Adherence to Medication and Physical Activity among People Living with HIV/AIDS

Abstract

Background: The aim of this study was to investigate the adherence to medication and Physical Activity (PA) among People Living with HIV (PLHIV). **Materials and Methods:** In the present cross-sectional study, 122 PLHIV were selected. The research tools included the Baecke questionnaire and the AIDS Clinical Trials Group questionnaire. Data were analyzed by independent t test and multiple logistic regression. **Results:** The results of 7- and 30-day recalls showed that 76.21 and 82.23% of patients had proper medication adherence. The mean score of PA in patients was less than the recommended average score in the questionnaire. Furthermore, there was no significant difference observed between the medication adherence and PA. **Conclusions:** Although the adherence to medication was appropriate, nurses and health care providers should increase the level of PA for PLHIV by dealing with the related barriers to live an active life.

Keywords: *Exercise, HIV infections, Iran, medication adherence*

Mohammad-Ali Morowatisharifabad[1], Ehsan Movahed[2], Rohollah Nikooie[3], Jamileh Farokhzadian[4], Reza Bidaki[5], Mohsen Askarishahi[6], Mahdieh Hosseinzadeh[7]

[1]Elderly Health Research Center, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, [2]Department of Health Education and Promotion, School of Public Health, Jiroft University of Medical Sciences, Jiroft, Iran, [3]Department of Exercise Physiology, Faculty of Sports Sciences, Shahid Bahonar University, Kerman, Iran, [4]Nursing Research Center, Kerman University of Medical Sciences, Kerman, Iran, [5]Research Center of Addiction and Behavioral Sciences and Diabetes Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, [6]Department of Biostatistics and Epidemiology, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, [7]Nutrition and Food Security Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Address for correspondence:
Dr. Ehsan Movahed,
School of Public Health,
Jiroft University of Medical Sciences, Jiroft, Iran.
E-mail: ehsanmovahed89@ yahoo.com

Introduction

Adherence to treatment is a major challenge in patients with chronic diseases, such as Human Immunodeficiency Viruses (HIV).[1] In the case that patients do not adhere to medications, serious consequences will arise, such as disease relapse and progression.[2] Adherence rate should be higher than 95% for complete suppression.[3] A study in Isfahan indicated that the rate of non-adherence in People Living with HIV (PLHIV) was 10.8%.[4] Given that Physical Activity (PA) is one of the most effective interventions that can increase the individuals' compliance with medications, only 50.7% of PLHIV showed medication adherence.[5,6] Brawner reported that nurses and physicians could improve HIV patients' treatment adherence to a large extent.[7] Therefore, this study was carried out to investigate adherence to medication and PA among PLHIV.

Materials and Methods

In this cross-sectional study, the population included PLHIV, who referred to the Behavioral Diseases' Counseling Center, Kerman city, Iran in 2017. The inclusion criteria consisted of having 18 years or more and taking antiviral medications for at least 6 months. A convenience sampling method was used to select the participants. The sample size was estimated as 122 considering the test power of 80%, the first type error of 5%, and the coverage of all study participants.

The Baecke and AIDS Clinical Trials Group (ACTG) questionnaires were used to assess adherence. The Baecke questionnaire consists of 16 items and three subscales of labor (items 1-8), exercise (items 9-12), and leisure time (items 13-16) that calculate the level of PA. The mean of each index was calculated in the range of 1–5. Later, these three indices were summed up to calculate the total score of PA. Therefore, the final PA score was measured as a rate of 3–15. In 1982, Baecke *et al.* calculated the questionnaire's reliability as 88%, 81%, 74%, and 81% for the three indices of labor, exercise, and leisure time as well as the total indicators, respectively.[8] The ACTG designed by Kekwaletswe for PLHIV.[9] In the present study, the medication adherence was investigated in past seven days and 30 days. Regarding the specific culture of Kerman people, validity was confirmed by the infectious specialists, and its reliability was considered to be 79% by the

Cronbach's alpha method. Independent t test and multiple logistic regressions were used to analyze the data.

Ethical considerations

Prior to sampling, participants were explained about the study purpose. Furthermore, participants were asked to sign written informed consents forms to cooperate in the research. They were also ensured about the confidentiality of their information. Ethics code (IR.SSU.SPH.REC 1396.83) was also obtained from the Ethics Committee of Yazd University of Medical Sciences.

Results

A total of 122 PLHIV with an average age of 41.88 (9.46) years participated in the study. Among the study population, 53.31% were male, 36.90% had a diploma or higher degrees, and 41.83% had an income of over US $ 60. The disease was sexually transmitted in 37.70% of the patients. The CD4 was more than 350 in 59% of participants. The mean scores of 7- and 30-day medication adherence were 89.38 (25.41) and 94.44 (18.41), respectively [Table 1]. The patients' mean score of PA was 6.89 (1.42), which is less than the recommended average score in questionnaire (9). Moreover, there was no significant difference observed between PA and medication adherence [Table 2]. The results of multiple logistic regression showed that only the educational level variable was related to medication adherence. Therefore, the odds ratio of poor adherence was 4.53 times higher in illiterate people than those with a diploma or higher degrees ($P = 0.04$, Confidence Interval = 1.07-19.13, Odds Ratio = 4.53).

