

SOCIODEMOGRAPHIC FACTORS AFFECTING PATIENT COMPLIANCE TO LONG-TERM THERAPIES

SHAKEEL AHMAD MIR*

Department of Clinical Pharmacology, Sher-I-Kashmir Institute of Medical Sciences, Srinagar, Kashmir, India.

Email: drshakeelahmadmir@gmail.com

Received: 17 April 2021, Revised and Accepted: 25 May 2021

ABSTRACT

Objective: The aim is to study the effect of various sociodemographic factors on patient compliance in long-term therapies.

Methods: This is a questionnaire-based study of 195 adult outdoor patients suffering from chronic illnesses and receiving long-term drug therapy. Various sociodemographic factors were noted in a validated questionnaire. Questions about drugs being taken were asked. The compliance was measured by General Medication Adherence Scale.

Results: The study population consists of 51.3% of males and 48.7% of females. About 39.0% of participants were literate and 61.0% were illiterate. About 72.3% belonged to the rural area, 13.3% urban, and 14.4% to the main city. About 33.3% were self-employed or unemployed, 17.4% government employees, and 49.3% were private employees. About 20.0% belonged to high-income group, and 40.0% to middle- and 40.0% to low-income group. Statistically significant correlation was found between compliance and age, gender, area of residence, education, and marital status ($p < 0.05$). Better compliance was observed in men, unmarried, middle-aged, literate, and urban populations.

Conclusions: We conclude that some sociodemographic factors correlate with compliance to long-term therapies.

Keywords: Sociodemographic, Compliance, Long-term therapy, Chronic disease.

© 2021 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2021v14i7.41868>. Journal homepage: <https://innovareacademics.in/journals/index.php/ajpcr>

INTRODUCTION

The main aim of the prescribed therapy is to achieve the desired results in the patients. However, such results cannot be achieved if the patients are non-compliant [1]. Compliance is defined as the extent to which a person's behavior (in terms of taking medications, following diets, or executing lifestyle changes) coincides with medical or health advice [2]. Non-compliance can be described as failing to enroll in a treatment program, terminating treatment early, or failing to follow orders, including those related to medication administration [3].

Non-compliance can be divided into primary (not buying or receiving the medicines) and secondary (not complying with the instructions regarding dosage, frequency, and duration of medication intake). The phrases compliance and non-compliance are clinician oriented. The words adherence and non-adherence have been proposed to change the focus to patients. In clinical practice, however, these words are interchangeable [4].

According to the WHO, the factors influencing compliance to treatment may be classified into five categories such as patient-centered factors (sociodemographic factors, health belief, health literacy, forgetfulness, etc.), therapy-related factors (complexity of the medical regimen, duration of treatment, side effects, etc.), health-care system factors (poorly developed health services, non-existent reimbursement, patient-physician relationship, etc.), social and economic factors (poor socioeconomic status, poverty, unemployment, lack of effective social support networks, etc.), and disease factors (severity of symptoms, level of disability, comorbidity, and complications) [5].

Poor therapeutic compliance jeopardizes patient care efficacy, making this a crucial problem in population health from both a quality of life and a health economics standpoint [6].

Therapeutic non-compliance is associated with excess emergency hospital visits, hospitalizations, and higher treatment costs. It causes loss of productivity and has a negative impact on patient's quality of life [1].

It has been estimated that the compliance to short-term therapy is 70–80% and long-term therapy 40–50%. Good compliance is defined as taking 80–120% of the medications prescribed [7].

The influence of various sociodemographic factors on compliance is less clear cut.

Various studies have obtained conflicting results while studying association of compliance to sociodemographic factors. The present study also aims to find a relationship between various sociodemographic factors and compliance.

METHODS

Data were collected from the outpatient department of SKIMS Hospital, Srinagar, Kashmir, from December 2020 to March 2021. The nature of the study was explained to patients and their relatives and written consent was taken from all subjects. The information was kept confidential. Data were collected by interview method using a pre-designed, validated, pre-tested questionnaire. All the relevant sociodemographic factors were recorded in the pro forma. 250 patients were given the questionnaire. Only 195 returned the completely filled questionnaire.

Inclusions criteria

Age more than 18 years, suffering from documented chronic disease, taking prescribed drugs for past 6 months, ability to communicate by at least one of the means, namely, speaking or writing, those willing to participate in the study.

Exclusion criteria

Age less than 18 years suffering from an acute disease, on short-term drug therapy, inability to communicate by at least one of the means, namely, speaking or writing, those not willing to participate in the study.

Study tools

Validated demographics questionnaire was prepared in English and Urdu. Section one had the questions about the general demographic information such as gender, age, place of residence, qualification, occupation, economic status, and marital status. Section two asked the questions related to medication being taken. To assess therapeutic compliance, we used the English and Urdu versions of a novel medication adherence tool known as General Medication Adherence Scale (GMAS) after obtaining permission from the authors of the scale.

