Journal of Diabesity

VOLUME 1 | ISSUE 1 | 2025

Advancing Metabolic Health

Journal of Diabesity

Volume 1 | Issue 1 | 2025

eISSN: [Pending]

Cover Article Title:

Self-Reported Symptoms of Empagliflozin Discontinuation – An Online Survey

---

Authors:

Ahmed Farhan, Mahnoor, Maria Zafar

Pakistan Institute of Medical Sciences, Islamabad

Publisher:

Journal of Diabesity

Published Online: July 2025

Website: https://journalofdiabesity.com

Email: editor@journalofdiabesity.com

Table of Contents

Original Research

Title: Self-Reported Symptoms of Empagliflozin Discontinuation – An Online Survey

Authors: Ahmed Farhan[1], Dr. Mahnoor[2*], Dr. Maria Zafar[3]

1. Assistant Professor of Medicine, Pakistan Institute of Medical Sciences, Islamabad
2. Postgraduate Resident, Pakistan Institute of Medical Sciences, Islamabad
3. Senior Registrar, Pakistan Institute of Medical Sciences, Islamabad

*Corresponding Author email: mahnooryousaf2012@yahoo.com

ABSTRACT

Background and Aims:

Sodium-glucose cotransporter 2 inhibitors (SGLT2i) are a newer class of antidiabetic agents that not only improve glycemic control but also offer additional benefits, including weight reduction and a reduced risk of cardiovascular events. However, their use is associated with various adverse effects, which may lead to treatment discontinuation. This study aimed to evaluate the rate of discontinuation of empagliflozin and to assess the incidence of associated adverse effects and post-withdrawal symptoms.

Materials and Methods:

A cross-sectional study was conducted using an online survey to collect data from 567 adults (≥18 years) who had used empagliflozin for at least three months and subsequently discontinued it for any reason. Participants were recruited via social media and online forums. The survey collected data on demographics, duration of empagliflozin use, reasons for discontinuation, and post-withdrawal symptoms. Statistical analysis was performed using SPSS version 26.

Results:

Of the 567 respondents, 75% (n = 425) had been prescribed empagliflozin (Jardiance) for diabetes, while 25% (n = 142) used it for heart failure. The most common reasons for discontinuation were genital infections (27%, n = 109), urinary tract infections (22%, n = 90), dry mouth and frequent urination (17%, n = 70), perceived lack of efficacy (14%, n = 55), hypotension (11%, n = 45), and ketoacidosis (9%, n = 35). In 67% (n = 231) of cases, patients attributed their discontinuation to adverse effects. Post-withdrawal symptoms most frequently reported included headache (20%, n = 60) and peripheral swelling (17%, n = 50). A majority (68%, n = 200) opted not to resume empagliflozin, while 19% (n = 55) considered restarting the medication.

Conclusion:

While empagliflozin demonstrates clinical efficacy in managing both type 2 diabetes and heart failure—improving glycemic control, promoting weight loss, and reducing cardiovascular mortality—the occurrence of adverse effects remains a key factor in discontinuation.

Awareness of these side effects and proactive management strategies may improve adherence and therapeutic outcomes.

Keywords: Empagliflozin, Diabetes, SGLT2 Inhibitors, Empagliflozin side effects

INTRODUCTION

Heart failure is a common comorbidity in individuals with diabetes, affecting more than 20% of patients aged 65 years and older [1]. The prognosis for patients with both diabetes and heart failure remains poor, with a median survival of approximately four years [2,3]. Evidence from meta-analyses suggests that intensive glycemic control does not significantly reduce hospitalizations for heart failure or overall mortality when compared to standard glucose management [4]. Furthermore, many glucose-lowering agents have not demonstrated a significant improvement in heart failure outcomes and may be associated with adverse effects [5].

Empagliflozin is a highly selective sodium-glucose cotransporter 2 (SGLT2) inhibitor approved for the treatment of type 2 diabetes. It lowers blood glucose levels by inhibiting renal glucose reabsorption and enhancing urinary glucose excretion [6]. In addition to its glycemic benefits, empagliflozin is associated with osmotic diuresis, weight loss, and reductions in blood pressure—achieved without increasing heart rate [7]. Other favorable effects include reductions in serum uric acid levels, vascular resistance, albuminuria, and atrial stiffness, all of which contribute to its cardioprotective profile [8]. When administered alongside standard care, empagliflozin has been shown to significantly

reduce the risk of major adverse cardiovascular events in patients with type 2 diabetes compared to placebo [9].

