STUDY ON THE EFFECT OF POLYPHARMACY ON THE QUALITY OF LIFE IN CARDIOVASCULAR PATIENTS

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ABSTRACT

AIM AND OBJECTIVES:

To assess the effect of polypharmacy on quality of life in cardiovascular patients by using WHOQOL- BRE questionnaire and scoring respectively. To identify patients who are at the greater risk for the effects of polypharmacy. To describe positive and negative outcomes of polypharmacy among cardiovascular patients. To assess quality of life of patients.

MATERIALS AND METHODS

A Prospective Observational study was conducted from November 2020 to April 2021. A sample size of 500 patients (of both the genders) was taken. Patients who met the inclusion criteria were enrolled. All the necessary and relevant data were collected from the patient case notes, treatment charts, and laboratory reports. The questionnaires were filled by directly interviewing the patient and patient representatives if the patients are not conscious. These data were recorded in a patient proforma/questionnaire and data was categorized using WHO-QOL BREF scale.

STATISTICAL CONSIDERATION:

All the raw data was collected and entered in excel sheet 2010 in windows 10 version and the mean value was calculated.

RESULTS:

Around 58.6% of patients, fell under the category of 6-7 medications per day (which is highest in the present study), that included the patient into polypharmacy category. Patients taking 6-7 medications fell under moderate to good QOL scoring, patients taking ≥8 fell under poor to moderate QOL scoring. In excellent QOL score, females (9.1%) dominated males (5.5%), in good quality of life males (31.4%) dominated females (28.8%), In moderate males dominated females, in poor quality of life males and females were almost equal. Among the study sample 14% fell under poor QOL scoring, 48.4% of sample size fell under moderate quality of life, 30% of sample size showed good quality of life, 7.6% fell under excellent quality of life.

CONCLUSION:

Patients with multimorbid conditions like CHF with DM, IHD, Angina showed moderate to poor QOL and patients with no comorbidities showed moderate to good quality of life, but though it is polypharmacy, these medications are essential and needed for their well-being though their quality of life is being affected. From this, we can conclude that though polypharmacy has its disadvantages regarding the quality of life of cardiovascular patients but it is essential for life sustenance. QOL can be made not severely affected by proper life style, dietary changes and patient counseling regarding medication use and Drug interactions.

KEY WORDS:

Polypharmacy, Cardiovascular, Quality of life, Hypertension, WHOQOL-BRE Questionnaire,Coronary artery disease, Congestive heart failure, Ischemic heart disease, Thyroid, Diabetes.

INTRODUCTION

Polypharmacy, is defined by the World Health Organisation as “the administration of many drugs at the same time (Mortazavi, 2016 march) (Karine Gonçalves PereiraI, 2017). These medications may include OTC medications or some other herbal/dietary items (Yanez, 2021). As this is common in elderly patients to treat the chronic concomitant conditions they might have like Hypertension, Diabetes, Gastroesophageal related issues, and cardiovascular disease (Ngaruiya, 2022).

The use of many medications for their health issues may improve the condition of the patient at the same time they may also cause adverse effects, which can be associated with increased mortality and morbidity,thus affecting their Quality of life (Zabihi, 2019). The factors, which contribute to Polypharmacy include the occurrence of multiple chronic diseases, Comorbid conditions, Concomitant use of different medications without proper knowledge, multiple hospitalizations, and multiple prescribers for a single patient, self-medication is also one of the main causes of polypharmacy, and many OTC drugs are available, whose irrational use may also lead to polypharmacy (Schenker Y, 2019). Assessing the quality of life of the cardiovascular patients was done by using the WHOQOL-BRE questionnaire and the scoring was given according to the WHOQOL (V, 2001). The comorbid conditions which we considered are Hypertension, Angina, Unstable Angina, Coronary Artery Disease (CAD), Congestive Heart Failure (CHF), Myocardial Infarction (MI), ischemic heart disease (IHD), Diabetes, andHypothyroidism (McGrory S, 2013).

Hypertension, also known as increased blood pressure, is a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the body through the blood vessels. Each time heart beats, it pumps blood into the systemic vessels (WHO.int.2020, 2020). Blood pressure is created by the flow of the blood, pushing it against the walls of the arteries. The higher the pressure, the tougher the heart has to pump to circulate the blood (when to suspect hypertension, 2020).

