

## ⇒ Research Article



# Structural Model of Quality of Life Based on Optimism Mediated by Coping Strategies in Patients With Human Immunodeficiency Virus

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## Abstract

**Background:** Human immunodeficiency virus (HIV) can lead to a difficult and painful condition if left untreated and the heavy burden of the disease may create many problems for the patients.

**Objectives:** We aimed to design a structural model of quality of life based on optimism mediated by coping strategies in patients with HIV.

**Methods:** The research method was descriptive using structural equation modeling. The statistical population of the study consisted of all patients with HIV referred to the Iranian AIDS Studies Center and the Iranian Family Health Association during 2018-2019. The sample consisted of 250 patients with HIV referred to the Iranian AIDS Studies Center and the Iranian Family Health Association who were selected using convenience sampling based on the inclusion and exclusion criteria. Data were collected using the quality of life, Lazarus-Folkman coping styles, and revised life orientation questionnaires. Data were analyzed by Pearson's correlation coefficient and structural equation modeling using SPSS software, version 22, and Lisrel software version 8.80.

**Results:** Coping strategies had a mediating role in the relationship between quality of life and optimism in patients with HIV (AGFI=0.92, RMSEA = 0.051).

**Conclusions:** Coping strategies played a mediating role in the relationship between optimism and quality of life so that quality of life increased with the direct effect of optimism and coping strategies.

**Keywords:** Quality of life, Human immunodeficiency virus, Optimism

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Received December 26, 2020, Accepted: June 1, 2021, Published Online: June 29, 2021

## Background

Acquired immunodeficiency syndrome (AIDS) is a social phenomenon that affects all aspects of one's life. Since the first patients with human immunodeficiency virus (HIV) in the United States were young gay men, there is essentially a global belief that HIV is transmitted mainly through intercourse and is mostly related to groups that engage in unusual sexual activity (1). Researchers believe that the way to deal with the disease is an important factor in preventing its spread, success of treatment plans and patient welfare, and increasing the quality of life of patients (2). Quality of life is people's concepts of their position in life according to cultural content and the value of the system in which they live, which is more concerned with their goals, standards, and concerns (3). Quality of life is a fluid concept dependent on the culture and living conditions of each human being and varies in different populations, times, and places. The response of different people to HIV varies depending on the cultural, spiritual,

and religious norms of society (4).

On the other hand, since patients with HIV are in a difficult and painful condition and the heavy burden of the disease has created many problems for patients, their optimism can be one of the most important factors affecting their reaction to the disease and searching for health services (5). Optimism or having a general expectation that in the future, good events will happen more than bad events can affect people's behavior and how they cope with difficulties and pressing life events (6). Because optimistic people expect positive things to happen to them in the future, and this confidence in the future creates a positive feeling in the individual, leading to a high psychological adjustment (7). Even if they encounter pressing problems and events of life, since they are optimistic about the future and believe that they can solve problems with their efforts, they also use positive coping strategies to deal with these situations, and this can lead to higher mental and physical health (8).

Moreover, coping strategies are skills that are taught to increase people's psychosocial abilities and enable the individual to effectively face the requirements and conflicts of life (9,10). Researchers believe that most people prefer to use certain coping methods in stressful situations, which collectively constitute the individual's coping styles (11). Lazarus and Folkman (12) have divided coping styles into three types of problem-oriented (including behaviors and cognitions that change stressful situations), emotion-focused (including behaviors in which the goal is to change a person's response to the stressor, and the person tries to change uncomfortable emotional responses to reduce tension) and avoidance (the person escapes it by distancing himself from the stressful problem) (13). Nixon and colleagues (14) showed that optimistic people, despite being in high-risk and difficult situations, are not psychologically harmed and look positively at life's problems and are not discouraged after failure and increase their efforts.

### Objectives

Therefore, the aim of this study was to develop a structural model of quality of life based on optimism mediated by coping strategies in patients with HIV.

