

Demographical Factors Affecting Patient Compliance (Adherence) to Medications In An Outpatient Psychiatric Clinic: A Preliminary Study

Selen YEĞENOĞLU*^o, Albert L. WERTHEIMER**^o, William R. DUBIN***^o

Demographical Factors Affecting Patient Compliance (Adherence) to Medications In An Outpatient Psychiatric Clinic: A Preliminary Study

Summary: This paper focuses on considering pharmacists to evaluate medication compliance (adherence) in patients. The objective of this preliminary study was to assess medication compliance in patients as reported to a pharmacist (also a post-doctoral student), rather than to a professional caregiver. Though there have been various studies conducted in this area based on patients' reports, they have always had the potential for bias based on the extent of the patient's honesty.

Ratios of compliance rate were surveyed in various pharmacotherapy categories such as antibiotics, antiasthmatics, antihypertensives, and psychiatric, showing that the ratios differed in each category. The paper leads into studying possible various demographical factors affecting the compliance and the reasons for non-compliance.

According to this study, it did not appear that patients were any more candid with the pharmacist versus their physician. In this study medication compliance rate was found as 30%. From these interviews, it is clear that there are no large differences in terms of compliance by gender, age and education level. Also, the pharmacist's being in the same environment with the treating physician might have affected patients' honesty. However the reported reasons for non-compliance should be explored in detail in a larger patient group.

Keywords: Patient Compliance, Medication Compliance, Honesty, Psychiatric Medicines.

Bir Psikiyatri Polikliniğinde Hastaların İlaç Kullanımına Olan Uyuncularını Etkileyen Demografik Faktörler: Ön Çalışma

Özet: Bu makale, hastalardaki ilaç uyuncunu değerlendirmede eczacıları dikkate alma üzerine odaklanmıştır. Bu ön çalışmanın amacı, hastaların hekimlerinden farklı olarak bir eczacıya (aynı zamanda doktora sonrası araştırmacı) bildirdikleri ilaç kullanımına olan uyuncularını değerlendirmektir. Bu alanda hastaların bildirimlerine bağlı olarak çeşitli çalışmalar yapılmış olmasına karşın, bu çalışmaların hastaların dürüstlüğü çerçevesinde yanlışlık taşıma olasılığı söz konusudur.

Antibiyotik tedavisi, astım tedavisi, hipertansiyon tedavisi ve psikiyatrik tedavi gibi değişik ilaç tedavisi gruplarında uyuncu oranları araştırılmış ve her bir tedavi sınıfı için değişen oranlar bulunmuştur. Makalede ilaç tedavisine uyuncu etkileyebilecek olası değişik demografik faktörlerin ve uyuncusuzluğun (uyumsuzluğun) nedenlerinin araştırılmasına ışık tutulmuştur. Bu çalışmada, ayakta tedavi gören psikiyatri hastalarıyla yüzyüze yapılan görüşmeler yoluyla elde edilen veriler sunulmuştur.

Bu çalışmaya göre, hastaların eczacıya, doktorlarından daha dürüst oldukları görünmemektedir. Bu çalışmada, ilaç uyuncu oranı 30% olarak bulunmuştur. Bu görüşmelerden uyuncu ile cinsiyet, yaş ve eğitim düzeyi arasında önemli farklar bulunmadığı açıktır. Aynı zamanda eczacının hastaya tedavi hizmeti veren hekimle aynı ortamda bulunuyor olması da hastaların dürüstlüğüne etkilemiş olabilir. Bununla birlikte, uyuncusuzluk için bildirilen nedenler daha geniş bir hasta grubunda detaylı biçimde incelenmelidir.

Anahtar kelimeler: Hasta Uyuncu, İlaç Uyuncu, Dürüstlük, Psikiyatrik İlaçlar.

INTRODUCTION

Patient compliance refers to the willingness and ability of an individual to follow health-related advice properly, to take medication as prescribed, to attend scheduled clinic appointments, as well as to comple-

te recommended follow-ups¹. Medication non-compliance is defined as a discontinuation or failure of proper medication intake without prior approval from the treating physician².

Over the last 30 years, numerous studies in the me-

* Hacettepe University, Faculty of Pharmacy, Department of Pharmacy Management, 06100 Ankara, TURKEY.

** Temple University, School of Pharmacy, Center for Pharmaceutical Health Services Research, 3307 North Broad Street, Philadelphia, PA 19140, USA.

*** Temple University Hospital, Department of Psychiatry, Outpatient Clinic, 9th Floor-West Rock Pavilion, 3401 North Broad Street, Philadelphia, PA 19140, USA.

