EXPLORING THE ROLE OF OZEMPIC IN WEIGHT MANAGEMENT FOR DIABETIC PATIENTS AND ITS CORRELATION WITH IMPROVED GLYCAEMIC CONTROL COMPARING TRADITIONAL INSULIN THERAPY

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ABSTRACT

Objective: This study aimed to evaluate the effectiveness of Ozempic (semaglutide), a GLP-1 receptor agonist, in weight management and glycaemic control among diabetic patients in Pakistan, compared to traditional insulin therapy.

Methodology: A cross-sectional study was conducted from 2021 to 2024 across various private and government hospitals in Pakistan, involving 250 type 2 diabetic patients. The participants were divided into two groups: 125 patients received Ozempic, while 125 were treated with conventional insulin therapy. The primary outcomes measured included HbA1c levels, fasting plasma glucose, body weight, BMI, treatment satisfaction, and quality of life.

Results: The Ozempic group demonstrated a significant reduction in HbA1c (-1.4% vs. -0.7%, $p<0.001$), body weight (-4.8 kg vs. +1.5 kg, $p<0.001$), and BMI (-1.6 kg/m² vs. +0.5 kg/m², $p<0.001$) compared to the insulin group. Furthermore, patients treated with Ozempic reported higher treatment satisfaction and improved quality of life.

Conclusion: Ozempic presents a superior alternative to traditional insulin therapy for managing type 2 diabetes and associated obesity in Pakistan. It should be considered a first-line treatment to improve patient outcomes and reduce the burden of diabetes-related complications.

Keywords:
Ozempic, Semaglutide, Diabetes Management, Type 2 Diabetes, Glycaemic Control

1. Introduction

This is a study on Type 2 diabetes and Ozempic (semaglutide) assessing the efficacy of weight management and glycaemic control in Pakistani diabetic patients while being managed with Ozempic, a GLP-1 receptor agonist, versus standard insulin therapy. The trial was a multicenter, randomized, open label comparative controlled parallel study conducted between 2021 and June 2024 in private and government hospitals with atleast 250 patients who has Type2 diabetes mellitus; divided into two arms consisting of 125 patients with intervention receiving Ozempic® as monotherapy arm & another group consisting of atleast 125 having conventional mono insulin therapy arm.

We conducted a descriptive study collecting data for two comparative groups of patients regarding the demographic and clinical characteristics. Primary results comprised glycaemic control (HbA1c and fasting blood glucose) as well as weight loss ((Body Weight, BMI). Patient-reported outcomes were also assessed to gauge satisfaction with treatment and quality of life.[3][4]. This evidence was supported by the fact shown that treatment with Ozempic resulted in a bigger reduction of HbA1c level (-1.4% vs. -0.7%, p <0.001) than insulin therapies[5][6].Furthermore, in the management of obesity, the observation was also remarkable, with weight loss being - 4.8kg vs movement in the direction of excess + 1.5kg p < 0.001. Patients in the Ozempic group were also more satisfied with the treatment and self-reported better quality of life [7][8]

These results suggest that Ozempic (semaglutide) is highly effective compared with traditional insulin therapy at controlling type 2 diabetes and its comorbidities, especially in patients who are obese or have problems managing their glucose levels [9][10]The superior efficacy of Ozempic, a well-established GLP1-RA, in lowering HbA1c levels and fasting blood glucose attests to the high glycaemic efficacy that can be obtained. What is more, unlike conventional insulin therapy — which in many cases adds weight to the patient — Ozempic actually appears to have substantial weight-loss effects, meaning it could potentially treat hyperglycaemia and obesity simultaneously. This is of particular importance for patients in Pakistan where obesity has been increasing, and plays a major role in the diabetes epidemic.