Angina pectoris/ Angina is chest pain or discomfort in the thoracic ca. It happens when a part of your heart doesn't get an adequate blood supply carrying oxygen (Kalvelage, 2020). This occurs when arteries that carry blood to your heart become narrowed and clogged because of atherosclerosis or a clot formation on the walls of arteries (Pakhomov, 2007).

Heart failure is a complex clinical syndrome in which the heart cannot pump enough blood to meet therequirements of the body (Cleland, 2020). It may occur from any disorder that impairs the filling of ventricles or ejection of blood to the systemic circulation (Hu, 2020).

Ischemic heart disease is primarily caused by atherosclerotic plaque formation in the coronary arteries that leads to an imbalance between the required level and supplied level resulting in myocardial ischemia(Severino, 2020). IHD may present as an acute coronary syndrome (ACS includes unstable angina, NSTEMI, STEMI (Bellis, 2021).

Myocardial Infarction is a condition that is caused by reduced blood flow in a coronary artery due to occlusion of an artery by an embolus or thrombus (.Lindsey, 2018). MI is defined by the demonstration ofmyocardial cell death due to ischemia (Jenca, 2020).

Coronary artery disease is a condition characterized by atherosclerotic plaque accumulation in the epicardial arteries, either obstructive or non-obstructive (Eskerud, 2021). This process can be modified by lifestyle modifications, pharmacological therapies, and dietary changes to achieve disease stabilization (Kumar, 2021).

MATERIALS AND METHODS

This is a prospective observational study conducted at Sri Krishna Institute Of Medical Sciences, Guntur. This study is carried out for a period of six months from November 2020 to April 2021.The study included the sample size based on these **inclusion criteria**. Patients with age above 45 years of both the genders, with comorbid and non-comorbid conditions, with multiple drug therapy (i.e., more than 5), receiving any OTC medications or herbal drugs. The **exclusion criteria** include, patients with age below 45 years, who receive less than 5 medications.

SOURCE OF THE DATA

All the relevant and necessary data will be collected from treatment charts and lab reports, interviewing the patient and patient caretaker, collecting data from physician and nursing staff.

RESULTS AND ANALYSIS GENDER DIFFERNTIATION

GENDER	NUMBER OF PATIENTS	PERCENTAGE
MALE	216	43.2%
FEMALE	284	56.8%
TOTAL	500	100%

DISTRIBUTION OF PATIENTS BASED ON AGE

AGE GROUP	NUMBER OF PATIENTS	PERCENTAGE
45-55	98	19.6%
56-65	142	28.4%
66-75	150	30%
>75	110	22%

Majority of the patients were under age group of 56-75

DISTRIBUTION OF PATIENTS BASED ON NUMBER OF MEDICATIONS INTAKE PER DAY (based on gender)

DRUGS PER DAY	MALES	FEMALES	QOL CATEGORY	Percentage
6	75	54	Good - Excellent	25.8%
7	74	90	Good	32.8%
8	30	44	Good	14.8%
9	20	49	Moderate	13.8%
10	15	37	Moderate - Poor	10.4%
11	2	10	Poor	2.4%

Number of Medications per day showed major influence on quality of life of patient by producing various ADR'S, Drug interactions, Contra indications. Patients taking more than 8 medications were with comorbid conditions like IHD with DM, CHF with DM, CAD with DM, CAD with Thyroid patients with non-comorbid conditions showed good to excellent quality of life, patients with chronic comorbidities showed moderate to poor quality of life.

DISTRIBUTION OF PATIENTS BASED ON DISEASES

DISEASE	NUMBER OF PATIENTS	PERCENTAGE	QOL CATEGORY
HYPERTENSION	39	8%	EXCELLENT
HYPERTENSION WITH DM	51	10%	GOOD to EXCELLENT
HTN WITH THYROID	34	7%	GOOD to EXCELLENT
CAD	56	11%	GOOD
CAD WITH DM	88	18%	MODERATE to GOOD
CAD WITH THYROID	67	13%	MODERATE to GOOD