### Methods

We used structural equation modeling in this descriptive study. The statistical population of the study consisted of all patients with HIV referred to the Iranian AIDS Studies Center and the Iranian Family Health Association in 2018-2019. The sample consisted of 250 patients with HIV referred to the mentioned centers who were selected by convenience sampling method on the inclusion and exclusion criteria. This study consisted of five variables and 40 people were selected as the sample group for each variable ( $n=200$ ), and considering the possible drop-out rate 250 people were selected. The inclusion criteria regardless of sex (being male or female) were as follows: age range of 18 to 50 years, early stages of HIV, not having any other chronic physical illness before the diagnosis of HIV, not having any diagnosed serious mental disorder. We excluded patients who did not answer all questions.

We selected the patients with a positive diagnosis of HIV. They completed the questionnaires after being informed about the objectives of the study and that their personal information would remain confidential. Informed consent was obtained from all participants and the following ethical considerations were taken into account: (a) All participants received oral information about the research and participated in the research if they wished, (b) They were assured that all information is confidential and will be used for research purposes, (c) To respect privacy, the participants' names and surnames were not registered, and (d) All questionnaires were conducted by the researcher himself.

### Quality of Life Questionnaire - Short Form

The questionnaire has 36 items and 8 sections. Each section is scored between 0 and 100 using the Likert scale, with a total score ranging from 0 to 800. A higher score indicates higher and more desirable quality of life. Convergent validity of the instrument was confirmed by the World Health Organization quality of life questionnaire, and its reliability was reported to be 0.86 using Cronbach's alpha. Also, Doosti-Irani and colleagues confirmed the face and content validity of the instrument with the opinion of professors and experts and reported a Cronbach's alpha of 0.71 (15).

### Lazarus-Folkman Coping Strategies test

This questionnaire was prepared by Lazarus and Folkman with a revised form of 66 items and 8 scales, each of which is composed of a number of items. According to Lazarus, internal reliability ranges from 0.66 to 0.79 for different coping styles. The Cronbach alpha of this test was 0.87. The validity of subscales ranges from 0.57 to 0.81 and from 0.39 to 0.652 for healthy individuals and patients with cancer, respectively. (16).

### Life Orientation test

The revised life orientation test is a short and modified version of the main life orientation test that measures individual differences in optimism-pessimism. Respondents are asked to grade their agreement for each item based on a five-point Likert scale. Scheier and colleagues reported Cronbach's alpha coefficient of 0.76 and a test-retest reliability coefficient of 0.79 (within four weeks) for a student group. Alpha coefficient was 0.87 for 59 women with breast cancer and 0.74 after 12 months (17).

Descriptive statistics were used to categorize the individual characteristics of patients to calculate frequency, percentage, mean and standard deviation. Kolmogorov-Smirnov test was used to determine the normality of data, and Pearson's correlation coefficient and path analysis model was used as appropriated. In order to match the proposed model, chi-square index, degree of freedom, fit indices such as comparative fit index (CFI), goodness of fit (GFI), adjusted goodness of fit (AGFI), and root mean square error of approximation (RMSEA) were investigated. SPSS and AMOS software (version 22) were used to analyze the data. The significance level was considered to be 0.05.

### Results

In this study, 47 (19%) of the participants were women and 203 (81%) were men. Also, 67 (27%) were 18-30 years old, 93 (38%) were 31-40 years old and 90 (35%) were 41-50 years old. There was no missing data in this study. Kolmogorov-Smirnov test used to investigate the normality of the variables.

According to Table 1, the correlation coefficients between optimism, coping strategies, and quality of life scales were statistically significant ( $P < 0.05$ ).

As shown in Table 2, standardized and unstandardized coefficients of the direct path of the hypothetical model of optimism to quality of life ( $P < 0.01$ ,  $\beta = 0.35$ ), optimism to coping strategies ( $P < 0.01$ ,  $\beta = 0.53$ ), and coping strategies to quality of life ( $P < 0.01$ ,  $\beta = 0.23$ ) were significant.

