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A Prospective Observational Study on Management Patterns of Various Cardiovascular Diseases

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Abstract

Introduction: The cardiovascular system is formed from the gut and blood vessels. Cardiovascular disease (CVD) is defined as any serious, abnormality of the guts or blood vessels (arteries, veins). The various types of cardiovascular diseases include Coronary heart disease, High blood pressure (Hypertension), Cardiac arrest, Heart failure, Arrhythmia, Stroke, Congenital heart disease, Myocardial infarction, Angina pectoris, Cardiomyopathy. **Methodology:** A prospective observational study was conducted for a period of 6 Months, in a tertiary care teaching hospital. **Results and Discussion:** A total of 50 CVD patients considered, 28% were Female patients and 72% were male patients. The maximum were 40-50 years of Age group people getting effected by CVD's and 11patient received combination therapy among 50 patients it was observed all the patients received good response and improved with pharmacotherapy and none had undergone surgical therapy. **Conclusion:** We concluded from this study, that the patients who undergone for combination therapy are responding well for the treatment when compared with the patients who went for the mono therapy and beta blockers and angiotensin 2 receptors nitrates are the most commonly prescribed drugs that means these drugs are giving good results in the treatment and treatment should start with first line drugs and males are more affected when compared with females.

Keywords
Cardiovascular diseases; Beta blockers; Angiotensin 2 receptors; Nitrates.

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1. INTRODUCTION:

The cardiovascular system is formed from the gut and blood vessels. Cardiovascular disease (CVD) is defined as any serious, abnormality of the guts or blood vessels (arteries, veins). The various types of cardiovascular diseases include Coronary heart disease, High blood pressure (Hypertension), Cardiac arrest, Heart failure, Arrhythmia, Stroke, Congenital heart disease, Myocardial infarction, Angina pectoris, Cardiomyopathy.

Hypertension or High blood pressure often has no signs and symptoms, if untreated can lead to heart diseases and stroke. A Blood pressure is measured by Sphygmomanometer. The hypertension can be managed by the usage of medications such as beta blockers, ACE inhibitors.

Myocardial Infarction mentioned as a attack, is most frequently caused by a decrease or stoppage of blood flow to some of the guts, resulting in necrosis of cardiac muscle. This is generally the result of a blood clot in the epicardial artery of heart muscle. Chest pain or discomfort which may travel to shoulder, arm, neck, jaw, nausea, indigestion, heartburn, cold sweat, fatigue, sudden dizziness are the signs and symptoms of myocardial infarction. The diagnostic methods for myocardial infarction include chest x-ray, echo-cardiogram, angiogram and cardiac CT-scan. It can be managed by the usage of medications such as blood thinners, thrombolytics, anticoagulants and anti-platelet drugs. Hypertension, smoking, diabetes, regular alcohol consumption, dietary risk, abdominal obesity and stress are the major risk factors for myocardial infarction (1).

Congestive Cardiac Failure is also termed as heart failure. The inability of the heart to pump enough blood to the peripheral tissues to meet metabolic demands is referred as congestive heart failure. The signs and symptoms of heart failure include dyspnea, persistent coughing or wheezing, edema, fatigue, loss of appetite, nausea, confusion, impaired thinking and increased heart rate. Thus, from a functional view of point, the heart failure can be defined as not only decrease as peripheral blood flow to meet metabolic demands but also increase in atrial pressure leading to signs and symptoms of heart failure (2). The heart failure can be examined by various parameters such as physical examination to determine the presence of clinical symptoms and signs, blood tests, including complete blood count, urinalysis, complete metabolic profile for levels of serum electrolytes (including calcium and magnesium), blood urea nitrogen, serum creatinine, glucose, fasting lipid profile, liver function tests and thyrotropin. Other specific laboratory tests for heart failure include brain natriuretic peptide (BNP) and N-terminal proBNP (NT-proBNP). The management of heart failure focuses on obtaining certain goals such as (a) to improve prognosis and reduce mortality and (b) to alleviate symptoms and reduce morbidity by reversing or slowing the cardiac and peripheral dysfunction. Congestive Cardiac Failure can be managed by medications such as diuretics, angiotensin converting enzyme (ACE) inhibitors, beta adrenergic blockers, aldosterone antagonists and anticoagulants (3). Coronary disease, hypertension, diabetes, obesity and smoking contribute to major risk factors of the heart failure (4).

