Peer-Group support based on the chronic care model for improving HIV patients' caring ability

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Abstract

Background: The caring ability of HIV patients toward a condition is still relatively low, especially during a pandemic, which makes the patient's immune condition more susceptible to decline.
Purpose: This study aims to develop peer-group support based on a chronic care model (CCM) to improve the caring ability of HIV patients.
Methods: An explanatory study with a cross-sectional approach was employed. A total of 375 respondents were recruited with convenience sampling. The exposure included individual characteristic factors, health system factors, support system factors, environmental factors, and peer group support based on the chronic care model. Meanwhile, the outcome was an improvement in the patients' caring ability. Statistical analyses were performed using SPSS version 21 and SEM-PLS.
Results: Outer model analysis showed valid (λ >0.5 and T-value >1.96) and reliable (Cronbach's alpha > 0.6), all hypotheses showed significant effect to dependent variable exclude individual characteristic factors to peer group support based on chronic care model ($p<0.05$). Model development is reasonably fit as indicated by the research data (RMS Theta = 0.080 < 0.102; NFI value 0.901 > 0.9; Standardized Root Mean Square = 0.079 < 0.10). The model had predictive relevance and can be applied in other research settings (Q2 = 0.230; 0.518).
Conclusion: The development of the model shows that the variables are pretty good in forming a peer group support model based on the chronic care model to improve the ability of PLWH.

Keywords: ability; chronic care model; human immunodeficiency virus; peer group support

Introduction

The rate of adherence to antiretroviral treatment (ARV) in HIV AIDS patients shows that it is still not 100% (Iacob et al., 2017). In Indonesia, adherence to ART is still a major problem; this is evidenced by the level of Lost follow-up (LFU) for treatment, and ART is still relatively high, namely 21.87%. East Java occupies the first position in Indonesia with the highest HIV incidence in 2017, with as many as 214,819 people who are eligible for ARVs and only 180,843 people receiving ARVs. Among 180,843 people who had received ARV therapy, 39,542 people (21.87%) lost their LFU (21.87%), and 3,501 (1.93%) stopped taking ARVs (Ministry of Health, 2021). This decrease in ART adherence ultimately makes patients prone to opportunistic infection and have a poor quality of life due to stigma and hopelessness (Ekstrand et al., 2018).

This condition causes the amount of virus in the patient's body to increase (Vaillant & Naik, 2022). Additionally, this non-adherence leads to an increased viral load and a decreased CD4 cell count, causing a gradual decline in the body's immunity (Vidya Vijayan et al., 2017). The decrease in immunity that occurs will have an impact on worsening the disease (Balasubramaniam et al., 2019), the emergence of many opportunistic infections (Shenoy et al., 2017), and the patient's quality of life getting worse (Meng et al., 2023). The quality of life of people living with HIV (PLWH) must be carefully considered because sufferers must constantly comply with treatment therapy (Ahmed et al., 2018). Peer Group Support is effective for shaping positive behavior and new values in individuals who are members; support from peer groups has been proven to increase patient enthusiasm in the treatment process (Mark et al., 2019). Many approaches have been implemented to improve ARV adherence, but few effectively shape positive patients' behavior and increase their treatment adherence. The peer group support approach has not been integrated with patient care in hospitals, so it is necessary to research developing peer group support models to increase ARV compliance and immunity, decrease opportunistic infection, and improve patient quality of life.

The chronic care model (CCM) identifies critical elements of a health care system that drive high-quality chronic disease care, including community, health systems, self-management support, delivery system design, decision support, and clinical information systems (Cluesman et al., 2023). The integration of handling and the role of peer group support with elements in CCM is critical to strengthening fellow sufferers and assisting health workers in providing integrated care between the hospital and the community. This study aimed to develop a peer group support model based on the CCM to improve the caring ability of HIV patients.

Materials and Methods

Design

We designed explanatory research with a cross-sectional approach conducted between June and August 2022 in the Educational and General Hospital and AIDS Commission in Indonesia. The study described the development of a peer group support model based on the CCM in PLWH.

