Original Article

IMPACT OF PHARMACIST EDUCATION ON MEDICATION ADHERANCE IN HEART FAILURE PATIENTS

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ABSTRACT

Objective: To determine whether pharmacist intervention improves the medication adherence in the heart failure population and to identify the barriers affecting adherence.

Methods: A prospective interventional study was conducted in 1000 bedded multi specialty private hospital to assess the medication adherence through pharmacist counseling and barriers involved in adherence by using Morisky medication adherence.

Results: The male heart failure population (88%) was predominant compared to females (12%). The 51-70 year age group patients were identified to have lower adherence rate (37.3%) followed by 71-90 year population with 25.3% adherence rate. The adherence score was obtained at baseline and after 6 months which showed statistically significant improvement*$P<0.0001$. The major adherence barrier was forgetfulness (63%) under patient related problem and polypharmacy was the major factor under medical related barrier (27.7%).

Conclusion: The pharmacist based intervention and counseling improved medication adherence in heart failure patients. The major barriers identified can be overcome by continuous intervention by the pharmacist especially in a chronic disease like heart failure.

Keywords: Adherence, Heart failure, Barriers.

INTRODUCTION

Heart failure shows high morbidity and mortality rate. In western countries heart failure is predominantly a disease of the elderly, in India it affects younger age group.[1] It is essential that patients with HF receive pharmacological treatment to slow cardiac remodeling, and decrease symptoms, hospitalizations and death. Prescribed therapy is, however, useless unless patients adhere to their prescribed medications. Medication non adherence compromises treatment outcomes in HF. Overall medication adherence rates in HF patients average only about 50% and decline over time. Due to the importance of medication adherence to hospitalization and mortality, it is vital that healthcare professionals should implement interventions to improve medication adherence. [2]. The World Health Organization identified medication non adherence as a leading cause of morbidity, mortality, and health care costs.[3] Pharmacists are well suited to optimize drug therapy regimens, identify barriers to medication adherence, and develop ways to address, as well as educate patients about medication-related problems.[4]This study is carried out with an aim to determine whether pharmacist intervention with improves the medication adherence in the heart failure population and to identify the barriers affecting adherence. A validated PIL (patient information leaflet), was prepared and distributed to the study population.

MATERIALS AND METHODS

Prospective interventional study was carried out from January 2014 to June 2014 in the department of cardiology in a 1000 bedded multispecialty hospital. The study was approved by an institutional ethics committee. Patients above 30 years of age, Heart failure (NYHA I-III) and who were willing to participate in the study were included, whereas patients' who had physical/cognitive impairments and patient with severe illness were excluded. After obtaining informed consent the patients were recruited based on inclusion criteria.

In the selected population pre medication adherence score was measured. Then they were counseled by the pharmacist, providing information regarding disease condition, medications and need for adherence. They were also provided with validated patient information leaflet (PIL). The post medication adherence was done after 6 months, using MMAS (Morisky Medication Adherence Scale) – 8 items. The pre and post medication adherence were interpreted.

Statistical analysis

The data were analyzed by using Graphpad prism version. Results were expressed as mean ±Standard deviation(SD). Non parametric values were expressed in percentage.

RESULTS

A total of 87 patients were included in this study based on inclusion criteria out of which 83 patients participated till the study was completed. The patient's medical record and prescription were reviewed for counseling and medication adherence was identified.
Demographic data

Out of 83 patients, 88% (73) were male and only 12% (10) were female patients.

Table 1: Gender distribution

Sex	No of Patients	Percentage (%)
Male	73	88.0
Female	10	12.0

Age (n=83), As per the study result, most number of patients were in the age group of 51-70 years (51.8%) and least in the age group of 31-50 years (21.7%).

Table 2: Age Distribution

Age	No. of Patients	Percentage (%)
31-50	18	21.7
51-70	43	51.8
71-90	22	26.5

The majority of the respondents, namely 25(30%) were of secondary level education, 17(20.5%) had primary level education and 16 (19.3%) were found to be graduates and 18(21.7%) completed post graduation and only 7 (8.4%) in the category of higher secondary level.

Table 3: Education status

Category	No of Patients	Percentage (%)
PG	18	21.7
UG	16	19.3
Secondary	25	30.1
Primary	17	20.5
HS	7	8.4

New York Heart Association Classification (n=83)

Out of 83 patients, 69.9% (58) were diagnosed to have NYHA –III followed by NYHA-II 30.1% (25).