UNSTABLE ANGINA	20	4%	MODERATE
CHF WITH DM	65	13%	POOR to MODERATE
IHD WITH DM	55	11%	POOR to MODERATE
MI	25	5%	MODERATE

DISTRIBUTION OF PATIENTS BASED ON THE SUPPORT FROM THEIR FAMILY ANDFRIENDS

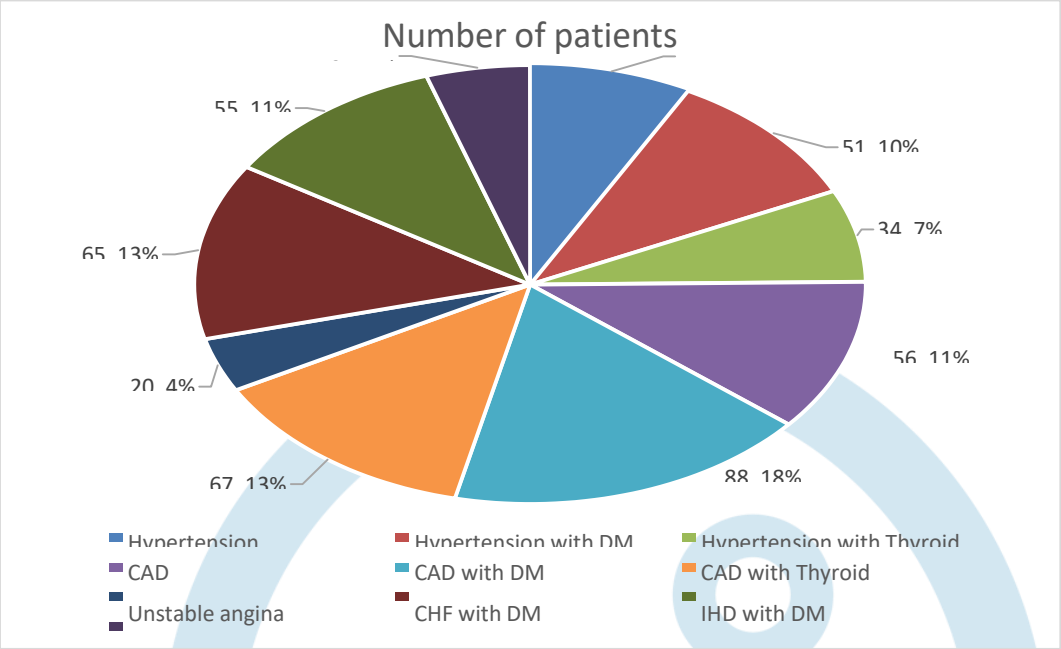
CATEGORY	**MALES**	**FEMALES**	**PERCENTAGE**
YES	214	269	96.6%
NO	2	16	3.6%

DISTRIBUTION OF PATIENTS BASED ON ABILITY TO MEET FINANCIAL NEEDS

CATEGORY	**MALES**	**FEMALES**	**PERCENTAGE**
YES	200	210	82%
NO	16	74	18%

Their financial status was not supportive to meet the medical expenses for their conditions putting theminto moderate to poor quality of life showing a score of between 35- 65

DISTRIBUTION OF PATIENTS BASED ON THE SUPPORT FROM THEIR FAMILY ANDFRIENDS



These patients who have no support from family and friends was because of their financialstatus. These patients are leading moderate to poor quality of life and are with comorbid conditions.

DISTRIBUTION OF PATIENTS BASED ON ADHERENCE TO HEALTH CHECKUP

FREQUENCY OF HEALTH CHECKUP	NUMBER OF PATIENTS	PERCENTAGE	QOL Category
DAILY	0	0	
EEKLY	0	0	
MONTHLY	120	24%	Good to excellent
HALF YEARLY	350	70%	Good
NEVER	30	6%	Poor

Patients who were not adherent to health checkup was because of their unsupportive financialstatus and social support from family

