Research Article / Araştırma Makalesi

Stigma, Hopelessness, Depression and Associated Factors in People Living with HIV

HIV İle Yaşayan Bireylerde Damgalanma, Umutsuzluk Depresyon ve İlişkili Faktörler

Ayşegül KILIÇLI [1], Şahide AKBULUT [2], Tuba DAMAR ÇAKIRCA [3]

[1]Nursing Department, Faculty of Health Sciences, Muş Alparslan University, Muş,TÜRKİYE
[2]Nursing Department, Faculty of Health Sciences, Batman University, Batman,TÜRKİYE
[3]Department of Infectious Diseases and Clinical Microbiology, Şanlıurfa Training and Research Hospital, Şanlıurfa, TÜRKİYE

Abstract

Background: It was aimed to determine stigma, hopelessness, depression and associated factors in people living with HIV (PLWH).
Materials and Methods: This descriptive cross-sectional study included 57 PLWH who admitted to Şanlıurfa Training and Research Hospital hospital between March 01-April 30, 2022. Berger HIV Stigma Scale, Beck Hopelessness Scale and Beck Depression Inventory were filled during face-to-face interviews with patients.
Results: It was determined Berger HIV-Stigma Scale mean score was high level (104.5±16.7), Beck Hopelessness Scale mean score was medium level (7.6±6.1) and Beck Depression Inventory mean score was medium level (16.3±13.7). Hopelessness rate was determined as 63.2% and depression rate as 40.4%. It was found a moderate correlation between stigma and hopelessness (r=0.44), a high level of correlation between stigma and depression (r=0.52), and a very high positive correlation between hopelessness and depression (r=0.80). Besides, a hopeless individual living with HIV was found to be odds 76 times more likely to be exposed to depression than a hopeful individual. In the regression analysis, it was determined that being single and growing up in a non-conservative family decreased HIV-stigma. On the other hand, it was observed that having to hide being infected with HIV increased HIV-stigma. It was determined that having to hide contagion with HIV decreased hopelessness (odds=0.13) but depression increased hopelessness (odds=1.21). It was determined that hopelessness increased depression (odds=1.87).
Conclusions: Stigma, hopelessness and depression are seen at high rates among PLWH and hopelessness increases depression significantly.

Key Words: HIV, Stigma, Hopelessness, Depression

Öz

Amaç: HIV ile yaşayan bireylerde (PLWH) damgalanma, umutsuzluk, depresyon ve ilişkili faktörlerin belirlenmesi amaçlandı.
Materyal ve Metod: Bu tanımlayıcı-kesitsel tipteki araştırmaya 01 Mart – 30 Nisan 2022 tarihleri arasında Şanlıurfa Eğitim ve Araştırma Hastanesi'ne hastanesine başvuran 57 PLWH hastası dahil edildi. Berger HIV Stigma Ölçeği, Beck Umutsuzluk Ölçeği ve Beck Depresyon Envanteri hastalarla yüz yüze görüşülerek dolduruldu.
Bulgular: Berger HIV-Damgalanma Ölçeği puan ortalamasının yüksek seviyede (104.5±16.7), Beck Umutsuzluk Ölçeği puan ortalamasının orta seviyede (7.6±6.1) ve Beck Depresyon Envanteri puan ortalamasının orta seviyede (16.3±13.7) olduğu belirlendi. Umutsuzluk oranı %63.2, depresyon oranı ise %40.4 olarak bulundu. Damgalanma ile umutsuzluk arasında orta düzeyde (r=0.44), damgalanma ile depresyon arasında yüksek düzeyde (r=0.52) ve umutsuzluk ile depresyon arasında çok yüksek düzeyde pozitif bir ilişki (r=0.80) saptandı. Ayrıca, HIV ile yaşayan umutsuz bir bireyin, umutlu bir bireye göre depresyona maruz kalma olasılığının 76 kat daha fazla olduğu görüldü. Yapılan regresyon analizinde bekar olma ve muhafazakar olmayan bir ailede büyümenin HIV ile damgalanmayı azalttığı belirlendi. Diğer yandan HIV bulaşını gizlemek zorunda kalmanın HIV ile damgalanmayı artırdığı görüldü. HIV bulaşını gizlemek zorunda kalmanın umutsuzluğu azalttığı (odss=0.13), depresyonun ise umutsuzluğu artırdığı (odss=1.21) belirlendi. Umutsuzluğun depresyonu artırdığı bulundu (odss=1.87).
Sonuç: PLWH'lerde damgalanma, umutsuzluk ve depresyon yüksek oranlarda görülmektedir ve umutsuzluk depresyonu önemli ölçüde artırmaktadır.

Anahtar Kelimeler: HIV, Damgalanma, Umutsuzluk, Depresyon

Corresponding Author/ Sorumlu Yazar

Dr. Ayşegül KILIÇLI
Nursing Department, Faculty of Health Sciences, Mus Alparslan University, Mus,TÜRKİYE

E-mail: aysegul_ay_9@hotmail.com

Received / Geliş tarihi: 18.10.2022

Accepted / Kabul tarihi: 28.11.2022

DOI: 10.35440/hutfd.1191096

This study was presented at the 6th National HIV/AIDS Congress on November 24 - 27, 2022 and published in the abstract book.

Introduction

HIV infection is a chronic disease caused by the microorganism called Human Immune Deficiency Virus (HIV), which destroys the human immune system, and AIDS (Acquired Immune Deficiency Syndrome) is a syndrome seen in people exposed to the HIV for a long time (1). According to UNAIDS 2021 data, 38.4 million [33.9 million–43.8 million] people globally were living with HIV in and 1.5 million [1.1 million–2.0 million] people became newly infected with HIV in 2021(2). It was reported that there are 30,293 HIV(+) and 2083 AIDS cases in Turkey from 1985 to December 31, 2021 (3).

Various psychiatric disorders, including depression, are more common in people living with HIV (PLWH) than in the general population (4). The reason for this situation can be explained by stress factors such as stigma due to HIV disease (5), the burden of lifelong commitment to antiretroviral therapy (6), poor outcomes despite treatment (7), low socioeconomic level (8), poor social support and severe immune depression (9). A meta-analysis showed that major depressive disorders are twice common in HIV-positive patients than in HIV-negative patients (10). Hopelessness which is one of the symptoms of depression, significantly reduces the quality of life of PLWH (11,12). Another factor affecting quality of life in PLWH is HIV-related stigma which impairs social relations resulting in retaining access to health services and thus low compliance to treatment (13,14). Therefore, in this study, we aimed to examine stigma, hopelessness, depression and related factors in PLWH.

