

Original Article**Care Management: Adherence to Therapies Among Patients at Bu-Alicina Clinic, Qazvin, Iran**

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ABSTRACT

Background: Non-adherence to treatment is a problem of increasing concern for all stakeholders. This study was designed to determine the prevalence of non-adherence among the clients consulting internists or cardiologists at Bu-Alicina Clinic in Qazvin.

Methods: A total number of 400 clients came to Bu-Alicina Clinic (center for internal medicine and cardiology) were randomly interviewed through a questionnaire during a two month period in 2003. Self-administered methods were used if the clients applied. The data were interpreted using statistical methods.

Results: The clients were between 14 and 78 years old (33.7 ± 8.5) and 57.5% of them were women and 42.5% were men. Of total number, 30.7% were consulting for continuation of their therapies and of these clients, 41.5% had poor-adherence to their current therapies. The more educated clients were 1.6 times (OR=1.62; 95% CI=0.71, 3.74) likely to be more adherent to the therapies. There was no significant difference between the internal diseases patients and cardiology patients in this regard (41.7% vs 40%). Of the total number of 400 clients, 79.5% had history of consulting to medical clinics during the last three months and 37.4% of them had non-adherence to their past therapies. The more frequent factors were: forgetfulness (13.3%), not to be able to afford to pay for treatment costs (10.3%), disbelieve to the doctor and consulting another ones (8.4%), long distance (8.4%), feeling that it is not important to take medications (7.4%), side effects (7.4%), disbelieve to the diagnosis (7.1%), religious considerations (6.5%), and misunderstanding or lack of information about the prescription (5.8%). No significant difference was found between men and women on this aspect.

Conclusion: Patients need advice, supported information from professionals about their health and therapies. Certain studies must be done to determine the pitfalls and effective interventions address that barriers can be developed.

Keywords: adherence, non-adherence, non communicable disease

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Non-adherence to treatment is a problem of increasing concern for all stakeholders. Since the early 1970s, the extent and consequences of poor adherence have been well-documented in terms of impact on population health and health expenditure ¹.

The term adherence is usually not explicitly defined in some published articles, but generally it refers to "patient compliance" or "patient following of medical recommendations". In operational terms, the variables of non-adherence are defined as: "not filling a prescription", "not taking medication", "errors in

dosage", "reducing medication", "taking extra medication", and "taking additional nonprescribed medication" ^{1,2,3}.

The participants of WHO adherence meeting in June 2001, concluded that defining adherence as "the extent to which the patient follows medical instructions" was a hopeful starting point ⁴. However, the term "medication" was felt to be insufficient in describing the range of interventions used to treat chronic diseases. Furthermore, the term "instruction" implies

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that the patient is a passive, acquiescent recipient of expert advice as apposed to an active collaborator in the treatment process ⁽¹⁾. Effective treatment relationships characterize by an atmosphere in which alternative therapeutic means are explored, the regimen is negotiated, adherence is discussed, and follow-up is planned.

According to Haynes ⁵ and Rand ⁶, adherence refers to:

"The extent to which a person's behavior-taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations-forms a health care provider."

The real-life response to clinician's prescription of preventive therapy will include a range of undesirable patient behavior, including a failure to fill the initial prescription, erratic use or under-use of therapy, and premature discontinuation of therapy. Studies indicate that primary nonadherence (not filling initial prescriptions) range from 6-44% ^{7, 8}. Anyhow, this rate depends on the disease and the length of treatment.

In Iran, the studies reveal that about 83.3% of hospitalized patients have had self-medication before hospitalization and in 30% of cases it has been because of their disbelief to doctors or negligence ⁹. This rate was 67.7% for the patients in cardiovascular department ¹⁰. About 42% of them pointed to the negligence, disbelief to doctors and having no afford for visit payment ¹⁰.

Another study in Qazvin reveals that some lay people, mostly the illiterates, have better adherence to the traditional healers ¹¹.

Adherence is simultaneously influenced by several factors. These include:

- Socioeconomic related factors such as long distance from treatment setting, age, illiteracy, level of wellbeing, disposable income and purchasing power.
- Health care team/system, such as the distribution and services, equity, quality of care, good relationship between doctor and patient, good communication system.