Angina Pectoris can be defined as chest discomfort that is precipitated by physical and emotional stress. This can be relieved by rest and nitroglycerine; hence it can be termed as typical angina. It can be observed without ischemia due to oesophageal disease, gastric disease, bronchopulmonary disease. Angina can be classified as unstable angina and stable angina, if the angina is associated with acute coronary syndrome, then it is unstable angina, if with chronic then it is chronic stable angina. Chest pain or discomfort, pain in arms, neck, jaw, shoulder and back are the major signs and symptoms of angina pectoris. Other symptoms for angina are dizziness, fatigue, nausea, shortness of breath and sweating (5). Angina is a symptom of coronary artery disease which is the most common heart disease. The diagnosis of angina includes echo-cardiogram, chest x-ray, chest CT scan, coronary CT angiography, cardiac MRI, electrocardiography. The general care and management for angina mainly focuses on increasing the coronary blood flow through vascular smooth muscle relaxation. The management for angina pectoris involves the usage of medications such as beta-adrenergic blockers, calcium channel blockers and nitrates (6). The risk factors for angina include history of premature coronary artery disease, smoking, diabetes mellitus, hypercholesterolemia or systemic hypertension (7).

Cardiomyopathy is a disease condition can be defined as abnormal structure or function of the heart muscle. Cardiomyopathy can be classified as dilated cardiomyopathy, hypertrophic cardiomyopathy (HCM), arrhythmogenic right ventricular cardiomyopathy, left ventricular non compaction and restrictive cardiomyopathy (8). The symptoms include shortness of breath, fatigue, dizziness, lightheadedness, swelling in the ankles, feet, abdomen, veins in the neck, fainting during physical exercise, chest pain and heart murmurs. The examination of cardiomyopathy can be performed by electrocardiography, Endo cardiography, exercise testing, viral serology and endomyocardial biopsy. The treatment pattern for cardiomyopathy involves the medications such as diuretics, angiotensin converting enzyme inhibitors, angiotensin II receptor antagonist, beta blockers, natriuretic peptides, cytokine antagonist, anticoagulants (9). Heart failure, heart attack, obesity, diabetes, long term alcoholism, long term hypertension are the major risk factors for cardiomyopathy.

Cardiovascular diseases (CVDs) are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Over three quarters of CVD deaths take place in low- and middle-income countries.

Although there have been recent improvements in congestive heart failure treatment, researchers say the prognosis for people with the disease is still bleak, with about 50% having an average life expectancy of less than five years. For those with advanced forms of heart failure, nearly 90% die within one year.

Major risk factors that can't be changed Increasing Age. The majority of people who die of coronary heart disease are 65 or older, Male gender, Heredity (including race), Tobacco smoking, High blood cholesterol, High blood pressure, Physical inactivity, Obesity and being overweight when coming to the treatment for heart diseases, Doctors usually treat heart failure with a combination of medications. Depending on your symptoms, you might take one or more medications, including: Angiotensin-converting enzyme (ACE) inhibitors. Heart failure patients may need multiple medications. Each one treats a different symptom or contributing factor and comes with its own instructions and rules.

Modern heart drug therapy includes the following "big six" medications: Statins, Aspirin, Clopidogrel, Warfarin, Beta-blockers, Angiotensin-converting enzyme.

1.1 Objectives

- To analyse the management patterns in cardiovascular diseases.
- To identify most commonly prescribed medications.
- To estimate the percentage of patients undergoing surgical procedures.

2. METHODOLOGY:

Study Type: Prospective Observational Study. **Study site**: Inpatient department of cardiology and general medicine, Gandhi Hospital.

Study duration: December 2020- May 2021.

Type of Cardiovascular diseases: Hypertension, Myocardial infarction, Congestive Heart Failure, Angina Pectoris, Cardiomyopathy.

Study approval: Study protocol was submitted to Institutional Ethical Committee, CMR College of Pharmacy, Hyderabad and got approved.

2.1 Inclusion Criteria

Patients admitted into cardiology and general medicine department and diagnosed with cardiovascular diseases.