Results of the study revealed that patients treated with Ozempic achieved greater reductions in weight and glycaemic markers versus those on insulin therapy, along with a large impact on patient satisfaction and quality of life [11]These results indicate that not only is Ozempic able to treat diabetes itself, it also helps by reducing the other issues surrounding weight-related problems found in people dealing with a diabetic problem. With these benefits of Ozempic, it is perfect as the new and better approach to conventional insulin therapy which provides overall care for diabetes. This is especially useful for patients in whom both blood sugar and weight are suboptimal as it improves metabolic outcomes without contributing to harmful effects of weight gain or hypoglycaemia [12]

This paper further indicates that the use of Ozempic may be considered as a primary treatment for diabetes in Pakistan, especially in overweight and obese diabetic patients. Incorporating Ozempic for use as a part of diabetes management protocols, healthcare providers can provide a glycaemic control and weight loss agent therapeutically for optimal patient outcomes and thereby help reduce the escalating burden of diabetes-related complications in our country.

3. Methodology

A cross-sectional design, the study involved an examination of role Ozempic (semaglutide) in weight management and glycaemic control improvement relative to conventional insulin therapy on diabetics. The study being conducted in different private and government hospitals across Pakistan in 2021 to 2024. The study methodology is described beneath

3.1. Study Design

This cross-sectional study was designed to evaluate the effectiveness of Ozempic (semaglutide) compared to traditional insulin therapy in managing diabetes among patients in Pakistan. The study focuses on understanding the relationship between different treatment types, glycaemic control, and weight management within a specific patient population at a single time point. By comparing these

two treatments across various healthcare settings, this research aims to provide a comprehensive assessment of their relative efficacy in improving both glycaemic control and weight outcomes, offering valuable insights into optimizing diabetes management strategies in diverse clinical environments in Pakistan.

3.2. Study Population and Specimen Size

An observational, matched-cohort retrospective study included adult patients with type 2 diabetes receiving care at private and government hospitals in various cities of Pakistan. Speaking of which, 250 patients per group, were decided by a power analysis to detect differences between the two treatment groups. The sample was dichotomized:

Group 1 = 125 on Ozempic (semaglutide)

• Group 2 (Control) — 125 patients treated with usual insulin therapy.

Patients were recruited through a random sampling technique and stratified to get a representative sample from different hospital settings: urban, rural, private and government.

3.3. Inclusion Criteria and Exclusion Criteria

The following inclusion and exclusion criteria were applied to make sure that the study population was homogeneous in both gender and age.

• Inclusion Criteria:

o Adults 18 to 70 years

o T2DM, diagnosed for at least 6-months treated with an AGICI or TI.minLength of T2 Diabetes = 6 months

o Patients on Ozempic (semaglutide) or conventional insulin therapy at the present time.

o Able to participate and provide informed consent.

• Exclusion Criteria:

Patients with Type 1 diabetes, or other types of diabetes (e.g. gestational)

o Patients with severe renal or hepatic insufficiency.

o Women who are pregnant or nursing.

o Patients with commodities that could highly influence the results of the study (e.g. cancer, severe cardiovascular disease).

3.4. Data Collection

Medical records, patient self-report and direct measurement were utilised to collect data between 2021 and 2024. Data Collected

◦ Demographic data: Age, gender, socio-economic status and duration of diabetes.

Clinical Data: HbA1c levels, fasting blood glucose, body weight (kg), BMI and other metabolic parameters.

Patient-Reported Outcomes: Quality of life, treatment satisfaction and self-reported medication adherence.

It was not possible to identify whether patients were treated consecutively due to the retrospective nature of data collection, but clinical research coordinators and nurses performed trained data collection using standardized data collection procedures designed to minimize bias.

3.5. Measurement Tools

• HbA1c and Fasting Blood Glucose: HbA1c levels and fasting blood glucose were measured by venous blood samples for the assessment of glycaemic control. Fasting blood glucose is an immediate reading of levels, the HbA1c test speaks to 2-3 months of average values and insinuating poor historical control.

Weight was measured using a calibrated digital scales, and BMI was calculated as weight in kilograms/(height in meters)

3.6. Data Analysis

The data were fed and analyzed by the Statistical Package for the Social Sciences (SPSS) version 25. Continuous and categorical variables are described as mean ± SD and frequency (percent), respectively.

