Can We Afford to Overlook the Cost of Avoidable Complications in Type 2 Diabetes:

EE48

A Health Economic Analysis to Evaluate What Is the 'Cost of Not' Acting in Türkiye?

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Background & Aim

Sodium-glucose cotransporter-2 inhibitors (SGLT2i) reduce cardiovascular (CV) and renal complications and prolong survival in patients with type 2 diabetes (T2D).

The Cost of Not project outlines a new direction for clinicians, payers and policymakers with the objective of changing the trajectory of the global epidemic of T2D in order to improve outcomes for patients and reduce potentially avoidable complications, particularly cardiovascular and renal complications, which are amongst the most pervasive.[1]

These complications have a significant impact on patient outcomes. Patients with cardiovascular diseases such as heart failure (HF) or chronic kidney disease (CKD) in addition to diabetes have a higher risk of death. [2-6]

While there is broad consensus among healthcare professionals around how diabetes should be managed, in practice T2D is often managed poorly.[1] Many patients are not attaining optimal glucose levels: in Türkiye, only about 40% of people with T2D reached target blood glucose levels (2018), putting them at risk of life-threatening complications.[7]

The complications related to poorly managed T2D are driving the increase in costs associated with diabetes. In Türkiye, diabetes complications represent ~45% of overall healthcare resources used, and up to 71% of diabetes-related costs [8-9]

With better access to early diagnosis, earlier treatment and multi-disciplinary management of diabetes, good glycaemic control may be achieved, potentially avoiding or minimising many of the complications from diabetes and averting the potentially devastating consequences for patients and healthcare systems. [1&10]

The objective of this study is to quantify the economic value of short and long-term reductions in CV and renal complications associated with the use of SGLT2i in T2D against other glucose-lowering drugs (oGLD) or placebo.

Methods

A cohort-level partitioned survival model was developed to quantify economic (from payer perspective) and clinical outcomes associated with the results of clinical (CANVAS, EMPA-REG and DECLARE-TIMI 58) and real-world (CVD-REAL 1&2 pooled) studies comparing SGLT2i with placebo or oGLD, respectively. The model was applied over a time horizon of 20 years with 257,016 TRY (of 3 GDP per capita - 85,672 TRY GDP per capita according to TUIK data for 2021 in Türkiye) willingness-to-pay threshold per incremental QALY.

Data on healthcare resource utilisation, treatment costs and mortality were obtained for Türkiye. The summarising outcome of the analysis was net monetary benefit (NMB) per person. The Cost of Not report builds on an economic analysis adapted using local country data (where available) to describe the additional health and economic value to patients and health systems of using novel medicines to manage T2D. The health economic study quantifies the predicted clinical and health economic outcomes associated with the findings of real-world studies of SGLT2 inhibitors use (CVD-REAL 1 & 2 pooled) and clinical trial Cardiovascular Outcomes Trials (CVOTs) data. The results provide an understanding of the cost of inaction specifically for Türkiye.

Time horizon:

Estimating outcomes over a time horizon of up to 20 years, using a 6-monthly cycle

Modelled outcomes:

MI, Stroke, HHF, All-cause mortality (ACM), Renal progression through CKD stages, to the onset of ESRD

Health outcomes:

The impact of CV complications (MI and stroke) and renal progression expressed in terms of quality adjusted life years (QALYs)

Economic outcomes:

Estimation of direct and societal costs and QALYs, with value summarised in terms of net monetary benefit (NMB). Net monetary benefit (NMB) is a summary statistic that represents the value of an intervention in monetary terms. This figure is calculated by first assuming a willingness to pay threshold then converting health benefits (QALYs) into a monetary value in local currency. Incremental costs are then subtracted from this. So, the incremental NMB describes the total monetary value of estimated differences in total expected QALYs and total expected costs.

Utilisation of healthcare systems:

Hospitalisation for HF and reduction of incidents of ESRD.

Results

The Cost of Not economic analysis shows that a reduction in complications has the potential ;

- to decrease the number of cardiovascular events including ACM, MI and stroke;
- to enable patients to have a longer and better quality of life based on QALY and life year gains and
- to decrease the societal costs of T2DM.

An estimated 0.5021 QALY gain (based on CVD-REAL) (Table-1) and 0.2957 QALY gain (based on CVOTs) (Table-2) per patient on top of QALYs captured in previous cost-effectiveness studies, based on the reduction of cardiovascular and renal incidents.[11]

The value of the QALY gain primarily, plus the cost offset of avoiding hospitalisations for heart failure and end-stage renal disease, amounts to an additional benefit of up **to** 60,473 TRY (Table 2) vs placebo based on CVOTs and was 111,166 TRY (Table 1) vs oGLD based on CVD-REAL.

Table-1

Results - CVOTs: Overall population	SGLT-2i	Placebo	Incremental
Life years	11,248	10,969	0,279
QALYs	8,627	8,332	0,2957
Direct costs	75.800 TRY	59.225 TRY	16.575 TRY
Societal costs	6.870 TRY	7.931 TRY	-1.060 TRY
Net monetary benefit	2.134.717 TRY	2.074.244 TRY	60.473 TRY

Table-2

Results - CVD-REAL: 1 & 2	SGLT-2i	oGLD	Incremental
Life years	12,382	11,783	0,600
QALYs	9,581	9,079	0,5021
Direct costs	75.783 TRY	56.255 TRY	19.528 TRY
Societal costs	3.727 TRY	5.370 TRY	-1.643 TRY
Net monetary benefit	2.382.870 TRY	2.271.704 TRY	111.166 TRY

Conclusions

The health economic modelling analysis has suggested a clear additional value to patients and payers, of reducing CV events by comparing the benefits of SGLT2 inhibitors against oGLD or placebo. Early introduction of SGLT2i in patients with T2D is a cost-effective therapeutic option with the potential to reduce the complications of T2D and increase quality of life.

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Supported by AstraZeneca

Presented at ISPOR Europe 2022, 6 November – 9 November