- Condition related factors, such as the nature of the patient illness, poor understanding of the disease and its symptoms and comorbidity.
- Therapy related factors, such as high frequency dose, complex treatment, having no treatment instructions, bad tasting medications, adverse effect of treatment, etc.
- Patient related factors such as, forgetfulness, misconceptions about pain, fear of injections, hopelessness and negative feeling, disbelief to the diagnosis, refusal to take medication, lifestyle and health believes doubting the diagnosis, and religious or cultural believes and taboos ^{1,11-14}.

The objective of this study was to determine the prevalence of non-adherence and its causes among the clients coming to Bu-Alicina clinic.

Subjects and Methods

Through a descriptive study, we studied 400 clients coming to the out-patient clinic of Bu-Alicina teaching center, Qazvin, in fall 2003. The clients of the clinic are usually from the middle and lower middle socioeconomic class.

The clinic admits patients with internal and cardiovascular diseases. The clients were randomly chosen during a two month period of time; about 200 clients in each month and about 50 in each week were selected. The repeated ones were excluded (n=67) and substituted by the others.

The patients were interviewed through a questionnaire. The interviewers were two interns. Self-administered methods would also be applied, based on clients demand. To secure the right answers, in some cases the answers of the accompanying persons were matched to the clients' ones.

Criterion validity was secured according to literature ^{1, 13, 14}, content validity also checked by some experts views and face validity was pretested on 18 clients.

To increase the reliability, all clients were interviewed after consulting their doctors.

Statistical methods and χ^2 test were used to interpret the data. OR and 95% confidence intervals (CIs) were calculated for relationships

between demographic variables and outcome variable.

Results

The clients' ages ranged between 14 and 78 years old, with an average of 33.7 ± 8.5 .

Of the total number of 400, 57.5% were female and 42.5% were male. About 58% were illiterate or with elementary school education, 22% with guidance school education and 9% with higher education.

Of the total number, 78.5% were under coverage of health services insurance organizations. Of the total number, 123 clients (30.7%) were consulting for continuation of their therapies (55 clients to cardiovascular clinic and 67 to the internal medicine), and of this number, 72 patients (58.5%) said that they had been regular for their visits and serious either in filling their prescriptions or doctor's advices (good adherence), while the rest (41.5%) had been irregular and had not seriously followed their prescriptions (poor adherence). There was no significant difference between internal disease patients and the cardiovascular disease

patients in the prevalence of poor adherence (41.7% vs. 40%) OR=1.03; (95% CI=0.47, 2.26) (Table 1).

Table 1. Frequency distribution of good or poor adherence to therapies among patients consulting internists or cardiologists.

Adherence	Type of disease				Total
	Internal medicine		cardiology		
	N	(%)	N	(%)	
Poor	28	(41.8)	23	(41)	51 (41.5)
Good	39	(58.2)	33	(59)	72 (58.5)
Total	67	(100)	56	(100)	123(100)

$\chi^2 = 0.01, p = 0.92$
OR=1.03, 95%CI=0.47, 2.26

No correlation was found between the level of education and adherence ($p > 0.05$) (Table 2) where, people with guidance school or university education were 1.62 times likely to be more adherent (OR=1.62; 95% CI=0.71, 3.74).

Table 2. Frequency distribution of good or poor adherence to the therapies among the clients consulting for continuation of treatment by level of education (n=123).

Adherence	Level of education				Total
	Illiterate or elementary		Guidance school or university		
	N	(%)	N	(%)	
Poor	36	(45.5)	15	(34.1)	51 (41.5)
Good	43	(54.5)	29	(65.9)	72 (58.5)
Total	79	(100)	44	(100)	123 (100)

$\chi^2 = 1.1, p = 0.294$
OR=1.62, 95%CI=0.71, 3.74

In response to an open-ended question for the reason why they had not been regular on following their doctors' advices, they had mentioned the following major causes: feeling the therapies ineffective, feeling some difficulties after using the medications, being too busy, diagnostic tests costs and long distance from the clinic.

Of the total clients, 318 (79.5%) had history of some consulting medical clinics during the

last three months. Of this number, 119 clients (37.4%) consisting 69 women and 50 men, had some non-adherence to their past therapies. The frequency of the patient-related factors which the clients had presented for their non-adherence were the following: forgetfulness 13.3%, scarcity of medications 6.3%, having no afford to pay for treatment costs 10.3%, misunderstanding or lack of information about the prescription 5.8%, side-effects of medication

7.4%, self-medication 6.8%, inconvenience of the treatment 6.5%, disbelief to the diagnosis 7.1%, believing that it is not important to take the medication 7.4%, religious considerations, for example the Islamic rules in the month of Ramazan for fasting, 6.5%, disbelief to the doctor and consulting other doctors 9.4%, hopelessness and negative feelings about their treatment and recovery 4.8% and being long distant from the medical centre, for example living in the suburbs or distant villages, or being referred to Tehran medical centers, 8.4%.