Adult patients with cardiac diseases.

2.2 Exclusion Criteria

Patients who have absconded.

Children (below 12 yrs) and pregnant woman.

3. RESULTS:

TheTotalnumbersofcasescollectedare50.N=50

Table-1: Gender based distribution of Cardiovacular diseases.

GENDER	NO. OF PATIENTS	PERCENTAGE
Male	36	72%
Female	14	28%
Total	50	100%

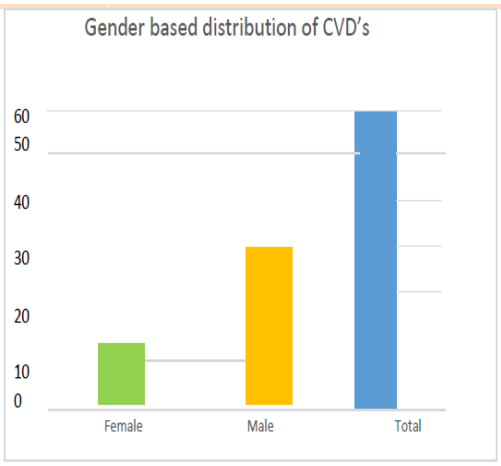

Figure-1: Gender based distribution of Cardiovacular diseases.

Table-2: Age based distribution of cardiovascular diseases.

AGE	NO. OF PATIENTS	PERCENTAGE
20-30	3	6%
30-40	10	20%
40-50	16	32%
50-60	10	20%
60-70	6	12%
70-80	3	6%
80-90	2	4%
TOTAL-50		100%

Figure-2: Age based distribution of cardiovascular diseases.

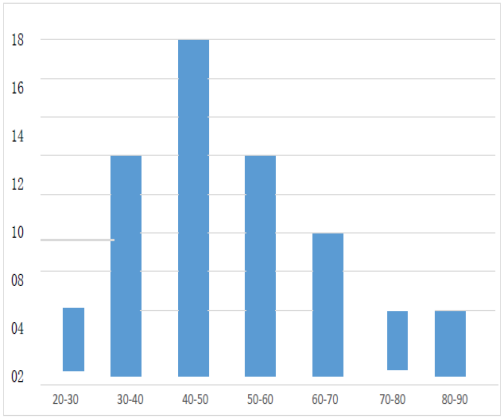

Table-3: Drug of choice based on class for Hypertension.

DISEASE	CLASS OF DRUGS	MEDICATIONS
Hypertension	ACE Inhibitors	Enalapril
	Beta blockers	Carvedilol
	Alpha blockers	Prazosin

Table-4: Drug of choice based on class for CHF

DISEASE	CLASS OF DRUGS	MEDICATIONS
Congestive Cardiac Failure	HMG- CoA reductase inhibitors(statins)	Atorvastatin
	ACE Inhibitors	Enalapril
	Beta blockers	Carvedilol
	Aldosterone receptor antagonist	Aldactone

Table-5: Drug of choice based on class for Myocardial infarction.

DISEASE	CLASS OF DRUGS	MEDICATIONS
Myocardial Infarction	Non- steroidal anti-inflammatory drug (NSAIDS)	Aspirin
ACE Inhibitors		Enalapril
Nitrates		Glyceryl trinitrate
Beta blockers		Carvedilol

Table-6: Drug of choice based on class for Cardiomyopathy.

DISEASE	CLASS OF DRUGS	MEDICATIONS
Cardiomyopathy	Aldosterone receptor antagonist	Aldactone
	HMG CoA reductase inhibitors	Atorvastatin
	Beta blockets	Carvedilol
	Diuretics	Furosemide
	Digitalis Glycosides	Digoxin

Table-7: Drug of choice based on class for Angina pectoris.

DISEASE	CLASS OF DRUGS
Angina Pectoris	Beta blockers
	HMG CoA reductase inhibitors
	Nitrates
	Calcium channel blockers
	NSAIDs

Table-8: Combination therapy in cardiovascular diseases.

