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The attitude of preventing opportunistic infections among PLHIV/AIDS attending non-governmental organization (Kuldesak) Depok City, Indonesia

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Abstract

Background: The number of people living with HIV and AIDS (PLWHA) is increasing and it has become a pandemic in various parts of the world. However, there are still limited AIDS countermeasures in preventing death, one of which is by reducing opportunistic infections.

Purpose: To determine the factors associated with the attitude of preventing opportunistic infections among PLHIV/AIDS attending non-governmental organization (Kuldesak) Depok City, Indonesia

Method: An analytic research with a cross-sectional research design which aims to determine the relationship between the independent variables and the dependent variable. The number of samples in this study were 71 PLHIV attending non-governmental organization "Kumpulan Dengan Segala Aksi Kemanusiaan" (Kuldesak) Peer Support Group (PSG) Depok City, Indonesia. Samples were taken using a non-random sampling technique with purposive sampling.

Results: Obtained that three variables influenced the attitudes to prevent opportunistic infection in PLWHA, namely perceived susceptibility (AOR = 4,98; 95% CI = 1,459-17,029), perceived severity (AOR = 4,04; 95% CI = 1,161-14,079) and perceived benefit (AOR = 7,13; 95% CI = 1,846-27,601).

Conclusion: Almost half of all respondents in the Kuldesak Peer Support Group (PSG) Depok City have a low attitudes to prevent opportunistic infection. Perceived benefit was the most dominant predictor in determining attitudes to prevent opportunistic infection.

Suggestion: In order to further develop this research and provide education so that the attitude of OI preventing, especially in PLWHA, is better than before.

Keywords: Opportunistic Infections; Perceptions; Attitudes; People living with HIV and AIDS.

INTRODUCTION

HIV (Human Immunodeficiency Virus) and AIDS (Acquired Immune Deficiency Syndrome) are one of the health problems that threaten many countries in the world. Globally, according to UNAIDS (2019), it states that 37.9 million people are living with HIV, with 1.7 million new infections in the same year (Joint United Nations Programme on HIV/AIDS, 2019). The estimated number of PLHIV in 2020 is 543,100 people; The number of PLWHA who are still alive and whose status is known is 387,210 people (71%); The number

of people living with HIV who received treatment was 152,525 people (40%); Number of PLHIV receiving treatment tested for Viral Load (VL) in 2021; at least after 6 months of Antiretroviral (ARV) treatment with a reduced Viral Load (VL) of 20,747 people (14%) (Ministry of Health of the Republic of Indonesia, 2022).

In Indonesia alone, in 2018 the number of reported HIV infections in Indonesia was 46,659 cases with 10,190 AIDS cases (Ministry of Health of the Republic of Indonesia, 2019; Widati & Kusumastuti, 2020;

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Juleha, 2020). Based on data from the Directorate General of P2P in 2017, West Java ranks in the top three in the number of reported HIV and AIDS infections, namely 5,819 HIV cases and 1,251 AIDS cases. Depok City as one of the cities in West Java Province ranks in the top 10 cities with the most reported HIV infection. The number of HIV cases in Depok City in 2015 was 146 cases, 2016 as many as 278 cases, 2017 as many as 372 cases and 2018 HIV cases as many as 220 cases and with AIDS cases as many as 73 cases (Depok City Health Office, 2019).

The number of people living with HIV and AIDS (PLWHA) is increasing and it has become a pandemic in various parts of the world. However, there are still limited AIDS countermeasures in preventing death, one of which is by reducing opportunistic infections (OIs). The dominance of OIs that often appear in PLHIV include pulmonary tuberculosis (50%), pneumonia (33%) hepatitis (30%), candidiasis (25%), followed by chronic diarrhea and extra pulmonary tuberculosis (Putri, Darwin, & Efrida, 2015; Harley, Troop, & Alston, 2020; Ong, Migliori, Raviglione, MacGregor-Skinner, Sotgiu, Alfenaar, & Goletti, 2020). Poor perceptions of HIV and AIDS can affect OI prevention efforts in PLWHA (Ernawati, 2018). This can increase the risk of OIs which are the main cause of death for PLHIV (Fahriati, Indah, Satria, & Mutoharoh, 2021; Indah, Puji, Kasumawati, Ratnaningtyas, Ismaya, Ayu, & Mabrurroh, 2022).