Materials and Methods

Study Design

This descriptive and cross-sectional study was conducted between March 1, 2022 and April 30, 2022 in Şanlıurfa Training and Research Hospital Infectious Diseases outpatient clinic. The data were obtained by the researcher by face-to-face interview from individuals who voluntarily participated in the research in the infectious diseases outpatient clinic. Inclusion criterias were as follows=PLWH who receive regular antiretroviral therapy and virologically suppressed, without using antidepressant treatment and individuals participating in the research voluntarily. Individuals who do not meet the inclusion criterias were excluded from the study.

Population and sample of the research

The population of the study consisted of HIV-infected individuals who applied to Şanlıurfa Training and Research Hospital Infectious Diseases outpatient clinic. It was determined in the sample size calculation using the GPower 3.1 program with a Type I error of 0.05 and an effect size of 95% with an effect size of d=0.05 that a minimum of 45 people should be sampled for difference analysis and a minimum of 46 people for correlation analysis (15, 16).

Applying to the polyclinic 57 (82.6%) out of 69 people agreed to participate in the study. 12 (17.4%) people did not want to participate in the research. Accordingly, the sample of the study consisted of 57 individuals.

Data Collection Tools

Descriptive Information Form, Berger HIV Stigma Scale, Beck Hopelessness Scale, Beck Depression Inventory.

Descriptive Information Form

This form consists of a total of 33 questions, 15 questioning the sociodemographic characteristics of individuals and 18 questioning about HIV-related (5, 6, 9, 10, 12, 14).

Berger HIV Stigma Scale (Berger-HSS)

It was developed by Berger et al. (17), and adapted into Turkish by Yıldız et al. (18). The scale consists of 39 four-Likert type items and 4 sub-dimensions (internalized stigma, concerns about social attitudes, negative self-image). The scale has no cutpoints. Higher scores for the answers given to the scale items indicate that the person agrees with the related items to a greater extent. A minimum of 39 and a maximum of 156 points can be obtained from the scale (17, 18). Cronbach's alpha coefficient was found to be 0.93 in this study.

Beck Hopelessness Scale (BHS)

It was developed by Beck et al. (19). Turkish validity and reliability study was conducted by Seber et al. (20). It consists of 20 items and three sub-dimensions (emotions about the future, motivations about the future, and expectations about the future), and the questions on the scale are answered as 'Yes-No'. 11 items of the scale are scored positive and 9 items are scored negative. A minimum of 0 and a maximum of 20 points can be obtained from the scale. A high score from the scale indicates high hopelessness (19, 20). The cut-off scores of the scale according to the hopelessness levels are: 0-3 hopeful, 4-8 slightly hopeless, 9-14 moderately hopeless, 15-20 highly hopeless. Hopelessness score is at least 9 and above (19). Cronbach's alpha coefficient was found to be 0.92 in this study.

Beck Depression Inventory (BDI)

It was developed by Beck et al. (21) and adapted into Turkish by Hisli (22). It consists of 21 items in a four-likert type. Each item is scored between 0-3. Scores from the scale are added together. A minimum of 0 and a maximum of 63 points can be obtained from the scale. A high total score indicates a high level of depression severity (21, 22). In the Turkish version of the scale, scores of 17 and above define depression above normal (22). Cronbach's alpha coefficient was found to be 0.94 in this study.

Statistical Analysis

SPSS 26.0 package program was used to analyze the data. Descriptive statistics such as number (percentage), mean (± standard deviation), median (minimum-maximum) values were calculated. The Kolmogorow Smirnow test was used to determine whether the continuous variables fit the normal distribution. The difference between the means of scale scores according to categorical variables was determined by independent sample t-test or Man Whitney U test for two independent groups, and by One Way ANOVA or Kruskal Wallis for

more than two groups. The relationship between numerical variables and scale and sub-dimension mean scores was determined by Pearson or Spearman correlation analysis. The statistical significance of the study was accepted as p<0.05, with a confidence interval of 95%.

Multiple linear regression analysis was performed using the enter method to determine the factors affecting Berger-HSS mean score. Berger-HSS mean score was determined as the dependent variable. The independent variables added to the logistic regression and their codes are: Marital status 0= married, 1= single; way an individual describes the family they grew up in 0= conservative, 1= no conservative; situation of having to hide the contagion with HIV infection; hopelessness status 0= hopeful, 1= hopelessness; depression status 0= no depression, 1= have depression.

Factors affecting hopelessness status of PLWH were determined by binary logistic regression analysis using the enter method. Hopelessness status was determined as the dependent variable. The assessment was determined as 0=hopeful, 1=hopelessness. Factors affecting depression status of PLWH were determined by binary logistic regression analysis using the enter method. Depression status was determined as the dependent variable. The assessment was determined as 0=no depression, 1= have depression. The independent variables added to the binary logistic regression analysis and their codes are: Social security status 0= yes, 1= no; working 0= yes, 1= no; income status 0= income < expense, 1= income ≥ expense; smoking 0= no, 1= yes; situation of having to hide the contagion with HIV infection 0= no, 1= yes; condom use status in sexual activities after being diagnosed with HIV infection 0= no, 1= yes; state of having problems with nutrition 0= no, 1= yes; hopelessness status 0=hopeful, 1=hopelessness; depression status 0=no depression, 1= have depression.

Ethical Considerations

Ethics committee approval was obtained from Muş Alparslan University Scientific Research and Publication Ethics Committee (Date:28.02.2022 MAUN-SRPEC-Board Decision-4/8). Institutional permission was obtained from Şanlıurfa Training and Research Hospital (Date:18.01.2022). Written informed consent was received from the people participating in the study through a voluntary consent form.

Results

Participants' Berger HSS mean score was 104.5±16.7, BHS mean score was 7.6±6.1, BDI mean score was 16.3±13.7 (Table 1).

It was found that 36.8% (n=21) of the participants were hopeful, 26.3% (n=15) slightly hopeless, 17.5% (n=10) moderately hopeless, 19.3% (n=11) highly hopeless. The rate of hopeless individuals with a BHS score of 9 and above was determined as 63.2% (n=36) and depression was found in 40.4% (n=23) of the individuals. Chi-square analysis revealed that there was a significant difference between hopelessness and depression, and a hopeless PLWH was 76.0 times more likely to be exposed to depression than a hopeful individual (X^2= 38.5, p<0.05, Odds Ratio = 76.0 95% CI [12.69-455.09]).