Samples

This study was conducted in two highest case areas of HIV in East Java, Indonesia. The specific population criteria were: (1) HIV patient with positive diagnosis using three methods (oncoprobe, intake, and vikia); (2) Age between 17 – 55 years old; (3) Cooperative and literate; (4) Patient with no mental illness, no drug users and no visual or hearing impairment. We determined the sample size using the rule of thumb, and 375 PLWH were recruited for this study. Data were recruited using convenience sampling and adjusted to PLWH, who came to health services to carry out routine checks.

Variables and Measurements

The independent variables in this study were individual characteristic factors, health system factors, support system factors, environmental factors, and peer group support based on the chronic care model. Meanwhile, the dependent variable was an improvement in patients' caring ability.

Individual characteristic factors

To investigate the individual characteristic factors, which consist of age, educational background, knowledge, attitude, assessment of disease, and coping mechanism. Age and educational background are measured with a demographical questionnaire, while knowledge and skills are measured with modify questionnaire. Assessment of disease interviewed by The Illness Perception Questionnaire (IPQ) (Basu & Poole, 2016) and The Brief 28-item COPE Inventory was used to know the coping mechanism (Baumstarck et al., 2017). The disease and coping mechanism assessment was measured using a 4-point Likert scale to evaluate participants. Each item was graded on a scale of 1 to 4, with one being the poorest and 4 being the best condition for favorable questions, and unfavorable questions showed otherwise. The Indonesian questionnaire version has been shown to be valid and reliable (r table = 0.257; r count = 0.270 – 1.000; Cronbach's alpha = 0.832-0.913).

Health system factors

Health system factors were formed by indicator access, healthcare collaboration, policy, and health facility availability. Access was measured with a health access and utilization survey (Harris et al., 2011), healthcare collaborative assessed through the Perception of Interprofessional Collaboration Model Questionnaire (PINCOM-Q) (Légaré et al., 2011), policy interviewed with Policymaking assessment questionnaire (O'Faircheallaigh, 2010), and health facility availability measured using Healthcare resource use questionnaire (Ilhan et al., 2009). Before being used, all questionnaires were tested for validity and reliability (r table = 0.257; r count = 0.271-0.876; Cronbach's alpha = 0.738-0.891). Each indicator in every question was determined by a 4-point Likert scale (one referring to the poorest condition and four referring to the best value; the negative question was interpreted otherwise).

Support system factors

The support system for PLWH was sourced from peer support measured with a peer support questionnaire (Dennis, 2013), family support was evaluated with a family support questionnaire (Bouman et al., 2018), social support was also measured with The Social Support Questionnaire (Srivastava & Kaul, 2014), decision making measured using decision-

Table 1. Characteristic Respondents (n=375)

Indicators	n	%
Age		
17-25 years	28	7.5
26-35 years	140	37.3
36-45 years	134	35.7
46-55 years	73	19.5
Gender		
Male	196	52.3
Female	179	47.7
Marital Status		
Single	116	30.9
Married	166	44.3
Divorced	79	21.1
Death Divorce	14	3.7
Ethnics		
Javanese	332	88.5
Madurese	36	9.6
Dayak	2	0.5
Chinese	5	1.3
Religion		
Islam	349	93.1
Catholic	2	0.5
Christian	24	6.4
Occupation		
Self-employed	37	9.9
Private	150	40.0
Trader	27	7.2
Laborer	12	3.2
IRT	123	32.8
Other	26	6.9
Past Illness		
No Past Illness	238	63.5
Hypertension	74	19.7
Diabetes	9	2.4
tuberculosis	28	7.5
Hepatitis	24	6.4
Other diseases	2	0.5
Family Disease History		
No Family Disease History	358	95.5
HIV	2	0.5
Hypertension	4	1.1
Diabetes	4	1.1
Hepatitis	7	1.9

Cont. Table 1. Characteristic Respondents (n=375)

Indicators	n	%
Educational Background		
No school	7	1.9
Elementary School	43	11.5
Junior High School	78	20.8
Senior High School	209	55.7
College	38	10.1
Income		
Less than minimum regional income*	322	85.9
More than and equal minimum regional income*	53	14.1

