ORIGINAL RESEARCH

A comparative analysis of care seeking behaviors in people living with congestive heart failure during the covid-19 pandemic in the U.S. and U.K.

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ABSTRACT

Background: The COVID-19 pandemic presented many challenges to persons living with chronic diseases. Patients living with Heart Failure (HF) faced complex challenges due to limitations to access to care due to restrictions associated with the pandemic. The purpose of the study was to examine the self-reported care seeking behaviors of HF patients in the US and UK. The primary aim was to differentiate the ability of HF patients in their respective countries to gain needed services during the pandemic, to examine the structural effects of the vastly different healthcare systems.

Methods: A quantitative descriptive design, using an online questionnaire, collected data between May and July 2020 among individuals with HF.

Results: US patients reported attending more HF-related appointments than their UK counterparts ($p < .001$). This is important since UK patients reported a greater likelihood of canceled appointments ($p < .05$). A greater proportion of US patients reported never having had an appointment canceled compared to those in the UK ($p < .05$). There were no differences in postponed appointments.

Conclusions: Overall, the comparison highlights the extensive availability of specialist services within the US model, contrasting with the UK's system that offers universal access to care.

Key Words: Comparative analysis, Heart failure, Covid-19 pandemic, Care seeking behaviors

1. INTRODUCTION

Heart Failure (HF) is a chronic condition that requires extensive interaction with the healthcare system, with subsequent adherence to medical advice by the individual patient to ensure good care related outcomes. This includes complex treatment modalities and close monitoring for new or worsening symptoms such as weight gain or shortness of breath. Lifestyle modification, or the engagement in healthier behaviors including exercise and diet interventions is central to gaining beneficial outcomes.[1,2] During the COVID-19 pandemic, many aspects of HF management related to individual self-care and medical intervention was affected. Healthcare systems were required to restructure their approaches to cope with the increased number of patients and to protect healthcare providers and staff members. Patients experienced limitations to access to care, with many elective procedures, appointments, and outpatient services, being postponed prioritizing urgent cases.[3] Patients with underlying cardiovascular conditions such as HF are at higher risk of severe infection and complications associated with COVID-19.[4–7] Studies have demonstrated that HF is a risk factor for a more severe clinical course and an independent risk factor for in-

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hospital mortality resulting from COVID-19 infection.[3,8] Thus, patient concerns about exposure and fear of contracting the virus affected the volume of in-person healthcare visits. The interaction between COVID-19 and HF is complicated primarily based on the effect of comorbid conditions on both disorders. The purpose of the current paper is to compare selected access to HF care, based on patient reports, in the US and UK.

2. Background and significance

2.1 Heart failure

Heart Failure complex disease resulting from impairments to cardiac output. These impairments cause inadequate perfusion, resulting in shortness of breath, fatigue, exercise intolerance, and peripheral edema.[9] Heart Failure continues to be a significant health and economic burden, with steady increases due to the aging population. In total, 6.2 million American adults have been diagnosed with HF, with projected to increases by 46% by 2030.[10] Costs associated with this condition exceed $30 billion per year. The lifetime risk of HF between the ages of 45 to 90 increased from 20% to 45%, with higher risks with elevated blood pressure or higher BMI.[10] Between 2013 to 2017, a 26% increase in hospital based care was seen in the United States.[9] Total deaths in the US from HF increased from 275,000 in 2009 to 310,000 by 2014.[11] The most common causes of HF include atherosclerotic disease, myocardial infarction, poorly treated hypertension, and valvular dysfunction. Other conditions associated with the development of HF include obesity, prediabetes, and lack of physical activity. These conditions are highly prevalent in the US and significantly contribute to the large proportion of the population living with HF.

2.2 General comparison of the US and UK healthcare systems

The United States and the United Kingdom have different approaches to healthcare provision with a primarily privatized versus government administered approach respectively.[12]

2.2.1 *United States healthcare system*

The healthcare system in the United States is primarily based on a market-driven model.[12] It is characterized by a mixture of private and public healthcare providers, health insurance companies, and government programs.[13] Here are some key aspects of the US healthcare system:

Private health insurance: Most Americans obtain healthcare coverage through private health insurance plans, typically provided by employers as part of employee benefits.[13] Individuals can also purchase private health insurance directly from insurance companies.

Public healthcare programs: The government provides several public healthcare programs, including Medicare, which primarily covers people aged 65 and older, and Medicaid, which offers healthcare coverage to poor families.[14]

Healthcare providers: The US has a diverse range of non-governmental healthcare services, including hospitals, clinics, physician practices, and specialty centers. These providers operate as private entities and can charge varying fees for their services.