Berger-HSS mean score was found to be significantly higher in the individuals who are married compared to the individuals who are single (p<0.05), in those with conservative family structure compared to those with intellectual family structure (p<0.05), in those who have to hide their contagion with HIV infection compared to those who do not have to hide (p<0.05), and in those who had difficulty in entering new social environments after being infected with HIV infection than those who did not (p<0.05) (Tables 2 and 3).

Table 1. Participants' mean scores of Berger HIV Stigma Scale, Beck Hopelessness Scale, Beck Depression Inventory and scales' subdimensions

Scales	The number of participant (n=57)	
	Mean (±SD)	Min-Max (Median)
Berger-HSS	104.5 (±16.7)	63-138 (105)
Berger-HSS personalized stigma	39.1 (±6.6)	23-51 (40)
Berger-HSS concern with public attitudes about people with HIV	36.2 (±6.1)	19-48 (36)
Berger-HSS negative self-image	22.8 (±6.1)	10-35 (24)
Berger-HSS disclosure concerns	23.0 (±4.2)	10-32 (23)
BHS	7.6 (±6.1)	2-19 (4)
BHS feeling in association with the future	2.0 (±2.6)	0-7 (1)
BHS loss of motivation	3.2 (±2.0)	1-7 (2)
BHS expectations of the future	2.2 (±1.7)	0-5 (2)
BDI	16.3 (±13.7)	0-58 (13)

Berger-HSS: Berger HIV Stigma Scale
BDI: Beck Depression Inventory
BHS: Beck Hopelessness Scale
SD: Standard Deviation, Min: Minimum, Max: Maximum

Table 2. Comparison of mean scores of Berger HIV Stigma Scale, Beck Hopelessness Scale and Beck Depression Inventory based on the sociodemographic characteristics of the participants

Socio-demographic characteristics	Total (n=57)	Berger-HSS		BHS		BDI	
	Mean (±SD)/%(n)	Mean (±SD)	p	Mean (±SD)	p	Mean (±SD)	p
Age, mean (±SD)	36.5 (±10.8)						
18-25 years old, % (n)	17.5 (10)	103.4 (18.7)	F: 0.67	9.9 (6.3)	H: 8.5*	17.5 (12.6)	H: 4.7
26-35 years old, % (n)	38.6 (22)	102.5 (18.6)	p:0.57	4.9 (4.8)	**p: 0.03**	13.2 (15.8)	p:0.19
36-45 years old, % (n)	24.6 (14)	103.3 (12.7)		9.3 (6.6)		18.0 (11.5)	
46 years and above, % (n)	19.3 (11)	111.0 (15.9)		8.8 (6.3)		19.2 (13.2)	
Gender, % (n)							
Female	17.5 (10)	101.6 (12.5)	t: -0.6	9.1 (6.4)	U: 194.0	23.0 (15.4)	U: 165.5
Male	82.5 (47)	105.1 (17.5)	p:0.54	7.3 (6.0)	p:0.3	14.9 (13.0)	p:0.1
Marital status, % (n)							
Married	50.9 (29)	109.5 (14.7)	t: 2.4	7.8 (6.4)	U: 391.0	16.5 (11.8)	U: 361.0
Single	49.1 (28)	99.3 (17.3)	**p: 0.02**	7.4 (5.9)	p:0.8	16.1 (15.6)	p:0.4
Family type, % (n)							
Nuclear	64.9 (37)	103.2 (14.0)	t: -0.7	7.5 (6.2)	U: 366.0	16.4 (14.1)	U: 369.0
Extended	35.1 (20)	106.9 (21.0)	p:0.4	7.8 (6.0)	p:0.9	16.2 (13.1)	p:0.9
Where you spend most of your life							
City center	70.2 (40)	102.9 (15.8)	H: 1.4	6.8 (6.0)	H: 2.9	14.8 (13.3)	H: 2.5
County	10.5 (6)	108.5 (18.7)	p:0.4	7.3 (4.4)	p:0.2	20.0 (12.8)	p:0.2
Village	19.3 (11)	108.0 (19.4)		10.9 (6.6)		19.9 (15.5)	
Education status, % (n)							
Literate	8.8 (5)	103.4 (10.1)	F: 0.8	14.2 (7.4)	H: 6.0	29.0 (15.0)	H: 3.2
Primary school	19.3 (11)	111.2 (17.4)	p:0.5	11.7 (6.4)	p:0.1	22.0 (14.3)	p:0.3
Middle school	7.0 (4)	110.0 (18.9)		9.2 (5.7)		19.7 (15.4)	
High school	24.6 (14)	104.1 (16.0)		7.1 (5.9)		17.2 (13.3)	
University	40.4 (23)	100.8 (17.6)		4.3 (3.2)		9.6 (10.2)	
Social security status, % (n)							
Yes	75.4 (43)	103.1 (16.8)	t:-1.09	6.4 (6.0)	U: 151.5	14.0 (12.7)	U: 165.5
No	24.6 (14)	108.7 (16.1)	p:0.2	11.2 (4.9)	**p<0.01**	23.2 (14.5)	**p: 0.01**
Status of working in a job that generates regular income							
Yes	54.4 (31)	104.1 (17.1)	U: 362.5	4.7 (4.5)	U: 149.5	10.3 (9.9)	U: 161.5
No	45.6 (26)	104.9 (16.6)	p:0.51	11.1 (6.0)	**p<0.01**	23.4 (14.3)	**p<0.01**
Income status, % (n)							
Income < Expense	50.9 (29	107.0 (14.2)	t: 1.13	9.0 (6.2)	U: 275.5	19.2 (13.7)	U: 282.0
Income ≥ Expense	49.1 (28)	101.9 (18.8)	p:0.2	6.1 (5.7)	**p: 0.03**	13.3 (13.2)	**p: 0.04**
Smoking status, % (n)							
Yes	47.4 (27)	108.4 (19.0)	t: 1.7	9.4 (6.2)	U: 283.0	18.2 (13.8)	U: 312.0
No	52.6 (30)	100.9 (13.7)	p:0.09	6.0 (5.5)	**p: 0.04**	14.5 (13.5)	p:0.1
Alcohol use status, % (n)							
Yes	15.8 (9)	99.7 (17.1)	t: -0.9	9.1 (7.0)	U: 198.0	15.6 (13.1)	U: 215.5
No	84.2 (48)	105.4 (16.6)	p:0.3	7.3 (5.9)	p:0.6	16.4 (13.9)	p:0.9
Recreational drug use, % (n)							
Yes	7.0 (4)	109.5 (7.3)	t: -0.9	12.5 (7.8)	U: 70.0	30.7 (24.8)	U: 64.5
No	93.0 (53)	104.1 (17.2)	p:0.09	7.2 (5.9)	p:0.2	15.2 (12.2)	p:0.19
Husband's age, mean (±SD)	36.3 (±9.1)						
18-25 years old, % (n)	7.0 (4)	104.7 (13.0)	F:0.2	10.5 (9.2)	H:2.6	18.5 (19.2)	F:1.7
26-35 years old, % (n)	21.1 (12)	106.5 (15.5)	p:0.8	5.2 (4.6)	p:0.4	11.8 (9.6)	p:0.1
36-45 years old, % (n)	26.3 (15)	110.0 (12.8)		9.9 (6.6)		21.9 (11.1)	
46 years and above, % (n)	8.8 (5)	107.8 (18.0)		10.2 (7.0)		14.6 (10.4)	
Husband education status, % (n)							
İlliterate	10.5 (6)	110.1 (15.3)	F:0.3	13.3 (5.5)	H: 8.9	22.3 (13.7)	F:0.5
Literate	12.3 (7)	107.8 (14.3)	p:0.8	9.4 (7.1)	p:0.1	18.1 (9.0)	p:0.7
Primary school	14.0 (8)	105.6 (13.5)		8.3 (6.1)		16.3 (8.2)	
Middle school	7.0 (4)	116.0 (17.6)		5.7 (6.1)		15.0 (16.5)	
High school	12.3 (7)	105.4 (13.9)		7.2 (7.3)		18.1 (16.7)	
University	7.0 (4)	106.2 (15.7)		4.5 (5.0)		9.7 (8.1)	
Husband working status, % (n)							
Yes	12.3 (7)	106.4 (12.7)	t:-0.3	7.0 (5.4)	U: 81.0	14.5 (12.8)	t:-0.6
No	50.9 (29)	108.3 (14.5)	p:0.7	8.8 (6.8)	p:0.4	17.7 (11.9)	p:0.5