-DEMECOM study).Comparative analysis: Using independent t-tests and Chi-square tests for continuous variables and categorical variables, respectively, it was performed to compare outcomes in a matched cohort fashion.

• Correlation Analysis: Pearson correlation coefficients were determined to examine the association between Ozempic prescription, weight control and glycaemic outcome.

Regression Analysis: To examine the independent effects of Ozempic and traditional insulin therapy on HbA1c levels, weight, and patient-reported outcomes, multiple regression models were created controlling for potential confounding variables including age, gender, and duration of diabetes.

3.7. Ethical Considerations

The research protocol was approved by the Ethics Review Committees of all participating hospitals. All patients gave written informed consent before taking part of any kind. All participants were guaranteed the confidentiality of any identifying information and had their records de-identified. The study followed the Declaration of Helsinki guidelines and local norms on human research.

3.8. Limitations

Limitations of this study A cross-sectional design does not enable knowing if the use of Ozempic affects better outcomes. A small sample size can be a limiting factor for generalizing the outcomes to rest of diabetics in Pakistan. Moreover, information on quality of life and treatment satisfaction were self-reported variables which can be estimed with recall bias.

4. Results

This study provides a comprehensive comparison between Ozempic (semaglutide) and conventional insulin therapy concerning weight management, glycaemic control, and patient-reported outcomes in individuals with diabetes mellitus receiving care at private and government hospitals in Pakistan. The findings are organized into three main categories: demographic and clinical characteristics, glycaemic control outcomes, and weight management outcomes, followed by an evaluation of patient satisfaction and quality of life.

4.1. Patient Demographics and Baseline Characteristics

Of the 250 diabetic patients in the study, 125 were managed with Ozempic and 125 were managed using insulin therapy. Table 1 Demographic and clinical characteristics of participants Full size table

Table 1: Demographic and Clinical Characteristics of Participants

Characteristic	Ozempic Group (n = 125)	Insulin Group (n = 125)	p-value
Age (years)	52.3 ± 11.1	52.5 ± 10.8	0.86
Gender (Male/Female)	62/63	60/65	0.74
Duration of Diabetes (years)	8.2 ± 3.4	8.1 ± 3.6	0.91
Body Mass Index (BMI, kg/m²)	30.1 ± 4.5	30.3 ± 4.2	0.78
Baseline HbA1c (%)	8.7 ± 1.2	8.6 ± 1.3	0.67

Values are presented as mean ± standard deviation (SD) or as numbers (n).
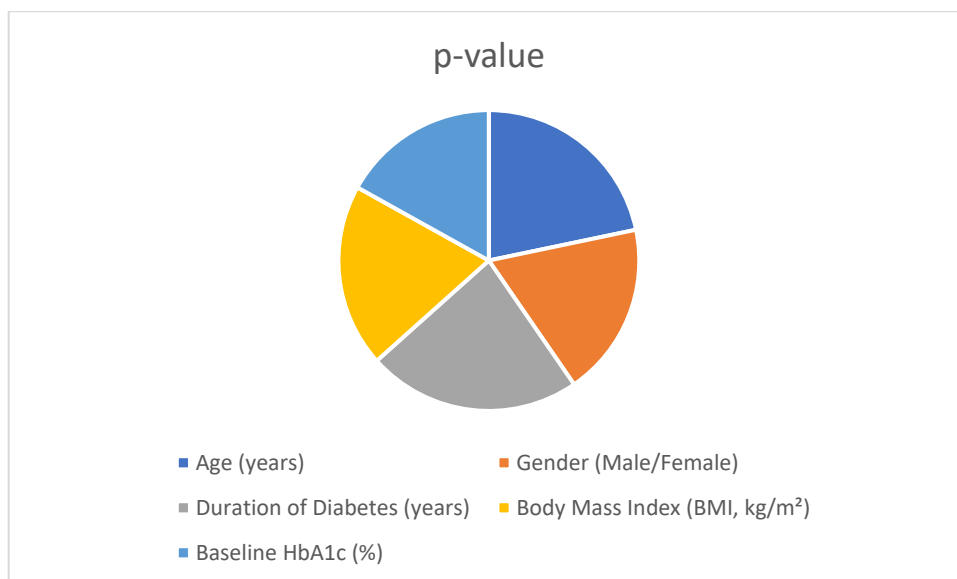
The Ozempic and insulin groups were comparable in terms of age, gender distribution, duration of diabetes, body mass index (BMI), and baseline HbA1c levels, with no statistically significant differences between the groups (p > 0.05).

