

Influences of Peer Support Group and Psychosocioeconomic Determinants on Treatment Compliance in HIV/AIDS Patients: A Path Analysis Evidence from Sragen, Central Java

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ABSTRACT

Background: Human Immunodeficiency Virus (HIV) is a virus that attacks the immune system, which further weakens the body's ability to fight infection and disease. AIDS (Acquired Immune Deficiency Syndrome) is a condition in which HIV is already in the final infection stage. When a person has AIDS, the body no longer can fight the infection it causes. This study aims to determine the effect of peer support groups and psychosocial economic determinants on treatment compliance to people living with HIV / AIDS (PLWHA) in Sragen, Central Java.

Subjects and Method: This study was an observational analytic with a case-control design. This study was conducted in Sragen from February to April 2020. The sample was selected by fixed disease sampling as many as 200 study subjects with the criteria of PLWHA. The variables observed for effect were treatment compliance to PLWHA, peer support groups, family support, perceived benefits, perceived trust, perceived threats, perceived barriers, and learning through observation (Observational Learning). Data were collected using a questionnaire and analyzed using path analysis or path analysis with Stata version 14.

Results: Treatment compliance in PLWHA increased with perceived benefit (b= 1.10; 95%

CI= 0.41 to 1.79; p= 0.002), perceived trust (b= 1.56; 95% CI= 0.85 to 2.27; p <0.001), peer support group (b= 0.66; 95% CI= -0.00 to 1.33; p= 0.051), family support (b= 0.97; 95% CI= 0.28 to 1.66; p= 0.006), perceived threat (b= 0.97; 95% CI= 0.28 to 1.66; p= 0.006). Treatment compliance in PLWHA decreased with perceived inhibition (b= -0.69; 95% CI= -1.37 to -0.01; p= 0.047). Treatment compliance in people living with HIV/AIDS was influenced indirectly by learning through observation.

Conclusion: Treatment compliance in PLWHA is directly influenced by perceived benefits, peer support groups, family support, perceived threats, perceived barriers. Treatment compliance in PLWHA is influenced indirectly by learning through observation.

Keywords: HIV/AIDS, compliance, peer support groups, psychosocial economics

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BACKGROUND

Infectious diseases in Indonesia are becoming increasingly difficult to control, especially those with HIV/AIDS. Human Immunodeficiency Virus, abbreviated as HIV, is a virus

that causes Acquired Immuno Deficiency Syndrome (AIDS). Acquired Immunodeficiency Syndrome, hereinafter referred to as AIDS, is a collection of symptoms of reduced self-defense ability caused by the entry of the

HIV in a person's body. People with HIV and AIDS (PLWHA) have been infected with the HIV (Ministry of Health of the Republic of Indonesia, 2013).

Data on HIV/AIDS cases in Indonesia are based on cumulative reports from the Directorate General of P2P, Ministry of Health of the Republic of Indonesia from 1987-2016 as many as 291,465 cases with the highest cases namely DKI Jakarta with 50,053 cases, East Java 44,006 cases, Papua 35,764 cases, West Java 24,927 cases, and Central Java 20,132 cases. Data on HIV/AIDS cases in 2017 were 46,405 cases so that the cumulative total of HIV/AIDS cases from 1987-2017 recorded and reported in Indonesia was 337,870 cases (Ministry of Health RI, 2018).

Sragen Health Office reported that HIV/AIDS cases in Sragen Regency, Central Java, have increased every year. The last recorded and reported case data was in 2017, spread evenly in 20 sub-districts in Sragen, Central Java, consisting of 81 HIV sufferers and 106 AIDS sufferers, while 18 sufferers died of HIV/AIDS (Sragen District Health Profile, 2017). HIV/AIDS data in Sragen, Central Java, based on the last five years, has increased. In 2014, it was 100 cases, 2015 as many as 173 cases, 2016 as many as 163 cases, 2017 as many as 187 cases, and in 2018 as many as 227 cases. The number of cases from 2000 to August 2019 was 1,018 cases (Sragen Health Office, 2019).