Berger-HSS: Berger HIV Stigma Scale; BHS: Beck Hopelessness Scale; BDI: Beck Depression Inventory

*SD: Standard Deviation; F: One Way ANOVA; H: Kruskal-Wallis H; t: Independent Sample t Test; U: Man Whitney U, *Posthoc Tukey Test*

Table 3. Comparison of mean scores of Berger HIV Stigma Scale, Beck Hopelessness Scale and Beck Depression Inventory according to the based on their experience with HIV of the participants

Experiences with HIV	Total (n=57)	Berger-HSS		BHS		BDI	
	Mean (±SD)/%(n)	Mean (±SD)	p	Mean (±SD)	p	Mean (±SD)	p
Way an individual describes the family they grew up in							
Conservative	59.6 (34)	109.6 (15.2)	F: 3.7*	9.0 (6.4)	H: 5.9	19.3 (14.7)	H: 4.2
Intellectual	8.8 (5)	88.2 (16.7)	**p: 0.01**	3.0 (1.2)	p:0.1	9.2 (5.8)	p: 0.2
Secular	3.5 (2)	101.5 (12.0)		8.0 (5.6)		10.5 (12.0)	
Other	28.1 (16)	99.0 (16.3)		6.1 (5.6)		12.9 (12.2)	
Duration of exposure to HIV infection (±SD)	4.0 (±3.3)						
1 year	22.8 (13)	102.0 (15.9)	F:0.6	5.3 (4.2)	H: 1.6	10.6 (7.5)	F:0.5
2 years	14.0 (8)	101.2 (18.5)	p: 0.6	9. (7.6)	p: 0.7	17.2 (16.1)	p: 0.7
3 years	7.0 (4)	103.2 (14.6)		8.5 (7.5)		17.7 (18.6)	
4 years	5.3 (3)	92.6 (13.0)		7.6 (4.9)		15.0 (7.9)	
5 years and above	36.8 (21)	107.5 (17.4)		7.4 (6.7)		16.5 (14.5)	
Situation of having to hide the contagion with HIV infection							
Yes	91.2 (52)	106.5 (15.6)	t: 3.0	7.7 (6.1)	U: 122.0	16.7 (13.3)	U: 87.5
No	8.8 (5)	84.0 (14.8)	**p<0.01**	6.6 (7.0)	p:0.8	12.4 (18.3)	p: 0.2
With whom was transmission of HIV infection first shared							
Wife/partner	35.1 (20)	105.3 (19.2)	F:0.2	8.5 (6.8)	H: 3.4	16.1 (13.8)	F:0.4
First degree family	24.6 (14)	104.1 (15.6)	p: 0.8	9.0 (6.2)	p: 0.4	19.7 (16.5)	p: 0.7
Friend	21.1 (12)	101.5 (16.7)		6.7 (5.9)		14.4 (13.9)	
Doctor	10.5 (6)	110.3 (12.6)		6.6 (5.9)		17.3 (12.3)	
No share with anyone	8.8 (5)	102.8 (17.5)		3.6 (1.1)		11.0 (3.4)	
Volunteering status in the first sharing of contagion with HIV infection							
Yes	68.4 (39)	102.4 (16.8)	t: -1.3	7.6 (6.2)	U: 331.0	16.3 (14.9)	U: 324.0
No	31.6 (18)	109.0 (16.0)	p: 0.1	7.6 (5.9)	p:0.7	16.2 (10.9)	p:0.6
Transmission route of HIV infection							
Sexual path	33.3 (19)	102.4 (12.8)	F:0.8	9.5 (7.1)	H: 4.1	18.5 (16.5)	H: 2.4
Through blood, such as needle sticking, surgery, dental treatment	7.0 (4)	96.5 (7.8)	p: 0.4	3.0 (1.1)	p: 0.1	7.0 (5.4)	p: 0.2
Unknown	59.6 (34)	106.6 (19.1)		7.1 (5.5)		16.1 (12.4)	
Difficulty entering new social environments after being infected with HIV							
Yes	42.1 (24)	110.6 (12.0)	t: 2.4	11.2 (6.5)	U: 177.5	22.4 (14.5)	U: 207.5
No	57.9 (33)	100.0 (18.4)	**p: 0.01**	5.0 (4.2)	**p<0.01**	11.8 (11.2)	**p<0.01**
First degree family's knowledge status that the person is HIV-infected							
Yes	52.6 (30)	103.2 (16.5)	t: -0.6	9.3 (6.7)	U: 294.5	17.8 (15.2)	U:363.5
No	47.4 (27)	106.0 (17.1)	p: 0.5	5.7 (4.7)	p: 0.07	14.6 (11.7)	p: 0.5
Second degree family's knowledge status that the person is HIV-infected							
Yes	7.0 (4)	100.5 (14.7)	t: -0.4	8.2 (6.2)	U: 100.0	16.0 (16.8)	U: 98.5
No	93.0 (53)	104.8 (16.9)	p: 0.6	7.6 (6.1)	p: 0.85	16.3 (13.6)	p: 0.8
Friend's knowledge status that the person is HIV-infected							
Yes	26.3 (15)	97.6 (15.4)	t: -1.9	5.2 (4.4)	U: 207.0	10.8 (10.4)	U: 208.5
No	73.7 (42)	107.0 (16.6)	p: 0.06	8.5 (6.4)	**p: 0.04**	18.3 (14.2)	p: 0.05
Work friend's knowledge status that the person is HIV-infected							
Yes	3.5 (2)	95.0 (15.5)	t: -0.8	6.5 (6.3)	U: 43.5	11.5 (9.1)	U: 46.5
No	96.5 (55)	104.8 (16.8)	p: 0.4	7.6 (6.1)	p: 0.6	16.5 (13.8)	p: 0.7
Having a regular sexual partner							
Yes	52.6 (30)	106.2 (14.9)	t: 0.8	8.4 (6.5)	U: 353.5	18.1 (13.2)	U: 310.5
No	47.4 (27)	102.6 (18.6)	p: 0.4	6.7 (5.5)	p: 0.4	14.3 (14.1)	p: 0.1
Condom use status in sexual activities before the diagnosis of HIV infection							
Yes	26.3 (15)	107.0 (22.6)	U: 281.5	3.9 (2.9)	U:182.0	9.0 (7.5)	U:182.0
No	73.7 (42)	103.6 (14.3)	p: 0.5	8.9 (6.4)	**p: 0.01**	18.9 (14.5)	**p: 0.01**
Condom use status in sexual activities after being diagnosed with HIV infection							
Yes	82.5 (47)	104.9 (17.4)	U: 226.0	6.7 (5.5)	U: 139.0	13.4 (11.3)	t:-3.8
No	17.5 (10)	102.4 (13.3)	p: 0.8	11.9 (7.2)	**p: 0.04**	29.8 (16.3)	**p<0.01**
Chronic disease status							
Yes	22.8 (13)	100.3 (17.9)	t:-1.0	8.2 (6.8)	U: 282.5	16.6 (16.3)	U: 271.5
No	77.2 (44)	105.7 (16.3)	p: 0.3	7.4 (5.9)	p: 0.9	16.2 (13.0)	p: 0.7
State of having problems with nutrition							
Yes	19.3 (11)	106.3 (17.8)	t:0.4	12.1 (5.9)	U: 122.0	26.2 (14.6)	U: 123.0
No	80.7 (46)	104.0 (16.6)	p: 0.6	6.5 (5.7)	**p<0.01**	13.9 (12.5)	**p<0.01**
Getting status information about AIDS							
Yes	61.4 (35)	102.7 (17.4)	t:-1.0	6.6 (6.0)	U: 280.5	14.0 (13.5)	U: 273.0
No	38.6 (22)	107.4 (5.5)	p: 0.3	9.3 (6.0)	p: 0.08	19.9 (13.4)	p: 0.06