Although the statistical test χ^2 , showed no significant difference between the men and women on this concern, the frequencies of some factors such as forgetfulness, having no afford to pay for costs, misunderstanding and self-medication is more among the men than the women and the frequencies of disbelief to diagnosis, religious considerations, disbelief to the doctor and hopelessness is more in women than men (Table 3).

Table3. Frequency distribution of negative factors affecting adherence to therapies among the clients by sex.

Factor	Sex		Total (%)
	Male: frequency (%)	Female: frequency (%)	
Forgetfulness	23 (17.8)	18 (10.0)	41 (13.3)
Scarcity of the medications	8 (6.2)	11 (6.1)	19 (6.3)
having no afford to pay for treatment costs	15 (11.6)	17 (9.5)	32 (10.3)
Misunderstanding or lack of information about the prescription	9 (7.0)	9 (5.0)	18 (5.8)
Side-effects of the medication	10 (7.7)	13 (7.2)	23 (7.4)
Self-medication	10 (8.8)	10 (5.6)	21 (6.8)
Disconvenience of the treatment	6 (4.7)	14 (7.8)	20 (6.5)
Disbelieve to the diagnosis	6 (4.7)	16 (8.9)	22 (7.1)
believing that it is not important to take the medication	14 (10.6)	9 (5.0)	23 (7.4)
Religious considerations	5 (3.9)	15 (8.3)	20 (6.5)
Disbelieve to the doctor and consulting another one	8 (6.2)	21 (11.6)	29 (9.4)
Hopelessness and negative feelings	3 (2.3)	12 (6.7)	15 (4.8)
Long distance from the medical centre	11 (8.6)	15 (8.3)	26 (8.4)
Total	100	100	100

$$\chi^2 = 11.24, p = 0.188$$

Conclusion

The finding of this retrospective study revealed a prevalence of 41.5% (95%CI=32.8%, 50.2%) of poor-adherence to current therapies. It also indicated a rate of 37.4% (95%CI=32.1%, 42.7%) of non-adherence in their earlier therapies during the past year. Although, recall bias may have occurred in this study and this study was not designed specifically to assess non-adherence for specific chronic diseases, reviewing the literature indicates similar rates for the chronic diseases. For example, in China, the Gambia and the Seychelles, only 43%, 27% and 26%, respectively, of the patients with hypertension adhere to their antihypertensive medication regimen^{1, 15, 16, 17}.

In developed countries such as the United States, only 51% of the patients treated for hypertension adhere to the prescribed treatment. Data on patients with depression reveal that 40-70% of them adhere to the therapies¹⁸.

In Australia, only 43% of the patients with asthma take their medication, as prescribed all the time and only 28% use prescribed preventive medication^{8, 18}.

In the treatment of HIV and AIDS, adherence to antiretroviral agents varies between 37% and 83% depending on the drug and the demographic characteristics of the patients¹⁹.

In this study the frequency of some socio-cultural factors such as forgetfulness, self-medication, disbelief of diagnosis or the doctor and religious considerations (especially for the women) are relatively higher besides the socio-economical ones. Meanwhile, factors related to health care team or health system-related, such as long distance and lack of information about prescription and also disbelief to the doctor and consulting the other ones, are to be considered. Although there was no significant difference between the under-educated and educated people in adherence; the odds ratio is 1.62 which should be considered. It is also notable that although the accessible sampling method was used in this study, the clients of this clinic are mostly from the middle and

lower-middle socio-economic class and somehow could be representing the population.

A survey in Iran revealed that 61% of people had experienced some illness during the 4 weeks prior to the interview, but only 52% of them, as a whole had consulted a doctor and of all consults, 18% had a consult again because the clients had felt the treatment ineffective and had not taken the medication¹¹.

It is also notable that the frequency of nonadherence among women is lower than men in such factors as forgetfulness, believing that it is not important to take the medication and higher in religious considerations and disbelief to the therapies; perhaps they are more considerate than men on these concerns.

Poor adherence limits the potential of patients' health improvement and quality of life. This is a particular problem in the context of the chronic conditions that currently dominate the burden of illness in our developing society with limited resources.