Support from groups such as Peer Support Groups (PSG) is a group of people living with HIV / AIDS (PLWHA) and people living with PLWHA. Peer support is mental support provided by PLWHA to other PLWHA, especially PLWHA who have just found out about their HIV status. PSG has a significant role in the quality of life of PLWHA. PLWHA, who get peer support, affect higher self-confidence levels, knowledge of HIV, access to HIV services, HIV

prevention behavior, and positive activities compared to PLWHA. The latter do not get peer support (Johan et al., 2014).

A study on treatment compliance to PLWHA observed from peer support groups and psychosocial economics to determine the effect on treatment compliance in PLWHA has never been done in Sragen. Therefore, the authors were interested in conducting this study.

SUBJECTS AND METHOD

1. Study Design

This study was an analytic observational research study with a case-control approach using a path analysis model.

2. Population dan Sample

The population of this study was people PLWHA who were recorded and reported in Sragen, Central Java.

3. Study Variables

The variables observed in this study were treatment compliance in PLWHA, peer support groups, family support, perceived benefits, perceived beliefs, perceived threats, perceived barriers, and learning through observation (Observational Learning).

4. Operational Definition of Variables

Treatment compliance in PLHWA was compliance seen in PLHWA behavior by the provisions given by health workers. The measuring instrument used was a questionnaire. The data scale used was continuous, and to facilitate analysis, the data was converted into a dichotomy. Code 0= low and code 1= high.

Peer Support Groups were cooperative in the care and treatment of PLWHA and actively participated in the prevention of HIV/AIDS transmission. The measuring instrument used was a questionnaire. The data scale used was continuous, and to facilitate analysis, the data was converted into a dichotomy. Code 0= weak and 1= strong.

Family Support was the respondent's perception of the family's support, including emotional support, information support, instrumental support, appreciation support, and social network support. The measuring instrument used was a questionnaire. The data scale used was continuous, and to facilitate analysis, the data was converted into a dichotomy. Code 0= weak and 1= strong.

Perceived benefits were the benefit felt by PLWHA regarding HIV/AIDS understanding, HIV/AIDS transmission, and HIV/AIDS prevention. The measuring instrument used was a questionnaire. The data scale used was continuous, and to facilitate analysis, the data was converted into a dichotomy. Code 0= low and 1= high.

Perceived trust was the self-confidence that PLWHA feels about the need for safety and security, quality of life, a sense of being respected by others. The measuring instrument used was a questionnaire. The data scale used was continuous and to facilitate data analysis becomes a dichotomy. Code 0= low and 1= high.

Perceived threats were the threat felt by PLWHA to the transmission of HIV / AIDS. The measuring instrument used was a questionnaire. The data scale used was continuous, and to facilitate analysis, the data was converted into a dichotomy. Code 0= low and 1= high.

Perceived barriers were the obstacles felt by PLWHA regarding the information they get about HIV/AIDS. The measuring instrument used was a questionnaire. The data scale used was continuous, and to facilitate analysis, the data was converted into a dichotomy. Code 0= low and 1= high.

Observational Learning was the strengthening of learning obtained from observing or witnessing the actions of others. The measuring instrument used was a questionnaire. The data scale used was continuous, and to

facilitate analysis, the data was converted into a dichotomy. Code 0= low and 1= high.

5. Study Instruments

The instrument in this study used a questionnaire. The questionnaire was in the form of a closed questionnaire. The researcher had provided the answers in the questionnaire so that the respondent only needed to choose and fill in according to reality.

6. Data Analysis

Univariate analysis was used to describe each dependent variable and the independent variables. Data were grouped according to the data type. Continuous data were presented with mean, standard deviation, minimum and maximum values. The dichotomy data was entered into the frequency distribution table.

Bivariate analysis was used to determine the correlation between the independent and dependent variables using the chi-square test.

Multivariate analysis was used to explain the correlation of influence between variables. Multivariate analysis was carried out by path analysis.

7. Research Ethic

This study focused on the basic principles of research ethics and applied for ethical permission from the Health Research Ethics Commission of Dr. Moewardi with the Ethical Eligibility Number Number: 211/II/HREC /2020 on February 7, 2020.