*Berger-HSS: Berger HIV Stigma Scale; BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; SD: Standard Deviation; F: One Way ANOVA; H: Kruskal-Wallis H; t: Independent Sample t Test; U: Man Whitney U*Posthoc Tukey Test*

Table 4. Relationship between participants' mean scores of Berger HIV Stigma Scale, Beck Hopelessness Scale, Beck Depression Inventory and scales' sub-dimensions

Scales	Scales									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Berger-HSS	1									
2. Berger-HSS personalized stigma	r:0.84* **p<0.01**	1								
3. Berger-HSS concern with public attitudes about people with HIV	r:0.68 **p<0.01**	r:0.40 **p<0.01**	1							
4. Berger-HSS negative self-image	r:0.87 **p<0.01**	r:0.72 **p<0.01**	r:0.45 **p<0.01**	1						
5. Berger-HSS disclosure concerns	r:0.71 **p<0.01**	r:0.51 **p<0.01**	r:0.69 **p<0.01**	r:0.56 **p<0.01**	1					
6. BHS	r:0.44 **p<0.01**	r:0.46 **p<0.01**	r:0.03 p:0.78	r:0.54 **p<0.01**	r:0.17 p:0.18	1				
7. BHS feeling in association with the future	r:0.31 **p<0.05**	r:0.32 **p<0.05**	r:-0.01 p:0.89	r:0.45 **p<0.01**	r:0.05 p:0.66	r:0.90 **p<0.01**	1			
8. BHS loss of motivation	r:0.38 **p<0.01**	r:0.37 **p<0.01**	r:0.10 p:0.42	r:0.40 **p<0.01**	r:0.12 p:0.34	r:0.83 **p<0.01**	r:0.82 **p<0.01**	1		
9. BHS expectations of the future	r:0.43 **p<0.01**	r:0.45 **p<0.01**	r:0.03 p:0.82	r:0.53 **p<0.01**	r:0.19 p:0.14	r:0.90 **p<0.01**	r:0.78 **p<0.01**	r:0.63 **p<0.01**	1	
10. BDI	r:0.52 **p<0.01**	r:0.54 **p<0.01**	r:0.14 p:0.27	r:0.59 **p<0.01**	r:0.24 p:0.07	r:0.80 **p<0.01**	r:0.77 **p<0.01**	r:0.64 **p<0.01**	r:0.80 **p<0.01**	1

Berger-HSS: Berger HIV Stigma Scale
BDI: Beck Depression Inventory
BHS: Beck Hopelessness Scale
**Pearson correlation*

The mean BHS score was found to be significantly higher in the individuals in the 18-25 age group compared to the 26-35 age group (p<0.05), in those who do not have social security compared to those who have social security (p<0.05), in those who do not work in a job that generates regular income compared to those who work in a job that generates regular income (p<0.05), those whose income is less than their expenses compared to those whose income is equal to or more than their expenses (p<0.05), in those smoking compared to non-smoking (p<0.05), in those who had difficulty in entering new social environments after being infected with HIV infection compared to those who did not experience this difficulty (p<0.05), in those who did not tell their friends that they were infected with HIV infection compared to those who could say so (p<0.05), in those who do not use condoms in sexual activities after the diagnosis of HIV infection compared to those who use condoms (p<0.05), and in those who have problems with nutrition compared to those who do not have such problems (p<0.05) (Tables 2 and 3).

