

# Correlation between peer-group support and behavior of preventing opportunistic infection in early adult people living with HIV/AIDS

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## Abstract

**Introduction:** Opportunistic infections are still leading cause of death for people living with human immunodeficiency virus (HIV) in Indonesia. Support and motivation-surrounded environment is one of the factors that can influence the behavior of people living with HIV (PLWHA) to prevent opportunistic infections. The purpose of this study was to investigate the relationship between peer-group support, demographic factor, and behavior of preventing opportunistic infections in early adulthood PLWHA.

**Material and methods:** PLWHA as respondent, correlational study with a cross-sectional approach. Ninety-eight respondents who have fulfilled inclusion criteria were selected through purposive sampling. Independent variable in this study was peer-group support, and dependent variable was opportunistic infection prevention behavior. Data were collected through a questionnaire, and analyzed using logistic regression test, with a statistical significance  $< 0.05$ .

**Results:** Peer-support in couple community has good informational support and rewards. Opportunistic infection prevention behavior of the respondents included behavior-seeking information, routine treatment, vigilance, and high awareness of transmission. There was a significant correlation between peer-group support ( $p = 0.000$ ) and employment status of PLWHA ( $p = 0.034$ ) with opportunistic infection prevention behavior.

**Conclusions:** Peer-group support has a strong relationship with behavior of preventing opportunistic infections in PLWHA in early adulthood. This is in accordance with the stating that peer-support is one of the driving factors which can change a person's behavior.

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**Key words:** HIV/AIDS, opportunistic infection, peer-group support, precede-proceed, prevention of infection.

## Introduction

Opportunistic infections are still the main cause of death in people living with human immunodeficiency virus

(HIV) in Indonesia [1]. This is because the immune system of HIV-positive person's body decreases along with an increase in stressors received. Support and motivation from

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surrounding environment are factors that can change the behavior of people living with HIV (PLWHA) to prevent opportunistic infections, which lead to acquired immune deficiency syndrome (AIDS) and death [2]. Until now, support and care services in Indonesia, which are integrated with primary health services, have developed rapidly but are not optimal due to behavior of PLWHA who are still not aware of the importance of continuous treatment [3].

According to Fauk *et al.* [4], opportunistic infection prevention strategies are carried out by being aware of exposure to infection, using HIV services, and regularly taking medication. These preventive behaviors are still relatively low among early adults (20-40 years). Low support of PLWHA reflected by the existence of stigma and discrimination can cause this behavior of opportunistic infection prevention to be insufficient [5]. Research reporting on the relationship between peer-support and opportunistic infection prevention behavior in PLWHA in early adulthood has not been previously performed.

In 2020, 37.7 million people worldwide suffered from HIV. Indonesia is one of the countries in Asia with rapidly growing rate of HIV infection [6]. In March 2021, East Java had second place in Indonesia with the highest number of HIV cases, namely 65,274, followed by DKI Jakarta and West Java. In March 2021, there were 144,632 (27%) of PLWHA on continuous antiretroviral therapy (ART), and only 8% of them had suppressed viral load (Director General of P2P, 2021). While in 2018, 13% of newly HIV-positive people have been infected with tuberculosis (TB) as a co-infection [7]. According to the National PLWHA support group foundation, Spirit Foundation, East Java has 30 peer-support groups, and Surabaya 4 groups recorded [8].

Decreasing body's immune system in HIV patients who are not on treatment can increase the risk of opportunistic infections. The most commonly found opportunistic infections in Indonesia are tuberculosis, oral candidiasis, diarrhea, pneumocystis pneumonia (PCP), and pruritic papular eruption (PPE) [9]. The number of CD4+ T lymphocytes in a healthy person is 500-1600 cells/ $\mu$ l. However, with the development of HIV infection, this number gradually decreases, which weakens the immune system, causing patients to become susceptible to opportunistic infections [7]. This number is influenced by various factors, such as medication adherence and quality of life of PLWHA [10]. Social support provided by peers can increase self-acceptance; this way, opportunistic infection prevention behavior also increases [2]. Research conducted by Camerin *et al.* [11] shows that support by fellow HIV sufferers can improve their behaviors of preventing opportunistic infections.

This is in accordance with a precede-proceed theory, in which a behavior is influenced by three aspects, such as predisposing factors, enabling factors, and reinforcing factors. Social support provided by peer-group is included in the driving factors that influence a person's behavior. Therefore, the higher the peer-support of PLWHA, the better the behavior of preventing opportunistic infections [12].

Considering the above-mentioned factors, the aim of the current study was to evaluate the relationship between peer-support groups and opportunistic infections preventing behavior in early adulthood PLHIV to reduce the incidence of opportunistic infections in people living with HIV.