Fee-for-Service Model: The US system is largely based on a pribately funded model, where healthcare providers are reimbursed by individuals and insurance companies based on services provided.[13] This payment structure can lead to higher healthcare costs and incentivize more procedures or tests.

High healthcare costs: Healthcare costs in the United States are significantly higher compared to other developed countries.[15] Factors contributing to high costs include administrative expenses, expensive medical technology, and the lack of a centralized pricing system.

2.2.2 *United Kingdom healthcare system*

Healthcare in the United Kingdom is provided by the National Health Service (NHS), a publicly funded and publicly provided system that offers universal healthcare coverage.[16] Here are some key aspects of the UK healthcare system:

Universal healthcare coverage: The NHS provides comprehensive healthcare coverage to all UK residents.[17] It is funded through tax revenues, with most services provided free of charge at the point of service.[18]

General Practitioners (GPs): GPs are the first point of care for individuals seeking healthcare in the UK. They act as gatekeepers and refer patients to specialists or hospitals when necessary.

Healthcare services: The NHS operates through a network of trusts and hospitals that provide healthcare services, including primary, specialist, and emergency care.[18] These services are delivered by healthcare professionals employed by the NHS.

National Institute for Health and Care Excellence (NICE): NICE evaluates the cost-effectiveness of medical treatments and technologies.[19] It provides guidelines to the NHS regarding the use of certain treatments and medications.

Waiting times: Due to the high demand for services, the NHS faces challenges related to waiting times for certain non-urgent treatments and procedures.[19] Efforts are made to reduce waiting times, but they remain a topic of discussion and concern.[17]

It is important to note that this is a basic overview of the US and UK healthcare systems. Both systems have their strengths and weaknesses, and ongoing debates and reforms continue to shape healthcare policies in both countries.

2.3 Covid-19

The emergence of COVID-19 resulted in a global crisis. To reduce spread, travel limitations, masking, quarantine, and social distancing measures were implemented. Government imposed limitations resulted temporary closures of businesses and other public settings, drastically altering daily life. Gyms, and public recreation centers were closed, and activities such as exercising in public were prohibited. Restrictions on gatherings led to a shift to distance learning for students. Group-based outpatient cardiac rehabilitation programs were limited, as they were considered elective services.[20,21] While these restrictions were necessary, they greatly impacted the level of physical activity undertaken by patients living with chronic diseases.

2.4 Aims

The purpose of our study was to explore the self-reported care seeking behaviors of US and UK HF patients. The primary aim was to differentiate the ability of HF patients in their respective countries to gain needed services during the pandemic, to examine the structural effects of the vastly different healthcare systems.

3. Methods

3.1 Design

The study was based on a quantitative descriptive design. An online questionnaire gathered data from May to July 2020 among individuals with Heart Failure. Participants were asked to provide information on demographic factors. For the current study, participants were asked a series of questions regarding their ability to access essential services related to their Heart Failure diagnosis. The questionnaire included a demographic section as well as a total of 54 items reflecting on various care seeking behaviors related to HF care and general efforts to access medical care.

3.2 Recruitment and participants

The questionnaire was hosted on the Prolific Panel™ online recruitment platform. The Prolific platform allowed users to receive information about studies that they might contribute to, as well as providing a mechanism for payment. Individuals who reported a history of Heart Failure were provided with consent information and a link to the questionnaire.

3.3 Ethics

The study was reviewed and approved by the Florida State University Institutional Review Board (IRB). Informed consent was gained from all participants prior to any study-related procedures were performed.

3.4 Data analysis

Descriptive statistics were used to quantify demographic variables, and the basic measures used in the study. An independent samples t-test was used to compare key aspects of care-seeking behaviors between participants in the US and UK.

4. Results

A sample of 346 people living with HF was obtained, consisting of individuals from the US (214) and the UK (132). Table 1 details the demographic characteristics of the sample. The sample characteristics in the US and UK were roughly equivalent. Notably, the age and duration of living with Heart Failure were compared using an independent samples t-tests and were found to be roughly equivalent.