CLASSIFICATION	MEDICATION
Angiotensin II receptor blockers + Diuretics	**Telmisartan + Hydrochlorthiazide**
Vasodilators + Nitrates	**Hydralazine + Nitroglycerine**
Nitrates + Opioid analgesics	Nitroglycerine + Morphine
Nitrates + ACE inhibitors	Nitroglycerine + Enalapril
ACE inhibitors + Calcium channel blockers	Enalapril + Amlodipine

DISEASE	NO. OF PATIENTS	PERCENTAGE
Hypertension	16	32%
Congestive Heart Failure	14	28%
Myocardial Infarction	12	24%
Cardiomyopathy	6	12%
Angina Pectoris	2	4%

Table-9: Disease condition based distribution of Cardiovascular diseases.

Figure-3: Disease condition based distribution of Cardiovascular diseases.

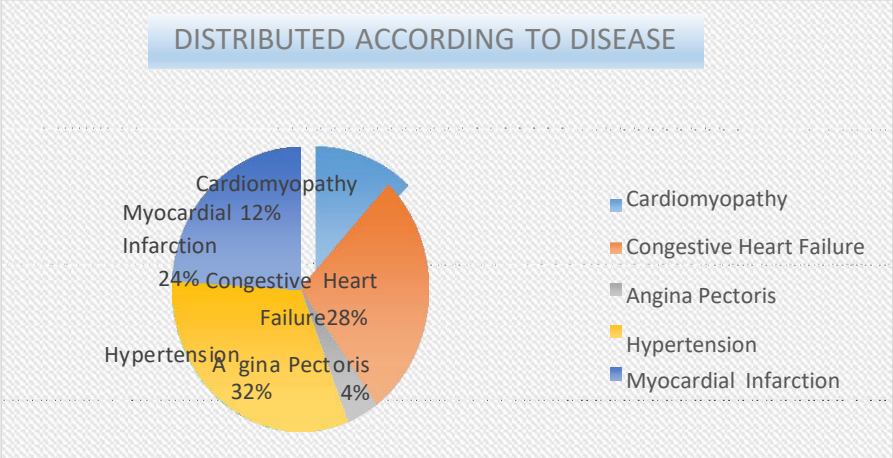

Table-10: Gender based distribution for different cardiovascular diseases.

DISEASE CONDITION	NO. OF PATIENTS	FEMALE	FEMALE PERCENTAGE	MALE	MALE PERCENTAGE
Hypertension	16	2	4%	14	28%
Congestive heart failure	14	6	12%	8	16%
Myocardial infarction	12	2	4%	10	20%
Cardiomyopathy	6	2	4%	4	8%
Angina pectoris	2	1	2%	1	2%

Figure-4: Gender based distribution for different Cardiovascular diseases.