## Study design and setting

This was a descriptive, correlational study with a cross-sectional approach, conducted between February and April 2022. The location of this research was Surabaya, the capital city of East Java, registered with the second highest number of new HIV cases in Indonesia. Couple community is one of peer-support groups (KDS) dedicated to PLWHA in Surabaya. The purpose of establishing this peer-support group was to support couples infected with HIV (both or one partner) due to their past bad behavior, such as intravenous drug use (IDU), and various background causes.

## Participants

Population of this study were PLWHA from the couple community of 130 people. The sample included 98 individuals, fulfilling the following criteria: aged between 20 and 40 years, being actively involved in peer-support group's (KDS) activities, able to communicate orally and to read and write, cooperative, PLWHA who had been diagnosed with HIV for more than 6 months. The sample selection was done through purposive sampling.

## Data collection

The independent variable in this study was the support of peer-group, and the dependent variable in this study was the behavior of opportunistic infection prevention. Data were collected with the use of 3 questionnaires: demographic, peer-group support, and opportunistic infection prevention behavior.

1. Demographic questionnaire: this was used to collect demographic information of respondents, such as gender, age, education, occupation, and length of diagnosis of HIV/AIDS.
2. Peer-group support questionnaire: this was employed to evaluate the support received by PLWHA, with indicators of informational support, appreciation support, instrumental support, social integration support, and emotional support. It consisted of 22 questions, with a score from 1 to 5 for answers from "never" to "always".
3. Opportunistic infection behavior questionnaire: this was utilized to measure the level of opportunistic infection prevention behavior of PLWHA, with indicators of seeking information, vigilance, awareness of transmission, and routine treatment. It included 22 questions, with a score from 1 to 4 for answers from "strongly disagree" to "strongly agree".

**Table 1.** Description of research variables

Variable/Category	n	%
Peer-group support		
Emotional support		
Bad	17	17.3
Moderate	35	35.7
Good	46	46.9
Total	98	100.0
Instrumental support		
Bad	80	81.6
Moderate	18	18.4
Good	0	0.0
Total	98	100.0
Informational support		
Bad	26	26.5
Moderate	15	15.3
Good	57	58.2
Total	89	100.0
Appreciation support		
Bad	9	9.2
Moderate	36	36.7
Good	53	54.1
Total	98	100.0
Social integration support		
Bad	32	32.7
Moderate	34	34.7
Good	32	32.7
Total	98	100.0
Opportunistic infection prevention behavior		
Seeking information		
Low	5	5.1
High	93	94.9
Total	98	100.0
Routine treatment		
Low	11	11.2
High	87	88.8
Total	98	100.0
Vigilance		
Low	13	13.3
High	85	86.7
Total	98	100.0
Transmission awareness		
Low	38	38.8
High	60	61.2
Total	98	100.0

## Research procedures

The study started with permit application to the head of the couple community, and research ethics' test was submitted to the Faculty of Nursing, Airlangga University. Study sample was determined according to the inclusion criteria. At the time of data collection, study's nature, objectives, and benefits were explained to all eligible individuals, and those who were willing to participate and fill out the questionnaires, signed the informed consent form. The researcher accompanied the respondent when filling out the questionnaire. Collected data were recorded in data collection sheet.

## Ethical clearance

This study was approved by the Research Ethics Commission (KEPK) at the Faculty of Nursing, Universitas Airlangga, on March 23, 2022, with ethical certificate number of 2461-KEPK.

## Data analysis

Descriptive and inferential assessments were used for data analysis. In descriptive analysis, data were grouped by category. In order to analyze the relationship between peer-support and opportunistic infection prevention behavior, a logistic regression test was performed, with a significance value of  $p \leq 0.05$ .

## Results

These results highlight the importance of peer-group support in enhancing preventive practices among PLWHA.

## Demographic characteristics

Demographic characteristics of PLWHA in early adulthood were gathered in March 2022 at the couple community. Regarding gender, there were 62 women (63.3%), and age of the respondents was mostly in the range of 36-40 years ( $n = 43$ ; 43.9%). The leading religion was Islam, with a total of 90 followers (90.8%). In terms of education, most of the participants indicated high school degree ( $n = 66$ ; 67.3%), with majority of jobs currently held by the respondents as private employees ( $n = 54$ ; 55.1%). Marital status of the participants was mostly reported as married, with a total of 63 people (64.3%). Characteristic data related to HIV status were mostly shown by those who have been infected with HIV for more than 5-10 years ( $n = 35$ ; 35.7%).