Given the high prevalence of obesity and overweight in patients with type 2 diabetes, SGLT2 inhibitors have attracted considerable interest for their cardiometabolic benefits. However, despite these advantages, concerns over potential side effects have limited their broader adoption. Misconceptions about the safety profile of SGLT2 inhibitors have contributed to hesitancy among healthcare providers, even though recent evidence suggests that the incidence of adverse events may be lower than previously reported [10–12].

In this context, our study aimed to evaluate the discontinuation rate of empagliflozin within three months of initiation and to investigate the frequency and nature of adverse effects leading to its discontinuation.

METHODOLOGY

This study employed a cross-sectional design using an online survey to collect data from 567 individuals regarding post-withdrawal symptoms of empagliflozin. Adults aged 18 years or older who had taken empagliflozin for a minimum of three months and had subsequently discontinued the medication for any reason were eligible for inclusion. Individuals who were currently using empagliflozin or who failed to complete the survey were excluded.

Participants were recruited through various online platforms, including social media and health-related online forums. They were invited to complete a structured online questionnaire designed to assess their experience with empagliflozin use and discontinuation. The survey collected demographic data, details of empagliflozin use, reasons for discontinuation, and post-withdrawal symptoms.

The questionnaire included the following key questions:

1. Why were you prescribed Jardiance (empagliflozin)?
2. Why did you stop using Jardiance?
3. Do you believe Jardiance withdrawal adversely affected your health?
4. What was the worst symptom you experienced after stopping Jardiance?
5. Have you considered or attempted restarting Jardiance?

Statistical analysis was performed using SPSS version 26. Descriptive statistics were used to summarize demographic characteristics, empagliflozin usage patterns, and the frequency and severity of post-withdrawal symptoms. Associations between empagliflozin use characteristics and post-withdrawal symptoms were evaluated using the Chi-square test.

RESULTS

A total of 567 patients participated in the survey. Of these, 75% (n = 425) were prescribed empagliflozin (Jardiance) for type 2 diabetes, while 25% (n = 142) received it for heart failure.

Among those who discontinued empagliflozin (n = 404), the most commonly reported reasons were genital infections (27%, n = 109) and urinary tract infections (UTIs) (22%, n = 90). Other reasons included dry mouth and frequent urination (17%, n = 70), perceived lack of efficacy (14%, n = 55), low blood pressure (11%, n = 45), and ketoacidosis (9%, n = 35).

Approximately 67% (n = 231) of participants believed that discontinuation of Jardiance adversely affected their health. The most commonly reported post-withdrawal symptoms included headache

(20%, n = 60) and swelling (17%, n = 50). Other symptoms reported were anxiety (12%), palpitations (11%), shortness of breath (11%), excessive urination (9%), blurred vision (8%), difficulty concentrating (7%), and tremors (6%).

When asked about resuming Jardiance, 68% (n = 200) stated they had not resumed the medication, 19% (n = 55) were considering restarting it, 9% (n = 28) reported improvement in symptoms upon resuming, and 4% (n = 13) had resumed but experienced persistent symptoms.