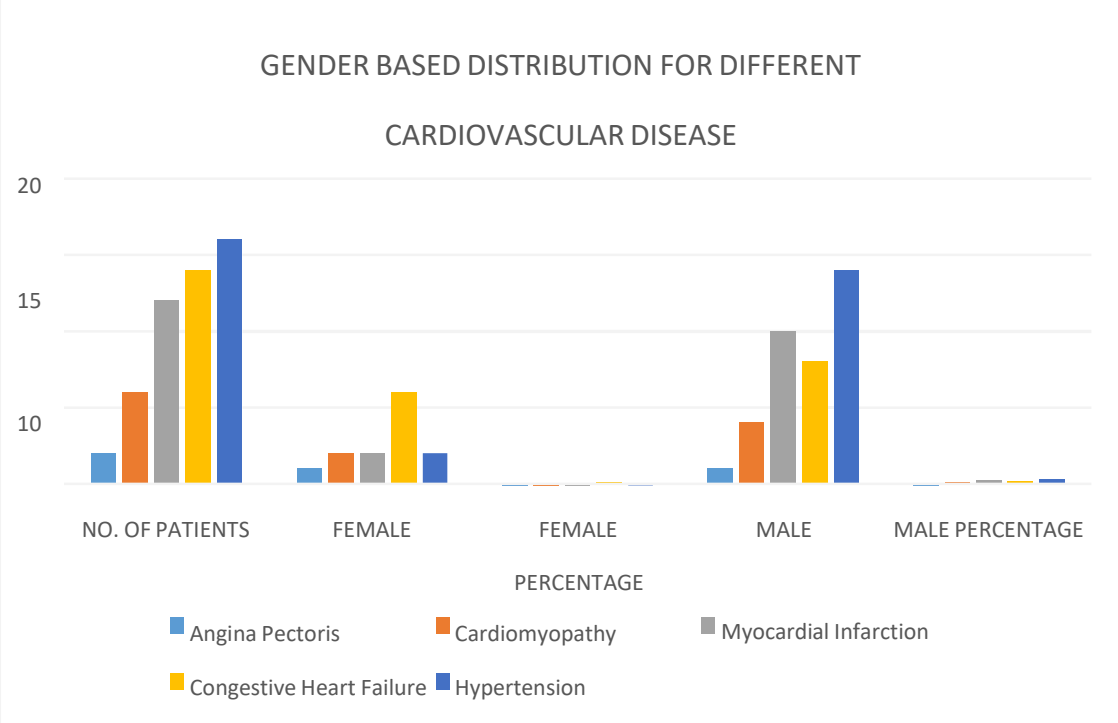

Table-11: Management- Comparison between pharmacotherapy and surgical therapy.

DISEASES	PHARMACOTHERAPY	SURGERIES
Hypertension	YES	NO
Congestive heart failure	YES	NO
Myocardial infarction	YES	NO
Cardiomyopathy	YES	NO
Angina pectoris	YES	NO

4. DISCUSSION:

Cardiovascular diseases (CVDs) are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Over three quarters of CVD deaths take place in low- and middle-income countries.

Although there have been recent improvements in congestive heart failure treatment, researchers say the prognosis for people with the disease is still bleak, with about 50% having an average life expectancy of less than five years. For those with advanced forms of heart failure, nearly 90% die within one year.

Major risk factors that can't be changed Increasing Age. The majority of people who die of coronary heart disease are 65 or older, Male gender, Heredity (including race), Tobacco smoking, High blood cholesterol, High blood pressure, Physical inactivity,

Obesity and being overweight when coming to the treatment for heart diseases, Doctors usually treat heart failure with a combination of medications. Depending on your symptoms, you might take one or more medications, including: Angiotensin-converting enzyme (ACE) inhibitors. Heart failure patients may need multiple medications. Each one treats a different symptom or contributing factor and comes with its own instructions and rules.

You and your caregivers should work with your healthcare team to understand the medications and when, how often and in what dosage to take them.

It's important to discuss all of the drugs you take with your doctor (or other healthcare providers) and understand their desired effects and possible side effects. Your doctor and your pharmacist are your best sources of information. Don't hesitate to ask them questions about your medicines. It's critical that people with heart failure take their medications exactly as directed by their healthcare provider, to optimize the benefits. The use of these drugs has saved lives, prolonged life and improved the heart's function. Physicians today have an arsenal of medications they can prescribe to help their patients in the battle against heart disease. If you are a heart patient, you can expect to be taking one or more of these highly effective medications.

As a heart patient, it's important for you to understand what each medication does and how to use them safely, often in combination. When used appropriately and according to the proper prescription, these medications extend both quantity and quality of life by preventing heart attacks and strokes.

Modern heart drug therapy includes the following "big six" medications:

1. Statins — to lower LDL cholesterol
2. Aspirin — to prevent blood clots
3. Clopidogrel — to prevent blood clots
4. Warfarin — to prevent blood clots
5. Beta-blockers — to treat heart attack and heart failure and sometimes used to lower blood pressure.
6. ACE inhibitors to treat heart failure and lower blood pressure,

This study observed the management patterns of various cardiovascular diseases such as Hypertension, Myocardial Infarction, Cardiomyopathy, Congestive Heart Failure and Angina pectoris. Among 50 cases of male and female collected, male patients are more affected with CVD's than females. The maximum age groups affected by CVD's were observed as 40-50 years of age group people and least affected are 80-90 years of age group. Hypertension was most affected CVD in all the considered cardiovascular diseases. Hypertension was found to be major risk factor for all cardiovascular diseases. Our study illustrates that, 11 patients received combination therapy which provided high recovery rate. The findings of this study summit the importance of receiving high recovery rate from the management prescribed and achieve a better patient outcome along with the safety and efficacy of the utilized patterns of management.