* Minimum regional income = 290 USD

Table 2. Description of Research Variable

Variable	Indicator	Low n (%)	Moderate n (%)	Good n (%)
Individual Characteristic Factors	Knowledge	185 (49.3)	168 (44.8)	22 (5.9)
	Attitude	101 (27.0)	140 (37.3)	134 (35.7)
	Assessment of Disease	346 (92.3)	19 (5.1)	10 (2.7)
	Coping Mechanism	66 (17.6)	255 (68.0)	54 (14.4)
Health System Factor	Access	4 (1.1)	30 (8.0)	341 (90.9)
	Health Worker Collaboration	5 (1.3)	35 (9.3)	335 (89.3)
	Policy	8 (2.1)	33 (8.8)	334 (89.1)
	Availability of Health Facilities	19 (5.1)	68 (18.1)	288 (76.8)
Support System Factor	Family support	24 (6.4)	77 (20.5)	274 (73.1)
	Peer Support	10 (2.7)	65 (17.3)	300 (80.0)
	Social Support	130 (34.7)	82 (21.9)	163 (43.5)
	Decision-making	16 (4.3)	291 (77.6)	68 (18.1)
	Information Availability	21 (5.6)	243 (64.8)	111 (29.6)
	Resource Benefits	38 (10.1)	287 (76.5)	50 (13.3)
Environmental factor	Social Relations	122 (32.5)	241 (64.3)	12 (3.2)
	Group Activities	135 (36.0)	201 (53.6)	39 (10.4)
	Environmental Situation	12 (3.2)	108 (28.8)	255 (68.0)
Peer Group Support based on chronic care model	information support	25 (6.7)	43 (11.5)	307 (81.9)
	emotional support	31 (8.3)	17 (4.5)	327 (87.2)
	mutual support	17 (4.5)	162 (43.2)	196 (52.3)
	Informed	25 (6.7)	43 (11.5)	307 (81.9)
	Activated patient	27 (7.2)	152 (40.5)	196 (52.3)
	Prepared	121 (28.8)	165 (44.0)	89 (23.7)
	Practice	29 (7.7)	126 (33.6)	220 (58.7)
Patient Ability Improvement	Daily Activities	34 (9.1)	278 (74.1)	63 (16.8)
Improvement	Confidence	14 (3.7)	234 (62.4)	127 (33.9)
	Coping Ability	36 (9.6)	274 (73.1)	65 (17.3)
	Social interactions	32 (8.5)	256 (68.3)	87 (23.2)
	Religious activities	27 (7.2)	271 (72.3)	77 (20.5)
	Confidence	46 (12.3)	213 (56.8)	116 (30.9)
	Social Support Acceptance	59 (15.7)	214 (57.1)	116 (27.2)
	Self-care	17 (4.5)	27 (7.2)	331 (88.3)
	Enhancement of Feeling	16 (4.3)	214 (57.1)	145 (38.7)

making questionnaire (Leykin & DeRubeis, 2010), information availability known by Questionnaires can provide valuable information (Whiteley et al., 2006), and human resources questionnaire was used to measure resource benefits (Obeidat, 2012). Overall, the variables were measured using a questionnaire in the Indonesian version, and the validity and reliability tests were carried out first (r table = 0.257; r count = 0.267-0.962; Cronbach's alpha = 0.788-899). A 4-point Likert scale was used to measure every question in the questionnaire and interpreted to low, moderate, and good categories.

Environmental factors

The measured environmental factors include social interaction, group activity, and environmental situation. Typical social interaction in PLWH was identified through the social interaction questionnaire (Srivastava & Kaul, 2014), group activity adopted from the questionnaire used by Sarver et al. (2021), and the environmental questionnaire used to measure the environmental situations (Dennis, 2013). Each question consists of a 4-point scale to evaluate environmental factors influencing the daily life of PLWH. All questionnaires have been tested for validity and reliability with valid (r table = 0.257; r count = 0.272-1.000) and reliable (Cronbach's alpha = 0.788-0.962)

Peer group support based on the chronic care model

The latent variable is a combination of the model development carried out in this study, which consists of informational, emotional, and mutual support indicators measured using a peer group support questionnaire (Cabral et al., 2018). The chronic care model indicators consisting of informed, activated patient, prepared, and practice were measured using the Patient Assessment of Care for Chronic Conditions (Schmittdiel et al., 2008). Firstly, the questionnaire was modified and tested for validity and reliability before being used in research. The value for favorable questions is if strongly agree = 4, agree = 3, disagree = 2, and strongly disagree = 1. For unfavorable questions, it was the opposite. Overall, the variables were measured using a questionnaire in the Indonesian version, and the validity and reliability tests were carried out first (r table = 0.257; r count = 0.272-1.000; Cronbach's alpha = 0.902-0.903).

