

Lessons Learned from Community Studies of HFpEF – The Digitalis Study

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“Outpatient medicine is both science and art, as much science and art as hospital medicine, if indeed there is any difference between the two that is not based on pre-judged ideas.”

**Moacyr Scliar Physician and Public Health Specialist,
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Medical education and, in particular, research in cardiovascular graduate programs have been developed within a segmented view, which reduces and disregards other aspects that constitute the individual, as well as the person beyond the disease. To correct and improve this view, we must understand the transformations that have occurred in medical education and in the health system rather than the privileges that constitute the current health scenario in Brazil. To this end, it is essential to understand the historical context of the changes in health education and medical education that led a group of researchers from the Fluminense Federal University (Universidade Federal Fluminense, UFF) to gain knowledge of heart failure (HF) in the city of Niterói, Brazil, which is the basis of the Digitalis study.^{1,2}

Inspired by the importance of primary health care (PHC) in the Alma-Ata Declaration, which was adopted in 1978, projects aimed at improving health quality and access to health were planned and established with methods that included the entire community.³ From this point onward, we were able to observe the development and implementation of the PHC model in Brazil and, especially, in the city of Niterói, which pioneered the implementation of the Family Health Program (FHP).⁴ The FHP, which is based on the family medicine model from Cuba, consists of a team of general practitioners, led by a family doctor, that is responsible for the health of family groups in a given territory.^{3,4}

The UFF has been participating in the reconstruction of PHC since its collaboration with the city of Niterói in the 1970s.^{5,6} This collaboration began with the implementation of the program through changes in the medical curriculum,

bringing new professionals, professors, and the UFF closer to PHC. This relationship promoted increased knowledge of the population of Niterói, especially of the approximately 150,000 inhabitants assisted by the FHP, which is the object of interest of the Digitalis study.^{5,6}

To establish a relationship between PHC in Niterói and the UFF School of Medicine, professors with expertise in public health in Niterói played important roles in the development of the Niterói Project, as well as in the update of the UFF medical curriculum, reorganizing health in the municipality and structuring the FHP. Professor Hugo Tomassini, who helped develop the Niterói Project in the 1970s while he was Secretary of Health and later a professor at the UFF Institute of Community Health (currently known as the Institute of Collective Health), Maria Manuela Alves dos Santos, professor at the Community Health Institute, and professor Luis Santini, director of the School of Medicine at the time, were crucial for including the School of Medicine in the discussion about updating the medical curriculum regarding PHC practices and other changes in patient care management.⁶

Under these leaderships, PHC was established as a new field of practical activities in the School of Medicine through the creation of the Supervised Field Work discipline. This brought the academic curriculum closer to PHC and, consequently, to the reality of medical care in Niterói. The project subsequently expanded to integrated patient care with the involvement of research teams from UFF, further integrating the UFF with PHC. Dayse Mary da Silva Correia, a nursing professor at UFF, coordinated implementation logistics and the multidimensional evaluation of nursing diagnosis in PHC. Professor Maria Luiza Garcia Rosa was responsible for designing the project, and Professor José Antônio Lagoeiro's dissertation originated the Digitalis study.^{6,7}

HF with preserved ejection fraction (HFpEF) is a cardiovascular condition with high costs and great impact on health systems around the world.^{4,5,7} HFpEF is the most prevalent clinical presentation worldwide, accounting for 40%-50% of HF cases, leading to decreased quality of life and survival.⁶⁻⁸ This condition is more prevalent in older people, women, and patients with diabetes, high blood pressure, or obesity.⁹ In view of the epidemiological profile of public health service users, we noticed the importance of PHC in the diagnosis and initial management of HFpEF, as well as the relevance of cardiometabolic syndrome, which promotes the onset of HFpEF and is often observed in PHC,¹⁰ and the high prevalence of cardiovascular diseases.^{2,5,7}

In this sense, the changes in the profile of Brazilian cardiac patients required changes in primary cardiovascular care, which included the implementation of new protocols by the

Keywords

HFpEF; Family Health Program; Primary Care; Cardiology

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Manuscript received September 13, 2022, revised manuscript September 24, 2022, accepted September 24, 2022

