Correlation between Drug Compliance and Quality of Life in AIDS Patients under Effects of Nursing Intervention

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Abstract:

Objective: Good drug compliance is the significant premise of the therapeutic efficacy and the physically healthy level could be reflected by the quality of life. It will be of great importance in enhancing the drug compliance and the quality of life for patients to firm their confidence in fighting with the disease, cooperate with treatment and prolong the lifetime through researching the nursing intervention model for AIDS patients. Based on the analysis of the effects of nursing intervention on AIDS patients' drug compliance and quality of life, this report studies the correlation between drug compliance and quality of life in AIDS patients under effects of nursing intervention, so as to provide theoretical basis for offering reasonable scheme of nursing intervention more comprehensively, assess the effect of treatment and improve the entirely healthy level of AIDS patients. Methods: A total of 240 AIDS patients were selected as subjects randomly, who were randomized into control group and intervention group, with 120 patients in each group. Both control group and intervention group were given routine nursing measures, while intervention group was given reasonable nursing intervention measures according to nursing requirements on the basis of routine nursing. Baseline data of patients, data after 3 months of observation and data after 10 months of observation were collected using self-made Antiviral Drug Compliance Questionnaire and World Health Organization Quality of Life with 100 Questions (WHOQOL-100), followed by rank correlation analysis and regression analysis. Results: After 3 months and 10 months of nursing intervention, there was obvious rank correlation between patients' drug compliance and quality of life in the intervention group. After 10 months of nursing intervention, the effects of drug compliance showed obvious gradual enhancement. As for domains of quality of life, after 3 months of nursing intervention, the rank correlation between drug compliance and physiology domain, independence domain and social relation domain became significant; after 10 months of nursing intervention, the rank correlation became more significant, and the rank correlation between drug compliance and psychology domain and environment domain also became significant. Conclusion: Drug compliance has direct influence on the therapeutic effects of patients, and the quality of life can improve the therapeutic effects of patients through influencing patients' drug compliance. With the continuation of intervention measures, the effects of intervention show gradual enhancement.

Keywords: AIDS; correlation; nursing intervention; treatment compliance; quality of life

1. Introduction

Currently, emergence and development of multiple anti-retroviral drugs have greatly improved the treatment and control of HIV/AIDS [1]. Highly active anti-retroviral therapy (HAART) has been demonstrated to be the most effective therapy for AIDS at present [2]. To achieve ideal therapeutic effects and avoid resistance to antiviral drugs, patients need to take medicine in long term, and thus good compliance become an important prerequisite for guaranteeing therapeutic effects [3]. Quality of life as a comprehensive health assessment indicator has been widely used in the assessment of clinical therapeutic effects [4]. AIDS patients are faced with not only the torment of disease, but also various pressures such as social prejudice and discrimination, so their quality of life requires more social attention [5]. Damon et al. [6] described that the quality of life felt subjectively by patients can more comprehensively evaluate the therapeutic effects of AIDS compared with conventional physiological

indicators such as CD4+ T lymphocyte count, viral load and mortality.

Many studies have demonstrated that reasonable nursing intervention measures can effectively improve AIDS patients' drug compliance and quality of life [7, 8]. Drug compliance is the main factor that directly influences patients' therapeutic effects, and quality of life is an important factor that indirectly influences therapeutic effects and an effective approach to evaluate therapeutic effects. Therefore, when investigating the effects of nursing intervention on patients' drug compliance and quality of life, it is important to analyze their correlation, so as to formulate more reasonable nursing intervention scheme. Based on existing literature, studies on the correlation between drug compliance and quality of life under effects of nursing intervention are rarely reported. Through quantifying the drug compliance and quality of life of HIV/AIDS patients receiving HAART in four designated hospitals for AIDS treatment in Harbin from 2010 to 2012, the present study investigated the correlation between both, to provide reference for the treatment and care of AIDS patients.

2. Subjects and methods

2.1. Subjects

A total of 240 AIDS patients in Harbin who began to receive treatment from 2010 to 2012 and met the Diagnostic Criteria and Principles of HIV/AIDS (National Standard of People's Republic of China) [9] were selected randomly as subjects. All the subjects were randomized into control group and intervention group, with 120 patients in each group.

2.2. Methods

The 240 patients were numbered (No. 1-240). Each patient was given a random number in the range of 0-1. The 240 random numbers were sorted. Patients corresponding with the first 120 random numbers were assigned to the intervention group, and the rest 120 patients were assigned to the control group. Both control group and intervention group were given routine nursing measures, while intervention group was given nursing intervention measures according to nursing requirements on the basis of routine nursing.

Intervention measures were as follows: (1) pay attention to home nursing care and improve the supporting service awareness of companion; (2) emphasize the concept of self-care and fully mobilize the subjective initiative of patients in disease process; (3) give psychological nursing and life guidance to help patients maintain good attitude and promote their physical and mental health; (4) strengthen education on drug compliance and nursing for adverse reactions to improve the efficacy of antiviral therapy; (5) give inpatients nursing and family visit to arouse patients' confidence in life by love and persistence; (6) provide follow-up service to learn about the recent health condition of patients and give nursing guidance; (7) establish QQ group, hotline and short message service to achieve refinement and humanization of service.