RESULTS

A. Univariate analysis

Univariate analysis is described in Tables 1 and 2. Table 1 shows the sample measurements for 200 subjects in PLWHA who met the inclusion criteria. Treatment compliance variable in PLWHA had a mean= 5.71 and SD= 2.22 with a minimum value of 1 and a maximum of 10. The peer support group variable had a mean= 2.8 and SD= 1.45 with a minimum value of 0 and a maximum of 6. The family support variable had

a mean= 3.32 and SD= 1.57 with a minimum value = 1 and a maximum= 6.The perceived benefit variable had a mean= 2.81 and SD= 0.96 with a minimum value= 0 and a maximum= 4.The perceived belief variable had a mean 2.76 and SD= 0.85 with a minimum value 0 and maximum= 4.The perceived threat variable had a mean= 2.58 and SD= 1.16 with a

minimum value= 0 and a maximum= 5.The perceived barrier variable had a mean= 2.57 and SD= 1.09 with a minimum value= 0 and a maximum value= 5.

The learning variable through observation had a mean= 2.63 and SD= 1.02 with a minimum value= 0 and a maximum= 5.

Table 1. Subject characteristics (continuous data)

Characteristics	n	Mean	SD	Min.	Max.
PLWHA Treatment Compliance	200	5.71	2.22	1	10
Peer Support Groups	200	2.85	1.45	0	6
Family support	200	3.32	1.57	1	6
Perceived Benefits	200	2.81	0.96	0	4
Perceived Trust	200	2.76	0.85	0	4
Perceived Threat	200	2.58	1.16	0	5
Perceived Barriers	200	2.57	1.09	0	5
Learning Through Observation	200	2.63	1.02	0	5

Table 2. Subject characteristics (dichotomous data)

Characteristics	n	%
Treatment compliance in PLWHA		
Weak	100	50
Strong	100	50
Peer Support Groups		
Weak	112	39
Strong	88	61
Family support		
Weak	76	38
Strong	124	62
Perceived Benefits		
Low	83	41.5
High	117	58.5
Perceived Trust		
Weak	74	37
Strong	126	63
Perceived Threat		
Weak	108	54
Strong	92	46
Perceived Barriers		
Low	104	52
High	96	48
Learning Through Observation		
Low	82	41
High	118	59

Table 2 shows that most of the study subjects were mostly PLWHA who had weak peer support groups as much as 56% and strong family support as much as 61%. The high perceived benefits were 58.5%. A strong

perceived belief was 63%. The low perceived threat was 54%. The low perceived barriers were 52%, and learning through high observation was 59%.

B. The result of bivariate analysis

The analysis used in this study was the chi-square test, which explained the relationship between the dependent variable (Treatment Compliance for PLWHA) and one independent variable (Peer Support Group, Family

Support, Perceived Benefits, Perceived Trust, Perceived Threats, Perceived Barriers, and Learning Through Observation). The results of the bivariate analysis can be seen in Table 3.

Table 3. Chi-square test of factors affecting treatment compliance in PLWHA

Independent Variable	PLWHA Treatment Compliance				OR	95% CI		p
	Disobedient		Obedient			Lower limit	Upper limit	
	N	%	N	%				
Peer Support Groups (PGS)								
Weak	65	58.04	47	41.96	2.09	1.14	3.85	<0.001
Strong	35	39.77	53	60.23				
Family support								
Weak	49	69.82	29	37.18	2.35	1.26	4.40	<0.001
Strong	51	41.80	71	58.20				
Perceived benefits								
Low	55	66.27	28	33.73	3.14	1.68	5.92	<0.001
High	45	38.46	72	61.54				
Perceived Trust								
Low	54	72.97	20	27.03	4.70	2.40	9.29	<0.001
High	46	36.51	80	63.29				
Perceived Threat								
Low	66	61.11	42	38.89	2.68	1.45	4.96	<0.001
High	34	36.96	58	63.04				
Perceived Barriers								
Low	15	25.86	43	76.14	0.01	0.006	0.05	<0.001
High	135	95.07	7	4.93				
Observational Learning								
Seldom	115	89.84	13	10.16	9.35	4.24	21.1	<0.001
Often	35	48.61	37	51.39				