Improvement of the patient's caring ability

PLWH, in the condition that they have the virus in their bodies, still have to be self-reliant. Improvement in the patient's caring ability was measured using the Activities of Daily Living (ADL) Questionnaire (Mlinac & Feng, 2016). The questionnaire consists of 9 dimensions: daily activities, beliefs, coping skills, social interaction, worship activities, self-confidence, acceptance of social support, self-care, and improving the patient's feelings. A total of 44 questions were assessed using a 4-point Likert Scale with a value of 1 = strongly disagree, 4 = strongly agree, and the negative question was the opposite.

Data Analysis

Statistical analyses were conducted using SPSS version 21 and Structural Equation Model-Partial Least Square (SEM-PLS). Descriptive statistics such as numbers, percentages, mean, and standard deviation were used to represent the descriptive characteristics of the respondents. Model development was analyzed using SEM-PLS to identify the outer and inner models. Results were expressed using a level significance of $p < 0.05$.

Ethical Consideration

The Health Ethics Commission of Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia, with No: 2092-KEPK/2022 approved ethical considerations for this study. Prospective respondents were first given a complete explanation of the research goal and procedures, including information that their participation in this study was voluntary. Then, those willing to participate were given an informed consent form and asked to sign as a willingness without coercion.

Results

Characteristics of Respondents and Research Variables

A total of 375 people living with HIV (PLWH) aged 17 – 55 years old preceding the survey were interviewed. Table 1 shows that more than half of the PLHW were males (52.3%). The highest proportion of respondents was in the aged group of 26 – 35 years (37.3%). Approximately 44.9% were married, 88.5% were from Javanese ethnics and more than half respondents showed Moeslem. The majority of PLHW showed in senior high school educational level (55.7%), 40.0% working in private sectors, like industry, daycare, private lesson, shopkeeper, cashier etc. with the monthly income majority 85.9% less than minimum regional income (290 USD). Regarding the health status, the highest proportion in comorbidity of illness were hypertension (19.7%), and followed by tuberculosis (7,5%) and hepatitis (6,4%). Mainly in the family, it showed that the most common previous diseases were HIV, hypertension, diabetes mellitus, and hepatitis.

Table 2 shows the latent variable in model development: individual characteristic factors, health system factors, support system factors, environmental factors, peer group support based on the chronic care model, and improvement of patient's ability. Individual characteristics factors in PLHW showed more than half of respondents had a low assessment of disease (92.3%), 49.3% had a low knowledge, with the attitude and coping mechanism showing moderate category (37.3%; 68.0%, respectively). Health system factors majority had a result with good category, such as access

Table 3. Research Fit Model Testing

	Saturated Model	Estimated Model
SRMR	0.079	0.071
d_ULS	12.900	12.400
d_G	4.400	3.800
Chi-Square	6001.7	7214.6
NFI	0.901	0.907
rms Theta		0.070

Table 4. Hypothesis Test

Variable	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Latent Variable 1 -> Latent Variable 5	0.1	0.6	0.01
Latent Variable 1 -> Latent Variable 6	0.5	2.9	0.34
Latent Variable 2 -> Latent Variable 5	0.5	4.8	< 0.001
Latent Variable 2 -> Latent Variable 6	0.4	2.9	0.01
Latent Variable 3 -> Latent Variable 5	0.5	1.9	0.05
Latent Variable 3 -> Latent Variable 6	0.5	5.6	< 0.001
Latent Variable 4 -> Latent Variable 5	0.7	12.2	< 0.001
Latent Variable 4 -> Latent Variable 6	0.7	5.3	< 0.001
Latent Variable 5 -> Latent Variable 6	0.6	3.7	< 0.001

