivariate analysis was conducted to control for potential confounding factors, thereby strengthening the validity of the observed associations between these factors and adherence.

Conclusion

The proportion of ART adherence among patients with HIV at a public hospital in Jakarta was quite good. Factors associated with ART adherence were age ≥44 years, higher education level, ART duration of >5 years, CD4 count ≥200, and the experience of drug side effects. The dominant factor in ART adherence was the experience of drug side effects. Considering the observed relationship between drug side effects and ART adherence, all patients should receive proactive counseling, including those who report no symptoms, to prevent complacency and reinforce the understanding that clinical stability does not justify treatment discontinuation.

Abbreviations

HIV: Human Immunodeficiency Virus; PLWH: people living with HIV; ART: antiretroviral therapy; CD4: cluster of differentiation 4; VCT: Voluntary Counseling and Testing; POR: prevalence odds ratio; CI: confidence interval.

Ethics Approval and Consent to Participate

This study received ethical approval from the Hospital Health Ethics Research Commission (approval no. 090/KEPK/RSUDT/2024) and all participants provided consent to participate. This study used secondary data from HIV care and ART summary forms; therefore, the Health Ethics Research Commission waived the need for informed consent.

Competing Interest

The author declares no conflict of interest.

Availability of Data and Materials

The datasets generated and analyzed during the current study are not publicly available due to patient confidentiality/privacy restrictions.

Authors' Contribution

KSF designed and conducted the study, analyzed the data, wrote the first draft, and edited the manuscript. LH was involved in the study concept and administration, provided feedback, and wrote and edited the manuscript. CS and NKF provided critical feedback and edited the manuscript.

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Declaration on the Use of Artificial Intelligence

Gemini (gemini.google.com) was utilized to help develop the initial structure of the discussion on the potential impacts of populism on evidence-informed health policy processes. ChatGPT-5.2 (chat.openai.com) was used to assist in editing and rephrasing the manuscript's initial texts, as the author is a non-native English speaker. All interpretations, analyses, and conclusions are solely the responsibility of the author.

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