Data entry, analysis, and interpretation

Data were entered into a computer, and analysis was done by a combination of manual calculators and online VassarStats. Descriptive and inferential statistics were used appropriately.

RESULTS

Table 1 shows that the study population consists of 51.3% (n=100) males and 48.7% (n=95) females. Table 2 shows that 0.5% (n=1) were up to 20 years old, 8.7% (n=17) were 21-30 years, 13.3% (n=26) 31-40 years, 16.9% (n=33) 41-50 years, 23.1% (n=45) 51-60 years, 24.1% (n=47) 61-70 years, and 13.3% (n=26) were above 70 years. Table 3 shows 39.0% (n=76) were literate and 61.0% (n=119) were illiterate. Table 4 shows that 97.0% (n=189) were married and 3.0% (n=3) were unmarried. Table 5 shows that 72.3% (n=141) belonged to rural area, 13.3% (n=26) urban, and 14.4% (n=28) to main city. Table 6 shows that 33.3% (n=65) were self-employed, 17.4% (n=34) govt. employees, and 49.3% (n=96) were private employees. Table 7 shows that 20.0% belonged to high-income group, and 40.0% (n=78) to middle- and 40.0% (n=78) to low-income group. Table 8 shows that 8.0% (n=8) males had poor, 31.0% (n=31) low, 10.0% (n=10) partial,

30.0% (n=30) good, and 21.0% (n=21) high adherence to therapy. About 10.5% (n=10) of females had poor, 35.8% (n=34) low, 8.4% (n=8) partial, 37.9% (n=36) good, and 7.4% (n=7) high adherence.

Those in the age group of up to 20 years, 100% (n=1) had good adherence. In age group 21-30 years, 5.9% (n=1) had low, 23.5% (n=4) partial, 53.0% (n=9) good, and 17.6% (n=3) high adherence. In the age group of 31-40 years, 7.7% (n=2) had poor, 23.1% (n=6) low, 11.5% (n=3) partial, 42.3% (n=11) good, and 15.4 (n=4) high adherence. In the age group 41-50 years, 9.1% (n=3) had low, 12.1% (n=4) partial, 57.6% (n=19) good, and 21.2% (n=7) high adherence.

In the age group of 51-60 years, 13.3% (n=6) had poor, 46.7% (n=21) low, 4.4% (n=2) partial, 22.2% (n=10) good, and 13.3% (n=6) high adherence. In the age group of 61-70 years, 12.8% (n=6) had poor, 42.6% (n=20) low, 4.2% (n=2) partial, 25.5% (n=12) good, and 14.9% (n=7) high adherence. In the age group of above 70 years, 3.8% (n=1) had poor, 65.4% (n=17) low, 7.7% (n=2) partial, 19.2% (n=5) good, and 3.8% (n=1) high adherence.

About 1.3% (n=1) among literates had poor, 1.3% (n=1) low, 18.4% (n=14) partial, 55.3% (n=42) good, and 23.7% (n=18) high adherence. About 14.3% (n=17) among illiterates had poor, 53.8% (n=64) low, 4.2% (n=5) partial, 19.3% (n=23) good, and 8.4% (n=10) high adherence. About 10.6% (n=20) married persons had poor, 52.9% (n=100) low, and 36.5% (n=69) good adherence. Among unmarried persons, 16.7% (n=1) had partial, 33.3% (n=2) good, and 50.0% (n=3) high adherence. About 5.0% (n=7) among those coming from rural areas had poor, 53.9% (n=76) low, 5.7% (n=8) partial, 24.8% (n=35) good, and 10.6% (n=15) high adherence. About 11.5% (n=3) from urban areas had partial, 53.8% (n=14) good, and 34.6% (n=9) high adherence. About 14.3% (n=4) from city had partial, 71.4% (n=20) good, and 14.3 (n=4) high adherence. Among self-employed, 1.4% (n=1) had poor, 6.1% (n=4) low, 15.4% (n=10) partial, 46.1% (n=30) good, and 30.9% (n=20) high adherence. Those working in government sector, 17.6% (n=6) had partial, 29.4% (n=10) good, and 52.9% (n=18) had high adherence. Among those working in private sector, 2.1% (n=2) had poor, 10.4% (n=10) low, 9.4% (n=9) partial, 21.9% (n=21) good, and 56.2% (n=54) high adherence.