The Health Belief Model (HBM) theory, explains that perceptions can be influenced subjectively based on the person's point of view, while the perceptions in HBM theory in cases of HIV and AIDS include Perceived susceptibility to contracting HIV and AIDS, perceptions of the severity of HIV and AIDS that can causing exclusion, loss, and even death, perceived benefit or positivity and negative perceptions of the impact of HIV and AIDS, as well as perceptions of ability and confidence in carrying out preventive behaviors (Fauzan, 2015; Tarkang, & Zotor, 2015; Champion, & Skinner, 2008; Munro, Lewin, Swart, & Volmink, 2007).

Based on a preliminary study conducted through interviews with "Kartu Depok Sejahtera" (KDS) or

Depok Prosperity Cardholder (DPC) is a program that unites and integrates poverty data in Depok City.

Kuldesak administrators, data was obtained that in 2018 there were 790 PLWHA in KDS Kuldesak. Regarding OIs, KDS Kuldesak administrators said that on average PLWHA did not pay attention to their behavior in preventing OIs, especially in key groups and people living with HIV who had just been diagnosed, because PLWHA still underestimated IO. This can be seen from the adherence to taking PLWHA medication. Many PLWHA experience new or recurring OIs. The purpose of this study was to analyze factors related to opportunistic infection prevention attitudes in people with HIV AIDS (PLWHA) in the Kuldesak Peer Support Group in Depok City.

RESEARCH METHOD

This study is an analytical study with a cross-sectional study design and quantitative approach. The research location was carried out at Kuldesak Peer Support Group (PSG) Depok City. The type of data between the independent variable and the dependent variable in this study was measured using a questionnaire with a nominal data scale. The population was PLHIV/AIDS attending non-governmental organization "Kumpulan Dengan Segala Aksi Kemanusiaan" (Kuldesak) Peer Support Group (PSG). Meanwhile, the sample in this study was taken using a non-random sampling technique with a type of purposive sampling that included all respondents who fit the inclusion criteria, namely active members of Kuldesak PSG, able to read and able to access online questionnaires, because the study was conducted during the COVID-19 pandemic. Based on the sample size formula using the Lemeshow formula, the number of samples obtained were 71 PLWHA.

Data collection techniques in this study used secondary data and primary data. Secondary data is data obtained from Kuldesak PSG regarding the number of PLWHA members. Primary data are the results obtained from filling out questionnaires distributed to the respondents. Perceived threat using adaptation from the *Development of a Brief Scale to Measure AIDS-Related Stigma* questionnaire,

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perceived susceptibility using the *Health Belief Model-Perceived Susceptibility* questionnaire, perceived severity using adaptation from the *AIDS Health Belief Scale* questionnaire, perceived benefit using adaptation from the *Development of a Brief Scale to Measure AIDS-Related Stigma* questionnaire and attitudes to prevent opportunistic infections questionnaire using tested questionnaires validity and reliability by Ernawati, 2018. The variables of perceived threat, perceived vulnerability, perceived severity, perceived benefit and attitudes towards preventing opportunistic infections were categorized into two categories, namely low if the total score was <

median (35) and high if the total score was \geq median (35).

In this study, data processing software was used, namely *Statistical Package for Social Sciences* (SPSS) version 26. Data analysis carried out includes univariate analysis to describe the distribution and frequency of all variables, bivariate analysis to determine the relationship between two variables using the Chi Square test with a Confidence Interval (CI) of 95%. Followed by bivariate analysis to determine the amount of association value, namely Prevalence Odds Ratio (POR) and multivariate analysis as a follow-up analysis using logistic regression test.

RESEARCH RESULTS

Table 1. Demographic Characteristic of Respondents (N=71)

Variables	f (%)
Age (Mean\pmSD) (Range)(Years)	(30.01 \pm 6.796) (17-45)
≤ 25 years	13/18.3
> 25 years	58/81.7
Education Level	
Low education	8/11.3
Higher education	63/88.7
Employment Status	
Employed	21/29.6
Unemployed	50/70.4
Marital Status	
Unmarried	42/59.2
Married	29/40.8
Illness Duration (Mean\pmSD)(Range)(Years)	(4.75 \pm 4.153) (0.3-15)
> 5 years	22/31
≤ 5 years	49/69
Have any Information About HIV/AIDS	
Yes	66/93
No	5/7