The BDI mean score was found to be significantly higher in those who do not have social security compared to those who have (p<0.05), in those who do not work in a job that generates regular income compared to those who work in such jobs (p<0.05), in those whose income is less than their expenses compared to those whose income is equal to or more than their expenses (p<0.05), in those who had difficulty in entering new social environments after being infected with HIV infection compared to those who did not (p<0.05), in those who did not use condoms in sexual activities after being diagnosed with HIV infection compared to those who used condoms (p<0.05), and in those who have problems with nutrition compared to those who do not have such problems (p <0.05) (Tables 2 and 3).

There were a moderately positive and significant relationship (r=0.44, p<0.05) between the participants' Berger HSS mean score and BHS mean score, a high level (r=0.52, p<0.05) positive significant correlation between Berger HSS mean score and BDI, and a very high level (r=0.80, p<0.05) positive and significant relationship between the BHS mean score and the BDI score mean (Table 4).

It was determined that being single and growing up in a non-conservative family decreased Berger-HSS. It was determined that having to hide contagion with HIV increased Berger-HSS. It was determined that having to hide contagion with HIV decreased hopelessness (p= 0.04, odds= 0.13) but depression increased hopelessness (p= 0.02, odds= 1.21). It was determined that hopelessness increased depression (p= 0.02, odds=1.87) (Tablo 5, 6 and 7).

Table 5. Findings related to logistic regression analysis regarding the effect of some variables on Berger HIV Stigma Scale in people living with HIV

Multiple linear regression for Berger HIV Stigma Scale					
Independent Variable	**B**	**t**	**p**	**95% CI for B**	
				Lower	**Upper**
Constant		7.92	0.00	66.296	111.317
Age	0.02	0.23	0.8	-0.317	0.401
Marital status (single)	-0.29	-2.62	**0.01**	-17.114	-2.274
Way an individual describes the family they grew up in (no conservative)	-0.24	-2.08	**0.04**	-16.181	-0.305
Situation of having to hide the contagion with HIV infection (yes)	0.29	2.492	**0.01**	3.320	30.693
Difficulty entering new social environments after being infected with HIV (yes)	0.08	0.66	0.5	-6.027	11.938
Hopelessness status (yes)	0.005	0.02	0.9	-1.046	1.074
Depression status (yes)	0.27	1.51	0.1	-0.109	0.770
Statistical Analysis	R: 0.661 Adjusted R^2: 0.357 F: 5.436 **p<0.01**				

Bold values: p<0.05 is statistically significance value;B: Standardized Coefficient; CI: Confidence Interval
Berger-HSS: Berger HIV Stigma Scale

Table 6. Findings related to logistic regression analysis regarding the effect of some variables on hopelessness status in people living with HIV

Binary logistic regression for hopelessness status					
Independent Variable	**B**	**p**	**Odds**	**95% CI**	
				Lower	**Upper**
Social security status (no)	-2.31	0.1	0.09	0.004	2.351
Working (no)	-1.38	0.2	0.25	0.025	2.523
Income status (Income ≥ Expense)	0.92	0.3	2.52	0.367	17.400
Smoking (yes)	0.67	0.4	1.95	0.291	13.157
Situation of having to hide the contagion with HIV infection (yes)	-1.98	**0.04**	**0.13**	0.020	0.961
Condom use status in sexual activities after being diagnosed with HIV infection (yes)	1.70	0.3	5.48	0.212	141.729
State of having problems with nutrition (yes)	0.70	0.7	2.01	0.046	87.621
Berger-HSS	-0.02	0.4	0.97	0.911	1.046
Depression status (yes)	0.19	**0.02**	**1.21**	1.031	1.436
Constant	1.93	0.6	6.92		
Statistical Analysis	X^2=38.620 **p<0.01** Nagelkerke R^2=0.672				

Bold values: p<0.05 is statistically significance value;B: Standardized Coefficient; CI: Confidence Interval
BHS: Beck Hopelessness Scale

Table 7. Findings related to logistic regression analysis regarding the effect of some variables on depression status in people living with HIV

Binary logistic regression for depression status					
Independent Variable	**B**	**p**	**Odds**	**95% CI**	
				Lower	**Upper**
Social security status (no)	3.72	0.1	41.46	0.269	6390.762
Working (no)	-1.55	0.3	0.21	0.010	4.311
Income status (Income ≥ Expense)	0.48	0.7	1.62	0.122	21.464
Smoking (yes)	-1.48	0.2	0.22	0.016	3.142
Situation of having to hide the contagion with HIV infection (yes)	-1.62	0.2	0.19	.011	3.503
Condom use status in sexual activities after being diagnosed with HIV infection (yes)	-1.28	0.4	0.27	0.007	11.515
State of having problems with nutrition (yes)	-0.95	0.5	0.38	0.011	13.446
Berger-HSS	0.04	0.2	1.04	0.964	1.132
Hopelessness status (yes)	0.62	**0.02**	**1.87**	1.089	3.229
Constant	-7.95	0.1	0.00		
Statistical Analysis	X^2=52.444 **p<0.01** Nagelkerke R^2=0.812				

Bold values: p<0.05 is statistically significance value;B: Standardized Coefficient; CI: Confidence Interval
BDI: Beck Depression Inventory

Discussion

In this study, we found high levels of stigma, hopelessness and depression in PLWHs and determined that hopelessness significantly increased depression.

Fear of HIV-related stigma can significantly limit patients' ability to establish and maintain new relationships (23). A study conducted in Iran revealed that 98.6% of 289 cases experienced internal stigma, 62.3% of them were stigmatized by others, 51.2% of them experiences social stigma, and 45% of experienced stigma by their family. Considering the perceived stigma, it was reported that 93.0% experienced shame and 78.5% wanted to be isolated (24). A study of 50 women reported that almost all women felt stigmatized from time to time, 52% perceived stigma frequently, and 74% of women had symptoms of depression (25). A study of forty-seven people stated that all participants experienced severe stigma or discrimination, which frightened them greatly. Participants reported that they were concerned about the effects of stigma and discrimination not only on themselves, but also on their family members (26). In a study conducted in Turkey, the Berger HSS mean score of the participants was reported as 92.4±19.8. In addition, the study stated that stigma was higher in those who share their HIV status with others (27). In another study, it was revealed that low education level and being unemployed increase stigma (28). In our study, the Berger HSS mean score was 104.5±16.7. The mean score of stigmatization was found to be significantly higher for those who were married, had a conservative family structure, had to hide their life with HIV, and had difficulty in entering new social environments after being infected with HIV. Also it was determined that being single and growing up in a non-conservative family decreased Berger-HSS, having to hide contagion with HIV increased Berger-HSS.