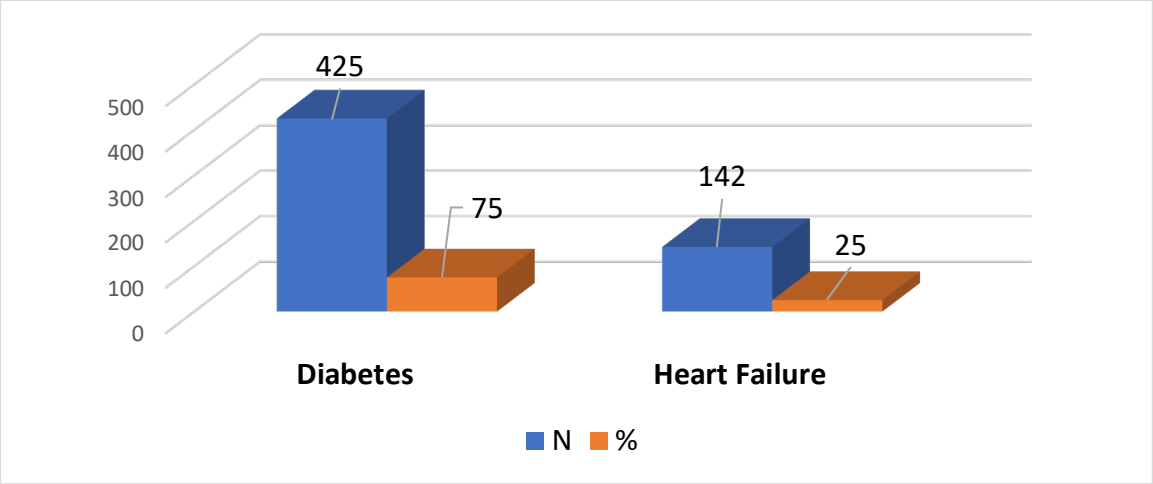

Figure 1 illustrates the reasons for empagliflozin prescription

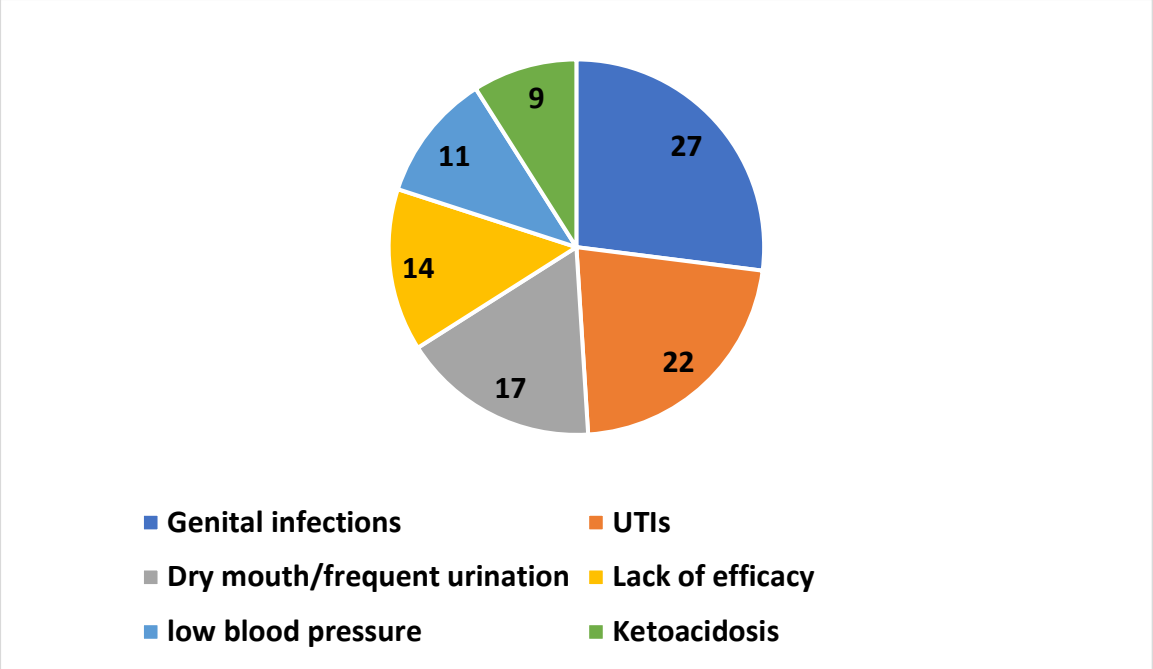

Figure 2 presents the leading causes of discontinuation.

