ASSESSMENT OF MEDICATION KNOWLEDGE, MEDICATION ADHERENCE AND HEALTH RELATED QUALITY OF LIFE (HRQoL) AMONG OUT PATIENTS IN TERTIARY CARE CARDIAC HOSPITAL

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ABSTRACT:

Background: Cardiovascular disease (CVD) is the leading cause of mortality in India. Adherence to medication has been shown to reduce mortality and rate of hospital readmissions. Medication adherence as well as patient's medication knowledge is also an important factor in validation and management of chronic illness. HRQoL indicates patient's perceptions of their general, physical, mental health status and describes health burden in a population. Hence the aim of this was to assess the level of medication adherence, barrier to medication compliance, association between knowledge about medication and medication adherence and health related quality of life among CVD patients.

Methods: A prospective observational study was conducted for a period3 months. Interview questionnaires for socio-demographic and clinical characteristics as well as the HRQoL, medication adherence, medication knowledge were used to collect data from 211 patients from the cardiovascular unit of Frontier Lifeline Hospital.

Result: Of the study population 59% were male and had a mean age of 58 years. The majority of participants (53%) were taking more than five medications. 34% of the study population had low adherence towards medication intake. The physical component of HRQOoL revealed that 28% of the participants had low scores in physical functioning, bodily pain and general health domains.

Conclusion: Medication adherence may be a surrogate marker of Health Related Quality of Life among patients and hence health care providers should identify patients with poor medication adherence and monitor their medication use.

Keywords: Medication Adherence, HRQoL , Medication Knowledge , Cardiovascular Patients.

INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of mortality in India. In CVD deaths, the most predominant causes (> 80 %) are stroke and ischemic heart disease [1]. Medication adherence has been defined as active, voluntary, and collaborative involvement of patient in a mutually acceptable course of behaviour to produce a therapeutic effect [2]. Adherence to medication has been shown to reduce mortality and rate of hospital readmissions [3]. Knowledge about prescribed medication is one important area of study in the field of health literacy. Studies have shown that poor health literacy is a barrier limiting patient's knowledge on prescribed medications. Inadequate knowledge on prescribed medication among the patients is also known to be associated with poor compliance [4]. Medication adherence as well as patient's medication knowledge is also an important factor in validation and management

of chronic illness. Assessing medication knowledge and medication adherence is also interlinked with the patient's quality of life. It is important to assess the health related quality life in cardiac patients. Although CVD events like heart failure, heart attack and stroke are the typical measures of illness examined in studies linking cardiovascular health metrics and health outcomes, health related quality of life (HRQoL) is also an important measure of cardiovascular illness [5-7]. HRQoL indicates patient's perceptions of their general, physical, mental health status and describes health burden in a population [8]. The structured assessment of HRQOL is considered important and it puts the patient's perspective at the forefront and helps to facilitate shared decision-making and ensure that the preferences of the patient are used to guide management [9]. In this study, the researcher identified the level of medication adherence, barrier to medication

compliance, association between knowledge about medication and medication adherence and health related quality of life among CVD patients.

MATERIALS AND METHODS:

2.1 Design and sample:

A prospective observational study was conducted for a period3 months. Interview questionnaires for socio-demographic and clinical characteristics as well as the HRQoL, medication adherence, medication knowledge were used to collect data from 211 patients from the cardiovascular unit of Frontier Lifeline Hospital. A non-probability convenience sampling technique was used to select subjects from the daily list of outpatient's visits during the study period. A trained Clinical Pharmacist collected the necessary data through face-to-face interview/ self report /patient case file.

Inclusion & exclusion criteria

Inclusion Criteria:

- Patients of either gender.
- Patients with cardiovascular disease and co-morbidities.
- Patients who are on medication for duration of three months or more.
- Patients who are willing to give consent and spend 15-30mints.

Exclusion Criteria:

- Patient recently started drug treatment.
- Pregnant patients.
- Patients who are not willing to participate in the study.
- Patients whose therapy was suspended or modified during monitoring period.
- Patient with disabilities or cognitive impairment.
- Patients with a serious psychiatric disorders or active substance abuse.

2.2 study tools

2.2.1. Demographics and clinical characteristics

Participants were asked general questions on the survey such as gender, age, marital status, education, occupation, functional status, and monthly income. The investigator also enquired health-related questions such as concomitant disease, experience of drug-related side effects and number of prescribed drugs.