Patients need advice, support and information from health professionals in order to be able to understand the importance of maintaining their health during the day, to use the drugs rationally, to learn how to deal with the missed doses and how to identify adverse events and what do when they occur. Sharing this responsibility with health professionals is a must; the patient can not cope alone¹.

Adherence is a behavioral problem observed in the patients, but with causes beyond the patients which must be reviewed by the health policy makers.

Intervention strategies to influence health policy, quality of care programmes and the provider's and patient's behavior in the health system are important. Meanwhile, trail intervention models such as information- motivation - behavior skills model (IMB) are recommended to change the behavior of the population²⁰.

In conclusion, this study reveals that there is a direct need for research to fill gaps in knowledge on adherence. In general, such research should aim at gaining better understanding of the determinants of the adherence

so that effective interventions that address barrier can be developed.

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References

1. WHO. *Adherence to Long-term Therapies, Evidence for action*. Geneva: World Health Organization; 2003.
2. Miaskowski C, Dodd MJ, West C, Paul SM, Tripathy D, Koo P et al. Lack of adherence with analgesic regimen: a significant barrier to effective cancer pain management. *J Clin Oncol* 2001, 19:4275-6.
3. Coutts JA, Gibson NA, Paton JY. Measuring compliance with inhaled medication in asthma. *Arch Dis Child* 1992 Mar;67(3):332-3.
4. Sabate E. *WHO Adherence Meeting Report*. Geneva: World Health Organization; 2001.
5. Haynes RB. *Determinants of compliance: The disease and the mechanism of treatment*. Baltimore: John Hopkins University Press; 1979.
6. Rand CS. Measuring adherence with therapy for chronic disease: implications for the treatment of heterozygous familial hypercholesterolemia. *Am J Cardiol* 1993; 72: 68-74.
7. Rashid A. Do patient cash prescriptions? *Br Med J Clin Res* 1997, 284: 24-6.
8. Krogh C, Wallner L. Prescription-filling patterns of patients in a family practice. *J Fam Pract* 1987 Mar;24(3):301-2.
9. Asefzadeh S, Anbarloei M, Habibi S, Rezaei M. Self-medication among the inpatients of Qazvin teaching hospitals. *The Journal of Qazvin University of Medical Sciences* 2002; 20:48-54.
10. Asefzadeh S, Barkhordari F, Moghadam F. Self-medication among cardiovascular patients of Bu-Ali Hospital. *The Journal of Qazvin University of Medical Sciences* 2003; 26: 91-3.
11. Asefzadeh S, Sameefar F. Traditional healers in the Qazvin region of the Islamic Republic of Iran: a qualitative study. *East Mediterr Health J* 2001 May;7(3):544-50.
12. Asefzadeh S. Rethinking health services insurance system: a new model for Iranian railroad households. *East Mediterr Health J* 1999 May; 5(3): 515-26.
13. Cramer JA, Mattson RH, Prevey ML, Scheyer RD, Ouellette VL. How often is medication taken as prescribed? A novel assessment technique. *JAMA* 1989 Jun 9;261(22):3273-7.
14. Plotnikoff RC, Brez S, Hotz SB. Exercise behavior in community sample with diabetes: Understanding the determinants of exercise behavioral change. *Diabetes Educ* 2000 May-Jun;26(3):450-9.
15. Grave JW. Management of difficult to control hypertension. *Mayo Clinic Hypertension Proceedings* 2000; 75: 278-84.
16. Hopman WM, Garvey N, Olajos-Clow J, White-Markham A, Loughheed MD. Outcomes of asthma education: results of a multisite evaluation. *Can Respir J* 2004 May-Jun;11(4):291-7.
17. Markowitz AJ, Winawer SJ. Screening and surveillance for colorectal cancer. *Semin Oncol* 1999 Oct;26(5):485-98.
18. Haynes RB, McDonald H, Garg AX, Montague P. Interventions for helping patients to follow prescriptions for medications. *Cochrane Database Syst Rev* 2002;(2):CD000011.
19. Schuman P, Ohmit SE, Cohen M, Sacks HS, Richardson J, Young M et al. Prescription of and adherence to anti-retroviral therapy women with AIDS. *AIDS Behav* 2001 Dec;5(4):371-8.
20. Fisher JD, Fisher WA. Changing AIDS-risk behavior. *Psychol Bull* 1992 May;111(3):455-74.