













Do all heart failure patients really need beta-blockers?

 **Dijana Bešić**^{*},
 **Mario Špoljarić**²,
 **Ivan Zeljković**¹,
 **Ante Lisičić**¹,
 **Jelena Kursar**¹,
 **Mario Udovičić**¹,
 **Diana Rudan**¹,
 **Ana Šerman**³,
 **Nikola Pavlović**¹,
 **Andrej Novak**¹,
 **Šime Manola**¹,
 **Ivana Jurin**¹

¹University Hospital Dubrava, Zagreb, Croatia

²General Hospital "Dr. J. Benčević" Slavonski Brod, Slavonski Brod, Croatia

³University of Zagreb, School of Medicine, Zagreb, Croatia

KEYWORDS: beta-blockers, heart failure, all-cause mortality.

CITATION: *Cardiol Croat.* 2024;19(11-12):520. | <https://doi.org/10.15836/ccar2024.520>

***ADDRESS FOR CORRESPONDENCE:** Dijana Bešić, Klinička bolnica Dubrava, Avenija Gojka Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-99-2923-347 / E-mail: dijana.besic94@gmail.com

ORCID: Dijana Bešić, <https://orcid.org/0000-0001-9701-0253> • Mario Špoljarić, <https://orcid.org/0000-0001-5770-3012> • Ivan Zeljković, <https://orcid.org/0000-0002-4550-4056> • Ante Lisičić, <https://orcid.org/0000-0002-4365-9652> • Jelena Kursar, <https://orcid.org/0000-0001-8791-4910> • Mario Udovičić, <https://orcid.org/0000-0001-9912-2179> • Diana Rudan, <https://orcid.org/0000-0001-9473-2517> • Ana Šerman, <https://orcid.org/0009-0007-8360-8466> • Nikola Pavlović, <https://orcid.org/0000-0001-9187-7681> • Andrej Novak, <https://orcid.org/0000-0002-7828-4870> • Šime Manola, <https://orcid.org/0000-0001-6444-2674> • Ivana Jurin, <https://orcid.org/0000-0002-2637-9691>

Introduction: Beta-blockers (BBs) have proven their efficacy in reducing mortality in patients with heart failure with reduced ejection fraction (HFrEF). However, the effects in patients with heart failure with preserved ejection fraction (HFpEF) and heart failure with mildly reduced ejection fraction (HFmrEF) are less clear and consistent data are lacking.^{1,2} The aim of this study was to examine the association of BB therapy with all-cause mortality in different groups of HF patients.

Patients and Methods: We investigated BB use in real-life cohort of patients with heart failure (HF) diagnosis included in the registry in the period between June 2021 and February 2024. We compared all-cause mortality between patients who did not receive any BB therapy and patients receiving BB therapy at three different doses, defined as maximal, medium ($\geq 50\%$ of maximal dose) and low ($\geq 25\%$ of maximal dose). For statistical analysis we used chi-square and Fisher's exact test and the p value of 0.05 was defined as statistically significant.

Results: This registry-based study included 1009 patients with median age of 70 years (IQR 62-76), and median follow-up period of 365 days (IQR 184-367). Total of 247 patients had HFpEF (24.5%), 146 patients had HFmrEF (14.5%) and 616 patients had HFrEF (61.1%). In HFrEF group patients with BB therapy in any dose had significantly lower all-cause mortality compared to the patients without BB therapy (mortality rate 11 vs. 32%, $p=.02$). All-cause mortality rate between patients receiving BB therapy at any dose and patients without BB therapy in both HFmrEF and HFpEF group did not differ. There was no statistically significant difference in dose-related outcomes for three different BB doses in overall HF cohort, nor in each HF group separately. BB use in HFrEF patients with history of AF was associated with significantly lower all-cause mortality (7 vs. 47%, $p<.00001$), but these results did not translate to HFpEF nor HFmrEF patients with history of AF.

Conclusion: Our findings indicate that BB do not improve survival in patients with HFmrEF and HFpEF, independently of history of AF. Real-life studies and well-designed registries with larger cohorts of patients and longer follow-up period are needed to investigate the impact of BB use and dosing on survival in different groups of HF patients.

RECEIVED:
September 17, 2024

ACCEPTED:
October 31, 2024



LITERATURE

1. Zhang X, Shen C, Zhai S, Liu Y, Yue WW, Han L. A meta-analysis of the effects of β -adrenergic blockers in chronic heart failure. *Exp Ther Med.* 2016 Oct;12(4):2489-2496. <https://doi.org/10.3892/etm.2016.3657>
2. Peikert A, Bart BA, Vaduganathan M, Claggett BL, Kulac IJ, Kosiborod MN, et al. Contemporary Use and Implications of Beta-Blockers in Patients With HFmrEF or HFpEF: The DELIVER Trial. *JACC Heart Fail.* 2024 Apr;12(4):631-644. <https://doi.org/10.1016/j.jchf.2023.09.007>