**Supplementary 1.** Characteristics of the Eligible Studies

| **Study** | **Year** | **Country** | **Design** | **Setting** | **Study duration** | **GLP-1 RA** | **Comparator drug** | **Patients** | **Comparator (n)** | **Males (n)** | **Females (n)** | **Age (mean ± SD)** | **Diabetes duration (years)** | **HbA1c** | **BMI** | **Validity score** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Best et al [29] | 2011 | USA | Retrospective cohort | The IMS LifeLink Program: Health Plan Claims (US) Database | June 2005 - March 2009 | Exenatide | Combination therapy, metformin only, sulfonyl urea only, TZD only, and insulin only. | 21,754 | 361,771 | 167,984 | 197,515 | 52.7 ± 8.7 | > 9 m | 250.xx (ICD-9CM) | N/A | N/A |
| Paul et al [30] | 2015 | USA | Retrospective cohort longitudinal pharmaco-epidemiological study | General Electric Centricity database (USA) | June 2005 - December 2012 | Exenatide | Insulin | 2,804 | 28,551 | 12.542 | 18.813 | 56 ± 11 | 1.6 ± 2.2 | 59.6/62.8 | 38.8 ± 7.9 |  |
| Svanstrom et al [20] | 2019 | Denmark and Sweden | Register-based cohort study | Nationwide registers in Denmark and Sweden | January 1, 2010 to December 31, 2016 | Liraglutide | DPP-4 | 23,402 | 23,402 | 27,614 | 19,190 | 59.4 ± 10.1 |  | N/A |  |  |
| Thomsen et al [19] | 2021 | Danmark | Nationwide population-based comparative effectiveness cohort study | Danish Data registry (Danmark) | 2015 to 2018 | Liraglutide | Empagliflozin | 12,706 | 14,498 | 6,820 | 9,264 | 59.3 (50.2 -68.2) | 6.1 (2. 2 - 10.9) | N/A |  |  |
| Nathan et al (subset LIR vs. SIT) [21] | 2022 | USA | Comparative study | 36 clinical centers | From July 2013 to August 2017 | Liraglutide | Sitagliptin | 1,262 | 3,785 | 3,210 | 1,837 | 57.2 ± 10.0 | > 10 | 6.5-8.5% |  |  |
| Nathan et al (subset LIR vs. GLIM) [21] | 2022 | USA | Comparative study | 36 clinical centers | From July 2013 to August 2017 | Liraglutide | Glimepiride | 1,262 | 3,785 | 3,210 | 1,837 | 57.2 ± 10.0 | > 10 | 6.5-8.5% |  |  |
| Natha et al (subset LIR vs. GLA) [21] | 2022 | USA | Comparative study | 36 clinical centers | From July 2013 to August 2017 | Liraglutide | Glargine | 1,262 | 3,785 | 3,210 | 1,837 | 57.2 ± 10.0 | > 10 | 6.5-8.5% |  |  |

GLP-1 RA: glucagon-like peptide 1 receptor agonist; DPP-4: dipeptidyl peptidase-4; TZD: thiazolidinedione; HbA1c: glycosylated hemoglobin; BMI: basal metabolic index; SD: standard deviation.

**References**

19. Thomsen RW, Knudsen JS, Kahlert J, Baggesen LM, Lajer M, Holmgaard PH, Vedin O, et al. Cardiovascular Events, Acute Hospitalizations, and Mortality in Patients With Type 2 Diabetes Mellitus Who Initiate Empagliflozin Versus Liraglutide: A Comparative Effectiveness Study. J Am Heart Assoc. 2021;10(11):e019356.  
doi:10.1161/JAHA.120.019356  
PubMed PMID:34032121 PMCid:PMC8483550

20. Svanstrom H, Ueda P, Melbye M, Eliasson B, Svensson AM, Franzen S, Gudbjornsdottir S, et al. Use of liraglutide and risk of major cardiovascular events: a register-based cohort study in Denmark and Sweden. Lancet Diabetes Endocrinol. 2019;7(2):106-114.  
doi:10.1016/S2213-8587(18)30320-6  
PubMed PMID:30527909

21. Grade Study Research Group, Nathan DM, Lachin JM, Bebu I, Burch HB, Buse JB, Cherrington AL, et al. Glycemia reduction in type 2 diabetes - microvascular and cardiovascular outcomes. N Engl J Med. 2022;387(12):1075-1088.  
doi:10.1056/NEJMoa2200436  
PubMed PMID:36129997 PMCid:PMC9832916

29. Best JH, Hoogwerf BJ, Herman WH, Pelletier EM, Smith DB, Wenten M, Hussein MA. Risk of cardiovascular disease events in patients with type 2 diabetes prescribed the glucagon-like peptide 1 (GLP-1) receptor agonist exenatide twice daily or other glucose-lowering therapies: a retrospective analysis of the LifeLink database. Diabetes Care. 2011;34(1):90-95.  
doi:10.2337/dc10-1393  
PubMed PMID:20929995 PMCid:PMC3005487

30. Paul SK, Klein K, Maggs D, Best JH. The association of the treatment with glucagon-like peptide-1 receptor agonist exenatide or insulin with cardiovascular outcomes in patients with type 2 diabetes: a retrospective observational study. Cardiovasc Diabetol. 2015;14:10.  
doi:10.1186/s12933-015-0178-3  
PubMed PMID:25616979 PMCid:PMC4314769