Inadequate information about HIV, low social support and high stigma are associated with hopelessness (23). A study conducted on 156 PLWH found that 20.5% of individuals had high hopelessness, 82.8% were depressed, and there was a moderate positive correlation between hopelessness and depression (29). In a study conducted in Sweden, it was reported that half of the participants were hopeless and a quarter of them were severely hopeless, and older and single men were more hopeless than women (28). A study conducted on young PLWH revealed that individuals with depressive symptoms had an increased level of hopelessness (30).In this current study, we determined that 63.8% of the participants were hopeless and 19.3% were highly hopeless.We also found that the risk of exposure to depression in a hopeless individual living with HIV is 76 times higher than that of a hopeful individual. It was determined that hopelessness was higher in individuals who are in the 18-25 age group, who do not have social security, who do not work in a job that generates regular income, who have a lower income than their expenses, who smoke, who have difficulties in entering a new social environment after being infected with HIV, who do not tell their friends that they have HIV, who do not use condoms after contracting HIV, and who had problems with nutrition ($p<0.05$). It was determined that having to hide contagion with HIV decreased hopelessness but depression increased hopelessness. The current study also found a moderately positive relationship between internalized stigma and negative self-image and hopelessness ($p<0.05$).

It has been reported that depressive disorder increases threefold in PLWH due to stigma, and the lifetime prevalence of depression varies between 22-45% (31). One study found the prevalence of moderate-to-severe depressive symptoms to be 16.6% (32). A study conducted in Turkey reported the mean BDI score of the participants as 16.9±10.9. The study detected moderate depression in individuals, and revealed that depression was higher in individuals who reported to others that they were infected with HIV (27). Another study, in which the rate of depression was reported as 20% in PLWH individuals, reported that depression was seen at a higher rate in individuals who separated from their spouses, perceived stigma, had opportunistic infections, declared that they were infected with HIV, and did not comply with treatment (33). It is stated that being young, having low education level, having low income and being unemployed increase depression (34).Consistent with previous studies, our study determined that the depression score average of the participants was 16.3±13.7% and 40.4% of the participants had depression. Also it was determined that hopelessness increased depression.

In a study conducted on men living with HIV, it was found that patients resorted to substance use in order to cope with the perceived stigma and depression after diagnosis. It has been reported that there is an increase in individuals' tendency to substance use and risky sexual behaviors in order to facilitate social relations (35). A study conducted with 301 male inmate patients with a history of substance use revealed that 36.9% of the participants had moderate-to-severe depressive symptoms and experienced high levels of stigma (Berger HSS: 100.4±12.2), and there was a positive correlation between stigma and depression (36). In our study, however, the mean scores of both depression and hopelessness did not differ significantly based on recreational substance use. However, the hopelessness and depression mean scores of substance users were found higher than those of non-users.

There are also nutritional problems in PLWH (37,38). It was determined that 19.3% of the individuals participating in our study had a problem with nutrition and these individuals experienced more hopelessness and depression. In addition, it was found that individuals who do not have social security, are unemployed, have low income, and have difficulty entering social environments after being infected with HIV have higher depression scores.

Study Limitations

The results cannot be generalized to the population as it was conducted only in single center, assessment is individual's self-reported with scales and within a certain time period.

Conclusion

In this study, we found that stigma, hopelessness and depression are seen at high rates in HIV-infected individuals and

hopelessness increases depression at a very high level. These results can be explained by the rural and conservative nature of the region, the absence of psychosocial environments that give importance and priority to these individuals, avoidance of treatment and service due to stigma in accessing health services, and the perception that HIV transmission should be hidden. It is suggested that these individuals should be supported in terms of effective coping strategies

Acknowledgements

The authors would like to give thanks to participants to study and Şanlıurfa Training and Research Hospital.

Ethical Approval: *Ethics committee approval was obtained from Muş Alparslan University Scientific Research and Publication Ethics Committee (Date:28.02.2022 MAUN-SRPEC-Board Decision-4/8). Institutional permission was obtained from Şanlıurfa Training and Research Hospital (Date:18.01.2022). Written informed consent was received from the people participating in the study through a voluntary consent form.*

Author Contributions:

Concept: A.K., Ş.A., T.D.Ç.

Literature Review: A.K., Ş.A., T.D.Ç.

Design : A.K.

Data acquisition: T.D.Ç.

Analysis and interpretation: A.K.

Writing manuscript: A.K., Ş.A., T.D.Ç.

Critical revision of manuscript: A.K., Ş.A., T.D.Ç.

Conflict of Interest: *The authors have no conflicts of interest to declare.*

Financial Disclosure: *The authors declared that this study has received no financial support.*