Table 1. A comparison of US and UK HF populations

Variables	US (N = 214)	UK (N = 132)	Sig
Gender	Male 58.8% Female 40.5% Unspecified 0.8%	Male 61.2% Female 37.5% Unspecified 0.3%	
Age	69.4 (12.23)	70.1 (13.44)	n/a
Length of HF Diagnosis	2.54 (.92)	2.62 (.98)	n/a
Anxiety Regarding HF	5.94 (2.54)	5.90 (2.11)	n/a
Anxiety Regarding COVID-19	5.47 (2.71)	5.68 (2.52)	n/a
GAD-7 Cumulative Score	7.74 (5.67)	6.92 (6.11)	n/a
CESD Cumulative Score	7.74 (5.67)	6.91 (6.11)	n/a
CSES Cumulative Score	51.71 (10.22)	49.83 (11.66)	n/a

Table 2 presents the characteristics of the participants based on their reported care-seeking behaviors and their experiences with the healthcare system. Significant differences were observed between the US and UK populations during the COVID-19 pandemic. US patients reported attending more HF-related appointments than their UK counterparts (2.48 versus 1.64 in the past 6 months, $p < .001$). This is important since UK patients reported a greater likelihood of canceled appointments ($p < .05$) compared to their US counterparts. A greater proportion of US patients reported never having had an appointment canceled compared to those in the UK ($p < .05$). There were no differences in postponed appointments. Additionally, US patients were more likely to consider attending in-person appointments at healthcare facilities ($p < .001$), reflecting a generally higher acceptance of risk among US patients.

The study examined limited aspects of patients' efforts to obtain needed medications and other clinical services. US patients were more likely to perceive that they could access necessary services if their condition were to worsen ($p < .001$). They also reported greater ease in obtaining diagnostic testing compared to their UK counterparts ($p < .001$). While most results indicated greater access to services for US patients, there was one notable exception: US patients reported greater difficulty in obtaining refills of prescription medications ($p < .001$). This is likely due to the public funding of medications in the UK, whereas the US system often imposes significant costs on patients, especially for name-brand medications, which can be expensive.

Table 2. COVID and access to HF services US versus UK

Variable	US (N = 214)	UK (N = 132)	Sig
Number of HF appointments past 6 months	2.48 (1.89)	1.64 (1.52)	$p < .001$
Were HF appointments cancelled during past 6 months	.22 (.41)	.35 (.48)	$p < .05$
Were HF appointments postponed during past 6 months	.33 (.47)	.38 (.49)	n/a
None of my appointments were cancelled	.51 (.50)	.32 (.47)	$p < .05$
At least one of my appointments was cancelled due to the pandemic	.63 (1.26)	1.02 (1.53)	$p < .05$
I have experienced difficulty gaining lab tests and results	.05 (.21)	.21 (.47)	$p < .001$
How willing are you to attend hospital-based appointments	1.95 (.83)	1.55 (.72)	$p < .001$
Difficulty gaining medication refills	.68 (.48)	.42 (.50)	$p < .001$
Do you feel you could promptly access HF care if your condition worsened	.32 (.47)	.14 (.35)	$p < .001$

5. Discussion

Heart Failure is a condition that affects millions of people across the globe. The United States and the United Kingdom are developed nations with advanced healthcare systems, yet they differ significantly in terms of healthcare structure, funding mechanisms, and patient care approaches. This paper aims to compare the management and care of congestive HF patients in the US and the UK, shedding light on the strengths and weaknesses of each system.

The United States operates a primarily market-driven healthcare system with a mix of private and public insurance options. The UK, on the other hand, has a publicly funded National Health Service (NHS) that provides comprehensive care to its citizens. These different healthcare models profoundly impact how congestive HF care is delivered in the two countries.

The results of the current study reflected a general advantage in reported scores among US HF patients. US patients reported a pattern of greater access to care. This included more HF-related appointments ($p < .001$), less likelihood of canceled appointments ($p < .05$), greater access to diagnostics ($p < .001$), the feeling that they can gain an appointment if needed ($p < .001$), and a greater willingness to attend hospital-based appointments ($p < .001$). The sole advantage for the UK system is that UK patients reported greater ease in obtaining medication refills ($p < .001$). This issue is most likely associated with the high costs of medications in the US, coupled with COVID-related economic realities.

In the UK, the NHS guarantees universal access to care, including HF management, regardless of socioeconomic status. Patients do not have to worry about affordability or insurance coverage when seeking medical attention. This system promotes early detection, preventive care, and consistent management of HF, reducing the burden on emergency services. In the US, access to congestive HF care can be influenced by insurance coverage and out-of-pocket costs. Patients with comprehensive insurance plans might receive high-quality care, but those without insurance or with limited coverage could face barriers to accessing necessary treatments. This can lead to delayed interventions, exacerbating the condition

and potentially increasing healthcare costs in the long run.