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Perceived Threat	
Low	27/38
High	44/62
Perceived Susceptibility	
Low	30/42.3
High	41/57.7
Perceived Severity	
Low	28/39.4
High	43/60.6
Perceived Benefit	
Low	37/52.1
High	34/47.9
Prevention Attitude of Opportunistic Infections	
Low	24/33.8
High	47/66.2

Based on table 1 the characteristics of respondents based on age show the mean and standard deviation (30.01 ± 6.796) with an age range of 17 to 45 years, the majority age > 25 years as much as 81.7%. The majority of respondents are highly education, namely 88.7%, the majority are not occupation with a percentage of 70.4%, the majority unmarried as much as 59.2%, the majority of respondents diagnosed with HIV \leq 5 years are 69%. Based on information about HIV/AIDS, 93% of respondents were exposed. based on the respondent's perception shows that the respondent has a high perceived threat of 62%, a high perceived susceptibility of 57.7%, a high perceived severity of 71%, a low perceived benefit of 52.1%. Based on the frequency distribution of respondents according to opportunistic infection prevention attitudes, it showed that more than half of the respondents had high opportunistic infection prevention attitudes, namely 66.2%.

Table 2. The Factors Associated With The Attitude of Preventing Opportunistic Infections

Variables	Attitudes to Prevent Opportunistic Infection		cPOR* (95% CI)	p-value
	Low (n=24)	High (n=47)		
Age (n/%)				
\leq 25 years	5/2.8 (38,5)	8/17	1,28	0,751
> 25 years	19/79.2 (32,8)	39/83	(0,37 - 4,45)	
Education Level (n/%)				
Low education	4/16.7 (50)	4/8.5	2,15	0,431
Higher education	20/83.3 (31,7)	43/91.5	(0,48 - 9,48)	

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Employment Status (n/%)				
Employed	7/29.2 (33,3)	14/29.8	0,97	1,00
Unemployed	17/70.8 (34)	33/71.2	(0,33 - 2,85)	
Marital Status (n/%)				
Unmarried	14/58.3	28/59.6	0,95	1,00
Married	10/41.7	19/40.4	(0,35 - 2,58)	
Illness Duration (n/%)				
> 5 years	11/45.8	11/23.4	2,76	0,097
≤ 5 years	13/54.2	36/76.6	(0,97 - 7,90)	
Have any Information About HIV/AIDS (n/%)				
Yes	22/91.7	44/93.6	1,33	1,00
No	2/8.3	3/6.4	(0,20 - 8,57)	
Perceived Threat (n/%)				
Low	14/58.3	13/27.7	3,66	0,024**
High	10/41.7	34/72.3	(1,30 - 10,28)	
Perceived Susceptibility (n/%)				
Low	17/70.8	13/27.7	6,35	0,001**
High	7/29.2	34/72.3	(2,14 - 18,84)	
Perceived Severity (n/%)				
Low	15/62.5	13/27.7	4,35	0,01**
High	9/37.5	34/72.3	(1,53 - 12,39)	
Perceived Benefit (n/%)				
Low	19/79.2	18/38.3	6,12	0,003**
High	5/20.8	29/61.7	(1,94 - 19,28)	

*cPOR: Crude Prevalence Odds Ratio

**Statistically significant

Table 2 shows the low risk of attitudes to prevent opportunistic infection in PLWHA based on perceived threat, perceived susceptibility, perceived severity, and perceived benefit. The cPOR value of perceived threat with attitudes to prevent opportunistic infection is 3,66 (95% CI = 1,0-10,28) which means PLWHA with low perceived threat has a 3,7 times chance of having attitudes to prevent opportunistic infection which is also low compared to PLWHA with high perceived threat. The cPOR value of perceived susceptibility with attitudes to prevent opportunistic infection is 6,35 (95% CI = 2,14-18,84) which means PLHIV with low perceived susceptibility has a 6,4 times chance of having attitudes to prevent opportunistic infection which is also low compared to PLWHA with high perceived susceptibility.

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In addition to perceived threat and perceived susceptibility, variables that had a statistically significant correlation with attitudes to prevent opportunistic infection were the perceived severity variable with a cPOR of 4,35 (95% CI = 1,53-12,39) and perceived benefit variable with a cPOR of 6,12 (95% CI = 1,94-19,28). It means that PLWHA with low perceived severity have a 4,4 times greater chance of having a low attitudes to prevent opportunistic infection than PLWHA with high perceived threat. Similarly, PLWHA with low perceived benefit has 6 times chance of having attitudes to prevent opportunistic infection which is also low compared to PLWHA with high perceived benefit.

