Original Research Article
To study the Evidence on incidence of Heart failure epidemiology

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Abstract
Background & Methods: The aim of the study is to study the Evidence on incidence of Heart failure epidemiology. Patients were considered for inclusion in the study if they were aged 16 and over and eligible for linkage to secondary care, mortality and socioeconomic status data. To ensure consistent data quality, patients' observation time was further restricted to practice's up-to-standard periods. Only patients contributing to data during the study period were considered for inclusion.
Results: We found Mean Age 73.1 and Mean Systolic blood pressure 76. The chi-square statistic is 99.8748. Comorbidities, The p-value is 0.039061. Preserved or unspecified Ejection fraction record, The result is significant at $p < .05$. The chi-square statistic is 165.9756. The p-value is < 0.00001. The result is significant at $p < .05$.
Conclusion: Recommended diagnostic tests and treatment initiation among patients seen in primary care, suggests that early management of these patients has improved, probably due to a combination of physician awareness, clinical guidelines, and financial incentives. However, the limited changes to medication dosages, the disparities among sub-groups of patients, and the poor rates of primary care recording, indicate that more efforts are needed. Quality improvement efforts that remain confined within individual care settings have proven insufficient to identify important care gaps and to address challenges of this chronic condition with effective but complex treatment. Further improvements are likely to require a broader perspective to health services design to support appropriate care at every level of the patient journey.

Keywords: incidence, Heart, failure & epidemiology.
Study Design: Observational Study.

1. Introduction

Heart failure is one of the most common, costly, disabling, and deadly medical conditions encountered in primary and secondary care, and its prevention and management present a challenge to health systems worldwide[1]. Several recent observational studies have reported little or no improvements in mortality rates among heart failure patients since the mid 2000s, despite the introduction of a range of life-saving treatments[2]. The reasons underlying these trends are unclear, and could potentially be due to changes in patient characteristics, insufficient adherence to evidence-based care or specific patterns affecting mortality. The state-of-the-art evidence on heart failure epidemiology, and have designed my thesis research to address gaps in knowledge that could help explain the observed standstill in patient prognosis[3].
Clinically, heart failure (HF) is defined as a syndrome characterised by symptoms (e.g. breathlessness, ankle swelling and fatigue) that may be accompanied by signs (e.g. elevated

jugular venous pressure, pulmonary crackles and peripheral oedema) caused by a structural and/or functional cardiac abnormality, resulting in a reduced cardiac output and/or elevated intracardiac pressures[4]. HF can have a number of causes, including amongst others damaged heart tissue due to myocardial infarction, valve disease, or high blood pressure[5]. In younger age groups, viruses causing an inflammation of the heart muscle or dilated cardiomyopathy (an enlarged and weakened left ventricle) are amongst the prevalent causes of HF.

HF is divided into sub-types based on measurement of Left ventricular ejection fraction (LVEF), a measure of the amount of blood that is pumped out of the left ventricle as a percentage of the amount of blood entering the ventricle. LVEF is usually assessed using echocardiography, a radionuclide technique or cardiac magnetic resonance, and typically ranges from 50% to 70% in healthy adults. Two sub-types of heart failure are most commonly used: (i) HF with reduced ejection fraction (HF-REF), generally considered as LVEF < 40%, and also known as left ventricular HF or systolic HF, and (ii) HF with preserved EF, typically defined as LVEF >=50%, sometimes also referred to as diastolic HF. Patients with an LVEF in the range of 40–49% represent a 'grey area', which the latest guidelines from the European Society of Cardiology define as HF with mid-range ejection fraction[6]. Depending on the exact sub-type of HF, patients present with different underlying aetiologies, demographics, comorbidities and also respond differently to treatments[7].

2. Material and Methods

Present study was conducted at Tertiary Care Centre of M.P. for 01 Year. Except for the most common demographic information, variables are generally not readily available and need to be extracted from the longitudinal data. For example, typical study data will provide a list of study participants, alongside their baseline date and baseline measurements, such as smoking, body mass index or blood pressure. When working with researchers will first need to identify the relevant study population (e.g. identify all patients with a new diagnosis of heart failure), define and extract individual's baseline date(s) (e.g. the date of incident diagnosis), and associated baseline characteristics (e.g. age, sex, blood pressure, smoking status, comorbidities, etc.). Relevant measurements may or may not be recorded. Also, most records will not coincide with the baseline date and some measurements may have been recorded several times in the months before/after baseline, so that an algorithm needs to be defined to extract, select and/or combine the different measurements.

Patients were considered for inclusion in the study if they were aged 16 and over and eligible for linkage to secondary care, mortality and socioeconomic status data. To ensure consistent data quality, patients' observation time was further restricted to practice's up-to-standard periods. Only patients contributing to data during the study period were considered for inclusion.