References

1. Deeks SG, Overbaugh J, Phillips A, Buchbinder S. HIV infection. Nat Rev DisPrimers 2015;1(1):15035.
2. UNAIDS DATA 2021. Global Summary of the AIDS Epidemic, 2021. (2022). https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf
3. Republic of Turkey Ministry of Health General Directorate of Public Health (February 1, 2022). HIV-AIDS Statistics. https://hsgm.saglik.gov.tr/tr/bulasici-hastaliklar/hiv-aids/hiv-aids-liste/hiv-aids-istatislik.html Date of Access: 03.11.2022
4. Jallow A, Ljunggren G, Wändell P, Wahlström L, Carlsson AC. HIV-infection and psychiatric illnesses - A double edged sword that threatens the vision of a contained epidemic: The Greater Stockholm HIV Cohort Study. J Infec2017;74(1):22–28
5. Loutfy MR, Logie CH, Zhang Y, Blitz SL, Margolese SL, Tharao WE, et al. Gender and ethnicity differences in HIV-related stigma experienced by people living with HIV in Ontario, Canada. PloS one 2012;7(12): e48168.
6. Shet A, Kumarasamy N, Poongulali S, Shastri S, Kumar DS, Rewari BB, et al. Longitudinal Analysis of Adherence to First-Line Antiretroviral Therapy: Evidence of Treatment Sustainability from an Indian HIV Cohort. Curr HIV Res 2016;14(1):71-79.
7. Bisson GP, Zetola N, Collman RG. Persistent high mortality in advanced HIV/TB despite appropriate antiretroviral and antitubercular therapy: an emerging challenge. Curr HIV/AIDS Rep 2015;12(1):107-16
8. Wolff CL, Alvarado RM, Wolff MR. Depression in HIV infection: Prevalence, risk factors and management. Rev Chilena Infectol 2010;27(1):65-74.
9. Duko B, Geja E, Zewude M, Mekonen S. Prevalence and associated factors of depression among patients with HIV/AIDS in Hawassa, Ethiopia, cross-sectional Study. Ann Gen Psychiatry 2018;17(45):1-6.
10. Ciesla JA, Roberts JE. Meta-analysis of the relationship between HIV infection and risk for depressive disorders. Am J Psychiatry 2001;158(5):725-730.
11. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington: American Psychiatric Publishing; 2013.
12. Swindells S, Mohr J, Justis JC, Berman S, Squier C, Wagener MM, et al. Quality of life in patients with human immunodeficiency virus infection: Impact of social support, coping style and hopelessness. Int J STD AIDS 1999;10(6):383–391
13. Wagner AC, Hart TA, McShane KE, Margolese S, Girard TA. Health care provider attitudes and beliefs about people living with HIV: Initial validation of the Health Care Provider HIV/AIDS Stigma Scale (HPASS). AIDS Behav 2014;18(12):2397-2408
14. Reif S, Wilson E, McAllaster C, Pence B. The Relationship of HIV-related stigma and health care outcomes in the US Deep South. AIDS Behav 2019;23(Suppl3):242–250.
15. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav Res Methods 2007;39:175-191.
16. Cohen J. Statistical power analysis. Curr Dir Psychol Sci 1992;1(3):98-101.
17. Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale. Res Nurs Health 2001;24(6):518-529.
18. Yıldız Mİ, Başar K, Karadağ Çaman Ö, İnkaya AÇ. The reliability and validity of the Turkish form of Berger HIV Stigma Scale. Noro Psikiyatr Ars 2021;58:292−299.
19. Beck AT, Lester D, Trexler L. The measurement of pessimism: The Beck Hopelessness Scale. J Consult Clin Psychol 1974;42(6):861-865.
20. Seber G, Dilbaz N, Kaptanoğlu C, Tekin D. Hopelessness Scale: validity and reliability. Crisis Journal 1993;1(3):139-142.
21. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Arch Gen Psychiatry 1961;4:561–571.
22. Hisli N. Validity and reliability of the Beck Depression Inventory for university students. Psychology Journal 1989;7(22):3-13.
23. Takada S, Weiser SD, Kumbakumba E, Muzoora C, Martin JN, Hunt PW, et al. The dynamic relationship between social support and HIV-related stigma in rural Uganda. Ann Behav Med 2014;48(1):26–37.
24. SeyedAlinaghi SA, Paydary K, Kazerooni PA, Hosseini M, Sedaghat A, Emamzadeh-Fard S, et al. Evaluation of stigma index among people living with HIV/AIDS (PLWHA) in six cities in Iran. Thrita 2013;2(4):69-75.
25. Mohite VR, Mohite RV, George J. Correlates of perceived stigma and depression among the women with HIV/AIDS infection. Bangladesh J Med Sci 2015;14(2):151-158.
26. Zang YX, Golin CE, Bu J, Emrick CB, Nan Z, Ming-Qiang L. Coping strategies for HIV-related stigma in Liuzhou, China. AIDS Behav2014;18(Suppl 2(0 2):S212–220.
27. Demirel OF, Mayda PY, Yıldız N, Sağlam H, Koçak BT, Habip Z, et al. Self-stigma, depression, and anxiety levels of people living with HIV in Turkey. Eur J Psychiatry 2018;32(4):182-186.

28. Schönnesson LN, Ross MW, Garcia-Huidobro D, Eriksson LE, Andersson G, Williams ML, et al. Hopelessness and HIV infection: An exploratory study with a gender-specifc perspective. BMC Psychology 2022;10(46):1-12.
29. Govende RD, Schlebusch L. Hopelessness, depression and suicidal ideation in HIV-positive persons. S Afr J Psychiatr2012;18(1):16-21.
30. Cavazos-Rehg P, Xu C, Borodovsky J, Kasson E, Byansi W, Nabunya P, et al. The impact of discomfort with HIV status and hopelessness on depressive symptoms among adolescents living with HIV in Uganda. AIDS Care 2021;33(7):867-872.
31. DeJean D, Giacomini M, Vanstone M, Brundisini F. Patient experiences of depression and anxiety with chronic disease: A systematic review and qualitative meta-synthesis. Ont Health Technol Assess Ser 2013;13(16):1-33.
32. Mekonen T, Belete H, Fekadu W. Depressive symptoms among people with HIV/AIDS in Northwest Ethiopia: Comparative study. BMJ Open 2021;11(7)e048931:1-7.
33. Seid S, Abdu O, Mitiku M, Tamirat KS. Prevalence of depression and associated factors among HIV/AIDS patients attending antiretroviral therapy clinic at Dessie referral hospital, South Wollo, Ethiopia. Int J Ment Health Syst 2020;14(55):2-8.
34. Rueda S, Gibson K, Rourke SB, Gogolishvili D, Globerman J, Chambers L, et al. Mastery moderates the negative effect of stigma on depressive symptoms in people living with HIV. AIDS Behav 2012;16:690–699.
35. Edelman EJ, Cole CA, Richardson W, Boshnack N, Jenkins H, Rosenthal MS. Stigma, substance use and sexual risk behaviors among HIV-infected men who have sex with men: A qualitative study. Prev Med Rep 2016;3:296-302.
36. Shrestha R, Copenhaver M, Bazazi AR, Huedo-Medina TB, Krishnan A, Altice FL. A moderated mediation model of HIV-Related stigma, depression, and social support on health-related quality of life among ıncarcerated Malaysian men with HIV and opioid dependence. AIDS Behav 2017;21:1059–1069.
37. Tsai AC, Bangsberg DR, Emenyonu N, Senkungu JK, Martin JN, Weiser SD. The social context of food insecurity among persons living with HIV/AIDS in rural Uganda. Soc Sci Med 2011;73(12):1717-1724.
38. Weiser SD, Tuller DM, Frongillo EA, Senkugu J, Mukibi N, Bangsberg DR. Food insecurity as a barrier to sustained antiretroviral therapy adherence in Uganda. PLoS One 2010;5(4):e10340.