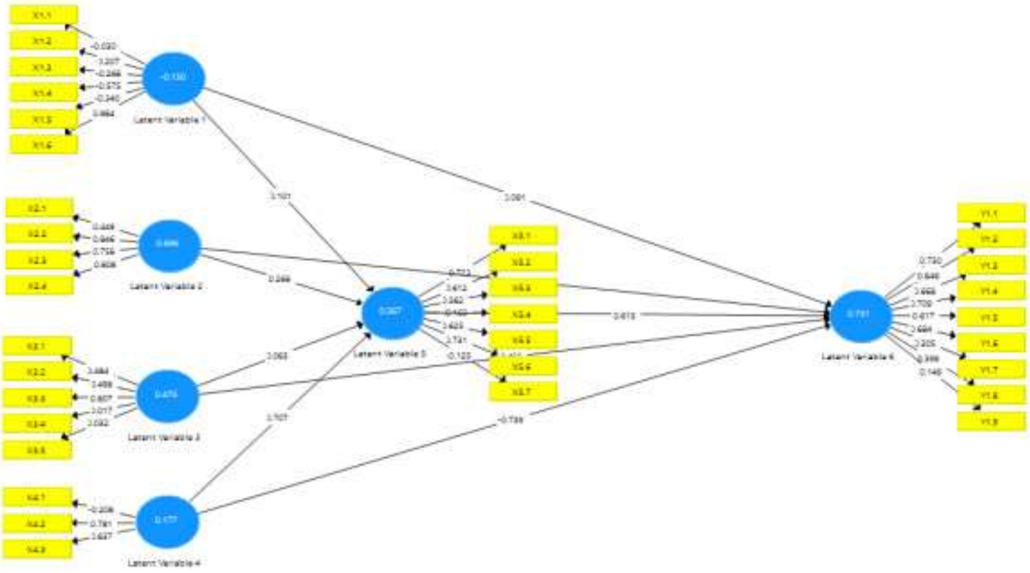

Figure 1. Outer Model Analysis. Latent variable 1: Individual Characteristic Factors; Latent variable 2: Health System Factor; Latent variable 3: Support System Factor; Latent variable 4: Environmental factor; Latent variable 5: Peer Group Support based on chronic care model; Latent variable 6: Patient Ability Improvement; X1.1: Knowledge; X1.2: Attitude; X1.3: Assessment of Disease; X1.4: Coping Mechanism; X2.1: Access; X2.2: Health Worker Collaboration; X2.3: Policy; X2.4: Availability of Health Facilities; X3.1 Family support; X3.2 Peer Support; X3.3 Social Support; X3.4 Decision-making; X3.5 Information Availability; X3.6 Resource Benefits; X4.1 Social Relations; X4.2 Group Activities; X4.3 Environmental Situation; X5.1 information support; X5.2 emotional support; X5.3 mutual support; X5.4: Informed; X5.5 Activated patient; X5.6 Prepared; X5.7 Practice; Y1.1 Daily Activities; Y1.2 Confidence; Y1.3 Coping Ability; Y1.4 Social interactions; Y1.5 Religious activities; Y1.6 Confidence; Y1.7 Social Support Acceptance; Y1.8 Self-care; Y1.9 Enhancement of Feeling

