

CORRELATION BETWEEN REPORTED LEVELS OF THERAPEUTIC COMPLIANCE AND GEOGRAPHIC LOCATION OF PATIENT RESIDENCE

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ABSTRACT

Objectives: Globally, healthcare suffers from the urban-rural and rich-poor divide. Our objective is to assess differences in therapeutic compliance between rural and urban adults.

Methods: In a questionnaire-based study of outpatients, we assessed 400 adult outpatients selected by simple randomization.

Results: The patients belonging to urban areas had better therapeutic compliance as compared to those belonging to rural areas. About 53.1% of patients from urban areas had good compliance as compared to 22.9% of patients from rural areas ($p < 0.001$).

Conclusion: Our findings reveal statistically significant differences in therapeutic compliance between rural and urban population.

Keywords: Therapeutic compliance, Non-compliance, Urban, Rural, Medication.

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INTRODUCTION

Therapeutic compliance is an important part of any treatment. Non-compliance can have consequences for patients as well as healthcare system [1]. Therapeutic compliance is commonly defined as "patient's behaviors" (in terms of taking medication, following diets, or implementing lifestyle modifications) that correspond with healthcare practitioners' recommendations for health and medical advice [2].

Non-compliance is a serious global problem. Several rigorous studies have found that in developed countries, the compliance rate in chronic diseases is only 50%. The magnitude and impact of poor compliance is greater in developing countries, given insufficient health resources and unequal access to health care [3].

Urban-rural disparities in income, literacy, health awareness, and access to healthcare are found globally. These disparities can have an impact on patients' therapeutic compliance.

When it comes to healthcare, Indians are divided into two groups: Urban India who has access to quality care, and rural India with comparatively limited access to healthcare. In terms of population density, India remains largely rural. According to the National Commission on Macroeconomics and Health, about 80% of health infrastructure, workers, and other health resources are concentrated in urban areas [4].

We conducted this study to examine the association between geographic location of patients' residence and therapeutic compliance in view of this urban-rural divide.

METHODS

This prospective observational study was conducted from June 2022 to August 2022.

A validated questionnaire was prepared in English and Urdu. It had two sections. Section one had questions about the general demographic information such as age, gender, residence, educational level, and economic status. Section two asked the questions related to medication compliance. We used the English and Urdu versions of a medication

compliance tool known as the general medication adherence scale (GMAS) after obtaining permission from the authors [5].

Study population

Four hundred patients attending the outpatient department (OPD) of SKIMS Hospital, Kashmir, were selected by simple randomization for this self-reported study.

Inclusion criteria

Suffering from a documented disease, the ability to communicate by at least one of the means, namely, speaking or writing, unsupervised treatment, age more than 18 years.

Exclusion criteria

Attending OPD for general medical check-up without a documented disease, unable to communicate by at least one of the means, namely, speaking or writing, supervised treatment, aged <18 years.

Statistical analysis

Analysis was done by a combination of manual calculators, VassarStats, and online statistical calculators. Differences in compliance rates based on patient characteristics were examined.

RESULTS

There were 52.5% of males ($n=210$) and 47.5% of females ($n=47.5$) (Table 1). About 11.2% ($n=45$) patients were in the age group of 18-30 years, 60.0% ($n=240$) 31-60 years, and 28.8% ($n=115$) above 60 years (Table 2).

About 60.0% ($n=240$) of patients were from rural areas, and 40% ($n=160$) were from urban areas (Table 3).

Among rural patients, 66.7% ($n=160$) were literate and 33.3% ($n=80$) were illiterate. Among urban patients, 84.4% ($n=135$) were literate and 15.6% ($n=25$) were illiterate (Table 4).

About 10.4% ($n=25$) of rural patients belonged to the upper class, 47.9% ($n=115$) to the middle class, and 41.7% ($n=100$) to the lower

Table 1 : Characteristics of study population by gender

Gender	No.	%
Male	210	52.5
Female	190	47.5

Table 2: Characteristics of study population by age

Age group	No.	%
Up to 30 years	45	11.2
31–60 years	240	60.0
Above 60 years	115	28.8

Table 3: Characteristics of study population by geographic location of residence

Residence location	No. (%)
Rural	240 (60.0)
Urban	160 (40.0)

Table 4: Characteristics of study population by educational status

Education	Rural No. (%)	Urban No. (%)
Literate	160 (66.7)	135 (84.4)
Illiterate	80 (33.3)	25 (15.6)

Table 5: Characteristics of study population by economic status

Area	Upper class	Middle class	Lower class
Rural	25 (10.4)	115 (47.9)	100 (41.7)
Urban	25 (15.6)	110 (68.8)	25 (15.6)

Table 6: Adherence pattern of the study population

Area	High	Moderate	Low
Rural	0 (0.0)	55 (22.9)	185 (77.1)
Urban	0 (0.0)	85 (53.1)	75 (46.9)

economic class. Among urban patients, 15.6% (n=25) belonged to the upper class, 68.8% (n=110) to the middle class, and 15.6% (n=25) to the lower economic class (Table 5).