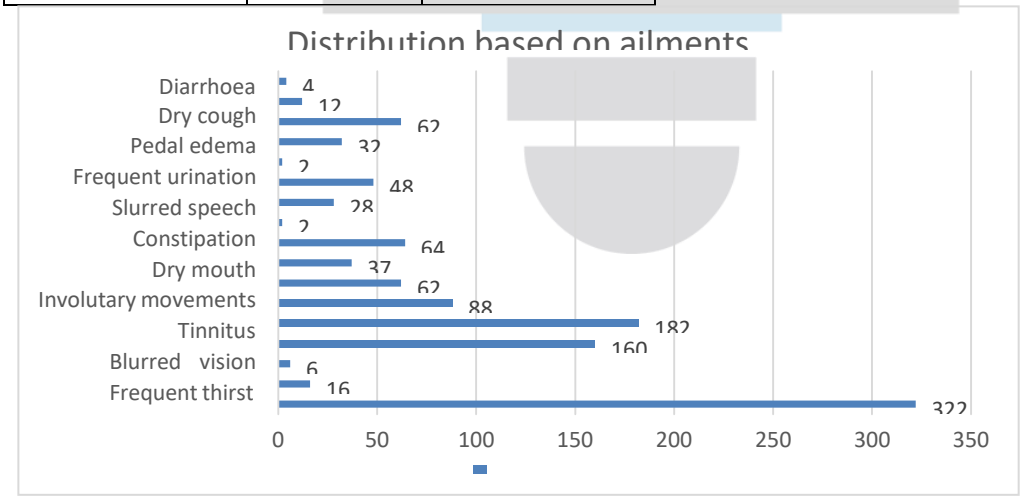
DISTRIBUTION BASED ON NEGATIVE FEELINGS AMONG MALES ANDFEMALES

GENDER	NUMBER OF PATIENTS	QOL CATEGORY
MALES	16	POOR
FEMALES	84	MODERATE, POOR

Among males these negative feelings were with comorbid patients, smokers; Among females these negative feelings were among both non-chronic and chronic patients.

DISTRIBUTION OF PATIENTS BASED ON AILMENTS

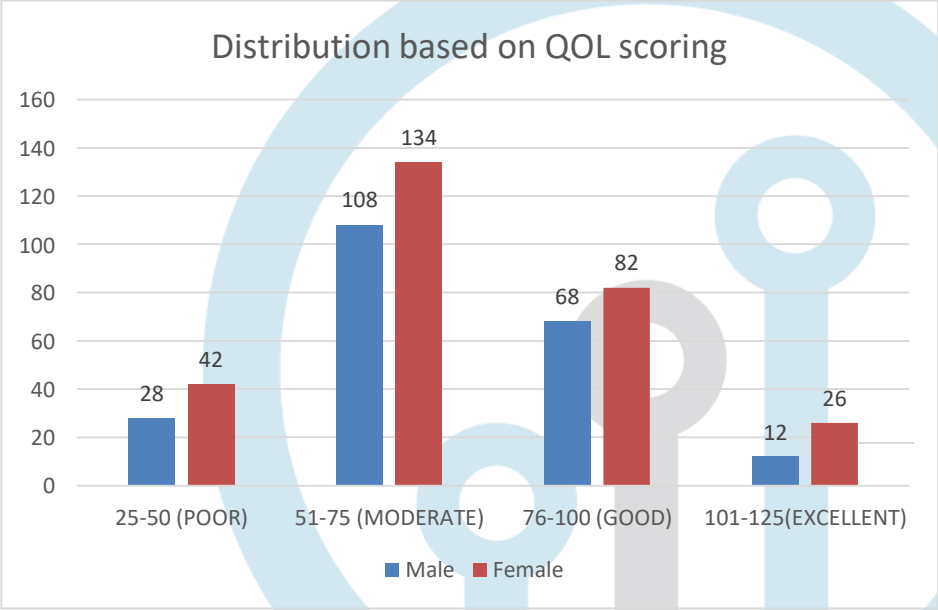
AILMENTS	PATIENTS	PERCENTAGE
DIARRHOEA	4	0.8%
DRY COUGH	12	2.4%
EDEMA	62	12.4%
FREQUENT URINATION	32	6.4%
SLURED SPEECH	2	0.4%
CONSTIPATION	48	9.6%
DRY MOUTH	28	5.6%
INVOLUNTARY MOVEMENTS	2	0.4%
TINNITUS	64	12.8%
BLURRED VISION	37	7.4%
FREQUENT THIRST	62	12.4%
TIREDNESS	88	17.6%
PALPITATIONS	182	36.4%
SOB	160	32%
HEADACHE	6	1.2%
LEG CRAMPS	16	3.2%
DIZZINESS	322	64.4%



DISTRIBUTION OF PATIENTS BASED ON QOL SCORING

CATEGORY	NUMBER OF PATIENTS	PERCENTAGE
POOR	70	14%
MODERATE	242	48.4%
GOOD	150	30%
EXCELLENT	38	7.6%

Majority of the patients fell under moderate to good quality of life by evaluating using WHOQOL- BREF questionnaire which includes financial, mental, physical quality of life of thepatients.



