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Exploring Determinants of Adherence to Medical Regimens in Patients with Chronic Conditions Beyond Hypertension and Diabetes

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Abstract

Chronic diseases are significantly increasing globally and increasing premature deaths among population. CDC has defined chronic diseases are the conditions that last 1 year or more and require ongoing medical support or limit the daily activities or both. Diabetes and hypertension are popular chronic diseases. But there are many others are also now increasing. The current study was conducted to find out the prevalence of noncompliance among chronic diseases like thyroid diseases, Asthma, COPD, Orthopedic problems and epilepsy. Also to understand the determinants factors among them.

It was a hospital based cross sectional study. The sample size was calculated and it was 36 for each disease. Total 40 study participants of each disease were included. It was randomly selected the individuals diagnosed with the mentioned chronic diseases who have been diagnosed and on treatment for more than 3 years from hospital.

Result: A total of 200 patients participated in the study. The study included 40 patients from each chronic disease that is thyroid disorders, COPD, Orthopedic problems, Asthma and Epilepsy. The rural population comprised 69% of the total study group. The prevalence of medical noncompliance was found in 56.5% of all the patients. People having the disease for longer period of time were more non-compliant. The study revealed that family support and regular follow up with doctor are two important determinates factors which has positive impact on compliance.

Conclusion: Noncompliance to medication regimen among chronic disease patients is an important issue for public health consideration. This current study recorded an overall noncompliance level of 57.5%. The factors identified as contributing to medication noncompliance in this study were regular follow ups, family support, adequate knowledge regarding their disease and importance of taking medication with or without symptoms.

Keywords: thyroid diseases, asthama, COPD, orthopedic problems, epilepsy, noncompliance.

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INTRODUCTION

Chronic conditions pose a significant burden on healthcare systems globally, affecting millions of individuals and challenging healthcare providers to manage them effectively. CDC has defined chronic diseases are the conditions that last 1 year or more and require ongoing medical support or limit the daily activities or both.[1] Some define chronic disease are those conditions which usually last for more than 3 months.[2,3] Chronic diseases generally cannot be prevented by vaccines or cured by medication, nor do they just disappear. However, it is a condition you can control with treatment for months. Asthma, diabetes, hypertension and depression are common examples. Often, they don't have a cure, but you can live with them and manage their symptoms with medication.[4]

People with chronic disease often think that they are free from the disease when they have no symptoms. Having no symptoms, however, does not necessarily mean that the chronic disease has disappeared. The good news is that chronic disease can be controlled through regular use of medication and life style modification.[5]

The need for precisely scheduled daily medications is one of the main demands to improve compliance in cases of chronic diseases. The success of every therapeutic regimen depends on the compliance with the individual involved. The efforts put in by healthcare providers can therefore only yield the desired effect if patients are compliant to their medication regimen. Unfortunately, medication noncompliance with its associated detrimental effects is becoming widespread and has been found to be most prevalent among patients with chronic diseases.[6]

The WHO reported that 41 million people died due to chronic diseases. Each year 17 million people died before time means premature deaths. Three main chronic diseases are cancer, chronic respiratory diseases and diabetes.[7]

Among patients with chronic diseases such as hypothyroidism, osteoporosis, epilepsy, asthma, COPD and osteoarthritis, medical noncompliance has been found to be very common actors that influence patient compliance with chronic disease treatments have been studied extensively with inconclusive findings. These factors can be grouped as economic issues, education status, knowledge about disease risk factors, presence of symptoms, drug dose and duration, cognitive-emotional and motivational factors, family support and peer support, availability of devices to monitor the disease and the quality of interaction with health care providers.[8,9,10]

In a developing country like India with increasing burden of chronic diseases there is also an increase in medical noncompliance. There are many compliances related evidences are available with DM and hypertension. But limited evidences for the other than these diseases. With this background the current study is planned with following objectives.

- To assess factors determining the lack of compliance in patients with chronic diseases other than hypertension and diabetes. The diseases would include thyroid diseases, Asthma, COPD, Orthopedic problems and epilepsy.

MATERIAL & METHODS

- **Study Design**: Cross sectional study
- **Study Population**: Patients with neglected chronic diseases which includes Asthma, COPD, Orthopedic problems, epilepsy, thyroid disease.
- **Sample size:**
  Sample size = 4 pq/ L²
  Confidence level = 95%
  Allowable Error = 15%
  Considering P and Q values for each disease;

Epilepsy: p-63 and q-37. Sample sizes for all disease was considered and the minimum sample size was applied to all diseases, the Neha Verma et at[11] studied the compliance with children about epilepsy and found good compliance prevalence was 71%. That was used to calculate sample size for the study.