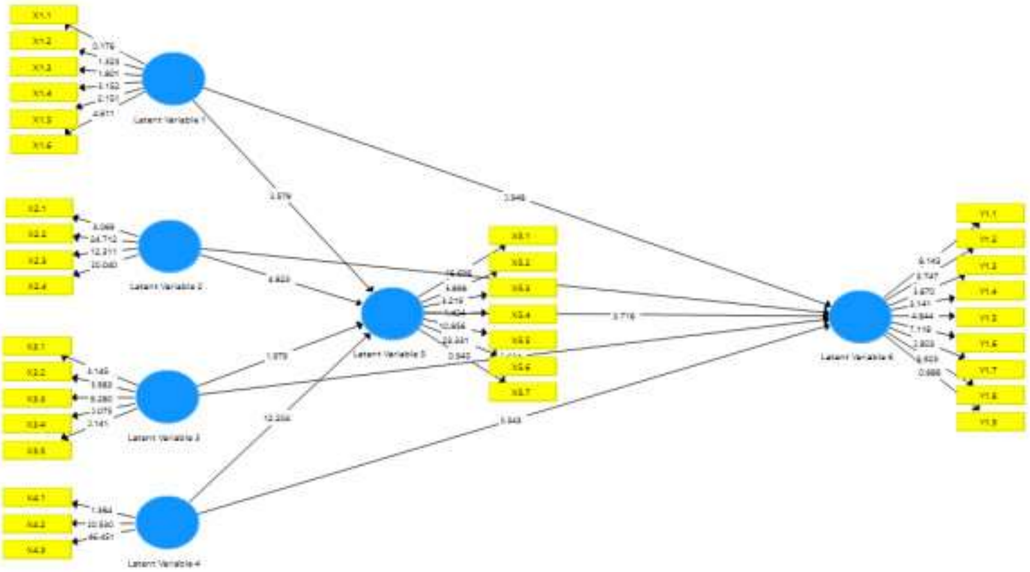

Figure 2. Inner Model Analysis. Latent variable 1: Individual Characteristic Factors; Latent variable 2: Health System Factor; Latent variable 3: Support System Factor; Latent variable 4: Environmental factor; Latent variable 5: Peer Group Support based on chronic care model; Latent variable 6: Patient Ability Improvement; X1.1: Knowledge; X1.2: Attitude; X1.3: Assessment of Disease; X1.4: Coping Mechanism; X2.1: Access; X2.2: Health Worker Collaboration; X2.3: Policy; X2.4: Availability of Health Facilities; X3.1 Family support; X3.2 Peer Support; X3.3 Social Support; X3.4 Decision-making; X3.5 Information Availability; X3.6 Resource Benefits; X4.1 Social Relations; X4.2 Group Activities; X4.3 Environmental Situation; X5.1 information support; X5.2 emotional support; X5.3 mutual support; X5.4: Informed; X5.5 Activated patient; X5.6 Prepared; X5.7 Practice; Y1.1 Daily Activities; Y1.2 Confidence; Y1.3 Coping Ability; Y1.4 Social interactions; Y1.5 Religious activities; Y1.6 Confidence; Y1.7 Social Support Acceptance; Y1.8 Self-care; Y1.9 Enhancement of Feeling

(90.9%), healthcare collaborative (89.3%), policy (89.1%), and health facility availability (76.8%) showed in good category. From support system factors, the highest support came from peer support (80.0%), followed by family support (73.1%) and social support (43.5%). Decision-making of the PLHW showed 77.6% in the moderate category, the same as with information availability and resource benefits (64.8% and 76.5%, respectively). The majority of indicators in environmental factors were in the moderate category, social interaction (64.3%), and group activity (53.6%), but environmental situations showed different results (68.0% in the good category). Peer group support based on the chronic care model showed information support in the good category (81.9%), as well as 87.2% emotional support and 52.3% mutual support in the good category. Informed (81.9%), activated patient (52.3%), and practice (58.7%) had good category; however, prepared identified in the moderate category (44.0%).

Model Developmental Finding

The model developmental analysis measured the outer model (construct validity, discriminant validity, reliability test) and inner model (determination coefficient, predictive relevance, model fit, and hypothesis test). Construct validity showed all loading factors (λ) >0.5 and T-value >1.96, discriminant validity depicted with Fornell-lacker criterion square root of each construct was greater than the correlation value with other constructs in the model. The reliability test in every variable met the requirements of Cronbach's alpha > 0.6 (Figure 1). The determination coefficient (R2) of the model showed individual characteristics variables, health system factors, support system factors, and environmental factors able to explain peer group support based on the chronic care model of 80.0% and improvement of patient's ability as well as 40.0% (Figure 2). All variables show Q2 > 0 (Q2 = 0.230; 0.518), which indicates that the model is said to have predictive relevance and can be applied in other research settings. Table 3 shows that the model is quite fit and in accordance with the research data (RMS Theta = 0.070 < 0.102; NFI value 0.907 > 0.9; Standardized Root Mean Square = 0.071 < 0.10). In hypothesis test, all hypothesis showed significant effect to dependent variable exclude individual characteristic factors to peer group support based on chronic care model (Table 4).