The RMSEA value for the present study was 0.051, indicating a good model fit to data. Also, the study of other fit indices indicated that the model fit was desirable (Table 3).

The bootstrap test was used to investigate the indirect effect of optimism and quality of life through the mediation of coping strategies. According to Table 4, indirect pathways existed in the relationship between optimism and quality of life mediated by coping strategies in patients with HIV based on the bootstrap estimation method. The modified model of the relationship between optimism and quality of life with the mediation of coping strategies in standard mode is shown in Figure 1.

## Discussion

The aim of this study was to develop a structural model of quality of life-based on optimism mediated by coping strategies in patients with HIV. Results showed that coping

strategies had a mediating role in the relationship between quality of life and optimism in these patients. This finding is consistent with Nixon and colleagues' study (14).

In explaining this finding, it can be said that chronic and incurable diseases such as AIDS reduce the patients' quality of life and optimism and coping strategies. Optimism is one of the main concepts of positive psychology that protects individuals against the negative effects of stress. Optimism helps a person to confront psychological problems that lead to failure and unpleasant life events. This gift helps a person achieve more success in life, work environment, and other parts of life. Optimism activates and improves the immune system (18). Nixon and colleagues (14) showed in their research that optimistic people, despite being in high-risk and difficult situations, are not psychologically harmed and look positively at life's problems and are not discouraged after failure and increase their efforts. Optimism is associated with physical and mental health, high motivation for progress, personal and psychological well-being (19). Increasing the patients' optimism increases the quality of life, which helps them to adapt to their life and illness through optimism. Quality of life is the individual's perception of his own health in general, in accordance with cultural requirements, value system, goals, expectations, and interests, and explains why people with similar objective indicators of quality of life can have completely different mental indicators. Considering the important quality of life for people in the society, trying to promote it is one of the main principles and priorities of planners and social policy-users and managers and government officials in every society and country. Therefore, it can be said that all programs, policies, and executive operations in the society aim to improve the quality of life of people in the community (20).

**Table 1.** Correlation Matrix Between Research Variables

Variables	M (SD)	1	2	3
Optimism	2.87 (0.56)	1		
Coping Strategies	3.54 (0.65)	0.83 <sup>a</sup>	1	
Quality of life	4.98 (0.39)	0.83 <sup>a</sup>	0.88 <sup>a</sup>	1

<sup>a</sup>  $P < 0.001$

**Table 2.** Standardized and Unstandardized Direct Coefficients of the Hypothetical Model of the Relationship Between Optimism and Quality of Life Mediated by Coping Strategies

Paths	B	$\beta$	Standard Error	Critical ratio	P
Optimism to quality of life	0.15	0.35	0.03	4.55	0.001
Optimism to coping strategies	0.46	0.53	0.04	10.60	0.001
Coping Strategies to quality of Life	0.29	0.33	0.04	5.11	0.001