## Variable characteristics

According to Table 1, peer-group support for PLWHA in the couple community was demonstrated by a sample of 98 respondents. The support for PLWHA in early adulthood in the couple community had high informational support of 58.2%, followed by award support with 54.1%. Oppor-

**Table 2.** Relationship between peer-group support and demographic factor with opportunistic infection behavior

Variable	Regression coefficient (B)	SE	Wald	dF	Sig.	Exp (B)	Sig./ Not sig.
Peer-group support	3.786	1.070	12.506	1	0.000	44.059	Significant
Gender	0.224	0.958	0.055	1	0.815	44.059	Not significant
Education	0.240	0.672	0.128	1	0.720	1.272	Not significant
Job	1.009	0.477	4.470	1	0.034	2.744	Significant

tunistic infection prevention behavior of 98 PLWHA from the couple community used as the cohort in this study had high information seeking behavior rate (94.9%), followed by routine treatment (88.8%), vigilance (86.7%), and high awareness of transmission (60%).

### The relationship of peer-group support and demographic factor with opportunistic infection behavior

Table 2 shows that the peer-group support variable had a relationship with the behavior of preventing opportunistic infections ( $p = 0.000$ ), because it met the requirements of  $p \leq 0.05$ . This means that the better the support received by PLWHA by the peer-group, the better the behavior of preventing opportunistic infections. Furthermore, based on Table 2, demographic data of the employment status only had a significant relationship with the behavior of preventing opportunistic infections, with a significance value of 0.034 (smaller than 0.05).

## Discussion

According to the results of the current study, peer-group support has a strong relationship with behavior of preventing opportunistic infections among PLWHA in early adulthood in the couple community. PLWHA who receive better support, the behavior of preventing opportunistic infections is better. Moreover, peer-support obtained by PLWHA in the couple community can increase the frequency of seeking information, vigilance, awareness of transmission, and continuous ARV treatment.

Peer-group support has a significant influence on behavior of preventing opportunistic infections. According to Nursalam [12], the purpose of forming peer-support groups is their influence in improving quality of life of PLWHA, including self-confidence, knowledge about HIV/AIDS, HIV services, behavior prevention of HIV transmission, and positive activities. PLWHA who receive good support can increase their prevention behavior against opportunistic infections. Acceptance and support from friends and family given to PLWHA can increase self-confidence. This enhanced self-confidence makes them seek information related to HIV/AIDS [13].

This is in line with the precede-proceed theory by Nursalam [12], which explains that behavior can be changed by three aspects, including predisposing factors, supporting

factors, and driving factors. Supporting factors, such as family, peers, and health workers, are behavioral reinforcing factors, manifested in attitudes and behaviors. Because when someone gets support for their doubts about behavior or attitude to be undertaken, that person will dare to leave own safe zone and face the problems that occur.

Support provided by the community greatly affects the level of confidence of PLWHA to be able to continue with their lives as usual. Peer-support groups can also built comfortable environment for PLWHA to express themselves [14]. Therefore, it is highly recommended for PLWHA to follow one of the communities according to their characteristics, so that HIV-positive individuals can adapt to their new status.

Peer-group support needs to be implemented and maintained by members of the peer-support group, so that PLWHA can improve their behavior to prevent opportunistic infections. Emotional, instrumental, reward, and informational supports as well as social integration carried out in a peer-support community can help increase the awareness of importance of PLWHA to maintain their health, in order to avoid more severe clinical manifestations. This support focused on PLWHA should be carried out by every member of the community, so that PLWHA feel comfortable and not isolated.

Furthermore, employment status as demographic factor is shown to have a significant relationship with the behavior of preventing opportunistic infections in early adulthood PLWHA from the couple community. Moreover, gender and education level do not have a significant relationship with the behavior of preventing opportunistic infections.

According to a research conducted by Safitri [15], employment status had an impact on quality of life of PLWHA. People living with HIV, who have permanent jobs, showed a good level of economic status to fulfill their daily needs. Quality of life is an individual's perception of own position in the environment and relationship with goals, expectations, standards, and concerns. This is closely related to the behavior of preventing opportunistic infections. PLWHA are expected to be able to search through information-surrounded environment regarding the prevention of a second infection that can attack their bodies. PLWHA who have a job are also usually able to process information well, so that they can implement preventive behavior against other infections.

Based on the above, the demographic factor of PLWHA in early adulthood in the couple community, namely employment status, has a significant relationship with the behavior

of preventing opportunistic infections. In PLWHA who have a good socio-economic status, the behavior of preventing opportunistic infections is better. Furthermore, gender and education level have no relationship with the behavior of preventing opportunistic infections, but they can influence the level of knowledge and the number of new HIV/AIDS cases.

## Conclusions

Peer-group support significantly enhances the behavior of preventing opportunistic infections among PLWHA in early adulthood, with informational and appreciation support playing a key role, while employment status also demonstrates a significant association with preventive behaviors. Future research should explore additional factors influencing prevention practices and develop targeted interventions to strengthen peer-group dynamics and employment-based support systems for PLWHA.

## Disclosures

1. Institutional review board statement: This study was approved by the Institutional Review Board (IRB) of Universitas Airlangga (IRB No.: 2461-KEPK).
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