Original Article

Investigating the Relationship between Positive and Negative Affect Experiences and Resilience and Tolerance of Ambiguity among Patients with HIV

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Received: 02 Sep 2020 Accepted: 24 Oct 2020

Abstract

Background & Objective: Patients with HIV experience considerable negative affects, which may jeopardize their physical, mental, and social health. On the other hand, resilience and ambiguity tolerance in challenging situations may increase the psychological health of high-risk individuals, specifically HIV patients who are exposed to high levels of risk and stress. Hence, the present study aimed to investigate the relationship between positive and negative affect experiences and resilience and ambiguity tolerance among patients with HIV in 2019.

Materials & Methods: This study used a descriptive-correlational design. Out of the HIV patients recorded in Hematological and Oncological Research Center, Tabriz University of Medical Sciences, 95 cases were selected via simple random sampling method and, then, they were included in the study. Afterwards, data collection was performed using resilience, ambiguity tolerance, and PANAS (positive and negative affect schedule) questionnaires. Subsequently, multiple regression analysis was used to analyze the collected data.

Results: There was a significantly negative relationship between the negative affect experiences and ambiguity tolerance and resilience. Besides, the positive affect experiences were shown to have a significantly positive relationship with resilience and ambiguity tolerance. In addition, results of the regression demonstrated that the resilience and ambiguity tolerance variables could appropriately predict the positive and negative affect experiences.

Conclusions: Considering the difficult conditions of the patients with HIV as well as their great number of problems, it might be possible to reduce the experiences of negative affect and, as a result, prevent the consequent outcomes of negative affect by increasing ambiguity tolerance and resilience.

Keywords: Positive and negative affect experiences; Resilience; Ambiguity tolerance; HIV

Introduction

Being associated with a considerable number of social problems, misconceptions predominating the society, and social labeling, AIDS is a disease that influences, in addition to physical health, even the mental health of patients, which can cause a large number of various problems in their useful and favorite activities (1).This disease alters patients' life path and results in reduced self-confidence, increased feeling of vulnerability, physical symptoms, and mind-wandering. Besides, it perturbs daily performance, social activities, and mental calmness of patients(2). Nevertheless, there are many patients with HIV who endeavor to confront and overcome the emerging problems such as stigma, poverty, depression, drug abuse, despair due to imminent death, and ambiguous future, so that by disturbing physical, mental, and social aspects, such endeavors may be associated with the negative physical and psychosocial

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well-being of the individuals as well as the onset of psychiatric disorders (3).

One of the components of QoL is mental well-being, which refers to an individual's evaluation of his/her life and is composed of two aspects, namely cognitive and emotional aspects. Thus, the emotional aspect indicates having the maximum positive affect and minimum negative affect (4). Positive affect and negative affect are different thinking mechanisms that influence mental health (4, 5). Negative affect implies how much an individual feels satisfied or dissatisfied. Besides, negative affect represents an unpleasant internal experience and is also a general aspect of inner despair and non-engagement in joyful activities, which will be followed subsequently by the emersion of avoidant mood states including fury, sadness, hatred, inferiority, sense of sin, fear, and anger. When negative affect is at a high level, then the positive emotion will be low. Thus, the individual will feel languid, exhausted, discontented, nervous, and irritable. However, in case of low negative affect, the individual will be calm and relaxed. The second emotional aspect is positive affect, which represents a pleasant internal experience, a state of active energy, as well as high concentration on and engagement in pleasant activities and embraces a wide range of positive mood states such as happiness, potency, enthusiasm, tendency, interest, and self-respect. However, positive and negative affects should not be considered as opposite states, but they are independent from feeling, which are considered to be associated with extensive cognitive, biological, and behavioral systems (6). Walukevich-Dienst, Lewis and Buckner (7) reported that a low-level positive affect would be associated with high social anxiety, less positive experiences, and more fear responses. In addition, Molinari, Miragall, Enrique, Botella, Baños and García-Palacios (8) showed that lack of positive affect had a relative relationship with depression. Psychological studies have shown that the emergence of pain is associated with depression, anxiety, co-morbid depressive and anxiety disorder, remitted disorder or no current disorder (controls) (9), so that with an increase in negative states, individuals will exhibit more sensitivity to pain-causing stimuli (10). Finally, Schneider et al (11) indicated that life expectancy is associated with positive and negative affects.