Table 3 shows the results of the chi-square test of the correlation between treatment compliance in PLWHA with strong peer support groups (PGS) had 2.09 times treatment compliance compared to PLWHA who had a weak peer support group (OR= 2.09; 95% CI= 1.14 to 3.85; p <0.001). PLWHA who received family support had a 2.35 times treatment compliance compared to PLWHA who had weak family support for treatment (OR = 2.35; 95% CI = 1.26 to 4.40; p <0.001). PLWHA who had a high perceived benefit had 3.14 times treatment compliance compared to PLWHA who had a low per-

ceived benefit of treatment (OR= 3.14; 95% CI= 1.68 to 5.92; p <0.001). PLWHA who had high perceived trust had 4.70 times treatment compliance than PLWHA who had low perceived trust for treatment (OR= 4.70; 95% CI= 2.40 to 9.29; p <0.001). PLWHA who had a low perceived barrier had 0.73 times treatment compliance compared to PLWHA who had high perceived barriers for treatment (OR= 0.73; 95% CI= 0.40 to 1.31; p <0.001). PLWHA, who had high observational learning, had a 1.79 times treatment compliance compared to PLWHA who had low

observational learning for treatment. (OR= 1.79; 95% CI= 0.97 to 3.30; p <0.001).

C. The result of multilevel analysis

The multivariate analysis explained the influence relationship between treatment

compliance to PLWHA, peer support groups, family support, perceived benefits, perceived trust, perceived threats, perceived barriers, learning through observation.

Table 4. Path analysis of treatment compliance in PLWHA

Dependent Variable	Independent Variable	b	95% CI		p
			Lower limit	Upper limit	
Direct effect					
Treatment compliance in PLWHA	← Perceived Benefits	1.10	0.41	1.79	0.002
	← Perceived Barriers	-0.69	-1.37	-0.01	0.047
	← Perceived Trust	1.56	0.85	2.27	<0.001
	← Peer Support Groups	0.66	-0.00	1.33	0.051
	← Family Support	0.97	0.28	1.66	0.006
	← Perceived Threat	1.09	0.41	1.77	0.002
Indirect effect					
Perceived Trust	← Observational Learning	1.22	0.49	1.82	<0.001
N observation= 200					
Log-likelihood= -231.30					

Table 4 shows that there was an influence relationship between variables that can directly or indirectly affect treatment compliance to PLWHA. Treatment compliance to PLWHA was directly affected by perceived benefits (b= 1.10; 95% CI= 0.41 to 1.79; p= 0.002), perceived barriers (b= -0.69; 95% CI = -1.37 to -0.01; p= 0.047), perceived trust (b= 1.56; 95% CI= 0.85 to 2.27; p <0.001), peer support group (b= 0.66; 95% CI= -0.00 to 1.33; p= 0.051), family support (b= 0.97; 95% CI= 0.28 to 1.66; p= 0.006), perceived threat (b= 1.09; 95% CI= 0.41 to 1.77; p= 0.002). Treatment compliance to PLWHA was influenced indirectly by learning through observation (b = 1.22; 95% CI= 0.49 to 1.82; p <0.001).

DISCUSSION

1. The effect of perceived benefits on treatment compliance in PLWHA

This study's results indicate that there was a direct effect of perceived benefit on treatment compliance in PLWHA, and it was statistically significant. PLWHA who had a high perceived benefit regarding treatment had an

average (logodd) of treatment compliance 1.10 units higher than PLWHA who had a low perceived benefit (b = 1.10; 95% CI= 0.41 to 1.79; p= 0.002). This study's results are in line with a study conducted by Herlambang Sasmita Aji (2010),, which stated a relationship between perceived benefits between treatment compliance and antiretroviral therapy (p <0.001). Besides, this study is in line with a study conducted by Rasmusen et al. (2013), which stated that ARV therapy's perceived benefits impacted patient treatment compliance.

This finding is in line with a study conducted by Yuniar (2012), which stated that the main internal factor that increased compliance to taking ARVs was PLHA's understanding of the benefits of understanding HIV / AIDS and its importance ARVs for PLWHA. Perceived benefits include a high understanding and awareness of the function and benefits of ARVs, strategies to consider drugs like vitamins so that PLWHA compliance in taking ARVs also increases. A study conducted by Miller et al. (2010) also found that patients universally reported that

they had experienced extraordinary and even tremendous health benefits from taking ARVs and realized that stopping ARVs would cause disease.