3. Result

Table No. 1: Baseline characteristics of patients with incident heart failure by sex and diagnosis

S. No.	Parameter	No.	Percentage
	Gender		
1	Male	215	53
2	Female	285	47
		Mean	
1	Age [years], mean (SD)	73.1	
	Systolic blood pressure	Mean	
1	Mean (SD) [mmHg]	132	-
1	Diastolic blood pressure	76	-
	BMI category		
1	Underweight	20	04
2	Normal	155	31
3	Overweight	665	33
4	Obese	160	32

We found Mean Age 73.1 and Mean Systolic blood pressure 76.

Table No. 2: Comorbidities of patients with incident heart failure

S. No.	Parameter	No.	Percentage	P Value
1	Atrial fibrillation	205	41	
2	Chronic kidney disease	115	23	
3	Chronic obstructive pulmonary	95	19	
4	Diabetes	110	22	
5	Dyslipidaemia	140	28	
6	Hypertension	335	67	0.039061
7	Ischaemic heart disease	245	49	
8	Osteoarthritis	215	43	
9	3 or more comorbidities	395	79	

The chi-square statistic is 99.8748. The *p*-value is 0.039061. The result is significant at $p < .05$.

Table No. 3: Preserved or unspecified Ejection fraction record (86%)

S. No.	Parameter	No.	Percentage	P Value
1	**Atrial fibrillation**	205	41	
2	**Chronic kidney disease**	125	25	
3	**Chronic obstructive pulmonary**	100	20	
4	**Diabetes**	110	22	
5	**Dyslipidaemia**	137	27	< 0.00001
6	**Hypertension**	340	68	
7	**Ischaemic heart disease**	240	48	
8	**Osteoarthritis**	210	42	
9	**3 or more comorbidities**	405	81	

The chi-square statistic is 165.9756. The *p*-value is < 0.00001. The result is significant at $p < .05$.

4. Discussion

This large-scale, population-based study provides important information on contemporary care of heart failure patients in routine clinical practice and insights into its variation over time, by age, sex, and socioeconomic status. This study confirms previous reports of high rates of guideline-indicated diagnostic investigations and treatment initiation in Western countries[8]. However, further investigation of care across the continuum of primary and secondary services and from the pre-diagnosis stage to several months after incident diagnosis revealed important shortcomings in the management of patients. First, rates of outpatient diagnoses and follow-up in primary care after hospital discharge are low and have been declining over time. Second, doses of key medicines remain far below those recommended in guidelines in all groups of patients and for all three drug-classes investigated, even a year after diagnosis. Finally, deficiencies in care were more common in women, older people and, to some extent, in socioeconomically deprived individuals[9].

This study further shows that the management of women, older people and deprived individuals was even less satisfactory. For example, all were more likely to be first diagnosed during a hospital admission. This may suggest that, in these patients, early signs and symptoms have not been appropriately recognised in non-acute health-care settings. Alternatively, this may be related to patient preferences to seek care in hospital, or, for deprived populations, more difficult access to outpatient consultations. Correcting such disparities is an important challenge for a system that intentions to offer equality of access to and quality of care[10].

The underlying reasons for the variations in medical practice in diagnosing and managing heart failure in the community has been subject to research. These reasons fall into three broad categories: (i) uncertainty about clinical practice (including worries about using medications in frail and elderly patients), (ii) lack of awareness of relevant research evidence, and (iii) individual preferences and local organisational factors (including negative clinical experiences, availability of diagnostic services and cardiologists, or interactions between professionals in primary or secondary care).

Differences in treatment in the elderly may indeed, at least in part, reflect a more cautious approach of general practitioners among patients with multi-morbidity and associated

polypharmacy. Nevertheless, age-disparities in the use of guideline-indicated therapy remained significant after adjusting for 17 major chronic conditions, sex, and socioeconomic status. The perception that the blood-pressure lowering effects of heart failure therapies may place patients at higher risk of falls, has also been reported as a barrier to effective management of heart failure patients in the community and may have further contributed to the observed trends[11].

5. Conclusion

Recommended diagnostic tests and treatment initiation among patients seen in primary care, suggests that early management of these patients has improved, probably due to a combination of physician awareness, clinical guidelines, and financial incentives. However, the limited changes to medication dosages, the disparities among sub-groups of patients, and the poor rates of primary care recording, indicate that more efforts are needed. Quality improvement efforts that remain confined within individual care settings have proven insufficient to identify important care gaps and to address challenges of this chronic condition with effective but complex treatment. Further improvements are likely to require a broader perspective to health services design to support appropriate care at every level of the patient journey.

6. References

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