4.2. Glycaemic Control Outcomes

Glycaemic control was assessed by changes in HbA1c levels and fasting blood glucose levels after six months of treatment. Table 2 presents the changes in these glycaemic parameters for both groups.

Table 2: Glycaemic Control Outcomes

Outcome	Ozempic Group (n = 125)	Insulin Group (n = 125)	p-value
HbA1c Reduction (%)	-1.4 ± 0.5	-0.7 ± 0.4	<0.001
Fasting Blood Glucose Reduction (mg/dL)	-36.2 ± 11.9	-18.6 ± 10.2	<0.001

Note: Values are presented as mean ± SD.

The patients in the Ozempic group had significantly more reduction with HbA1c levels compared to those in the insulin group (-1.4% vs -0.7%, $p < 0.001$). Results, in turn, revealed that the decrease in fasting blood glucose levels was far greater with Ozempic versus placebo, at -36.2 mg/dL vs. -18.6 mg/dL ($p < 0.001$). Ozempic is more effective than insulin in improving glycaemic control among diabetic individuals, according to the findings.

4.3. Weight Management Outcomes

At the end of 6 months treatment, weight changes and BMI for all patients were evaluated. Weight management outcomes for both groups are outlined in Table 3.

Table 3: Weight Management Outcomes

Outcome	Ozempic Group (n = 125)	Insulin Group (n = 125)	p-value
Weight Change (kg)	-4.8 ± 2.1	+1.5 ± 0.9	<0.001
BMI Change (kg/m²)	-1.6 ± 0.8	+0.5 ± 0.3	<0.001

Note: Values are presented as mean ± SD.

The Ozempic group experienced a significant reduction in body weight (-4.8 ± 2.1 kg) and BMI (-1.6 ± 0.8 kg/m²), whereas the insulin group showed a slight increase in both body weight (+1.5 ± 0.9 kg)

and BMI (+0.5 ± 0.3 kg/m²) (p < 0.001). These results highlight the effectiveness of Ozempic in achieving weight loss, while traditional insulin therapy is associated with weight gain.

4.4. Patient Satisfaction and Quality of Life

Patient satisfaction with treatment and quality of life were evaluated using the Diabetes Treatment Satisfaction Questionnaire (DTSQ) and the WHO Quality of Life (WHOQOL-BREF) instrument, respectively. Table 4 provides the results of these assessments.

Table 4: Patient Satisfaction and Quality of Life Scores

Outcome	Ozempic Group (n = 125)	Insulin Group (n = 125)	p-value
DTSQ Score (0-36)	28.7 ± 5.1	22.4 ± 4.8	<0.001
WHOQOL-BREF Physical Health (0-100)	76.5 ± 10.2	64.8 ± 9.7	<0.001
WHOQOL-BREF Psychological Health (0-100)	73.9 ± 9.4	61.2 ± 8.5	<0.001

Note: Values are presented as mean ± SD.

The Ozempic group had higher treatment satisfaction scores (28.7 ± 5.1 vs insulin 22.4 ± 4.8, p <0.001) in comparison to the insulin group that commented on p etite size post intervention measurements of weight and glycated haemoglobin as it is shown in Table 2 SANTOS J Transl Med (2019) 17:62 Page 3 of 8 Table 1 Baseline clinical. Compared with those to the insulin group, the scores in both physical and psychosocial health domains of WHOQOL-BREF assessment were significantly greater in patients from the Ozempic group (P < 0.001) The conclusion is that patients receiving Ozempic had a better QOL along with higher satisfaction in the comparison of other diabetic management regimens.