^o Corresponding author • e-mail: selen@hacettepe.edu.tr

dical literature have tackled the issue of medication compliance. Most of these publications are based on patient self-reports to their physicians. The reliability of these studies remains questionable, as there is no absolute way to verify/measure the patient's honesty. In fact, various studies actually support the fact that many patients fail to tell the truth to their doctors in terms of medication compliance³⁻⁶.

Measuring patient compliance can be challenging, but it is a great area of intervention opportunity for the pharmacist. Pharmacists are considered as the linking entity between patients and physicians as well as the most designated member of the healthcare team to assess patient compliance. Unfortunately, there is a lack of data regarding pharmacist's assessment of patient compliance.

Medication Compliance Rates

When compliance rates were surveyed, ratios differed in various disease categories. In terms of adherence to antibiotic therapy dispensed in the emergency department due to accidents, Liam et al. showed that of the 113 responders, 10 (9%) indicated that they did not take any of their prescribed medicines, and 25 (22%) indicated that they had taken less than 80% of their medications⁷. In terms of asthma therapy compliance, objective measures showed that fewer than 50% of patients with asthma take their inhaled medication as prescribed⁸. Yet another study conducted among hypertensive patients showed that over the study period, compliance to anti-hypertensive drugs decreased significantly from 85% to 65%⁹.

Among the psychiatric patient population, the literature revealed that, again, rates differed according to the type of disease. In a study conducted to estimate medication compliance in patients with schizophrenia or schizoaffective disorder, the mean compliance rates were 63% for the first month and ranged from 56% to 45% over the next five months. Poor compliance with medication has been reported in up to 40% of outpatients with schizophrenia¹⁰. In another study conducted among 90 outpatients with

schizophrenia, the level of medication compliance assessed independently by the treating staff at two outpatient settings, resulted in 40 compliant, 38 non-compliant, and 12 partially compliant patients¹¹. In a study among patients with depression, Ramana et al. interviewed patients 18 months after discharge from the hospital and reported a compliance rate of 70%¹². Published data indicate that between 30% and 60% of patients with depression do not take their medications as prescribed¹³.

Factors Affecting Compliance

There are various reasons for non-compliance. In one study, it was concluded that self-reported adherence was better among HIV patients with less complex medication regimens. This was partly because patients' understanding of regimen dosing decreases as regimen complexity increases¹⁴. Similar to the situation with HIV patients, another study concluded that the prescribed number of doses per day is inversely related to compliance. Simpler, less frequent dosing regimens resulted in better compliance across a variety of therapeutic classes¹⁵.

Another interesting issue that may impact compliance is the taboo revolving around the use of psychotropic drugs. For example, in an opinion poll taken by a representative group of 2,176 adults, results showed that psychotropic drugs are believed to cause significantly more severe side effects and provoke more fear of losing control compared to cardiac drugs¹⁶. Horne and Weinman's study suggested considerable variation in reported adherence and beliefs about medicines within and between illness groups. Most patients (89%) believed that their prescribed medication was necessary to maintain adequate health. However, over a third of patients had strong concerns about using their medication because of a fear of dependence or long-term effects¹⁵. In a study done with epilepsy patients, 40% stated they were going to become addicted to their medication, 61.4% reduced or stopped their regimen to test the outcome, and 47.7% changed the prescription with the same purpose¹⁸.

Thus possible reasons for poor compliance can be as summarized as follows:

1. Failure to comprehend importance of therapy: It would appear that a major reason for poor compliance is the lack of patient education on the importance of drug therapy and the potential consequences if the medication is not used properly.
2. Poor understanding of instructions: The patient's understanding of the directions, dosage and administration could also play a role in non-compliance.
3. Multiple drug therapy: It is generally agreed that the greater the number of drugs the patient is taking the higher the risk of non-compliance.
4. Frequency of administration: Just as the use of multiple drugs contributes to non-compliance so does the use of an individual drug at frequent intervals.
5. Duration of therapy: The rate of non-compliance becomes greater when the treatment period is longer.
6. Adverse effects: The development of unpleasant effects of a drug is an obvious deterrent to patient compliance.
7. Patients may be asymptomatic or symptoms subside: It is understandably difficult to convince a patient of the value of drug therapy when the patient's disease state is not associated with immediate symptoms.
8. Fear of becoming drug-dependent: The increasing problems of drug abuse and addiction have increased the awareness and concern about becoming dependent on agents that are yet prescribed for legitimate medical reasons.
9. Unpleasant taste of medication: Compliance associated with poor taste of medications is most commonly observed among the use of oral liquid formulas in the pediatric population.
10. Illness: The nature of the patient's illness may also contribute to non-compliance. For instance, poor compliance may be expected to be higher with psychiatric patients who are often less cooperative than patients with other disease states.
11. Cost of medication: Although non-compliance also arises with the use of drugs that are relatively

inexpensive, it might be anticipated that patients will be even more reluctant to comply with expensive medication intake.