Employment status (n=83)

Majority of the respondents, namely 37 (44.6%) were unemployed, followed by 27 (33.7%) were employed. This research shows that majority of the respondents were unemployed.

Barriers affecting medication compliance (N=83)

Barriers affecting medication compliance reported by 83 respondents can be classified as Patient-related and Medical-related barriers. All respondents reported multiple barriers. Patient-related barriers include: Forgetfulness was reported by 63%, Stopped medications on being well 20%, stopped medications due to side effects/sick by 8.4%, Financial burden 20%, Low literacy 19.2%), Depend on others for purchasing drugs 39.7%. Medical related barriers are: Polypharmacy which was depicted in table 6.

Table 4: Employment status

Occupation	No of patients	Percentage(%)
Employed	28	33.7
Unemployed	37	44.6
House wife	7	8.4
Retired	11	13.3

Assessment of Medication Adherence (n=83), Medication adherence was measured by the eight item Morisky Medication Adherence Scale (MMAS-8).

Table 5: Pre & Post adherence rate

Age Classification (Yrs)	Low Adherence		Moderate Adherence		High Adherence	
	Pre	Post	Pre	Post	Pre	Post
31-50	7	1	11	12	0	5
51-70	31	14	13	24	0	6
71-90	21	18	0	3	0	0

The pre counseling data's showing low adherence was observed in 51-70 years age group followed by 71-90 years with the percentage of 37.3%and 25.3% respectively. This adherence percentage was improved in follow-up session which is depicted in table 5. The Average of pre & post adherence with the *Mean ±SD of 4.51±1.58 to 6.14±1.22 is statistically significant with P-value<0.0001.

Table 6: Barriers in medication adherence

S. No.	Barriers for medication adherence	No. of Respondents(%)
1	Forgetfulness	52(63%)
2	Stopped Medications on being well	17(20%)
3	Depends others for Purchasing drugs	33(39.7%)
4	Low Literacy	16(19.2%)
5	Side effects	7(8.4%)
6.	Polypharmacy	23(27.7%)
7.	Financial	17(20%)

DISCUSSION

The study found that heart failure was more predominant in male population compared to females. The result coincided with Hospitalization for Congestive Heart Failure: United States, 2000–2010 conducted by Centre for disease control and prevention [5]. Patients in the age group of 51-70 years, were mainly affected by heart failure. Lower medication adherence rate was also observed in that 51-70 years age group followed by 71-90 years. The result suggests that the majority of the respondents 25 (30%) were under formal education. Irrespective of the education level, inadequate health literacy is one of the major factor for non adherence, so health literacy may be an important consideration in drug adherence. The study result showed 44.6% were unemployed. Our study found that there was a significant improvement in medication adherence from 4.51±1.58 to 6.14±1.22 with P value<0.0001. This shows that

pharmacist intervention plays an effective role in improvement of patient medication adherence and in patient compliance. Similar report was found in Michael D Murray et al. Pharmacist intervention for outpatients with heart failure can improve adherence to cardiovascular medications and decrease health care use and cost. [6] Although most patients are motivated to take their medications as prescribed, some may fail to comply due to lack of understanding, confusion, or simple forgetfulness. Continuous intervention may improve the low adherence found in 39.7% of patient population. This study identified patient related barriers were more like forgetting to take medication as the most common barrier for medication adherence. It can be overcome by daily reminders or diary keeping. Out of 83 patients, 16 stopped medication on being well and low literacy due to poor knowledge, so pharmacist can educate the patient about the consequences of non adherence. Patient information leaflet regarding disease and drug related information play vital part in educating the patients to improvise the medication adherence. Face to face counseling between pharmacist and patient regarding barriers in medication adherence and personalized intervention to address the barriers plays an important role in encouraging the patient to adhere with their drug regimen. Financial burden can be reduced by pharmacoeconomic analysis.

CONCLUSION

In the present study, the medication adherence rate was improved from baseline to post interview through pharmacist intervention. The identified major barriers, like forgetting to take medications, stopping on being well etc. can be overcome by continuous follow up and patient education by pharmacist.

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CONFLICT OF INTEREST

Declared None

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