DOI: <https://doi.org/10.36660/abchf.20220053>

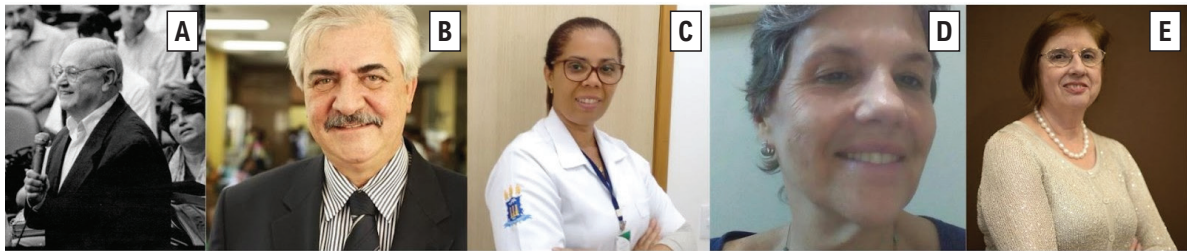


Figure 1 – Professors Hugo Tomassini, Luiz Antonio Santini, Dayse Mary da Silva, Maria Luiza Garcia, and Maria Manuela Alves dos Santos. Hugo Coelho Barbosa Tomassini. Disponível em: <https://www.abrasco.org.br/site/noticias/institucional/nosso-adeus-a-hugo-tomassini/> 52224/. Luiz Antonio Santini Rodrigues da Silva. Disponível em: <https://tribunadaimpressalivre.com/dr-luiz-santini-carpe-diem-e-o-lema/>. Dayse Mary da Silva Correia (Foto autoral). Maria Luiza Garcia Rosa (Foto autoral). Maria Manuela Pinto Carneiro Alves dos Santos. Disponível em: <https://www.cmb.org.br/cmb/index.php/noticias/2408-superintendente-do-cba-e-eleito-a-pela-segunda-vez-uma-das-100-pessoas-mais-influentes-da-saude-no-brasil>.

Brazilian Ministry of Health. The need for data collection by region was highlighted, with targeted protocols and trained professionals for clinical recognition and appropriate management of these patients.^{2,6}

Based on Portuguese physicians who observed an increase in HFpEF in PHC, several primary care patients with HFpEF were identified, and the knowledge of family doctors about the condition was evaluated. These actions resulted in the Digitalis study, a cross-sectional, epidemiological study conducted with all family medicine units in the city of Niterói, with a target population of 110,000 people aged > 45 years.² Professor Antonio José Lagoeiro Jorge was the principal investigator of HF in primary care; he disseminated

knowledge by publishing data on HF in primary care, as well as on the importance of cardiac biomarkers and tissue Doppler echocardiography.^{2,6}

This study allowed us to understand the profile of PHC users in Niterói and to establish preventive measures and early diagnosis in the FHP. The integration between family doctors and specialists is delayed by a lack of understanding of the role of each professional in the comprehensive care of cardiovascular patients. Establishing a relationship between doctors and PHC as early as medical education promotes better perception of the social role of the doctor, general practitioner, or specialist in the health of an entire community.^{3,6}