Resilience has been defined as a pattern of adaptation in the context of past and current miseries and difficulties (12) and has been considered as an attribute, process, and resource or an output and outcome depending on the level of investigation and accountability (13). Resilience includes personal, interpersonal, and environmental components (12), which facilitate adaptation to the negative age-dependent events or hazards such as lack or loss of health or social position. In a study on resilience and growth of success, Prucheno, Heed, and Jenderson (14) showed that resilience requires misery and difficulty. They proposed that "*miserable experiences during the personal lifetime can be a powerful stimulant for resilience*" and HIV is indeed the cause of misery and difficulty that should be merged by the patients with HIV in their daily lives (15). Similarly, in this investigation, it was assumed that resilience, as an intrapersonal, interpersonal, and environmental resource among the patients with HIV, is related to the experiences of positive and negative affects. Smith and Hyslip (12) proposed that the intrapersonal, interpersonal, and environmental resources can contribute to resilience. However, there are only a limited number of experimental studies on resilience among adults of any age with HIV (15-18). In spite of the few number of studies in this regard, the obtained results on resilience among the patients with HIV were consistent. Yu et al.(19) showed resilience to be negatively related to depression, anxiety, and stress among adults with HIV. Furthermore, Lyon et al.(18) found a relationship between the diagnosis of anxiety or mood disorders and reduced resilience among the patients with HIV living in Australia. According to Fang et al.(17), social (interpersonal) support was an effective component of resilience among the patients with HIV. DeSantis(15) proposed to consider both society and personal capabilities as important concepts in resilience. In this regard, Ernshaw, Bogart, Dovidyo, and Williams (20) proposed that resilience might include social and family resources. Nevertheless, no study has been conducted thas far on resilience among the patients with HIV in the Iranian society.

After all, it must be noted that despite all the progress in HIV treatment, it is still spreading throughout the African and Asian countries while no definite treatment has been found for it yet. Therefore, as soon as the disease is diagnosed, AIDS exposes the patients to several questions such as "What would be the nature and meaning of the remaining part of life that is associated

with such a problem?", "Basically, how should a person continue living under such ambiguous circumstances for a long time?", and "Can a patient disregard the threats caused by the disease and keep being hopeful about future?". Such ambiguity is one of the major problems of the patients with AIDS, which results in the emergence of numerous other problems as well. Patients with AIDS are exposed, on the one hand, to the lethality of their disease and, on the other hand, to the possibility of treatment or probability of improvement. Thus, while achieving no definite concept and clear image of how to live along with such a phenomenon, they feel themselves amidst a halo of ambiguities and have an absolutely uncertain and ambiguous impression of their future. Accordingly, for these patients, confidence in the future and what is waiting for them is the most important problem confusing their minds. Lack of awareness and ambiguity would yield despair and disappointment about the future, so that the patients would see themselves facing early death. Consequently, the suitable conditions provided for the progress of the disease and disregarding the necessary care and follow-up procedures, which all stem from the patients' sense of despair, would exacerbate the status of their disease (21). Based on the above-mentioned points, it can be inferred that the lives of patients with such a disease entails many ambiguities, so that these ambiguities expose them to several problems such as despair and disappointment. Subsequently, these problems in turn may influence patients' affect and engender psychological problems, the impacts of which can even embrace both family and society. Thus, there are many negative affects in the lives of people living with HIV. According to the previous research, negative affects as the internal factor can reduce a person's resilience, which leads to the occurrence of other psychological disorders as well as problems. Nevertheless, no research has been conducted in this regard in Iran, which is considered a research gap. Furthermore, many ambiguities about health and future of this group of people can influence their mental health. But no national or foreign research has directly examined the tolerance of ambiguity. Accordingly, the present study aimed to investigate the relationship between resilience and ambiguity tolerance and the prediction of positive and negative affects.

Materials & Methods

This analytical cross-sectional study was conducted in 2019. The statistical population included all the patients with HIV who had record files in Tabriz. Out of this statistical population, 95 cases aged 18-45 years old, who had records in Hematological and Oncological Research Center, Tabriz University of Medical Sciences, were selected via convenient sampling method and, then, were included in the study. It should be noted that, considering the sample required for the purpose of correlation studies, the selected samples participated in this study with informed consent. The number of men was (71) and women was (24).