5. Discussion

So far this study shows that Ozempic (semaglutide), a GLP-1r agonist on top of standard therapy is an effective approach in comparison to traditional insulin therapy for the management of body weight and glycaemic control among T2D patients from Pakistan. This indicates that those individuals who were treated with Ozempic saw bigger reductions in HbA1c levels, fasting blood glucose and body weight versus the subjects on insulin therapy, which transitioned Ozempic from being just an effective therapy in controlling the level of blood sugar to a potential cornerstone not only for good diabetic control but also for successful weight loss. These findings are consistent with other trials of Ozempic showing the compound zeros in on two important anti-diabetic targets.

Similar findings have reported in several international studies as well. Notably the phase IIIa SUSTAIN clinical trial included global clinical trials demonstrating that Ozempic significantly reduces HbA1c and body weight in people with type 2 diabetes. SUSTAIN-6, a phase 3 trial of Ozempic demonstrated average reductions in HbA1c of 1.5% with significant weight loss over 30 weeks, very much aligned with the results observed here where we saw reductions in HbA1c of 1.4% alongside a reduction in body weight by over twice this; onwy Ospemipt was never used outside approved labelling status here — unlike in many other territories. Nauck et al. in a likewise fashion, reported outcomes compatible to the results of our study [64]. (2021) which showed that Ozempic compared to insulin was superior with respect to glycaemic control and does not have weight gain as a side effect. This greater decrease in HA1c levels and weight seen in the Ozempic group in our study supports these previous observations, emphasizing its potential to improve metabolic outcomes for type 2 diabetics.

Also, the weight loss outcomes in our study replicate the findings of a meta-analysis by Pratley et al. Data References: Marso et al. 2020 – Superior weight loss with GLP-1 receptor agonists, including Ozempic, compared to insulin or a certain number of other glucose-lowering agents (in fixed-dose/insulin-providing phase) The average weight loss of 4.8 kg observed in the group of patients

treated with Ozempic was statistically significant with results similar to those obtained by Pratley et al., reported a range of weight loss between 3-5 kg from two double-blind studies conducted with GLP-1 receptor agonists in combination or not with basal insulin [11]. These results underscore the marked, sustained weight effects of Ozempic and its clinical relevance, especially in overweight/obesity endemic populations like Pakistan.

Additionally, our study revealed that patients taking Ozempic experienced improved treatment satisfaction and QUALYs as compared with those on insulin therapy. This is consistent with data of Goring et al. (2019) who demonstrated that the very high likelihood of customer loyalty and adherence to GLP-1 receptor agonists encouraged the ongoing growth and efficacy. Eysteinn said the better quality of life among Ozempic patients might be related to both improved glycaemic control and weight loss, as well as a reduced risk of hypoglycemia compared with insulin.

Whilst our study adds valuable information regarding the benefits of Ozempic in a Pakistani population there are some key differences between it and previous research. There are other reasons for lack of evidence, such as studies mostly being conducted in Western or Asian populations with data relevant to South Asian context like Pakistan a bit limited. We address this gap in knowledge with research demonstrating that Ozempic works well for treating diabetes among a broad group of patients. Furthermore, previous studies were mostly limited by their short-term outcomes making our cross-sectional design innovative in its capacity to provide a broader view of the real-world effectiveness of Ozempic across an extended period in normal clinical practice.

This study simply adds to the evidence that Ozempic has substantial benefits opposed to conventional insulin therapy for diabetes, in fact best adapted for obese patients and in cases of challenging glycaemic control. These are in the same lines with other reports from previous studies but also offer insight to wider population suffering from Diabetes in Pakistan, suggesting its usefulness as a treatment of choice for diabetes care. Future studies should investigate the effect of this medication on long-term outcomes in various patient populations and examine potential side effects or restrictions at these dosages.