Baseline data of patients, data after 3 months of nursing intervention and data after 10 months of nursing intervention were collected using self-made Antiviral Drug Compliance Questionnaire and World Health Organization Quality of Life with 100 Questions (WHOQOL-100).

2.3. Judgment Criteria

The effectiveness of AIDS antiviral drugs can be guaranteed only when patients have good drug compliance ($>$ 95%) [10]. According to the data collected by questionnaire, the drug compliance (%) of patients was calculated using the formula below:

Drug compliance = (qualified medication times/prescribed medication times)

Qualified medication times equaled to prescribed medication times minus missed medication times, overdue medication times, wrong medication times and medication times in which patients din not take medicine according to the dose prescribed by doctor.

Patients' quality of life was evaluated using World Health Organization Quality of Life with 100 Questions (WHOQOL-100) [11]. The scale is developed by the World Health Organization with the many years of efforts from 31 countries. It is an international scale used to measure the quality of life related to individual health, with good psychometric properties such as reliability, validity and reactivity as well as good international comparability.

2.4. Statistical methods

Data were input using Epi Data 3.0 software. Statistical analysis was performed using SPSS 19.0 software. Statistical methods mainly included rank correlation analysis, regression analysis, etc.

3. Empirical results

3.1. Basic statistical description

In the present study, the mean age of patients in the intervention group was (36.64±11.31) years, female patients accounted for 7.5%, patients of Han nationality accounted for 96.7%, patients with bachelor degree or above accounted for 33.1%, unmarried patients accounted for 45.8%, unemployed patients accounted for 23.3%, patients with ordinary economic condition accounted for 66.7%, patients with calm psychological state accounted for 68.9%, smokers accounted for 25.0%, drinkers accounted for 42.5%, patients with less than 5 hours of sleep every day accounted for 2.5%, and patients who lived alone accounted for 25.8%. The mean age of patients in the control group was (35.19±8.79) years, female patients accounted for 7.5%, patients of Han nationality accounted for 96.7%, patients with bachelor degree or above accounted for 27.1%, unmarried patients accounted for 52.5%, unemployed patients accounted for 21.0%, patients with ordinary economic condition accounted for 67.8%, patients with calm psychological state accounted for 69.2%, smokers accounted for 37.5%, drinkers accounted for 36.7%, patients with less than 5 hours of sleep every day accounted for 2.5%, and patients who lived alone accounted for 35.8%. There was no significant difference between two groups in age, gender, nationality, education level, etc. (P>0.05).

3.2. Rank correlation analysis on drug compliance and quality of life

First, the correlation between drug compliance and quality of life was investigated as a whole using rank correlation analysis. Correlation coefficients are shown in Table 1.

Table 1 Rank correlation coefficient between patients' drug compliance and quality of life

Time node	Correlation coefficient	Before intervention	3 months	10 months
Intervention group	Correlation coefficient	0.153	.206*	.367**
	Sig. (Bilateral)	0.095	0.024	0.003
Control group	Correlation coefficient	-0.105	-0.127	-0.139
	Sig. (Bilateral)	0.253	0.168	0.187

Note: *Significant at 5% level, **significant at 1% level.

As shown in Table 1, in the control group, there was no obvious correlation between AIDS patients' drug compliance and quality of life on three different time nodes; in the intervention group, there was no obvious correlation between drug compliance and quality of life before intervention, while there was obvious positive correlation between drug compliance and quality of life after 3 months and 10 months of intervention, and the correlation coefficient after 10 months of intervention was larger than that after 3 months of intervention.

In order to reflect the AIDS patients' quality of life comprehensively, the present study characterized the quality of life from six aspects: physiology domain, psychology domain, independence domain, social relation domain, environment domain and spiritual pillar. Correlation between drug compliance and various domains of quality of life was analyzed as below to provide more specific guidance for the formulation of nursing intervention scheme. Rank correlation coefficients are summarized in Table 2.

Table 2 Rank correlation coefficients of patients' drug compliance and domains of quality of life