12. Medication dispensing errors: Although a patient may fully intend to comply with instructions, he/she may inadvertently receive the wrong quantity of medication or the wrong instructions¹⁹.
13. Patient specific factors: Last but not least, the potential for substance abuse as well as multiple cultural beliefs may interfere with compliance²⁰.

Consequences of Non-compliance

In various studies it has been shown that poor medication compliance is significantly associated with an increased risk of hospitalization re-admissions, emergency room visits, and symptom exacerbation^{21,22}. There is a strong correlation between medication non-compliance and higher rates of illness relapse²³. For example, non-compliance to medications is common among schizophrenic patients and is a leading cause of multiple hospitalizations²⁴. There is strong evidence that non-compliance is a serious health issue, leading to unnecessarily high morbidity, mortality, and cost utilization outcomes. A study illustrated the fact that irregular drug users increase hospital costs as compared to regular drug users (\$3,992 versus \$1,048). Irregular drug users had higher rates of hospitalization (42% versus 20%) and lengthier hospital stays (16 days versus 4 days)²⁵.

The objective of this study was to assess medication compliance in a group of patients attending an outpatient psychiatry clinic at a university medical center. The study was conducted by collecting data from various interviews by a pharmacist (post-doctoral researcher at the same time). The interviews aimed at identifying reasons for non-compliance to the prescribed psychiatric medicines.

MATERIALS and METHODS

In this study, a designated pharmacist (also a post-doctoral researcher) conducted the interviews. The questionnaire of the study was developed by revi-

ewing the previously published literature on patient compliance. Before the original study, the questionnaire had been pilot tested with 20 outpatients. After making necessary changes and eliminating some questions, the data was collected by using an eight-item questionnaire (the questionnaire was composed of 4 close-ended questions: yes-no type, the others multiple choice; and of 4 open-ended questions) from January 7, through February 19, 2002. The interviewer met the patients in the waiting room of the Psychiatry and Behavioral Science Department's Outpatient Clinic at Temple University Hospital. The interviewer had to identify herself and give a brief synopsis on the aim of the study. Patients were told that the study was anonymous and that their participation was voluntary. They were also told that their responses to the questions would be kept confidential and would not be shared with their physician. The interviews were conducted while patients were waiting for their scheduled appointments. The interviewer invited the patients who agreed to participate in the study to a private area. Collected data was analyzed using the t-test and chi-square test as well as using an $\alpha = 0.05$ confidence interval.

FINDINGS

A total of 184 patients were asked to participate in the study. Of the 184 patients, 64 (34.78%) refused to be interviewed. Of the 64 refusing patients, 43 (67.19%) stated that they could not remember the names of their medications, 19 (29.69%) indicated that they were not on medication, and two (3.12%) were Hispanic and did not speak English. Finally, a total of 120 patients were interviewed. These patients were United States citizens and residents of Philadelphia.

Of the 120 patients who participated in the study, 83 (69.17%) were female and 37 (30.83%) were male. Patients' ages ranged from 19 to 71 years. The mean age of patients was 43.77 years, with a standard deviation of 11.05.

A mean compliance score for each patient was calcu-

lated by giving the highest score (4) to those who were always compliant with their drug regimen, and the lowest score (0) to the ones who were never compliant with their drug regimen. Hence, patients who were frequently compliant with their medication scored a 3; those who were sometimes compliant scored a 2 and those who were rarely compliant scored a 1. For patients using more than one psychiatric medication, each drug intake was scored as described above and the sum was divided by the number of drugs taken by the patient (Tables 1, 2, 6). The mean compliance score for males was found to be 3.58 and for females was 3.68.

Age distribution of all patients, their compliance status and their mean compliance score are summarized in Table 1. The highest mean compliance score was in the 30-49 year old age group, the second highest in the 50 year old and over age group. The lowest mean compliance score was found to be in the less than 30 year old age group. Chi-square test showed that compliance status by age was not statistically significant ($p > 0.05$).

Table 1. Compliance status of patients by age and mean compliance score

Age	Compliance status		Total	Mean compliance score
	Compliant	Non-compliant		
<30	6	6	12	3.42
30-49	52	18	70	3.72
>50	27	11	38	3.68
Total	85	35	120	3.61

Scale: 4 = Fully compliant; 0 = Completely non-compliant, $\chi^2 = 2.93$ $p = 0.23$

The distribution of all the patients by education level and their mean compliance scores are given in Table 2. The highest mean compliance was found to be among the high school graduate patients followed by "some" university/college and by university/college graduates.