The UK's NHS emphasizes a patient-centered approach by focusing on holistic care and continuity. Primary care physicians play a vital role in managing HF patients, coordinating various aspects of treatment, including medications, lifestyle modifications, and referrals to specialists. This approach helps build strong doctor-patient relationships, leading to better adherence to treatment plans. In the US, the emphasis on specialized care can sometimes result in fragmented management. Patients might see multiple specialists without a clear overall care plan. While this can provide access to advanced treatments, it can also lead to communication gaps and uncoordinated care, potentially impacting treatment outcomes.

Both the US and the UK offer advanced treatment options for congestive HF, including medications, lifestyle modifications, and surgical interventions. However, the availability and affordability of these treatments can differ between the two countries. In the US, a wide range of treatments is available due to its well-funded research and development sector. However, the cost of these treatments can be prohibitive for some patients, leading to disparities in care. Insurance coverage, including Medicare and Medicaid, helps mitigate some of these disparities, but challenges related to high drug prices and access to specialized care persist. In the UK, the NHS's centralized approach can lead to more standardized care, ensuring that treatments are available to all citizens regardless of their financial situation. However, this can sometimes result in delays for certain specialized procedures or treatments due to resource limitations within the system.

The comparison of HF care in the US and UK underscores the strengths and weaknesses of their respective healthcare systems. The UK's NHS offers universal access and patient-centered care, promoting early intervention and holistic management. In contrast, the US healthcare system provides a wider array of specialized treatments but is often marred by issues of access and affordability. In essence, the results of the current study demonstrated a superior pattern of access to care in the US compared to the UK. However, this comes at the cost of many traditionally disadvantaged populations in the US who often experience severe limitations to healthcare due to lack of insurance and poverty.

5.1 Clinical implications

The clinical implications of the study are as follows.

1) Advanced Medical Technology: The US is known for having some of the most advanced medical technologies and treatments available. This is due in part, to the innovation inherent to the for-profit system. This can lead to access to cutting-edge interventions, devices, and procedures for HF treatment that would be considered costly in the UK system.[22]

2) Specialization and Expertise: The US healthcare system has a highly specialized healthcare workforce. This could potentially lead to access to specialized cardiologists, cardiac surgeons, and other healthcare professionals with specific expertise in treating HF. The UK, however, offers universal access to care. The outward manifestations of this pattern in the US are the existence of health disparities in traditionally marginalized populations.[23]

3) Shorter Wait Times: In some cases, the US system might offer shorter wait times for specialized procedures or appointments compared to systems with government-funded healthcare. This is due primarily to the greater prevalence of specialists in the US system.[25]

4) Research and Innovation: The US healthcare system often fosters a strong environment for medical research and innovation. This can lead to the development of new treatments, medications, and approaches to managing HF. However, many of the costs of innovation are seen system wide by patients and healthcare entities alike.[26]

5) Choice and Accessibility: Some individuals in the US might have more choice in selecting healthcare providers, hospitals, and treatment options. This can provide a level of customization based on individual preferences and needs. This choice is increasingly being limited through the consolidation of health plans in various regions.[25]

6) Pharmaceutical Availability: The US has a robust pharmaceutical industry, which can contribute to the availability of a wide range of medications for HF management. Newer and more costly medications are often unavailable in the NHS. While available, the cost of expensive medications often contributes to health disparities in the US.[23]

6. Conclusion

There are various healthcare systems across the globe, primarily differing in how services are funded, which directly influences their availability. The UK and US provide a stark comparison due to their vastly different structures. In the current study, we observed a general advantage in the predominantly free-market US system regarding access to care, particularly in terms of appointment availability. However, US patients also reported more difficulties in obtaining medication refills, likely due to the high costs involved. Overall, the comparison highlights the extensive availability of specialist services within the US model, contrasting with the UK's system that offers universal access to care. The latter approach aims to reduce health disparities among traditionally marginalized groups. While neither system is perfect,

ensuring access to essential services remains crucial for both. Future efforts should prioritize improving care outcomes for patients across all healthcare systems.

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AUTHORS CONTRIBUTIONS

James Whyte IV and Mia Newlin Bradner conceived, led and performed the study. Vianca Colon, Josef Hodgkins, Shauna Barnes and Erin Stern are PhD students who served as Research Assistants on the study.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Obtained.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

DATA SHARING STATEMENT

No additional data are available.

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