In high-income group, 2.6% (n=1) had poor, 12.8% (n=5) low, 10.2% (n=4) partial, 25.6% (n=10) good, and 48.7% (n=19) high adherence. In middle-income group, 1.3% (n=1) had poor, 5.1% (n=4) low, 12.8% (n=10) partial, 50.0% (n=39) good, and 30.8% (n=24) high adherence. In low-income group, 6.4% (n=5) had low, 11.5% (n=9) partial, 48.7% (n=38) good, and 33.3% (n=26) high adherence.

Table 1: Gender

Gender	No.	%
Males	100	51.3
Females	95	48.7
Total	195	100

Table 2: Age

Age group	No.	%
Up to 20 years	1	0.5
21-30 years	17	8.7
31-40 years	26	13.3
41-50 years	33	16.9
51-60 years	45	23.1
61-70 years	47	24.1
>70 years	26	13.3
Total	195	100

Table 3: Education

Group	No.	%
Literate	76	39.0
Illiterate	119	61.0
Total	195	100

Table 4: Marital status

Group	No.	%
Married	189	97.0
Unmarried	06	3.0
Total	195	100

Table 5: Area of residence

Group	No.	%
Rural	141	72.3
Urban	26	13.3
City	28	14.4
Total	195	100

Table 6: Occupation

Group	No.	%
Self-employed/unemployed	65	33.3
Govt. employee	34	17.4
Private sector employee	96	49.3
Total	195	100

Table 7: Economic status

Group	No.	%
High income	39	20.0
Middle income	78	40.0
Lower income	78	40.0
Total	195	100

Table 8: Compliance to long-term therapy

Group	Compliance as per GMAS No. (%)				
	Poor	Low	Partial	Good	High
Gender					
Male	08 (8.0)	31 (31.0)	10 (10.0)	30 (30.0)	21 (21.0)
Female	10 (10.5)	34 (35.8)	08 (8.4)	36 (37.9)	07 (7.4)
Total (195)	18	65	18	66	28
Age					
18–20 years	0 (0.0)	0 (0.0)	0 (0.0)	01 (100.0)	0(0.0)
21–30 years	0 (0.0)	01 (5.9)	04 (23.5)	09 (53.0)	03 (17.6)
31–40 years	02 (7.7)	06 (23.1)	03 (11.5)	11 (42.3)	04 (15.4)
41–50 years	0 (0.0)	03 (9.1)	04 (12.1)	19 (57.6)	07 (21.2)
51–60 years	06 (13.3)	21 (46.7)	02 (4.4)	10 (22.2)	06 (13.3)
61–70 years	06 (12.8)	20 (42.6)	02 (4.2)	12 (25.5)	07 (14.9)
>70 years	01(3.8)	17(65.4)	02 (7.7)	05 (19.2)	01 (3.8)
Total (195)	15	68	17	67	28
Literacy					
Literate	01 (1.3)	01 (1.3)	14 (18.4)	42 (55.3)	18 (23.7)
Illiterate	17 (14.3)	64 (53.8)	05 (4.2)	23 (19.3)	10 (8.4)
Total (195)	18	65	19	65	28
Marital status					
Married	20(10.6)	100 (52.9)	0 (0.0)	69 (36.5)	0 (0.0)
Unmarried	0 (0.0)	0(0.0)	01(16.7)	02 (33.3)	03 (50.0)
Total	20	100	01	71	03
Residence					
Rural	07(5.0)	76 (53.9)	08 (5.7)	35 (24.8)	15 (10.6)
Urban	0(0.0)	0 (0.0)	03 (11.5)	14 (53.8)	09 (34.6)
City	0 (0.0)	0 (0.0)	04 (14.3)	20 (71.4)	04 (14.3)
Total	07	76	15	69	28
Employment					
Self/unemployed	1 (1.4)	4 (6.1)	10 (15.4)	30 (46.1)	20 (30.9)
Govt. sector	0 (0.0)	0(0.0)	06 (17.6)	10 (29.4)	18 (52.9)
Private sector	02 (2.1)	10 (10.4)	09 (9.4)	21 (21.9)	54 (56.2)
Total	03	14	25	61	92
Economical					
High income	01 (2.6)	05 (12.8)	04 (10.2)	10 (25.6)	19 (48.7)
Middle income	01 (1.3)	04 (5.1)	10 (12.8)	39 (50.0)	24 (30.8)
Low income	0 (0.0)	05 (6.4)	09 (11.5)	38 (48.7)	26 (33.3)
Total	02	14	23	87	69

GMAS: General Medication Adherence Scale

DISCUSSION

The factors that influence compliance can be classified into patient-related factors, therapy-related factors, healthcare system factors, socioeconomic and disease-related factors [5].

Sociodemographic variables include gender, age, area of residence, ethnicity, marital status, household, qualification, employment, and income.