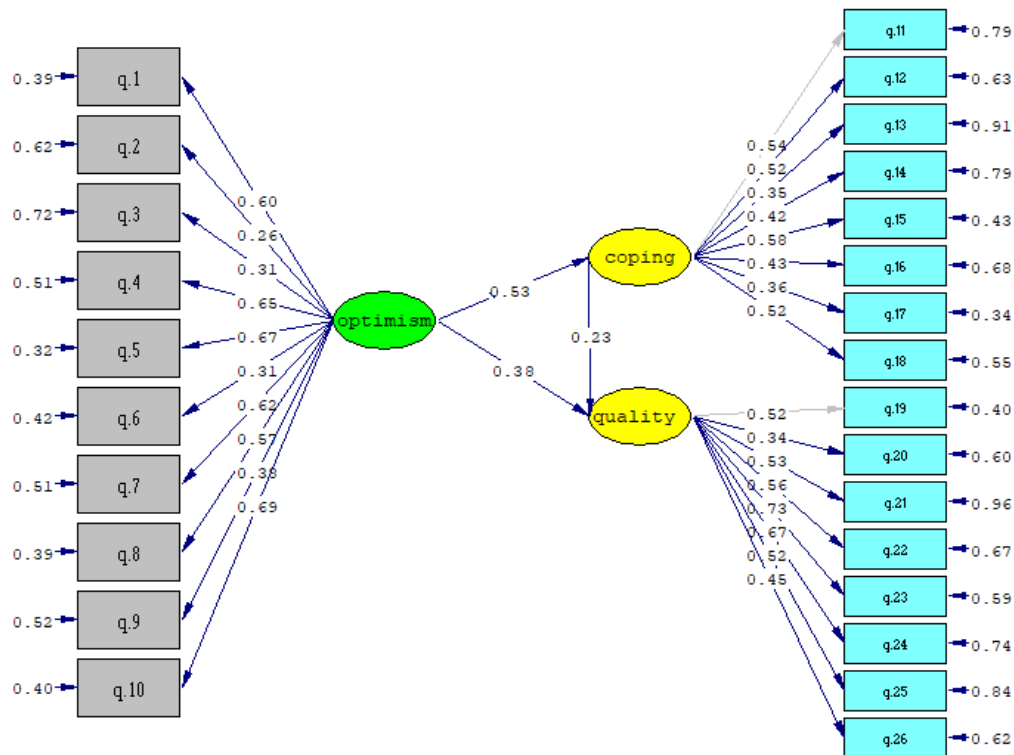
**Table 3.** Fitness indices of the proposed model of the relationship between optimism and quality of life with mediation of coping strategies

Model	P value	RMSEA	GFI	CFI	AGFI	TLI	NFI
Modified model	0.63	0.051	0.96	0.93	0.92	0.95	0.95

CFI, comparative fit index; GFI, goodness of fit; AGFI, adjusted goodness of fit; RMSEA, root mean square error of approximation; TLI, Tucker-Lewis index; NFI, normed fit index.

**Table 4.** Indirect Estimation of the Model Using the Bootstrap Method

Variable	B	Lower	Higher	P
Quality of life and optimism mediated by coping strategies	0.54	0.62	0.23	0.001



**Figure 1.** The Modified Model of the Relationship Between Optimism and Quality of Life With the Mediation of Coping Strategies in Standardized Mode

Although we usually use specific strategies for certain situations, problem-focused coping behavior works better when it is not beyond our ability and control. Sometimes we can improve the problem by adopting a few activities and fix it. In other words, when we assess an accident as a manageable incident, we tend to use problem-focused coping behaviors. But in other situations where we know that performance will not have a beneficial effect or may even worsen the situation and problem, we prefer to use emotion-focused coping behavior. The distinction between problem-based coping and emotion-based coping is important (11). People who are faced with chronic diseases such as AIDS, psychosocial diseases form cognitions of the disease in their cognitive system that play a role in their formation of internal and external variables such as personality factors, social environment, and demographic factors. These factors, along with the threat of the disease, affect the patient's perception of nature, causes, curability/controllability, and consequences of the disease (12).

Considering that the statistical population of this study was patients with HIV in Tehran, the results of this study cannot be generalized to other regions. The only data collection tool in this study was a questionnaire, which had a self-report nature, therefore it is not free bias. The patients of this study were only HIV positive patients, so the results of this study cannot be generalized to other patients. We suggest studies be done on other patients to compare the results. It is suggested that in future studies,

by selecting people who are homogeneous in terms of education level and socioeconomic status, to the extent possible, confounding factors can be prevented. Due to the low number of samples and the possibility of errors in them, it is suggested that larger samples be studied in the future.