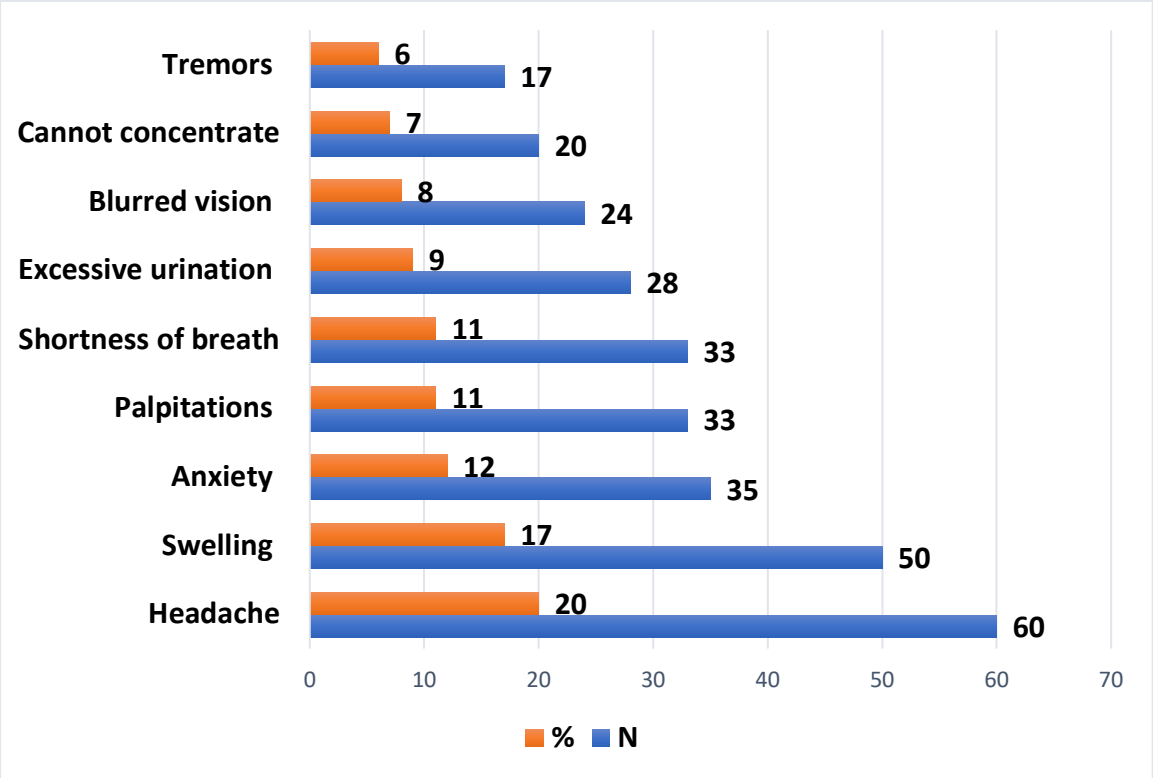

Figure 3 summarizes post-withdrawal symptoms.

Detailed participant responses to survey questions are provided in Table I.

Table I. Survey Questions and Participant Responses (N = 567)

Question	Response	N	%
Why were you prescribed Jardiance?	Heart Failure	142	25%
	Diabetes	425	75%
Why did you stop using Jardiance?	Genital infection	109	27%
	Urinary tract infection (UTI)	90	22%
	Dry mouth/frequent urination	70	17%
	Lack of efficacy	55	14%
	Low blood pressure	45	11%
	Ketoacidosis	35	9%
Do you think Jardiance withdrawal adversely affected your health?	Yes	231	67%
	No	114	33%
Which symptom was the worst after stopping Jardiance?	Headache	60	20%
	Swelling	50	17%
	Anxiety	35	12%
	Palpitations	33	11%
	Shortness of breath	33	11%
	Excessive urination	28	9%

Question	Response	N	%
	Blurred vision	24	8%
	Difficulty concentrating	20	7%
	Tremors	17	6%
Have you tried resuming Jardiance?	Yes, but symptoms persisted	13	4%
	Yes, symptoms improved after resuming	28	9%
	No, but planning to resume	55	19%
	No	200	68%

DISCUSSION

This observational study provides valuable insights into the reasons for discontinuation of empagliflozin and the post-withdrawal effects experienced by patients. While the majority of participants were prescribed empagliflozin for the management of type 2 diabetes, a significant proportion were using it to treat heart failure. The clinical benefits of empagliflozin in heart failure have been well documented, including a reduced risk of hospitalization (HR 0.73; 95% CI 0.61–0.88) and a decrease in primary cardiovascular outcomes in both diabetic and non-diabetic populations [13].

Numerous studies have examined both the beneficial and adverse effects of SGLT2 inhibitors. However, fewer have specifically focused on reasons for discontinuation. In one such study involving 775 patients, 85 (11%) discontinued therapy. The main reasons for discontinuation included

general weakness, over-diuresis, renal dysfunction, and urinary tract infections. Additionally, 31 patients stopped treatment due to cost concerns or side effects such as hypoglycemia and constipation. In contrast, our study found that genital infections (27%) and UTIs (22%) were the most frequently reported reasons for discontinuation, followed by dry mouth/frequent urination (17%), lack of efficacy (14%), low blood pressure (11%), and ketoacidosis (9%). Moreover, 67% of participants perceived that stopping empagliflozin had negatively impacted their health [14].

Saijo et al. [15] similarly reported that frequent urination (19.6%) and genital infections (11.3%) were the leading causes of SGLT2i discontinuation. They also noted that some patients discontinued the drug due to improvements in glycemic control or concerns related to renal function. These findings are generally consistent with our data but emphasize a slightly different prioritization of side effects.