5. CONCLUSION:

We concluded from this study that the patients who undergone for combination therapy are responding well for the treatment when compared with the patients who went for the mono therapy and beta blockers and angiotensin 2 receptors nitrates are the most commonly prescribed drugs that means these drugs are giving good results in the treatment and treatment should start with first line drugs and males are more affected when compared with females.

In our study we observed that Hypertension was the most common risk factor in cardiovascular diseases. Hence to manage the effect of another CVD's hypertension must be treated properly. Beta blockers, ACE inhibitors, Angiotensin II receptor blockers, Nitrates were the most commonly prescribed pharmacotherapy in CVD's. Our study concludes that, males are more predominant over females. It was observed that all patients received good response and improved with pharmacotherapy and none had undergone surgical therapy.

6. BENEFITS OF THE STUDY:

Establishing standard management guidelines for various cardiovascular diseases. Effect of precise diagnosis in management. Detecting the most effective medication in cardiovascular diseases. Understanding both the combination & mono-therapy results.

7. CONSENT:

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

8. ETHICAL APPROVAL:

Study protocol was approved by the Institutional Ethical Committee (IEC No: CMRCP/IEC/2020-21), CMR College of Pharmacy, Hyderabad.

9. COMPETING INTERESTS:

Authors have declared that no competing interests exist.

10. REFERENCES:

1) John G.Canto, et al. Number of Coronary Heart Disease Risk Factors and Mortality in Patients with First Myocardial Infarction. JAMA. 2011 Nov 16; 306(19): 2120–2127.
2) William W. Parmley. Pathophysiology and Current therapy of Congestive Heart Failure. JACC. March 15 1989; 771-85.
3) Arati A.Inamdar, et al. Heart Failure: Diagnosis, Management and Utilisation. Journal of Clinical Medicine. 2016 June 29; 5,62.
4) Shannon M Dunlay, et al. Risk factors for Heart Failure: A Population Based Case Control Study. Am J Med. 2009 November; 122(11): 1023–1028.
5) Ankur Jain, et al. Advancements in Pharmacotherapy for Angina. Expert Opin Pharmacother. 2017 April; 18(5): 457–469.
6) Paulino Alvarez, et al. Recent Advances in Understanding and Managing Cardiomyopathy. F1000Research 2017:1659 Last updated: 07 SEP 2017.
7) Perry Elliott, et al. Diagnosis and management of dilated cardiomyopathy. Heart 2000; 84:106–112.
8) Giuseppe Mancia, et al. Two-Drug Combinations as First-step Antihypertensive Treatment. ahajournals. 2021 June 7; 124:113- 1123.
9) Agam Bansall, et al. Practice patterns in the management of congestive heart failure and post-discharge quality of life: A hospital- based cross-sectional study.
10) Jeeva Joseph, et al. Guideline- directed medical therapy in heart failure patients: impact of focused care provided by a heart failure clinic in comparison to general cardiology out patient department. The Egyptian Heart Journal (2020) 72:53.
11) Colleen A. McHorney, et al. The Impact of Heart Failure on Patients and Care givers: A qualitative Study. PLOS ONE journal.pone.0248240 March 11 2021.
12) Pierpaolo Pellicori, et al. New perspectives and future directions of treatment of heart failure. Heart Failure Reviews (2020) 25: 147- 159.
13) Godswill J. Udom, et al. Recent Trends in the Pharmacotherapy of Angina Pectoris. Research gate. May 2020 2319-4219.
14) Odayme Quesada, et al. Temporal Trends in Angina, Myocardial Perfusion, and Left Ventricular Remodeling in Women with No Obstructive Coronary Artery Disease Over 1-Year Follow- Up: Results From Wise- CVD. J Am Heart Assoc. 2020;9: e016305.
15) Jamie Kitt, et al. New Approaches in Hypertension Management: a Review of Current and Developing Technologies and Their Potential Impact on Hypertension Care. Current Hypertension Reports. 2019; 21: 44.
16) Filip Machaj, et al. New therapies for the treatment of heart failure:a summary of recent accomplishments. Dove Medical Press journal: Therapeutics and Clinical Risk Management. 2019:15 147–155.