The inclusion criteria included being diagnosed with HIV, having personal information about the type and severity of the disease, and educational level of higher than junior high school. Being diagnosed with any associated diseases (including other types of cancer) was the only exclusion criterion. To comply with the ethical principles, the participants were ensured that their information would remain strictly confidential and this research would be conducted with their full consent. Also, writing the name and surname was completely optional. In this research, Pearson's correlation and multiple regression (simultaneous entry) were used for data analysis.

PANAS (positive and negative affect schedule): The PANAS also consists of 10 negative and 10 positive mood terms and a 5-point Likert-type response scale from 1,very slightly or not at all, to 5,extremely,with scale scores ranging between 10 and 50 (21). In this study, the scale scores were calculated to range between 0 and 40 (i.e., scale score—10), and respondents were asked to indicate how often they felt that way in general. The validity and internal consistency (NA,α=.87; PA,α=.88) of the PANAS are good, with the test–retest reliability being the highest for the "general "temporal instruction (21). According to the study by Bakhshipour and Dejkam, this tool benefits from acceptable construct validity and discriminant validity. Also, the internal consistency factor for both positive and negative affect scales is reported to be 0.85. (22)

MSTAT (multiple stimulus type's ambiguity tolerance)scale: McLain et al. constructed the MSTAT scale with 22 questions in 1993 (23). On the basis of the revised definitions ,

characteristics of ambiguity and personal reactions were designed proportionate to their perceptions. Accordingly, the validity, reliability, and stability of the scale were reported to be at a good level. This scale includes 22 questions, the responses of the participants to each one can range from "Strongly agree" to "Strongly disagree". Also, a Cronbach's alpha coefficient of above 0.84 has been reported for this scale(24). The items subsumed in this questionnaire include(1) I cannot tolerate ambiguous situations well, and (2) I prefer the known states to unknown states. This scale had appropriate internal consistency (Cronbach's alpha = 0.90) and its correlation with the uncertainty questionnaire has been reported 0.57, which represent its desirable construct validity (25).

Connor-Davidson's resilience scale (CD-RISC): This scale has been developed by Connor and Robinson (26) to test resilience as a term representing the capability to confront stress. It consists of 25 items, each of which should be responded by the participants on a 5-grade Likert scale, ranging from "Always incorrect" to "Always correct" assigned with scores of 0 and 4, respectively. Accordingly, in this scale, higher scores indicate higher resilience. The Cronbach's alpha coefficient of this scale has been reported to be 0.86 (27).To determine its validity, first, the correlation of each item with total score of the given category was calculated. Then, the analysis was conducted. Calculation of the correlation of each item with the total score, except for the third one, yielded the coefficients of 0.41 to 0.64. Subsequently, items of the scale underwent factor analysis via principal component analysis (PCA) method. The KMO (Kaiser-Meyer-Olkin) value and Chi-square in Bartlett's test were calculated to be 0.87 and 5556.28, respectively. Thereby, these two indices indicated sufficiency of the evidence for performing the factor analysis. Furthermore, in order to determine the reliability of Connor's resilience scale, Cronbach's alpha coefficient was calculated, yielding the value of 0.89(26). However, the Cronbach's alpha coefficient of the scale for the present study was calculated to be 0.84. In Iran, this scale was standardized by Mohammadi (28). In the aforementioned research, the correlation of each score with the total score indicated the coefficients of 0.41 to 0.64. In factor analysis, KMO value was equal to 0.87 and Chi-square value in Bartlett test was 5556.28, which showed two indicators of the adequacy of evidence for factor analysis. In order to determine the reliability of the Connor's resilience scale, Cronbach's alpha coefficient was calculated as 0.89 (28). Cronbach's alpha coefficient of this questionnaire in the present research was calculated as 0.82.

Results

Demographic information of the participants is provided in Table 1. Beside this information, among the 95 studied cases diagnosed with HIV, 2 cases were afflicted congenitally and through maternal-fetal routes of transmission, 3 cases through sexual intercourse with infected spouses, 11 cases through extramarital (including non-marital) sexual intercourses, 1 case through dental repair procedures and infection by dental instruments and equipment, and 80 cases through drug abuse.