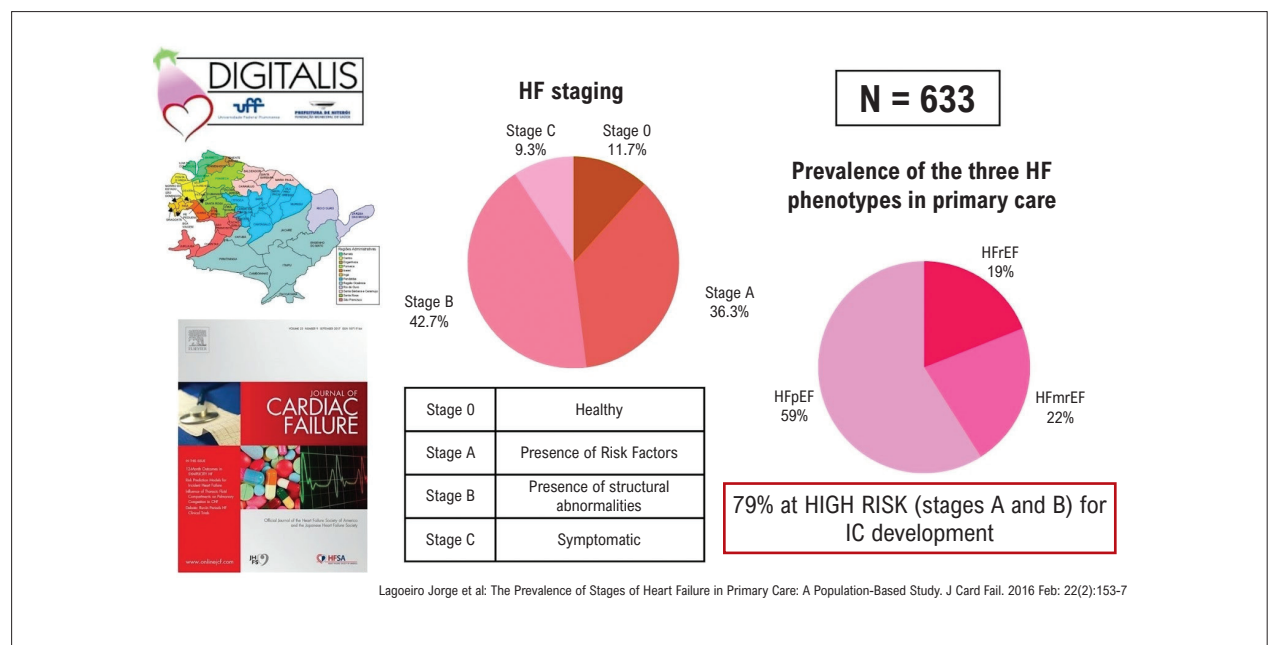


Figure 2 – Findings of the Digitalis study. HF: heart failure; HFmrEF: heart failure with mild-range ejection fraction; HFpEF: heart failure with preserved ejection fraction; HFrEF: heart failure with reduced ejection fraction. Prepared by the authors with data extracted from Jorge et al.¹¹

In view of the aforementioned, the Digitalis study brought the Graduate Program in Cardiovascular Sciences at UFF closer to PHC in Niterói. The study is a legacy left by the graduate program to the population of Niterói that promotes the creation of a service focused on the epidemiological profile of patients using the public health system, allowing the creation of specific public policies for cardiovascular health in PHC in Niterói.

Therefore, the Digitalis Study associated the increased presence of comorbidities commonly associated with HFpEF with a significant prevalence of this syndrome in PHC within a modern diagnostic model using clinical, echocardiographic, and biomarker data. These data revealed the epidemiological importance of HFpEF in Brazil based on a reliable metric that has high potential for external validity for other outpatient settings in Brazil.

References

1. Mesquita ET, Miranda VA. Insuficiência Cardíaca na Atenção Primária. *Rev Socerj*. 2005;18(4):342-44.
2. Jorge AJ, Rosa ML, Fernandes LC, Freire MD, Rodrigues RC, Correia DM. Estudo da Prevalência de Insuficiência Cardíaca em Indivíduos Cadastrados no Programa Médico de Família-Niterói. Estudo Digitalis: Desenho e Método. *Rev Bras Cardiol*. 2011;24(5):320-5.
3. Tavares LR, Velarde LG, Miranda VA, Mesquita ET. Percepções sobre Diagnóstico e Manuseio da Insuficiência Cardíaca: Comparação entre Cardiologistas Clínicos e Médicos de Família. *Arq Bras Cardiol*. 2006;87(2):167-73. doi: 10.1590/s0066-782x2006001500015.
4. Brasil. Ministério da Saúde. Plano de Ações Estratégicas Para o Enfrentamento das Doenças Crônicas e Agravos não Transmissíveis no Brasil 2021-2030. Brasília: Ministério da Saúde; 2021.
5. Jorge AJ, Rosa ML, Ribeiro ML, Fernandes LC, Freire MD, Correia DS, et al. Assessing Strategies for Heart Failure with Preserved Ejection Fraction at the Outpatient Clinic. *Arq Bras Cardiol*. 2014;103(3):231-7. doi: 10.5935/abc.20140120.
6. Brasil. Ministério da Saúde. Estratégia de Saúde Cardiovascular na Atenção Primária à Saúde. Brasília: Ministério da Saúde; 2022.
7. Correia DMS, Cavalcanti ACD, Queluci GC, Dias BF, Pimentel ACE, Jorge AJL, et al. Prevalência de Diagnósticos de Enfermagem Prioritários em Indivíduos Segundo Fatores de Risco para Insuficiência Cardíaca na Atenção Primária. *Res Soc Dev*. 2020;9:E9669109351-1. doi: 10.33448/rsd-v9i10.9351.
8. Tribouilloy C, Rusinaru D, Mahjoub H, Soulière V, Lévy F, Peltier M, et al. Prognosis of Heart Failure with Preserved Ejection Fraction: A 5 Year Prospective Population-based Study. *Eur Heart J*. 2008;29(3):339-47. doi: 10.1093/eurheartj/ehm554.
9. Fontes-Carvalho R, Leite-Moreira A. Heart Failure with Preserved Ejection Fraction: Fighting Misconceptions for a New Approach. *Arq Bras Cardiol*. 2011;96(6):504-14. doi: 10.1590/s0066-782x2011000600012.
10. Hotta VT, Rassi DDC, Pena JLB, Vieira MLC, Rodrigues ACT, Cardoso JN, et al. Critical Analysis and Limitations of the Diagnosis of Heart Failure with Preserved Ejection Fraction (HFpEF). *Arq Bras Cardiol*. 2022;119(3):470-9. doi: 10.36660/abc.20210052.
11. Jorge AL, Rosa ML, Martins WA, Correia DM, Fernandes LC, Costa JA, et al. The Prevalence of Stages of Heart Failure in Primary Care: A Population-Based Study. *J Card Fail*. 2016;22(2):153-7. doi: 10.1016/j.cardfail.2015.10.017.



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