Table 2. Distribution of patients by education level and mean compliance score

Education level	n	%	Mean compliance score
Some elementary school	3	2.50	3.33
Elementary school graduate	3	2.50	3.67
Some high school	34	28.33	3.54
High school graduate	43	35.84	3.72
Some university/college	24	20.00	3.69
University/college graduate	13	10.83	3.69
Total	120	100.00	3.61

The numbers of patients who claimed to be compliant with their prescribed medications and those who were non-compliant are shown in Table 3. When making this classification, only patients always taking their medications were considered as compliant; those who taking their medications frequently, sometimes, or rarely were considered as non-compliant.

Table 3. Medication compliance of patients

Compliance status	n	%
Compliant	84	70.00
Non-compliant	36	30.00
Total	120	100.00

Of the 84 compliant patients, 61% were female and 23% were male. The mean age of the compliant patients was 44.4 years with a standard deviation of 11.12.

Of the 36 non-compliant patients, 22 (61.1%) were female and 14 (38.9%) were male. The mean age of the non-compliant patients was 42.3 years with a standard deviation of 10.87. No significant difference was found between the mean age of compliant and non-compliant patients when the t-test was performed.

In Table 4 medication compliance by gender is presented. Upon the chi-square calculation, it was concluded that medication compliance by gender was not statistically significant ($p > 0.05$).

Table 4. Medication compliance by gender

Compliance status	Gender	
	Male (n)	Female (n)
Compliant	23	61
Non-compliant	14	22
Total	37	83

$\chi^2 = 1.57$ $p = 0.28$

Compliance by education level is presented in Table 5. Chi-square calculation showed that compliance by education level was not statistically significant ($p > 0.05$).

Table 5. Medication compliance by education level

Education Level	Compliance status	
	Compliant (n)	Non-compliant (n)
Some Elementary school and Elementary school graduate	4	2
Some high school and high school graduate	53	24
Some university/college and university/college graduate	27	10
Total	84	36

$\chi^2 = 0.24$ $p = 0.89$

Therapeutic classes of the drugs and their generic names (brand names in parentheses) prescribed by the psychiatrist to the total of 120 patients were as follows:

1-Antidepressants: sertraline (Zoloft®), venlafaxine (Effexor®), trazodone (Desyrel®), citalopram (Celexa®), paroxetine (Paxil®), bupropion (Wellbutrin®), fluoxetine (Prozac®), mirtazepine (Remeron®).

2-Antipsychotics: olanzapine (Zyprexa®), haloperidol (Haldol®), risperidone (Risperdal®).

3-Anticonvulsants: clonazepam (Klonopin®), divalproex (Depakote®), gabapentin (Neurontin®).

4-Sedatives: temazepam (Restoril®), diazepam (Valium®), alprazolam (Xanax®), lorazepam (Ativan®).

The most frequently prescribed medicine by the

physicians was olanzepine, followed by sertraline. The least prescribed medicines were lorazepam and temazepam. Distribution of drugs by their therapeutic class and mean compliance scores are given in Table 6. The highest mean compliance score was in anticonvulsants and the lowest mean compliance score in sedatives.

Table 6. Distribution of drugs by therapeutic class and mean compliance score

Therapeutic drug class	n	%	Mean compliance score
Antidepressants	100	54.05	3.63
Antipsychotics	36	19.46	3.79
Anticonvulsants	32	17.30	3.88
Sedatives	17	9.19	3.53
Total	185	100.00	3.71

Reasons for non-compliance with the prescribed medications can be seen in Table 7 (some of the non-compliant patients gave more than one reason for not taking their medication as prescribed). The most often proposed non-compliance reason (63.41%) was due to forgetfulness.

Table 7. Reasons for non-compliance given by patients

Reasons for non-compliance	n	%
'I forget to take'	26	63.41
'When I feel bad I take it'	5	12.20
'I don't want to take'	5	12.20
'I experienced side effects'	4	9.76
Total	40	100.00

DISCUSSION

This study was undertaken with the assumption that patients would tell the truth about whether or not they were always compliant with their psychiatric medications to a pharmacist (also a post-doctoral researcher) who was not directly involved in the health care of the patient. At the beginning of the study, we expected to observe that the non-compliance percentage would be higher than in the previously published studies. However, the non-compliance rate reported by the patients was only 30%, which is either similar or below the rates reported in

previous studies²⁶⁻²⁸. Our finding might suggest that this low percentage is related to the hospital environment, since the pharmacist was in the same environment as the patient's physician. Thus patients might have been negatively affected and might not have been honest with the pharmacist regarding their medication compliance.