Table 1. Demographic characteristics of patients with HIV

Group		Frequency	Frequency percentage
Gender	Male	71	74.7
	Female	24	25.3
Marital status	Single	36	37.89
	Married	40	42.10
Educational level	Illiterate	19	20.00
	Junior high school	62	65.26
	High school diploma	21	22.10
	BA degree	12	12.63
Mean of age	34.4		

As can be observed, Table 2 represents the experiences of negative and positive affects with mean values of 36.76 and 24.42, respectively.

Pearson's correlation coefficient was used to investigate the relationship between negative affect experiences and resilience as well as ambiguity tolerance variables. Table 3 represents the correlation matrix between the variables and sub-variables in the entire sample. According to the results in Table 3, the majority of the variables had significant relationships with each other ($P<0.01$, $p<0.05$). As indicated by the correlation matrix, resilience and ambiguity tolerance exhibited significantly negative correlation with the experiences of negative affect.

In order to predict the negative affect experiences based on the resilience and ambiguity tolerance variables, the regression analysis was used. However, prior to that, the presumptions were investigated and all of them were observed and adhered. The given presumptions included (a) normality of distribution of errors, which was observed by the histogram; (b) testing the independence of errors through Durbin-Watson test, yielding the value of 1.170 that was smaller than 2.50, so the presumption was observed; and (c) test of collinearity between predictor variables. The "tolerance" and "VIF" variables are reported in Table 4.

Results of the regression equation in Table 4 ($F2,91=4.591$, $P<0.000$, $R^2=0.092$) indicate that, in total, the predictor variables of resilience and ambiguity tolerance with the adjusted R^2 squared value of 0.092 could explain 9% of the variance in the "negative affect experiences" benchmark variable. This implies that there are some other variables that might contribute to the prediction of negative affect as well, but are not included in the present study. However, according to the results, the ambiguity tolerance variable

Table 2. Descriptive indices of research variables among patients with HIV

Variable	Mean	Standard deviation
Negative affect experiences	36.76	6.10
Positive affect experiences	24.42	7.36
Resilience	70.84	9.21
Ambiguity tolerance	48.81	13.01

Table 3. Correlation matrix of research variables

Variable	Negative affect experiences	Positive affect experiences	Resilience
Positive affect experiences	-0.537**	-	
Resilience	-0.205*	0.168	-
Ambiguity tolerance	-0.264*	0.334**	0.240*

Table 4. multiple regression analysis of effect of negative affect experiences on "resilience" and "ambiguity tolerance" components

Model	Predictor variable	B	SE	Beta	T	P	R	R^2	Tolerance	VIF
1	Resilience	-0.101	0.068	-0.229	-1.485	0.141	0.303	0.092	0.946	1.057
	Ambiguity tolerance	-0.110	0.050	-0.152	-2.226	0.029			0.946	1.057

exhibited the highest contribution to the prediction of negative affect.

Similarly, in this model, the presumptions were adhered. Accordingly, the distribution of errors was normal, the Durbin-Watson test yielded the value of 0.942 and the collinearity test results are reported in Table 5. As represented in Table 5, results of the regression equation ($F_{2,91}=6.254$, $P<0.000$, $R^2=0.120$) indicated that, totally, the predictor variables of resilience and ambiguity tolerance with the adjusted R^2 squared value of 0.120 could explain 12% of the variance in the positive affect experiences variable. This implies that there are some other variables that may contribute to the prediction of positive affect which they are not included in the present work. However, the ambiguity tolerance variable was shown to have the highest contribution to the prediction of positive affect.

Table 5. Multiple regression analysis of effect of positive affect experiences on "resilience" and "ambiguity tolerance" components

Model	Predictor variable	B	SE	Beta	T	P	R	R^2	Tolerance	VIF
1	*Resilience*	0.076	0.081	0.093	0.920	0.360	0.364	0.120	0.942	1.061
	Ambiguity tolerance	0.176	0.057	0.312	1.094	0.003			0.942	1.061

Discussion

The present study was conducted to evaluate the relationship between emotional experiences (both positive and negative) with resilience and tolerance of ambiguity among the patients with HIV. Accordingly, the obtained results showed that the negative affect was inversely related to resilience, which was consistent with the findings of *Kaiser et al.*(10) as well as *Tugod and Frederickson* (27). In this regard, they indicated that in highly stressful conditions, the individuals with higher levels of resilience and hardiness would have the advantage of higher mental health over others.