2.2.2. Health Related Quality of Life:

The HRQoL was measured by using SF (Short Form) - 12 questionnaires. It contains 12 items in 8 domains which are the subset of SF-36. It includes physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality (energy/fatigue), social functioning, role limitations due to emotional problems and mental health (psychological distress and psychological well being)[10]. The HRQoL was classified as high level (scores >60) , normal level (scores 40-60)and low level (scores <40).[11]

2.2.3. Medication adherence:

The medication adherence was measured by using Adherence to Refills and Medications Scale (ARMS). ARMS developed by Kripalani et al. The scale has been validated against the Morisky adherence scale, as well as refill adherence. In addition, the ARMS were able to accurately measure adherence even among low-literacy patients [12]. The questionnaire consists of 14 questions, which are divided into two categories: adherence to intake of prescribed medicines (eight items) and adherence with refilling of prescriptions (four items). Each item uses a four-point Likert response scale (1= none of the time, 4= all the time). Possible scores range from 12 to 48 with a lower score indicating greater adherence [13].

2.2.4. Medication knowledge:

Medication knowledge has been assessed with the help of specially designed medication knowledge assessment questionnaire. Questionnaires comprising of 10 questions, was used to assess the knowledge of patients about their medications, its indication, dose and side effects etc. Each response was scored as 'yes' or 'no' [14].

2.3 Ethical Consideration

This study was approved by Institutional Ethics Committee. Written informed consent was obtained from all the study participants, and confidentiality was ensured.

2.4 Statistical analysis:

Data were analyzed using SPSS version 23.0. Descriptive statistics for each variable were calculated as percentage, mean ±standard deviation and range. To evaluate the correlation among the medication adherence and medication knowledge, medication adherence and quality of life, Pearson correlation coefficient was used.

3. RESULT

General characteristics of participants

The participant's characteristics are shown in table 1. A total of 242 patients were approached, and among those 211 consented and were given the questionnaire (88%). Of the study population 59% were male and had a mean age of 58 years .Approximately 58% had completed primary / middle / high school. 81% of the

participants had multiple (two or more) diseases. The majority of participants (53%) were taking more than five medications table 1.

Table 1: Participants characteristics (n=211)173 subjects had multiple (two or more) diseases

Variables	n	%
Gender		
Male	126	59
Female	85	41
Age in years		
Mean		±SD
58±10		
Family status		
Living alone	8	4
With spouse	37	18
With family	166	78
Functional status		
No impairment	194	91
Impairment of vision	5	3
Hearing impairment	12	6
Education		
Primary /mid/high school	122	58
Intermediate / diploma	83	39
Graduate / professional honors	6	3
Monthly Family income		
5000-20000	19	9
>20000	192	91
Disease conditions		
Systemic Hypertension	201	95
Diabetes Mellitus	105	49
Dyslipidemia	40	18
Coronary Artery Disease	81	38
Chronic Obstructive Pulmonary Disease	2	1
Single Vessel Disease	14	6
Congestive Heart Failure	8	3
Hypothyroidism	22	10
Angina	13	6
Chronic Kidney Disease	4	2
Acute Pulmonary Edema	2	1
Rheumatic Heart Disease	6	3
Congestive Heart Failure	2	1
Congenital Heart Disease	18	9
Number of prescription drugs currently taking		
1-5	99	47
6-10	104	49
11-15	8	4

Medication adherence

34% of the study population had low adherence towards medication intake. (ARMS ≥20) table 2. The mean ARMS score among the participants was 19 with a standard deviation of ±3.7. The major reasons reported for non adherence polypharmacy and negligence that contributed to 16%. Forgetfulness was noted in 7% of the non-adherent patient. Complexity of regimen was

also a factor that affects 3% of medication adherence. Various reasons for non adherence are summarized in table 2. 56% of the study participants experienced side effects due to various medications. Constipation was the most common side effect experienced by the participants, accounting for 8%.Dizziness and palpitation were experienced by 6% and 5% of the study participants respectively. Other side effects experienced are presented in table 2.

Table 2: Participants response on medication adherence, reason for low adherence and side effects experienced

Variables	n	%
ARMS score Mean±SD=19.75±3.7		
<20	140	66
≥20	71	34
Reason for low adherence		
Forgetfulness	15	7
Polypharmacy	18	8
Complexity of regime	7	3
Negligence	17	8
Non availability of medication	4	1
Dependency on care taker	3	1
Financial constraints	3	1
Side effects	4	1
Side effects experienced		
CONSTIPATION	21	8
DIARRHOEA	3	1
DIZZINESS	12	6
DRY MOUTH	6	2
MOUTH ULCER	6	3
CHEST PAIN	2	1
COUGH	2	1
DISTURBANCE IN SLEEP	8	4
FLATULENCE	2	1
GASTRITIS	2	1
HEADACHE	10	5
IMPOTENCE	2	1
MUSCLE SPASM	3	1
NEURASTHENIA	2	1
NOCTURIA	2	1
PALPITATION	10	5
STOMACH PAIN	3	1
WEIGHT LOSS	2	1
NIL	113	54

Medication knowledge

The mean total score (out of 10) for the drug knowledge section questionnaire was 4.4±1.7. 32% of the participants had poor knowledge regarding the prescribed medication (table 3).