Discussion

On the basis of the various measuring approaches to medication adherence, 76.21–82.23% of the participants had an appropriate level of adherence to the medication regimen. However, the participants' level of PA was less than the recommended average score of the questionnaire. In the study of ELUL *et al.* (2013), 78–94% of PLHIV had a high adherence to the 3-day and 30-day medication regimen, which is consistent with our study.[10] However, in the study of Nyamathi *et al.* (2016), 94% of rural women with HIV took less than 50% of their medications.[3] Such discrepancy can be caused owing to the participants' cultural and residential varieties. In accordance with Vancampforta *et al.* (2016), we found that the level of PA was low.[6] In other words, no study has ever showed high levels of PA in PLHIV. One of the main causes of low PA levels among PLHIV can be the high prevalence of depression.

With regard to the PA mean score, individuals with appropriate medication adherence were not significantly different from those who had poor medication adherence. However, the results of Pellowski *et al.* (2016) were inconsistent.[11] The mentioned controversies were possibly attributed to the different research tools and various lifestyles of the studied patients. The limitations of this study included its cross-sectional design and self-report data collection method, which is prone to bias because patients may not report their attitudes and behaviors properly.

Conclusion

Owing to the patients' proper medication adherence and low PA, nurses and health care providers are recommended to enhance the PA of PLHIV by conducting continuous follow-ups, training, informing patients about the great benefits of PA, and examining the individuals' barriers to exercise. Future researchers are also suggested to investigate the factors that caused no significant difference between medication adherence and PA.

Conflicts of interest

Nothing to declare.

Table 1: The medication adherence levels of participants after 7 and 30 days

	Good adherence		Poor adherence	
	n (%)	Confidence interval	*n* (%)	Confidence interval
7 days	93 (76.21)	68.91-83.60	29 (23.80)	16.40-31.11
30 days	101 (82.23)	76.22-89.32	21 (17.22)	10.73-23.80

Table 2: The difference in the scores of PA and its dimensions from the medication adherence

Variable	Mean (SD)		Independent *t*-test	*p*
	Proper medication adherence (*n*=93)	Poor medication adherence (*n*=29)		
Labor index	2.53 (0.84)	2.41 (0.71)	-0.66	0.51
Exercise	2.24 (0.61)	2.11 (0.61)	-1.00	0.32
Leisure time	2.16 (0.66)	2.22 (0.67)	0.47	0.64
Total score of physical activity	6.93 (1.45)	6.75 (1.34)	-0.60	0.56

References

1. Gao Y, Kraft JC, Yu D, Ho RJY. Recent developments of nanotherapeutics for targeted and long-acting, combination HIV chemotherapy. Eur J Pharm Biopharm 2019;138:75-91.
2. Gholamaliei B, Karimi-Shahanjarini A, Roshanaei G, Rezapour-Shahkolaei F. Medication adherence and its related factors in patients with Type II diabetes. J Educ Community Health 2016;2:3-12.
3. Nyamathi A, Ekstrand M, Heylen E, Ramakrishna P, Yadav K, SinhaS, *et al*. Relationships among adherence and physical and mental health among women living with HIV in rural India. AIDS Behav 2018;22:867-76.
4. Daryazadeh S. Investigation of adherence and process of anti-retroviral therapy in patients referred to Isfahan behavioral consultation center during ten years. Razi J Med Sci 2014;21:62-70.
5. Chapman SB, Aslan S, Spence JS, De Fina LF, Keebler MW, Didehbani N, *et al*. Shorter term aerobic exercise improves brain, cognition, and cardiovascular fitness in aging. Front Aging Neurosci 2013;5:75.
6. Vancampfort D, Mugisha J, De Hert M, Probst M, Firth J, Gorczynski P, *et al*. Global physical activity levels among people living with HIV: Asystematic review and meta-analysis. Disabil Rehabil 2018;40:388-97.
7. Brawner BM. Attitudes and beliefs regarding depression, HIV/AIDS, and HIV risk-related sexual behaviors among clinically depressed African American adolescent females. Arch Psychiatr Nurs 2012;26:464-76.
8. Baecke JA, Burema J, Frijters JR. A short questionnaire for the measurement of habitual physical activity in epidemiological studies. Am J Clin Nutr 1982;36:936-42.
9. Kekwaletswe CT, Jordaan E, Nkosi S, Morojele NK. Social support and the mediating roles of alcohol use and adherence self-efficacy on antiretroviral therapy (ART) adherence among ART recipients in gauteng, South Africa. AIDS Behav 2017;21:1846-56.
10. Elul B, Basinga P, Nuwagaba-Biribonwoha H, Saito S, Horowitz D, Nash D, *et al*. High levels of adherence and viral suppression in a nationally representative sample of HIV-infected adults on antiretroviral therapy for 6, 12 and 18 months in Rwanda. PLoS One 2013;8:e53586.
11. Pellowski JA, Kalichman SC. Health behavior predictors of medication adherence among low health literacy people living with HIV/AIDS. J Health Psychol 2016;21:1981-91.