Table 3. Final Model of Multivariate Analysis in Prevent Opportunistic Infection

Variable	Coeff	SE	Adjusted POR (95% CI)	p-value
Perceived Susceptibility	1,60	0,62	4,98 (1,459 - 17,029)	0,010
Perceived Severity	1,39	0,63	4,04 (1,161 - 14,079)	0,028
Perceived Benefit	1,96	0,69	7,13 (1,846 - 27,601)	0,004

Based on final model of multivariate analysis above, three variables were obtained that influenced the attitudes to prevent opportunistic infection in PLWHA, namely Perceived Susceptibility (AOR = 4,98; 95% CI = 1,459-17,029), Perceived Severity (AOR = 4,04; 95% CI = 1,161-14,079) and Perceived Benefit (AOR = 7,13; 95% CI = 1,846-27,601). Table 3 shows that the most dominant factor for attitudes to prevent opportunistic infection in PLWHA is perceived benefit with an AOR of 7,13, it means that PLWHA with low perceived benefit have 7 times greater chance of having attitudes to prevent opportunistic infection which is also low than PLWHA with high perceived benefit.

DISCUSSION

Opportunistic infections are infections caused by a decrease in the immune system, and occur because microorganisms enter the body (bacteria, fungi, viruses, etc.). Opportunistic infections or OI can cause death >90% of AIDS patients. The attitude of preventing opportunistic infections is a response both negative and positive to prevent other comorbidities due to immunological disorders. This study describes risk factors correlated with attitudes to prevent opportunistic infection in People with HIV/AIDS

(PLWHA) in Kuldesak Peer Support Group (PSG) Depok City, West Java.

Opportunistic infection prevention attitudes were measured using a scale of 1 to 4. In the analysis related to opportunistic infection prevention attitudes in PLWHA, it was found that almost half of the respondents had a low attitude towards opportunistic infection prevention by 33.8%. Almost the same as the research conducted in Surabaya, it was found that the attitude of preventing opportunistic infections reached 35%. In the proportion of perceived benefits, more than half of the respondents (52.1%) had a low perception. And get a low perceived benefit of 50% (Ernawati, 2018). Alsianda revealed the results of the low perceived benefit of 50% (Indah, Puji, Kasumawati, Ratnaningtyas, Ismaya, Ayu, & Mabrurroh, 2022). the low attitude of preventing opportunistic infections by 40% (Indah & Eryando, 2023).

Based on the results of research on the final model, the study found that perceived benefit is a predictor of attitudes to prevent opportunistic infections. In this study, people living with HIV who had a low perceived benefit had a 7 times greater risk of producing a low attitude to prevent opportunistic infections (95% CI = 1.846-27.601). Research in

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Surabaya found that perceived benefits were related to the attitude of preventing opportunistic infections (p-value = 0.000) (Ernawati, 2018). Benefits are the advantages that a person feels in certain circumstances. In theory, perceived benefits are the perceived benefits of a person, which can change his behavior (Fauzan, 2015). PLWHA feel that they have high benefits such as peer support, as well as maintaining a healthy lifestyle that can have an impact on treatment. These advantages have an impact on high attitudes to prevent opportunistic infections as well. The results of this study support the opinion of Indah, et al who stated that perceived benefits indicate individual beliefs to carry out certain attitudes and behaviors. This is also in line with Rosenstock's theory where a person's perceived benefits change his behavior (Fauzan, 2015).