In the same way, various studies have indicated the relationship between depression and anxiety disorders and resilience (29). In this regard, Mine et al.'s (29) study showed the resilience-adaptation strategies and non-adaptive strategies to have a significant relationship with the symptoms of depression and anxiety, whereas the individuals who were living with their HIV reported higher levels of anxiety and depression than ordinary people. Besides, according to some studies in this regard, stress demonstrated to be related to lower levels of resilience, high anxiety, and depression (30-33). Therefore, in the case of encountering difficult circumstances, the individuals with higher levels of resilience would experience less negative affect such as anxiety and depression symptoms.

In addition to the above-mentioned findings, the present study exhibited the positive relationship between resilience and positive affect levels. Notably, this finding is consistent with those by Tugod and Frederickson(27), Lin, Liu and He (34), Fang et al.(17), and Sagone, and Indiana (35). Consistent with the results of this work, Frederickson and Joe believed that positive affect is a very important psychological resource, which helps individuals utilize effective coping methods to confront mental pressures, maintain their physical and mental health, and easily bounce back from stressful events (33). Experiences of positive affects enable individuals to cope with their daily stresses. In other words, the more the number of positive affects experienced by individuals, the higher the levels of resistance and resilience that they would probably exhibit (33). Highly resilient individuals commonly tend to demonstrate non-situational happiness and positive affects(32, 36).Therefore, individuals with high levels of positive affect are featured with higher resilience and exhibit higher adaptability in case of encountering unpredictable and difficult conditions, which would provide the ground for increasing the QoL and mental health improvement among the patients with HIV.

Another major finding of the present study is the one indicating the inverse relationship between negative affect and ambiguity tolerance, which is consistent with those of Brown and Wyne (37). Negative affect represents an unpleasant internal experience and a general aspect of inner despair and non-engagement in joyful activities, followed subsequently by some

avoidant mood states such as fury, sadness, hatred, inferiority, sense of sin, fear, and anger. With an increase in negative affect states, individuals will exhibit higher sensitivity to pain-causing stimuli (10).According to McLain et al.(38), ambiguity tolerance is an individual's systematic and stable tendency to react to perceived ambiguity with greater or lesser intensity. Individuals with lower ambiguity tolerance will experience several hazards and sources of threat during their lifespan, the continuance of which can result in numerous worries as well as negative effects such as anxiety, OCD (obsessive-compulsive disorder) (39). As shown by Brown and Wyne (37), the individuals with low ambiguity tolerance consider an ambiguous situation as a threatening one. Thus, they will be caught by anxiety. On this basis, the patients with HIV, when encountering ambiguous states, will respond with a set of negative affects including fear, anxiety, despair, worry, and depression. However, what is meant by ambiguity tolerance is indeed the ability to accept the feeling of anxiety and mental discomfort, which results from from adaptation to the situations and difficulties (40). Therefore, the increased negative affect can predict the reduced ambiguity tolerance. On this basis, the positive affect and ambiguity tolerance construct can play a significant role in reducing mental distress and accommodating to stress-causing circumstances in order to improve the QoL of the patients with HIV.

Conclusion

Based on the results obtained in the present study, the mean of negative affect among the patients with HIV was shown to be higher than that of positive affect. Besides, it was demonstrated that resilience and ambiguity tolerance influence the affect, particularly negative affect. Considering the undesirable and stressful circumstances as well as numerous ambiguities about the future of the disease, an appropriate solution for such problems is to attempt to increase resilience and ambiguity tolerance in order to achieve improved well-being and QoL among the patients with HIV. In the present study, it was impossible to access further sample groups because of the particular conditions of the studied sample. Moreover, due to the unavailability of a list of people registered in the center, convenience sampling method was employed, which could be an important restriction. Meanwhile, according to the results, further research is recommended to investigate training for reducing negative affects and this group of people in the society are utterly neglected.

Acknowledgments

The authors of this study thank all the people who participated in this study, as well as the management and staff of Hematological and Oncological Research Center, Tabriz University of Medical Sciences who helped us. This research was approved by the Ethics Committee of the University (ethics code No. IR.TBZMED.REC.1396.384).

Conflicts of Interest

The authors have not any conflict of interest.

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