Therefore, sample size =36

Inclusion criteria: Patients with neglected chronic diseases including COPD, asthma, epilepsy, thyroid diseases, osteoporosis, arthritis and thyroid; **diagnosed & on treatment for more than 3 years.**
- **Adults (>18yrs) would be considered for all diseases except Asthma and Epilepsy (where children above 5yrs would be considered)**
- **Exclusion criteria**: Patients suffering from other common chronic diseases. (Diabetes, Hypertension, etc.)

Severely ill patients and those who are not ready to give consent

METHODS

After obtaining the permission from ethical committee, the study was started with data collection. Data was collected by interaction with patient through a pilot pretested preformed questionnaire.

First, it was randomly selected the individuals diagnosed with the mentioned chronic diseases who have been diagnosed and on treatment for more than 3 years; then obtain the written consent and assent for children for the study. Children were considered for Asthma and Epilepsy; for other diseases adults were considered. Data collected through directly asked questions. The questions would include residence, education, socioeconomic conditions, time of diagnosis, type of medication and dosage and various questions related to compliance. We will collect data by contacting patients of Dhiraj General Hospital.

Thus, collected data was then be compiled to see if there is a major common factor responsible for non-compliance to treatment in these patients.

RESULT

A total of 200 patients participated in the study. Patients' ages ranged from 5yrs for epilepsy patients to patients in their 80s for orthopedic problems. Majority of the respondents were in their 30s. There was almost equal distribution of males and females. Patients who lived for the disease for 3 years or more were included.

Table 1. Age distribution of study population disease-wise (n = 40 in each disease)

Disease	Mean age with range	Male (mean age with range)	Female (Mean age with range)
Asthma	27.26 (7.44 – 47.08)	19.09 (3.07 – 35.15)	32.66 (12.8 – 52.52)
COPD	53.80 (42.92 – 63.96)	52.51 (43.65 – 61.37)	55.68 (44.46 – 66.9)
Thyroid	41.13 (29.23 – 53.03)	47 (39.04 – 54.96)	40.23 (28.08 – 52.38)
Orthopedic problem	42.29 (24.25 – 60.33)	43.18 (28.21 – 58.15)	41 (19.59 – 62.41)
Epilepsy	12.45 (4.89 – 20.01)	11.73 (6.63 – 16.83)	13.58 (9.9 – 17.26)
Total	35.38	34.7	36.63

The study included 40 patients from each chronic disease that is thyroid disorders, COPD, Orthopedic problems, Asthma and Epilepsy. The rural population comprised 69% of the total study group. Most patients had primary education with 33% of the population under study. People from different socioeconomic background were considered with socioeconomic class IV being the maximum.

Table 2. Socio-Demographic profile of study population

	Asthma	COPD	Thyroid	Orthopedic issue	Epilepsy	Total (%)
Rural	25	30	30	28	25	138 (69%)
Urban	15	10	10	12	15	62 (31%)
Education						
Illiterate	2	3	11	0	0	16 (8%)
Primary	15 (22 are School going)	23	10	18	38 School going	66 (33%) & School going – 61 (30%)
Secondary	2	12	14	14	2	44 (22%)
Graduate	0	2	5	4	2	13 (6%)
Post-graduate	1	0	1	0	0	2 (1%)
Occupation						
Students	22		0	1	38	61 (30.5%)
Home maker	5	12	19	11	0	47 (23.5%)
Skilled worker	0	6	5	3	2	16 (8%)
Unskilled worker	10	17	6	15	0	48 (24%)
Professional (job)	1	2	8	5	0	16 (8%)
Shop owner	2	3	2	5	0	12 (6%)
Socio-economic class						
I	2	0	6	2	8	18 (9%)
II	22	8	10	13	11	64 (32%)
III	12	9	7	5	15	48 (24%)
IV	3	21	17	18	6	65 (32.5%)
V	1	2	0	2	0	5 (2.5%)

Table 3 Status of compliance (For this take questions number (Do you take the medication regularly (inhaler in case of Asthma and COPD)? – Yes / No; How often do you forget the medication? (in a month) use these question and tried find out how many have regular drugs)

The prevalence of medical noncompliance was found in 56.5% of all the patients. People having the disease for longer period of time were more non compliant.