22.9% (n=55) rural patients showed moderate and 77.1% (n=185) low compliance. About 53.1% (n=85) urban patients showed moderate and 46.9% (n=75) low compliance (Table 6).

Pearson correlations (r)

Variable/correlation/sig	Residence	Adherence_score
Residence		
Pearson correlation	1	0.310**
Sig. (two-tailed)		0.000
n	400	400
Adherence_score		
Pearson correlation	0.310**	1
Sig. (two-tailed)	0.000	
n	400	400

**Correlation is significant at the 0.01 level (two-tailed)

DISCUSSION

Therapeutic compliance is a major determinant of treatment efficacy, and poor compliance reduces optimal clinical benefit. Measuring

medication compliance is challenging. There are many ways to measure it, including patient reports, pharmacy records, vital sign testing, electronic monitoring devices, and laboratory markers. However, there is no "gold standard" for measuring compliance behavior, and the use of different strategies has been reported in the literature [3].

We measured compliance with the GMAS [5].

In recent years, there has been renewed interest in the geographic characteristics of public health. Previous studies have documented differences between urban and rural healthcare, often in the form of access and use of health services, costs, and geographic distribution of providers and services [6].

The rural population's health is consistently poorer than that of the urban population. Health outcomes have widened markedly between rural and urban areas over the past three decades, and health outcomes are now significantly worse in rural areas than in urban areas [7].

We conducted this study to determine the differences in therapeutic compliance between rural and urban populations. Prior research examining this issue has yielded inconsistent results.

We defined the urban and rural as per Census India definition, which categorizes an area as urban if minimum population is 5000 persons, density of population of at least 400 persons per sq. km. and 75% and above of the male main working population is engaged in non-agricultural pursuits. An area with population of <5,000, a population density of <400 per sq km, and more than 25% of the male working population" engaged in agricultural pursuits is categorized as a rural area [8].

In the present study, we found that compliance significantly varies according to the patients' location of residence. The patients belonging to urban areas had better compliance as compared to the patients belonging to rural areas (p<0.001). About 53.1% of patients from urban areas had moderate compliance as compared to 22.9% of patients from rural areas.

Higher compliance in the urban population may be due to higher literacy (84.4% urban vs. 66.7% rural literacy), and better socioeconomical conditions. 68.8% of patients from urban areas belonged to the middle class, as compared to 47.9% from rural areas. An extensive review has found older age, female gender, higher income, and more education to have small yet positive effects on compliance [9]. In a study conducted in the United States of America, it was observed that rural America often lacks access to basic health care [10].

In another study conducted in the US, no rural/urban disparity was found in post-stroke antihypertensive medication use. However, trend analyses showed a small but significant increase in antihypertensive use over time among urban but not rural stroke survivors [11].

In a study conducted in Al-Ahsa, Saudi Arabia, 36% of the urban population was found adherent to short-term antibiotics compared with 22% in rural areas [12].

Dessie *et al.* while reviewing the research on this subject conclude that there are no consistent differences in rates of cardiovascular medication utilization or compliance among adults with cardiovascular disease or diabetes living in rural versus urban settings. They suggest that higher quality evidence is needed to determine if differences truly exist between urban and rural patients in compliance with medications [13].

Another study conducted in Brazil revealed that socio-demographic and economic characteristics, lifestyle habits, and how to relate to health services were the factors associated with non-compliance regardless of place of residence [14].

Limitations

Compliance is a multifaceted phenomenon that is influenced by the interactions of various components. According to the definitions of compliance, the population studied, the methodology used, the length of observation, and the data analysis tools used, there is a wide variation in reported compliance. The accuracy of the answers is crucial to the validity of our results. We used a well-structured questionnaire to reduce recall bias. Another limitation of this study is the small sample size, which we attempted to overcome by employing a random sampling method to generalize results. However, our findings should not be extrapolated to other populations. There is always the possibility of confounding in observational studies. The current research is only exploratory in nature. Large-scale studies are required to reach a definitive conclusion.

CONCLUSION

Our findings reveal high rates of therapeutic non-compliance in rural areas. These findings imply that to improve the therapeutic compliance more emphasis should be placed on patients in rural areas.

AUTHOR CONTRIBUTIONS

The author compiled the data and after analyzing it the article was structured.

CONFLICTS OF INTEREST

None.

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ETHICAL APPROVAL

Yes.

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