The present study aims to find a relationship between various sociodemographic factors and compliance. We found a statistically significant correlation between gender and compliance ($p=0.003$). In our study, males had better compliance as compared to females. In many studies related to this factor, contradictory results have been found. Some studies have found females patients to have better compliance [8]. We found a statistically significant correlation between age and compliance ($p=0.012$). Middle-aged patients had better compliance as compared to young and the elderly. The majority of studies conducted have found age related to compliance. Although most studies have found the elderly more compliant [1], yet some studies have found the elderly less compliant [9].

We found a statistically significant correlation between education and compliance ($p=0.000$). Literate patients were more compliant. We did not compare the effect of various educational levels like higher or lower education on compliance. Contradictory results have been found while studying the correlation between the level of education and compliance. Some studies have found that educational level may not be a good

predictor of compliance [1]. However, Rolnick *et al.* have found higher compliance in patients living in areas with higher education rates [10].

We found better compliance in unmarried, though in five recent studies, marital status was not found to be related to compliance [1]. Some authors believe that marriage positively affects compliance [11]. We also found an area of residence and compliance significantly correlated ($p=0.000$). Patients belonging to the rural areas were found least compliant as compared to those from urban areas or cities. Martin *et al.* also found low compliance in the rural population [12].

We found no correlation between the patient occupation and compliance ($p=0.292$). We also found small but statistically significant ($p=0.042$) differences in compliance between various income groups. In some studies, income and cost of therapy were found related to compliance but in others, income was not related to compliance [1].

While socioeconomic status has not been reliably found to be an independent predictor of compliance, low socioeconomic status in developing countries can force patients to choose between competing priorities. Demands to guide the scarce resources available to meet the needs of other family members, such as children or parents for whom they care, are common examples of such priorities [5].

CONCLUSIONS

Compliance is a complex phenomenon that differs from population to population. This is a well-known problem. Non-compliance with medication is a global problem that has an effect on patient health

outcomes and health-care costs. Several patient sociodemographic factors are linked to therapeutic non-compliance.

ACKNOWLEDGMENT

The authors would like to express their sincere thanks and gratitude to Dr. Atta Abbas Naqvi and Professor Mohamed Azmi Hassali of Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia (USM), Penang, Malaysia, for allowing to use GMAS in this study. The authors also wish to thank the patients who participated in the study.

AUTHORS' CONTRIBUTIONS

All authors have made considerable contributions to the work reported in the manuscript.

CONFLICTS OF INTEREST

None.

AUTHORS' FUNDING

None.

REFERENCES

- Jin J, Sklar GE, Oh VM, Li SC. Factors affecting therapeutic compliance: A review from the patient's perspective. *Ther Clin Risk Manag* 2008;4:269-86.
- Jay S, Litt IF, Durant RH. Compliance with therapeutic regimens. *J Adolesc Health Care* 1984;5:124-36.
- Nose M, Barbui C, Gray R, Tansell M. Clinical interventions for treatment non-adherence in psychosis: Meta-analysis. *Br J Psychiatry* 2003;183:197-200.
- Swaminath G. You can lead a horse to the water. *Indian J Psychiatry* 2007;49:228-30.
- World Health Organization. Adherence to Long-Term Therapies: Evidence for Action. Geneva: World Health Organization; 2003.
- Joho AA. Factors affecting treatment compliance among hypertension patients in three district hospitals-Dar Es Salaam. In: Muhimbili University of Health and Allied Sciences, Dar Es Salaam Tanzania; 2012.
- Stroupe KT, Teal EY, Weiner M, Gradus-Pizlo I, Brater DC, Murray MD. Health care and medication costs and use among older adults with heart failure. *Am J Med* 2004;116:443-50.
- Chuah SY. Factors associated with poor patient compliance with antituberculosis therapy in Northwest Perak, Malaysia. *Tubercle* 1991;72:261-4.
- Balbay O, Annakkaya AN, Arbak P, Bilgin C, Erbas M. Which patients are able to adhere to tuberculosis treatment? A study in a rural area in the Northwest part of Turkey. *Jpn J Infect Dis* 2005;58:152-8.
- Rolnick SJ, Pawloski PA, Hedblom BD, Asche SE, Bruzek RJ. Patient characteristics associated with medication adherence. *Clin Med Res* 2013;11:54-65.
- Cooper C, Carpenter I, Katona C, Schroll M, Wagner C, Fialová D, *et al.* The AdHOC study of older adults' adherence to medication in 11 countries. *Am J Geriatr Psychiatry* 2005;13:1067-76.
- Martin MY, Kim YI, Kratt P, Litaker MS, Kohler CL, Schoenberger YM, *et al.* Medication adherence among rural, low-income hypertensive adults: A randomized trial of a multimedia community-based intervention. *Am J Health Promot* 2011;25:372-8.