### Conclusion

It can be concluded that coping strategies played a mediating role in the relationship between optimism and quality of life so that with the direct effect of optimism and coping strategies, the quality of life increased.

### Conflict of Interests

The authors declare that they have no conflicts of interests.

### Ethical Approval

This article has an ethics committee code of IR.HUMS. REC.1399.089 was from Hormozgan University of Medical Sciences. All ethical principles were considered in this research. The participants were informed about the purpose of the research and its stages. Informed consent was obtained from the subjects. They were also assured of the confidentiality of their information. Moreover, the subjects were free to withdraw from the study if desired. They were also informed that they would be provided with the results of the research.

### Funding/Support

This research did not receive any specific grant from funding agencies in the public, commercial, or nonprofit sectors.

### Authors' Contribution

Conceptualization [SL]; Methodology [SD]; Investigation [SB]; Writing – original draft [SL]; Writing – review & editing [all authors]; Funding acquisition [all authors]; Resources [all authors]; Supervision [SD].

### Acknowledgments

We would like to thank our participants who greatly cooperated with us in the research.

### References

1. Alemayehu M, Wubshet M, Mesfin N, Tamiru A, Gebayehu A. Health-related quality of life of HIV infected adults with and without Visceral Leishmaniasis in Northwest Ethiopia. *Health Qual Life Outcomes*. 2017;15(1):65. doi: [10.1186/s12955-017-0636-6](https://doi.org/10.1186/s12955-017-0636-6).
2. Costa JO, Pearson SA, Acurcio FA, Bonolo PE, Silveira MR, Ceccato M. Health-related quality of life among HIV-infected patients initiating treatment in Brazil in the single-tablet regimen era. *AIDS Care*. 2019;31(5):572-81. doi: [10.1080/09540121.2019.1576841](https://doi.org/10.1080/09540121.2019.1576841).
3. Helvik AS, Bjørkløf GH, Corazzini K, Selbæk G, Laks J, Østbye T, et al. Are coping strategies and locus of control orientation associated with health-related quality of life in older adults with and without depression? *Arch Gerontol Geriatr*. 2016;64:130-7. doi: [10.1016/j.archger.2016.01.014](https://doi.org/10.1016/j.archger.2016.01.014).
4. Kaneez S. Depression and coping mechanism among HIV/AIDS patients under anti-retroviral therapy. *Indian J Soc Psychiatry*. 2016;32(2):149-53. doi: [10.4103/0971-9962.181098](https://doi.org/10.4103/0971-9962.181098).
5. Nagy D, Szamosközi S. The relationship between irrational cognitions, autobiographical memory, coping strategies and complicated grief. *Procedia Soc Behav Sci*. 2014;127:524-8. doi: [10.1016/j.sbspro.2014.03.303](https://doi.org/10.1016/j.sbspro.2014.03.303).
6. Singh R, Shukla A, Tiwari S, Srivastava M. A review on delignification of lignocellulosic biomass for enhancement of ethanol production potential. *Renew Sustain Energy Rev*. 2014;32:713-28. doi: [10.1016/j.rser.2014.01.051](https://doi.org/10.1016/j.rser.2014.01.051).
7. Kim ES, Tindle HA, Kubzansky LD, Liu S, Duncan MS, Manson JE, et al. The relation of optimism to relative telomere length in older men and women. *Psychosom Med*. 2020;82(2):165-71. doi: [10.1097/psy.0000000000000764](https://doi.org/10.1097/psy.0000000000000764).