The perception of adverse health outcomes after discontinuation is a key finding of our study. Approximately 67% of respondents reported negative health effects following cessation of therapy. In a prior study, empagliflozin was discontinued in 22.7% of patients within the first three months, 44.3% between three and twelve months, and 33.0% between twelve and twenty-four months [16]. Additionally, the discontinuation of empagliflozin has been associated with increases in fasting blood glucose, N-terminal pro-brain natriuretic peptide, body weight, systolic blood pressure, uric acid, and reductions in hemoglobin and hematocrit—suggesting a potential physiological rebound effect [16].

Post-withdrawal symptoms have not been widely studied. In our cohort, the most commonly reported symptoms after stopping empagliflozin were headache (20%) and peripheral swelling (17%). These findings highlight a need for further research to understand the nature and

mechanisms of post-withdrawal effects, which remain underrecognized in clinical practice.

Interestingly, a substantial proportion of patients (68%) chose not to resume empagliflozin after discontinuation. This reluctance may be attributed to the severity of side effects experienced or inadequate counseling about the drug's long-term benefits. Conversely, 19% of participants expressed a willingness to consider restarting the medication. This underscores the importance of patient education, shared decision-making, and individualized care in improving medication adherence and treatment outcomes.

Compared to existing literature, our study reinforces the role of genitourinary infections as a leading cause of discontinuation but also provides new data on post-discontinuation symptoms—an area seldom explored. This gap in the literature necessitates further investigation to guide future clinical practice.

Conclusion:

Although empagliflozin offers substantial therapeutic advantages in managing type 2 diabetes and heart failure, discontinuation due to adverse effects—and the ensuing post-withdrawal symptoms—poses significant challenges. Clinicians should proactively monitor for common side effects, educate patients about the risk-benefit profile of the drug, and provide adequate support for those who discontinue therapy. Future research should focus on strategies to minimize side effects and better understand the physiological impact of withdrawal, with the goal of enhancing long-term patient adherence and outcomes.

LIMITATIONS

The study relied on self-reported data, which may be subjected to bias. The convenient sampling technique restricted the study to smaller size and may not represents the larger population.

Acknowledgments

The authors acknowledge the contributions of all participants who completed the survey. We also extend our gratitude to the staff of the Department of Medicine, Pakistan Institute of Medical Sciences, Islamabad, for their support in conducting this research.

Conflict of Interest:

The authors declare no conflict of interest regarding the publication of this paper.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical Approval:

Institutional Review Board (IRB) approved the study. Written informed consent provided by all the participants who completed the survey. Participants were assured of confidentiality and anonymity.

REFERENCES

1. Abraham WT, Lindenfeld J, Ponikowski P, Agostoni P, Butler J, Desai AS, et al. Effect of empagliflozin on exercise ability and symptoms in heart failure patients with reduced and preserved ejection fraction, with and without type 2 diabetes. Eur Heart J. 2021 11;42(6):700-710.
2. Vaduganathan M, Docherty KF, Claggett BL, Jhund PS, de Boer RA, Hernandez AF, Inzucchi SE, Kosiborod MN, Lam CSP, Martinez F, et al. SGLT-2 inhibitors in patients with heart failure: a comprehensive meta-analysis of fve randomised controlled trials. Lancet. 2022;400:757–767. doi:10.1016/S0140-6736(22)01429-5.
3. Gilstrap LG, Fonarow GC, Desai AS, Liang L, Matsouaka R, DeVore AD, Smith EE, Heidenreich P, Hernandez AF, Yancy CW, et al. Initiation, continuation, or withdrawal of angiotensin-converting enzyme inhibitors/angiotensin receptor blockers and outcomes in patients hospitalized with heart failure with reduced ejection fraction. J Am Heart Assoc. 2017;6:e004675.
4. Amin OA, Alaarag AF. The impact of discontinuation of sacubitril–valsartan and shifting to angiotensin-converting enzyme inhibitor or angiotensin receptor blocker in patients with heart failure with reduced ejection fraction. Anatol J Cardiol. 2021;25:163–169.
5. van Ruiten CC, Smits MM, Kok MD, Serné EH, van Raalte DH, Kramer MHH, Nieuwdorp M, IJzerman RG. Mechanisms underlying the blood pressure lowering effects of dapagliflozin, exenatide, and their combination in people with type 2 diabetes: a secondary analysis of a randomized trial. Cardiovasc Diabetol. 2022;21:63.
6. Heise T, Jordan J, Wanner C, Heer M, Macha S, Mattheus M, Lund SS, Woerle HJ, Broedl UC. Acute pharmacodynamic effects of

empagliflozin with and without diuretic agents in patients with type 2 diabetes mellitus. Clin Ther. 2016;38:2248–2264.e5.