2. The effect of perceived barriers to treatment compliance in PLWHA

This study's results indicate that there was a direct effect of perceived barriers on treatment compliance in PLWHA and statistically significant. PLWHA who had a high perceived barrier regarding treatment had an average (logodds) of treatment compliance 0.69 units lower than PLWHA who had a low perceived barrier ($b = -0.69$; 95% CI = -1.37 to -0.01 ; $p = 0.047$). This study is in line with a study conducted by Sisayahid (2016), which stated that the perceived barriers did not cause non-adherence to ARV therapy, which means that the perceived barriers affect treatment compliance to PLWHA. This can be seen from most informants who did not experience significant obstacles in accessing ARVs or obstacles when taking ARVs. The perceived barriers can be minimized by the presence of good social support obtained by informants, support from families, support from NGOs, and support from health workers.

Based on HBM theory, perceived barriers are action behavior that will be formed from a person's perceived vulnerability and severity of the disease and the perceived benefits and obstacles faced. PLWHA, who consider the disease severity and have experienced serious symptoms, become more adherent in taking medication after knowing the benefits of ARVs. The high perceived barriers regarding HIV/AIDS information will make PLWHA more adherent to ARV treatment (Yuniar, 2012).

3. The effect of perceived trust on treatment compliance in PLWHA

The results of this study indicated that there was a direct effect of perceived trust on treatment compliance in PLWHA and statis-

tically significant. PLWHA who had high perceived trust regarding treatment had an average (logodds) of treatment compliance 1.56 units higher than PLWHA who had low perceived trust ($b = 1.56$; 95% CI = 0.85 to 2.27 ; $p < 0.001$).

Trust is a belief about the truth about something that is felt in the culture that exists in that society. So that if people have wrong beliefs about something, it can hinder behavior change (Beauty, 2016). The health belief model is where a person acts to avoid and control disease when someone thinks that humans have a vulnerable condition, that illness has serious consequences, and believes that action can reduce vulnerability and seriousness. Actions will be worth the benefits (Sudomo, 2020).

This study explained that high perceived trust could increase PLWHA treatment compliance. PLWHA believes that by consuming ARVs every day, their quality of life will be better and safer if they take ARVs every day and feel healthy carrying out their daily activities. Thus, trust encourages PLWHA to be more obedient in consuming ARV every day. This result is supported by Glanz's (2012) theory, which stated that a trust influenced compliance included in health behavior. Where there was trust, there was an effort to avoid the disease even though it was related to finance.

4. The effect of peer support groups on treatment compliance in PLWHA

This study's results indicate that there was a direct effect of peer support groups on treatment compliance in PLWHA and statistically significant. PLWHA, who had a strong peer support group regarding treatment, had an average (logodds) of treatment compliance 0.66 units higher than PLWHA, who had a weak peer support group ($b = 0.66$; 95% CI = -0.00 to 1.33 ; $p = 0.051$). This study's results are in line with a study conducted by Tri Johan et al. (2001), which stated that there

was a significant influence between the role of peer support groups and treatment compliance in PLWHA.

Research in the Bulletin of Health Research (2013) stated that peer support groups were very helpful in taking treatment compliance with PLWHA. The role of Peer Support Groups (PGS) is very helpful for PLWHA, especially in terms of undergoing treatment, providing motivation for PLWHA to always be cooperative in counseling and treatment. This is in accordance with Alfyyatur (2012), who stated that PGS has the task of providing motivation and assisting PLWHA, namely informing in-depth about HIV/AIDS, including taking ARV drugs.

A theory from Yuswanto et al. (2015) stated that a peer support group is a group that aims to support each group member in their daily life. Peer support includes people who face the same challenges, e.g., patients with certain infections, certain communities. Peer Support Groups (PGS) are well known in HIV/AIDS prevention to provide support for people infected with HIV (PLWHA) and their families. The first time someone finds themselves infected with HIV, they have several psychological, health concerns, relationships with partners, economics, and prejudice. They will be treated with stigma and discrimination. The moral support needed by people infected with HIV is needed to overcome these various problems to still live healthy and productive lives.

Peer support interventions in HIV-infected adolescents have shown a correlation with emotional management and positively influence treatment outcomes. This conclusion was obtained by comparing groups of adolescents who were intervened and not intervened through peer support activities. Within 2 years, it shows a change in perceptions of pain and concerns about illness in the adolescent group in the peer support group, and a further increase in the

number of adolescents whose virus is not detected through viral load testing (Isabelle, 2015).