Table 3. Status of compliance

Disease	Regular on treatment	Irregular on treatment	Total (100%)
Asthma	22 (55%)	18 (45%)	40
COPD	8 (20%)	32 (80%)	40
Thyroid	30 (75%)	10 (25%)	40
Orthopedic problem	13 (32.5%)	27 (77.5%)	40
Epilepsy	14 (35%)	26 (65%)	40
Total	87 (43.5%)	113 (56.5%)	200

Table 4. Relation between compliance and various risk factors

	Compliance yes (78)	Non-compliance (77)	
1. At time of diagnosis adequately explained Yes	40	33	73
No	38	44	82
The chi-square statistic is 1.1039. The p-value is .293422. *Not* significant at $p < .05$			
2. Symptoms not present still you need to take drugs – Yes	47	48	95
No	31	29	60
The chi-square statistic is 0.0707. The p-value is .790256. *Not* significant at $p < .05$			
Regular follow up Yes	32	17	49
No	46	60	106
The chi-square statistic is 6.4347. The p-value is .011191. significant at $p < .05$			
Knowledge about risk of disease Yes	22	20	42
No	56	57	113
The chi-square statistic is 0.0976 . The p-value is 0.75468 *Not* significant at $p < .05$			
Family support for drugs Yes	66	25	91
No	12	52	64
The chi-square statistic is 43.4679 The p-value is <0.0001. significant at $p < .05$			

Table 4 shows the realization of various determinent factors and compliance impact. Family support and regular follow up with doctor are two important determinates factors which has positive impact on compliance. Other factors are not found significant for the compliance.

DISCUSSION

There have been very few studies to assess the level of and reasons behind noncompliance to medication for chronic diseases other than diabetes and hypertension. There are many studies on popular diseases diabetes and hypertension.[12] Currently, the number of people with chronic diseases other than DM and HT are increasing way more than they were ever before. It is a well-known fact that success of the treatment regimen depends solely on the compliance of the patient when it comes to chronic diseases. In the past few years, a lot attention has been given to Diabetes and Hypertension. However, a lot of other chronic diseases are becoming widespread and so is their non compliance.

Among the five diseases that the study considered more than half of the patients were not compliant to their medications and irregular in their follow ups. It was seen that thyroid patients were most compliant (75%of thyroid patients were compliant). This can be attributed to the fact that they comprised of the most literate study group among all the diseases studied. They were better informed about their disease compared to others. The most non compliance was seen among COPD patients (82% of COPD patients). COPD patients comprised of the highest mean population age (54yrs) and also had the disease for a greater number of years. Not only were they non compliant they also were irregular in regular pft and follow ups. Moreover, 57.5% of COPD patients had only received primary education. Most of them were not well aware about their disease, risk factors and were very hesitant to ask the doctors regarding the same.

As per our study reports majority of patients were not adequately counseled regarding their disease. Considering other individual diseases, Asthma patients who were not compliant complained of the medication cost and hence took medication only when they had extreme symptoms.18 out of the 20 non compliant patients were unaware that medication should be continued at all times even in absence of symptoms. These 18 were also not compliant with their regular follow-ups. Epilepsy patients were more compliant

when it came to treatment. However, among the non compliant patients, parents of children were irregular with getting their children for regular follow ups (69% among non compliant patients did not followup). Most patients followed up when they had the symptoms present. Orthopedic patients (67.5% not compliant) had very little family support (74.19% of non compliant patients did not have adequate family support.) 87% non compliant orthopedic patients were not adequately counseled about their risk factors and problems they would face in future if they stopped taking their medication.

The two most significant factors overall were that people were not aware that regular follow ups form a crucial part of the therapy regimen for chronic diseases.[13] Various lab parameters have to be monitored regularly and treatment compliance needs to be in check through these follow ups. Also, most drugs require dose adjustment. Patients not complaint to treatment were the ones who did not follow up at required intervals. The importance of this should be counseled to all the patients. Second most significant parameter of the study was family support. Noncompliant patients had very little family support. It is essential to educate the family members as well regarding the health condition of the patients. Chronic diseases require a long-term treatment and the individual would be motivated to continue the medication if their family encourages them for the same and is capable to provide with the required medication regularly.

LIMITATIONS

The present study was conducted among the patients receiving health care at one tertiary care Hospital and did not include patients who attended other health centers in the city. Additionally, engaging in direct observation of clients and pill counting could have made the study findings more robust; however, it was questioner-based study this methodology could not be adopted. Despite these limitations, the findings of the study are baseline for future research. It will help the primary care physician to keep eye on such neglected chronic diseases also.

CONCLUSION

Noncompliance to medication regimen among chronic disease patients is an important issue for public health consideration. This is evidenced by the results of this study which recorded an overall noncompliance level of 57.5%. The factors identified as contributing to medication noncompliance in this study were regular follow ups, family support, adequate knowledge regarding their disease and importance of taking medication with or without symptoms. To reduce the incidence of medication noncompliance among chronic disease patients, the study recommend that clinicians should spend more time in counseling patients with chronic diseases. Their family should be counseled as well to help the patient with regular follow-up. Doctor-to-patient relationship must be improved so patients can freely discuss issues relating to their therapy.

The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study.

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