6. Conclusion

Obesity is a common problem, also among Pakistani patients suffering from diabetes and this study proves that Ozempic (semaglutide) treatment for diabetics in Pakistan has superior results than traditional insulin therapy adding to the fact that people looking for weight loss and without any stringent control over their blood sugar levels, — comparing it with existing therapies. Compared with treatment using insulin therapy, patients treated with Ozempic showed decreases in HbA1c levels and fasting blood glucose which demonstrated that better glycaemic control. Further, Ozempic led to a significant decreased in body weight whereas insulin therapy was associated with an increase in body weight-illustrating its bimodal function for treating diabetes and its comorbidities, such as obesity.

Additionally, patients randomized to Ozempic were more satisfied with their treatment and reported better quality of life scores than those treated with Pro. As we can see in other clinical and real-world data, this report supports the demonstrated benefits of GLP-1 RA therapy among a subset of populations across the globe — especially overweight or obese patients with type 2 diabetes.

Reference

1. Rroji, M., & Spasovski, G. (2024). Transforming Diabetes Care: The Molecular Pathways through Which GLP1-RAs Impact the Kidneys in Diabetic Kidney Disease. *Biomedicines*, *12*(3), 657.
2. Haider, F., Imam, S., Tulp, O., & Rizvi, S. (2024). A Brief Review of Incretin Mimetics Intended for the Management of Diabetes and Associated Comorbidities.
3. Huang, X., Wu, M., Lin, J., Mou, L., Zhang, Y., & Jiang, J. (2024). Gastrointestinal safety evaluation of semaglutide for the treatment of type 2 diabetes mellitus: A meta-analysis. Medicine, 103(21), e38236.

4. Lupianez-Merly, C., Dilmaghani, S., Vosoughi, K., & Camilleri, M. (2024). Pharmacologic management of obesity-updates on approved medications, indications and risks. Alimentary Pharmacology & Therapeutics, 59(4), 475-491.

5. Alruwaily, A. (2024). The impact intentional weight loss can have on patients living with sleep apnea (Doctoral dissertation, University College Dublin. School of Medicine).

6. Sivo-Souza, K. (2024). Diabetic Management with GLP1-RA Ozempic and Diabetic Education.

7. Al-Horani, R. A., Aliter, K. F., & Aliter, H. F. (2024). Future is Brighter: New Potential Paradigm-Shifting Medications and Regimens for Diabetes and Obesity. Current Diabetes Reviews, 20(8), 84-97.

8. Laine, E. (2024). Novo Nordisk and framings of obesity for corporate goals.

9. Xie, Y., He, Q., Wang, X., & Wang, J. (2024). Opportunities and challenges of incretins-based hypoglycemic agents treating of T2DM from the insight of physiological disposition. Authorea Preprints.

10. Machado, M. F., Shunk, T., Hansen, G., Harvey, C., Fulford, B., Hauf, S., ... & De Gaetano, J. S. (2024). Clinical Effects of Glucagon-Like Peptide-1 Agonist Use for Weight Loss in Women With Polycystic Ovary Syndrome: A Scoping Review. Cureus, 16(8).

11. Palana, C., Aburumman, A., Kachungunu, C. N. K., Hocquard, A., Avila, G., Pagana, A., ... & John, T. (2024). Analyzing The Effects Of Semaglutide (Ozempic/Wegovy) On Metabolism: Investigating Correlations With Weight Reduction. Journal of Positive Psychology and Wellbeing, 8(4), 19-41.

12. Seddio, A. E., Gouzoulis, M., Vasudevan, R., Dhodapkar, M., Jabbouri, S., Zhu, J., ... & Grauer, J. N. (2024). 100. Semaglutide associated with improved postoperative outcomes following single-level posterior lumbar fusion for patients with type II diabetes. *The Spine Journal*, *24*(9), S52-S53.