5. The effect of family support on treatment compliance in PLWHA

This study's results indicate that there was a direct effect of family support on treatment compliance in PLWHA and statistically significant. PLWHA who had strong family support regarding treatment had an average (logod) treatment compliance 0.97 units higher than PLWHA who had a weak family support group ($b= 0.97$; 95% CI= 0.28 to 1.66; $p= 0.006$). This study's results are in line with Bachrum's (2017) study, which stated that there was a correlation between family support and compliance with taking ARV drugs in PLWHA at PGS Sehati.

Family support is needed because PLWHA will experience boredom, so they don't feel hopeless. It is hoped that family support can support PLWHA's spirit of life who can control their emotions. Emotional support gives individuals a feeling of comfort, feeling loved when experiencing depression, and assistance in enthusiasm, empathy, trust, and attention. The individual who receives it feels valuable. In this emotional support, the family provides a place to rest and gives encouragement (Prasetyawati, 2011).

Other studies also support the results of this study. The level of family support experienced by respondents affects compliance; the greater the level of family support, the greater the compliance to taking ARV drugs significantly. Family plays an important role in improving, helping, and encouraging patients to comply with the treatment journey (Lumbanbatu, 2012).

According to the Ministry of Health (2011), the couple and their families will provide support and care. This relationship can affect compliance because if the family provides motivation and provides support, it includes: instrumental support, informa-

tional support, assessment support, and emotional support for the patient, and there must be openness between the patient and the family so that the family understands the patient's needs and vice versa (Ministry of Health, 2011). Family support is one of the motivations for HIV/AIDS sufferers apart from the hospital's programs in undergoing treatment programs and family support, which is given in the form of attention and provides an explanation of suggestions that can motivate patients to undergo HIV / AIDS treatment programs.

6. The effect of perceived threats on treatment compliance in PLWHA

This study's results indicate that there was a direct effect of perceived threat on treatment compliance in PLWHA, and it was statistically significant. PLWHA who had a high perceived threat regarding treatment had an average (logodd) of treatment compliance 1.09 units higher than PLWHA who had a low perceived threat ($b = 0.97$; 95% CI = 0.28 to 1.66; $p = 0.006$). This is in line with Marpaung's (2016) study regarding factors related to HIV/AIDS patient compliance, namely respondents who had a higher perceived threat, namely 57 respondents (81.4%) from a total of 70 respondents.

Someone will take action to cure the disease if the disease truly threatens them. In this case, HIV/AIDS is a disease that is a threat to anyone, especially PLWHA (Saputro, 2016). This is the basis why individual perceptions of the severity of disease and self-belief can change individual behavior to be more useful in the treatment process, namely, by being more obedient (Novianto, 2016).

This theory is also supported by Lestari (2017), who stated that perceived threat comes from beliefs about the seriousness of the disease and the vulnerability of PLWHA. The individual then assessed the benefits of the action taken, namely adherence to

following ARV treatment, even though PLWHA is overshadowed by the risks of their actions, such as fear and drug side effects.

7. The effect of learning through observation on treatment compliance in PLWHA

The results showed an indirect effect of learning through observation on treatment compliance to PLWHA through the perception of trust. PLWHA who had high experiential learning about treatment had an average (logodd) of treatment compliance 1.22 units higher than PLWHA who had low observational learning ($b = 1.22$; 95% CI = 0.62 to 1.82; $p < 0.001$).

The best learning for adults is observational learning. Learning through observation means learning to face practical problems, real social problems, and solve them. Good observation of someone will create a sense of trust (Arif, 2014). Perceived benefits are the belief in the advantages of the suggested methods to reduce the risk of disease. Perceived benefits, in summary, mean the perceived benefits which have a positive relationship with healthy behavior. Individuals aware of the benefits of ARVs consumed by PLWHA will continue to carry out healthy behaviors such as routine daily ARV consumption (Wulandari, 2015).

AUTHOR CONTRIBUTION

Yusuf Bachtiyar Lobis was the main researcher who collected data, formulated data, designed the research and conducted questionnaire reliability tests. Bhisma Murti checked the data and analyzed the data. Hanung Prasetya gave suggestions for discussion of research and writing techniques.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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