7. Packer M, Anker SD, Butler J, Filippatos G, Pocock SJ, Carson P, Januzzi J, Verma S, Tsutsui H, Brueckmann M, et al; EMPEROR-Reduced Trial Investigators. Cardiovascular and renal outcomes with empagliflozin in heart failure. N Engl J Med. 2020;383:1413–1424.
8. Butler J, Anker SD, Filippatos G, Khan MS, Ferreira JP, Pocock SJ, Giannetti N, Januzzi JL, Piña IL, Lam CSP, et al; EMPEROR-Reduced Trial Committees and Investigators. Empagliflozin and health-related quality of life outcomes in patients with heart failure with reduced ejection fraction: the EMPEROR-Reduced trial. Eur Heart J. 2021;42:1203–1212.
9. Borges-Júnior FA, Silva Dos Santos D, Benetti A, Polidoro JZ, Wisnivesky ACT, Crajoinas RO, Antônio EL, Jensen L, Caramelli B, Malnic G, et al. Empagliflozin inhibits proximal tubule NHE3 activity, preserves GFR, and restores euvolemia in nondiabetic rats with induced heart failure. J Am Soc Nephrol. 2021;32:1616–1629
10. Packer M, Butler J, Filippatos GS, Jamal W, Salsali A, Schnee J, Kimura K, Zeller C, George J, Brueckmann M, et al; EMPEROR-Reduced Trial Committees and Investigators. Evaluation of the effect of sodium-glucose co-transporter 2 inhibition with empagliflozin on morbidity and mortality of patients with chronic heart failure and a reduced ejection fraction: rationale for and design of the EMPEROR-Reduced trial. Eur J Heart Fail.2019;21:1270–1278.
11. Anker SD, Butler J, Filippatos GS, Jamal W, Salsali A, Schnee J, Kimura K, Zeller C, George J, Brueckmann M, Zannad F, Packer M; on behalf of the EMPERORPrese rved Trial Committees and

Investigators. Evaluation of the effects of sodium-glucose co-transporter 2 inhibition with empagliflozin on morbidity and mortality in patients with chronic heart failure and a preserved ejection fraction: rationale for and design of the EMPEROR-Preserved Trial. Eur J Heart Fail 2019;21:1279–1287.

12. Pham D, Rocha ND, McGuire DK, Neeland IJ. Impact of empagliflozin in patients with diabetes and heart failure. Trends in cardiovascular medicine. 2017 Feb 1;27(2):144-51.
13. Anker SD, Butler J, Filippatos G, Ferreira JP, Bocchi E, Böhm M, et al. Empagliflozin in heart failure with a preserved ejection fraction. N Engl J Med [Internet]. 2021;385(16):1451–61.
14. Bak, M., Chi, S.A., Jeon, K. et al. Discontinuation rates, clinical effects and provocation factors of SGLT-2 inhibitor in the real world. Sci Rep 14, 30653 (2024). https://doi.org/10.1038/s41598-024-71231-7.
15. Saijo, Y.; Okada, H.; Hata, S.; Nakajima, H.; Kitagawa, N.; Okamura, T.; Osaka, T.; Kitagawa, N.; Majima, S.; Senmaru, T.; et al. Reasons for Discontinuing Treatment with Sodium-Glucose Cotransporter 2 Inhibitors in Patients with Diabetes in Real-World Settings: The KAMOGAWA-A Study. J. Clin. Med. 2023, 12, 6993.
16. Anker SD, Butler J, Filippatos G, Ferreira JP, Bocchi E, Böhm M, Brunner–La Rocca HP, Choi DJ, Chopra V, Chuquiure-Valenzuela E, Giannetti N. Empagliflozin in heart failure with a preserved ejection fraction. New England Journal of Medicine. 2021 Oct 14;385(16):1451-61.
17. Kaku, K.; Nakayama, Y.; Yabuuchi, J.; Naito, Y.; Kanasaki, K. Safety and effectiveness of empagliflozin in clinical practice as monotherapy or with other glucose-lowering drugs in Japanese patients with type 2 diabetes: Subgroup analysis of a 3-year post-

marketing surveillance study. Expert. Opin. Drug Saf. 2023, 22, 819–832.