In our study, though no significant difference was found between male and female patients, there were more female than male non-compliant patients (61.1% and 38.9% respectively). On the other hand, among the 37 male patients, non-compliance rate was 37.84% and among the female patients the same rate was 26.51%. Moreover the highest mean compliance score was in 30-49 age group. These findings are supported by the following two studies. A two-year follow-up study of 406 patients discharged from a psychiatric hospital revealed that non-compliance with psychotropic medication was a problem in at least half the cases. There were more male than female non-compliers (51% and 41% respectively) and more young patients among all the population groups²⁷. Data from a clinical trial showed that more positive attitudes toward compliance are related to older age, fewer symptoms, and a broader array of daily activities including social relations²⁸. Linden et al. investigated factors suspected to predict dropout from continuous neuroleptic treatment in a two-year prospective study involving 122 outpatients with a diagnosis of schizophrenia. Forty-two (34.4%) were classified as patient-related dropouts and compliant patients were significantly older²⁹.

In this study we observed that patients do not comply with their medications because they either forget to take their medicine or they take it only when the symptoms occur, or they simply do not want to take it because of side effects. In the study conducted by Ramana et al. it was found that a patient's refusal to take medications was the most common reason for non-compliance with antidepressants¹¹. Attitudes about medication and factors affecting medication compliance were also investigated in a sample of 148 psychiatric patients by Ruscher et al. Opposition to the idea of taking medication due to a belief of

lack of medication activity and occurrence of physical side effects were the most frequent reasons for discontinuing medication intake³⁰.

In our study, the highest mean compliance rate was among epilepsy patients. This finding suggests that these patients are more aware of the nature of their disease and the importance of being compliant with their medications.

Valenstein et al. found that among 1,307 veterans, 49% had been non-compliant with medication in the past year¹⁰. In 11 countries, 3,516 members of 14 patient advocacy groups were surveyed. The vast majority of respondents reported initiating the most recent treatment as recommended to them (94%), and most of those who initiated treatment also adhered to it (83%). Predictors of initiation by the respondents included higher levels of education, having received pharmacotherapy education as well as having received explanations about the diagnosis and treatment³¹. In a study done by Agarwal et al. non-compliant patients suffering from schizophrenia were younger³². Also, in another study done in three New Zealand community based samples, the levels of compliance with psychotropic medication were reported. At younger ages, psychotropics were not frequently used³³.

Cramer and Rosenheck performed a literature review, using a MEDLINE search, on compliance with psychiatric treatment from 1975 through 1996. They found that patients receiving antidepressants took 65% of the recommended amount of the medication, with a range from 40 to 90%. The mean compliance rate for patients with physical disorders was 76%, with a range from 60 to 92%¹². Demyttenaere et al. compared adherence in depressed patients using either fluoxetine or amitriptyline. Non-adherence to the treatment regimen occurred frequently in both treatment groups: 31% of patients had at least one three-day drug holiday, and 34% of patients had at least one episode of three pills in a 24-hour period³⁴. In a study with epilepsy patients, the self-reported non-use of the drug at any moment one week prior (self-reported non-adherence) was 40.0%²².

CONCLUSION

As inferred by the results of this study, the hospital setting may have skewed the data. Further studies may be beneficial to obtain more objective statistics of non-compliant patients. It may be suggested to conduct the study using similar methods but in a more informal environment for the patient, such as in a pharmacy.

The multifactorial nature and consequences of non-compliance makes it a challenging area of intervention. For instance, this study stresses the critical need for taking necessary steps toward minimizing poor outcomes related to lack of compliance in psychiatric drug therapy. This becomes all the more crucial since the duration of psychiatric treatment is usually lengthy and the costs of therapy are high. Lack of patient compliance with their prescribed medication regimens increases their disease relapse risk as well as the potential for disease worsening. Health care professionals could actually play a pivotal role in helping to increase medication compliance. For instance, the pharmacist could reinforce the importance of proper medication intake as well as adherence by acting as an educator for the patient. Pharmacists can provide verbal and written information to the patient. Various studies have shown that educating the patient about the nature of his/her disease and medications increases the likelihood of the patient's being compliant as well as improves his/her outcome. Patients' education regarding their medication regimen decreases the various concerns occurring at the initiation of therapy, allows for anticipating therapy-related problems, and ultimately improves medication compliance as well as patient satisfaction.

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