Table 3: Participants medication knowledge score

Variables	n	%
≤5	68	32
>5	143	68

Health Related Quality Of Life

Descriptive statistics of HRQoL is shown in table 4**.** The physical component of HRQOoL revealed that 28% of the participants had low scores in physical functioning, bodily pain and general health domains. The mean physical component score was 45.94 ±10.65. The mental component of HRQOL revealed that only 13% of the participants had low scores in vitality, social functioning, emotional role and mental health. The mean mental component score was 48.42 ±11.65.

Table 4: Participants response on Health Related Quality Of Life (HRQoL). PCS – Physical Component Scale, MCS – Mental Component Scale

HRQoL	PCS		MCS	
Variables	n	%	n	%
High level	6	3	61	29
Normal level	145	69	122	58
Low level	70	28	28	13

Correlation between Medication Adherence and Medication Knowledge, Medication Adherence and Health Related Quality Of Life

Table 5 presents the correlation between the medication adherence and medication knowledge, medication adherence and HRQoL. Medication knowledge was positively correlated with medication adherence (r=0.054, p=0.023), physical component scale was positively

Table 5: Correlation between medication adherence and medication knowledge, medication adherence and HRQoL

Variable	Medication adherence	
	r	(p-value)
Medication knowledge	0.054	0.023
HRQoL: Physical component scale	0.16	0.014
HRQoL: mental component scale	0.09	0.16

Correlated with medication adherence (r=0.16, p=0.014). However mental component scale did correlate with medication adherence (r=0.09, p=0.16).

DISCUSSION

During the study period, a total of 242 patients were screened among whom 211 patients agreed to participate in the study. To our knowledge, this is the first study conducted in Chennai documenting this issue among outpatients with cardiovascular disease.

The current study determined not only the association between medication literacy and medication adherence but also the extent of medication adherence among cardiovascular patients. Medication literacy is the crucial indicator of safe medication use as stated by Pouliot et al, Shaunajio Shi et al [15, 16]. In the current study, 66% of cardiovascular patients had high level of medication adherence as well as medication knowledge. In the current study, medication literacy was positively correlated with medication adherence (r=0.054, P = 0.023). Hence improving medication literacy would aid in patient's ability to use appropriate and safe medications. 34% of the participants had a low medication adherence and 32 % of the participants had a low level of medication knowledge. Adequate knowledge combined with correct and positive attitude towards the disease is the most fundamental premise for patients to adhere to medication therapy. Factors such as the forgetfulness, polypharmacy , complexity of regime and financial constraints were found to affect the medication adherence in the present study , which is comparable to the study conducted by JS Thakur et al [17].

Other studies also reveal similar factors affecting medication adherence of patients [18-21].

In our current study, impaired HRQoL was related to decrease in medication adherence. Though 28% of the study participants had a lower physical component score, if had limited influence on the mental health. We assessed the impact of medication adherence on impaired HRQoL using Pearson correlation coefficient. Physical component scale had a positive correlation with medication adherence whereas patients with low adherence tend to have poorer quality of life [22]. This association was previously proved by Hanus et al., wherein subjects with high medication had higher quality of life scores compared to those with lower adherence [23].

Limitations

Limitations of the present study includes smaller sample size and limited geographic representation, therefore our result may not be representative. Further studies including more geographic representation and increased sample size should be carried out to have a holistic view in regards to this study. However, this study is an important advancement in knowledge as very few studies are available pertaining to this topic from India, highlighting the medication adherence, barrier in medication adherence, medication literacy and health related quality of life.

Conclusion

As medication literacy and medication adherence are low in cardiovascular patients, it is recommended that sustained health promotion and education to be undertaken at level of patient contact to improve

compliance. In our study, patients with low medication adherence had a poor HRQoL more so in physical domain. Medication adherence may be a surrogate marker of Health Related Quality of Life among patients and hence health care providers should identify patients with poor medication adherence and monitor their medication use.

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