Perceived susceptibility is also a predictor of attitudes to prevent opportunistic infections. Low perceived susceptibility has a 5 times greater risk of resulting in a low attitudes to prevent opportunistic infections (95% CI = 1,459-17,029). Respondents in the study had a high perceived susceptibility accompanied by a high attitudes to prevent opportunistic infections. Susceptibility is an impact that has the opportunity to occur in a person due to certain conditions. In the perceived susceptibility can be interpreted as a perception that leads to a person's belief in the possible effects of a disease. In related studies also found similar results, namely there is a strong correlation between perceived susceptibility and attitudes to prevent opportunistic infections (p-value = 0,000) (Ernawati, 2018; Indah & Eryando, 2023). Perceived susceptibility can also be caused by stress that can affect their minds. A person's perception can be influenced by his physiological system, when the physiological system is disturbed, it will affect a person's perception (Bahar & Haris, 2016). This is also in line with the statement of Indah, et al who stated the susceptibility of the body of PLWHA to other comorbidities, which has an impact on the high perceived susceptibility. In addition, PLWHA has a high perceived susceptibility if they experience stress that affects their minds. This is the impact of PLWHA's

thoughts about their susceptibility to other comorbidities. This research is supported by research in the Genteng Wetan Village where the perceived susceptibility will direct one's beliefs about the possible impact of a disease (Fauzan, 2015).

In addition to perceived benefits and perceived susceptibility, perceived severity is also a predictor of attitudes to prevent opportunistic infections with AOR = 4.04; 95% CI = 1.161-14.079. Respondents in this study had a high perception of severity accompanied by attitudes to prevent opportunistic infections. This shows that the perception of severity has an impact on respondents to take a preventive attitude towards other co-morbidities due to their HIV/AIDS infection. This supports Rosenstock's theory where the perceived severity of a disease will have an impact on the treatment to be performed (Fauzan, 2015). This research is in line with research conducted in Surabaya which states that there is a relationship between perceptions of seriousness and attitudes towards preventing opportunistic infections (p-value = 0.037). Where the higher the perceived severity is directly proportional to the high attitude of prevention of opportunistic infections in respondents undergoing treatment to prevent comorbidities from attacking their bodies (Ernawati, 2018).

The strength of this study is that it is the first study to fully discuss what are the predictors of attitudes to prevent opportunistic infections. This study does not only focus research on individual trust factors, which contain perceived threat factors, perceived susceptibility, perceived severity and perceived benefit. The study also included characteristic variables (age, education, working status, marital status), long diagnosed as HIV, exposed the information about HIV/AIDS to perceived (perceived threat, perceived susceptibility, perceived severity, perceived benefit) using multivariate analysis.

The weakness of this study is that it only discusses attitudes to prevent opportunistic infections as a dependent variable. Further studies need to be conducted on attitudes to prevent opportunistic infections carried out by PLWHA. This study is also a study of 1 (one) center. As it is known that PLWHA is

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in several PSG, inter-PSG or (Non-Governmental Organizations (NGOs) that shelter PLWHA may have different perceived and attitudes. The study using several center or some regional data may need to be conducted to obtain a more comprehensive probability of risk factors for attitudes to prevent opportunistic infections. In addition, according to PLWHA, a good perceived is created by a conducive environment. Diatmi revealed that this conducive environment was created from social support that was able to provide insight for PLWHA in dealing with problems that arise, so that PLWHA would be able to accept themselves (Diatmi & Fridari, 2014; Mustamu, Nurdin & Pratiwi, 2019). PLWHA who get good support from the surrounding environment will affect their minds, resulting in good self-acceptance which has an impact on the high perception of self-confidence of PLWHA. Therefore, further studies of the social environment need to be carried out as an additional predictor.

To the author's knowledge, this study is the first to assess attitude of preventing opportunistic infections in PLWHA in Kuldesak PSG Depok City, West Java. The dominant predictor of attitude of preventing opportunistic infections in PLWHA is perceived benefit with an AOR of 7,13, it means that PLWHA with low perceived benefit have 7 times greater chance of having attitude of preventing opportunistic infections which is also low than PLWHA with high perceived benefit.

CONCLUSION

Nearly half of all respondents in the Kuldesak Peer Support Group (PSG) in Depok City have a low attitude towards preventing opportunistic infections. Low attitudes to prevent opportunistic infections can be reduced by increasing perceived susceptibility, perceived severity and perceived benefits. Perceived benefit is the most dominant predictor in determining attitudes to prevent opportunistic infections. The results of this study provide an overview of the risk factors associated with the attitude of preventing opportunistic infections in PLWHA at the Kuldesak Peer Support Group (PSG) in Depok City.

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SUGGESTION

Further research is needed on OI prevention behavior as the dependent variable, using PSG or other Non-Governmental Organizations (NGOs) that cover PLHIV in the Depok area of West Java and it is suggested to provide an overview of the risk factors associated with the attitude of preventing opportunistic infections in PLWHA.

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