QOL MEAN VALUES OF BOTH THE GENDERS

QUALITY OF LIFE CATEGORY	MEAN (MALE)	MEAN(FEMALE)	AVERAGE
POOR [25-50]	34.42	37.28	35.85
MODERATE [51-75]	65.23	68.59	66.91
GOOD [76-100]	88.10	89.64	88.87
EXCELLENT [101-125]	105.16	108.88	107.02

On an average the poor QOL value is 35.85, Moderate QOL value is 66.91, Good QOL value is 88.87,Excellent QOLvalue is 107.02

DISCUSSION

- The present study was aimed at assessing the effect of polypharmacy on Quality of life in cardiovascular patients with comorbid and non- comorbid conditions like, Hypertension, Hypertension with diabetes, Hypertension with thyroid, coronary artery disease (CAD), CADwith DM, CAD with Thyroid, Unstable angina, CHF with DM, IHD with DM, Myocardial infarction.
- A sample size of 500 patients, were selected based on inclusion and exclusion criteria, and amongthese patients it was found that most of the patients were between the age of 56-75 years. Around 500 patients of the whole study population, males were 216 and females were 284. Patients were categorized based on their social habits, like alcohol, smoking, chewing tobacco etc. and among males' alcohol consumption along with smoking was more prevalent and among females' tobacco chewing was prevalent. In the present study, there is a scope of patient counselling, and we counselled the patients about their social habits, for the better prognosis of the disease and efficacious treatment as well as in improving theWe found that the Patients, with the multiple morbid conditions (HTN, DM, CAD, CHF, IHD) were more prevalent in this study. They were counselled, about their condition and

the medication for the betterment of the treatment, and quality of life. In this study, patients with 2 or more conditions are more prevalent. Patients with the multimorbidity conditions, are at higher risk when compared to non -comorbid patients and the study shows that they are having poor quality of life than latter.

- Patients taking 6-7 medications fell under moderate to good QOL scoring, patients taking ≥8 fell under poor to moderate QOL scoring. According to WHOQOL – BREF scale, if the score is between 25 – 50 then the patients fall under poor quality of life, score between 51 -75 means moderate quality of life, score between 76 – 100 means good QOL, if scoring is between 101 - 125 indicating excellent QOL. In excellent QOL score, females (9.1%) dominated males (5.5%), in good quality of life males (31.4%) dominated females (28.8%), in moderate males dominated females, in poor quality of life males and females were almost equal. Among the study sample 14% fell under poor QOL scoring, 48.4% of sample size fell under moderate quality of life, 30% of sample size showed good quality of life, 7.6% fell under excellent quality of life.

- Around 58.6% of patients, fall under the category of 6-7 medications per day (which is highest in the present study), that includes the patient into polypharmacy category, and it may lead to prolonged hospitalization of the patient and decrease in quality of life. Low moral support for elderly patients was observed, which eventually led to decreased mental health, ultimately effecting their quality of life. As they are deprived of moral support and lack of care from their family, most of them were depressed and had negative feelings, which led to insomnia in them which resulted in poor quality of life. Some of the patients were having poor eyesight and most of them are diabetic patients.

- Patients with single condition were also taking more than 5 medications, which include them in the polypharmacy, and due to this polypharmacy patients are developing other conditions. Ex: A calcium channel blocker prescribed to a hypertensive patient, resulted in lower extremity edema, and a diuretic was prescribed to treat edema which led to urinary incontinence, and an anticholinergic was prescribed to treat urinary incontinence, which resulted in dry mouth, for which salivary stimulant was given to the patient. Some of the patients were unable to do their daily activities, and instrumental activities (Taking medication, managing finances) by themselves, they require assistance but some of them are able to do their daily activities.

CONCLUSION

- In the study, we have observed that the patients with comorbid conditions are having comparatively less quality of life than non-comorbid patients. We have concluded that the patients with the comorbid conditions are at higher risk, for the effects of polypharmacy. The positive outcomes of polypharmacy are, patients who are in life threatening conditions might need multiple medications, to increase their life span, despite of the adverse effects of the medications and prolonged hospitalization. Overall effect of polypharmacy would be extending the life of patient with reduced living quality. The negative outcomes of polypharmacy are, it can cause the medication related adverse effects, drug interactions in elderly patients, they are observed mainly due to functional impairment of the organs in elderly patients, polypharmacy can also develop new conditions in the patient, who have single or more conditions, this provides a way to suppress the quality of life of the patient, and this is the major risk of polypharmacy in elderly.
- Patients with multimorbidity were experiencing the poor to moderate quality of life due to less improvement. Most of the patients of study fell under the category of moderate to good quality of life. From this, we can conclude that though polypharmacy has its disadvantages, regarding the quality of life of elderly people, but it is evident that quality of life in elderly can be improved, through proper diagnosis, proper prescribing patterns, monitoring of treatment charts and patient counseling.

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