Discussion

Peer group support refers to the practical, social, and emotional support of a group of people with the same condition or illness (Cabral et al., 2018). Peer group support can reduce health behavior problems, reduce depression, and have a role in improving the ability of HIV patients to carry out daily activities, self-confidence and self-confidence, coping skills, social interactions, acceptance of social support, self-care and improvement of care (Øgård-Repål et al., 2021). Research by Berg et al. (2021) states that the approach to peer support groups is effective in terms of increasing retention in care, adherence, stigma, and mental health. Since 1980, peer support groups have supported each other, shared knowledge, and supported in care. With the support of peer groups, patients with HIV will feel like they have a group that is ready to listen to complaints and various strategies to deal with problems and help improve adherence to treatment (Misutarno et al., 2022). Group members have the opportunity to help each other when there is a problem so as to create a new, friendly relationship. The friendship formed can increase the patient's enthusiasm in managing his illness, for example a friend in a group proposes to do physical exercise together, it will also increase the desire of other members to take part in the exercise. Information and suggestions obtained from fellow members of the peer group are able to come up with problem-solving strategies that are beneficial to other members (Mark et al., 2019).

Peer group support based on the chronic care model is an intervention that describes a comprehensive approach to assisting and caring for groups of patients with HIV and supporting improved functional and clinical outcomes (Van Hout et al., 2020). The chronic care model highlights the importance of self-management support despite the existence of peer groups. However, self-management is critical, as it is emphasized by providing patients with knowledge, confidence, and skills for self-management of their condition. Self-management is a dynamic, interactive, and everyday process in which individuals are involved in managing chronic disease (Vainauskienė & Vaitkienė, 2021). Self-management is an individual's ability, in relation to family, community, and healthcare professionals, to manage symptoms of medication, lifestyle changes, and psychosocial, cultural, and spiritual consequences of health conditions (Mutumba et al., 2019). Self-management is concerned with the tasks a person must perform to live with a chronic condition (Boucher et al., 2019). The chronic care model describes self-management support as collaborative assistance of patients and families to gain ability and independence for their chronic illness, improve self-management compliance, and regularly assess problems and complications that arise (O'Connell et al., 2018). Self-management programs aim to enable patients to manage their condition, monitor symptoms, adjust medications, and determine when additional medical care is needed. Self-management support, based on patient empowerment, is a key function of the chronic nursing model. Patients must be knowledgeable about their chronic condition and have the skills and confidence necessary to manage it. Patients with relevant knowledge and skills can self-manage their chronic condition (Areri et al., 2020).

Based on the overall results of the study, it can be seen that in developing a peer group support model based on choric care models to increase the ability of HIV patients, the best path is the path from environmental factors (X4) through peer group support (X5) to increase the patient's ability (Y1). Meanwhile, the most substantial direct effect was shown in the fact that the support system factor (X3) directly increases the patient's caring ability (Y1). It was shown that environmental factors, namely group activities, have a higher value than social relationships and environmental situations in improving the patient's ability. Meanwhile, the support system factor, namely social support, is an indicator that has a higher value than family support, peer support, decision-making, information availability, and resource benefits so that the patient's caring ability to go through the two indicators of the two latent variables can be improved.

Environmental factors consist of social relations, group activities, and environmental situations. The patient's environment is one of the strongest motivations because the environment has a large enough role in shaping patients with HIV to continue to struggle and be enthusiastic in daily activities. Patients with HIV really need groups, because of the ability of a person (individual) in the process of cognitive activity accompanied by behavioral activities in choosing ways to adapt appropriately to stressful life situations and conditions, which arise from the individual's relationship with the environment (Willis et al., 2019). The statement, in principle, provides clarity that in carrying out his life, a person must behave towards himself and the environment in which he lives and is located.

Conclusions

The development of the peer group support model based on the chronic care model shows that all indicators are valid and reliable in measuring the latent variables of each model and overall shows that the independent variables affect the dependent variable. The coefficient of determination shows that individual characteristics variables, health system factors, support system factors, and environmental factors can explain peer group support based on the chronic care model of 80.0% and improvement of the patient's ability by 40.0%. Predictive relevance indicates that the model fits and can be applied in other research settings. The implications of this research suggest that the chronic care model, when integrated with peer support mechanisms, can be highly effective in enhancing patient outcomes, especially in chronic disease management. However, given that 20.0% and 60.0% of the variance remained unexplained for peer support and patient improvement, further research should explore additional factors that might influence these outcomes, such as cultural, psychological, or socio-economic variables. Additionally, longitudinal studies could be conducted to evaluate the long-term impact of peer support in chronic care, and comparative studies across diverse healthcare systems could further validate the generalizability of this model.

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Declaration of Interests

The authors declare that they have no competing interests.

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