8. Trickey A, May MT, Vehreschild JJ, Obel N, Gill MJ, Crane HM, et al. Survival of HIV-positive patients starting antiretroviral therapy between 1996 and 2013: a collaborative analysis of cohort studies. *Lancet HIV*. 2017;4(8):e349-e56. doi: [10.1016/s2352-3018\(17\)30066-8](https://doi.org/10.1016/s2352-3018(17)30066-8).
9. Vagiri RV, Meyer JC, Godman B, Gous AG. Relationship between adherence and health-related quality of life among HIV-patients in South Africa: findings and implications. *J AIDS HIV Res*. 2018;10(8):121-32. doi: [10.5897/jahr2018.0478](https://doi.org/10.5897/jahr2018.0478).
10. Weiss-Faratici N, Lurie I, Benyamini Y, Cohen G, Goldbourt U, Gerber Y. Optimism during hospitalization for first acute myocardial infarction and long-term mortality risk: a prospective cohort study. *Mayo Clin Proc*. 2017;92(1):49-56. doi: [10.1016/j.mayocp.2016.09.014](https://doi.org/10.1016/j.mayocp.2016.09.014).
11. Beraldo RA, Meliscki GC, Silva BR, Navarro AM, Bollela VR, Schmidt A, et al. Anthropometric measures of central adiposity are highly concordant with predictors of cardiovascular disease risk in HIV patients. *Am J Clin Nutr*. 2018;107(6):883-93. doi: [10.1093/ajcn/nqy049](https://doi.org/10.1093/ajcn/nqy049).
12. Biset Ayalew M. Mortality and its predictors among HIV infected patients taking antiretroviral treatment in Ethiopia: a systematic review. *AIDS Res Treat*. 2017;2017:5415298. doi: [10.1155/2017/5415298](https://doi.org/10.1155/2017/5415298).
13. Brondani MA, Phillips JC, Kerston RP, Moniri NR. Stigma around HIV in dental care: patients' experiences. *J Can Dent Assoc*. 2016;82:g1.
14. Nixon SA, Bond V, Solomon P, Cameron C, Mwamba C, Hanass-Hancock J, et al. Optimism alongside new challenges: using a rehabilitation framework to explore experiences of a qualitative longitudinal cohort of people living with HIV on antiretroviral treatment in Lusaka, Zambia. *AIDS Care*. 2018;30(3):312-7. doi: [10.1080/09540121.2017.1363365](https://doi.org/10.1080/09540121.2017.1363365).
15. Doosti-Irani A, Nedjat S, Nedjat S, Cheraghi P, Cheraghi Z. Quality of life in Iranian elderly population using the SF-36 questionnaire: systematic review and meta-analysis. *East Mediterr Health J*. 2019;24(11):1088-97. doi: [10.26719/2018.24.11.1088](https://doi.org/10.26719/2018.24.11.1088).
16. Ahadi H, Delavar A, Rostami AM. Comparing coping styles in cancer patients and healthy subjects. *Procedia Soc Behav Sci*. 2014;116:3467-70. doi: [10.1016/j.sbspro.2014.01.785](https://doi.org/10.1016/j.sbspro.2014.01.785).
17. Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *J Pers Soc Psychol*. 1994;67(6):1063-78. doi: [10.1037//0022-3514.67.6.1063](https://doi.org/10.1037//0022-3514.67.6.1063).
18. Chettimada S, Lorenz DR, Misra V, Dillon ST, Reeves RK, Manickam C, et al. Exosome markers associated with immune activation and oxidative stress in HIV patients on antiretroviral therapy. *Sci Rep*. 2018;8(1):7227. doi: [10.1038/s41598-018-25515-4](https://doi.org/10.1038/s41598-018-25515-4).
19. Ciccarelli N, Baldonero E, Milanini B, Fabbiani M, Cauda R, Di Giambenedetto S, et al. Cognitive impairment and cardiovascular disease related to alexithymia in a well-controlled HIV-infected population. *Infez Med*. 2019;27(3):274-82.
20. Cooper V, Clatworthy J, Harding R, Whetham J. Measuring quality of life among people living with HIV: a systematic review of reviews. *Health Qual Life Outcomes*. 2017;15(1):220. doi: [10.1186/s12955-017-0778-6](https://doi.org/10.1186/s12955-017-0778-6).