Domain of quality of life	Time node	Correlation coefficient	Before intervention	3 months	10 months
Physiology domain	Intervention group	Correlation coefficient	0.108	0.358**	0.582**
		Sig. (Bilateral)	0.147	0.007	0.000
	Control group	Correlation coefficient	0.184	0.154	0.164
		Sig. (Bilateral)	0.131	0.182	0.147
Psychology domain	Intervention group	Correlation coefficient	0.273	0.318	0.357**
		Sig. (Bilateral)	0.317	0.136	0.003
	Control group	Correlation coefficient	0.225	0.194	0.243
		Sig. (Bilateral)	0.284	0.334	0.275
Independence domain	Intervention group	Correlation coefficient	0.132	0.175*	0.251**
		Sig. (Bilateral)	0.186	0.042	0.005
	Control group	Correlation coefficient	-0.053	-0.138	-0.106
		Sig. (Bilateral)	0.232	0.184	0.120
Social relation domain	Intervention group	Correlation coefficient	0.087	0.144*	0.188**
		Sig. (Bilateral)	0.237	0.018	0.000
	Control group	Correlation coefficient	0.129	0.137	0.174
		Sig. (Bilateral)	0.285	0.228	0.264
Environment domain	Intervention group	Correlation coefficient	-0.183	0.043	0.154*
		Sig. (Bilateral)	0.362	0.076	0.038
	Control group	Correlation coefficient	-0.138	0.086	-0.077
		Sig. (Bilateral)	0.331	0.285	0.254
Spiritual pillar	Intervention group	Correlation coefficient	-0.174	-0.126	-0.173
		Sig. (Bilateral)	0.257	0.319	0.215
	Control group	Correlation coefficient	-0.148	-0.141	-0.193
		Sig. (Bilateral)	0.320	0.200	0.268

Note: *Significant at 5% level, **significant at 1% level.

As shown in Table 2, in the control group, there was no obvious rank correlation between six domains of quality of life and drug compliance on three different time nodes. In the intervention group, there was no obvious rank correlation between various domains of quality of life and drug compliance before intervention; after 3 months of intervention, the rank correlation between drug compliance and physiology domain, independence domain and social relation domain became significant; after 10 months of intervention, the rank correlation between drug compliance and physiology domain, independence domain and social relation domain became more significant, and the rank correlation between drug compliance and psychology domain and environment domain also became significant.

3.3. Regression analysis

Nursing intervention measures can improve AIDS patients' drug compliance and quality of life, but how the correlation between drug compliance and quality of life influences the therapeutic effects still requires further study. Drug compliance is the main factor that directly influences therapeutic effects, quality of life is an important factor that indirectly influences therapeutic effects, and CD4+ T lymphocyte count is a common indicator reflecting therapeutic effects. Therefore, regression model was established as formula (1), with drug compliance as intermediary variable, CD4+ T lymphocyte count as dependent variable and quality of life as independent variable.

$$\begin{cases} M = ax + c \\ y = bM + dx + e \end{cases}$$

(1)

In the formula, M represents intermediary variable drug compliance, x represents independent variable quality of life, y represents dependent variable CD4+ T lymphocyte count, and other symbols are regression coefficients and constant terms.

Parameter estimation of formula (1) was performed based on the data after 10 months of   intervention using OLS. Results are shown in Table 3.

Table 3 The influence of correlation between drug compliance and quality of life on therapeutic effects after 10 months of intervention

系数	Estimate	t	sig.
a	0.0024**	3.8423	0.002
b	274.83**	6.3274	0.000
c	0.1364	1.0452	0.4327
d	4.2834*	2.2347	0.0382
e	-44.875	0.5854	0.8437

Note: *Significant at 5% level, **significant at 1% level.

As shown in Table 3, after 10 months of nursing intervention, patients' drug compliance and quality of life could both improve the therapeutic effects. At the same time, drug compliance as intermediary variable had obvious enhancement effect, that is to say patients' quality of life could improve therapeutic effects through influencing patients' drug compliance.

4. Conclusion

First, through designing reasonable questionnaire, the present study quantitatively investigated the treatment compliance and quality of life of HIV/AIDS patients receiving HAART in Harbin. Then, through analyzing the effects of nursing intervention on AIDS patients' drug compliance and quality of life, the present study investigated the correlation between AIDS patients' drug compliance and quality of life under effects of nursing intervention. Conclusions are as follows:

As for the overall variation trend of AIDS patients' drug compliance and quality of life, with the implementation of nursing intervention measures, AIDS patients' drug compliance and quality of life show obvious equidirectional variation trend.

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As for the domains of AIDS patients' quality of life, nursing intervention measures can produce obvious influence on physiology domain, independence domain and social relation domain of quality of life in short term, and the influence shows gradual enhancement with the continuation of intervention measures; nursing intervention measures require a long time to produce obvious influence on psychology domain and environment domain of quality of life; nursing intervention measures can not produce obvious influence on spiritual pillar of quality of life within 10 months.

As for the path by which drug compliance and quality of life influence patients' therapeutic effects, drug compliance has obvious direct influence on patients' therapeutic effects, while quality of life improves patients' therapeutic effects through influencing drug compliance.

Above conclusions suggest that patients' drug compliance and quality of life are closely correlated, and a large sample study in France also demonstrated that there is significant correlation between patients' quality of life and drug compliance after one year of antiviral treatment [12]. Therefore, in the nursing intervention of AIDS patients, comprehensive nursing system for AIDS patients should be established, a new model of general management and nursing intervention for AIDS patients is expected with the research and exploration on the aspects of hospitals, families and the society. Also, knowledge about correlation should be popularized and applied to obtain positive cooperation of patients. Corresponding nursing measures should be adopted to improve patients' drug compliance and quality of life, so that patients can face up to the disease and fight strongly with our concerned support, scientific treatment and nursing, and their life can be prolonged.

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