Cardioprotective pharmacotherapy in patients with type 2 diabetes across the Middle East and Africa: the PACT-MEA study


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Background: There is limited information about the management of cardiovascular (CV) risk in patients with type 2 diabetes (T2D) in the Middle East and Africa. For patients with T2D and established atherosclerotic cardiovascular disease (eASCVD) or those at risk for ASCVD, global guidelines recommend the use of antidiabetic medications with proven cardiovascular and kidney benefit (glucagon-like peptide-1 receptor agonists [GLP-1 RAs] and sodium-glucose cotransporter-2 inhibitors [SGLT2is]), in addition to lipid lowering, blood pressure lowering, and antiplatelet therapy, independent of baseline HbA1c or metformin use.

Purpose: To determine the use of pharmacotherapy among a population of patients with T2D and eASCVD or high/very high ASCVD risk in seven countries across the Middle East and Africa.

Methods: Adult patients with T2D were enrolled in a cross-sectional, observational study in Bahrain, Egypt, Jordan, Kuwait, Qatar, South Africa, and United Arab Emirates. Pharmacotherapy data extracted from the medical charts of patients during a routine scheduled clinic visit in 2022 were analysed. Descriptive statistics were used to characterize patients with T2D and their glucose-lowering pharmacotherapy use by age, diabetes duration, body mass index, HbA1c, microvascular complications, estimated glomerular filtration rate (eGFR), and urinary albumin to creatinine ratio (UACR).

Results: Of the 3726 patients in the overall study sample (mean age, 58 ± 12; male, 53%), one in five had eASCVD (21%) and nearly all were classified as being at high (69%)/very high risk (30%, includes eASCVD), according to European Society of Cardiology (ESC) 2021 guidelines. About one-third (36%) of patients were taking SGLT2is (Table 1, range across countries: 20%-64%). Use of SGLT2is was similar across age and BMI but more patients with T2D for ≥10 years (40%) received these medications than those with T2D for <10 years (31%). More males than females were on SGLT2is (40% vs 32%). Use of SGLT2is was also higher among patients with HbA1c ≥7% (42% vs 33%, Table 2). SGLT2i use was similar by eGFR and UACR levels. Few (13%) of the overall sample of patients with T2D received GLP-1 RAs (Table 1, range across countries: 3%-25%), the use of which declined with age. More females than males were taking GLP1-RAs (16% vs 11%). More patients with obesity (BMI ≥30 kg/m2) received GLP-1 RAs than those without obesity (18% vs 8%); use was also higher among patients with eGFR ≥60 (14% vs 9%, Table 2).

Conclusions: Despite availability of cardio-renal therapy in each of the seven participating countries in the Middle East and Africa, few patients with T2D who had eASCVD or were at high/very high risk for ASCVD received SGLT2is or GLP-1 RAs, as recommended by guidelines. Active prioritization of cardio-renal protective therapies based on CV risk and renal target organ damage should be addressed given the high burden of disease and complications in the region.
## Table 1

<table>
<thead>
<tr>
<th>Medications</th>
<th>HbA1c</th>
<th>Microvascular complications (patients classified as having one of the three conditions)</th>
<th>eGFR (mL/min/1.73m²)</th>
<th>UACR (mg/g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;7%</td>
<td>27%</td>
<td>Retinopathy</td>
<td>Neuraphy</td>
</tr>
<tr>
<td>Glucose-lowering therapies, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biguanides</td>
<td>1137</td>
<td>1851</td>
<td>687 (73.3)</td>
<td>343 (62.7)</td>
</tr>
<tr>
<td>Insulin</td>
<td>1883</td>
<td>2227</td>
<td>354 (67.8)</td>
<td>534 (62.7)</td>
</tr>
<tr>
<td>Sulfonylureas</td>
<td>1526</td>
<td>1764</td>
<td>354 (67.8)</td>
<td>534 (62.7)</td>
</tr>
<tr>
<td>DPP-4 inhibitors</td>
<td>1276</td>
<td>1414</td>
<td>354 (67.8)</td>
<td>534 (62.7)</td>
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<tr>
<td>SGLT2 inhibitors</td>
<td>1126</td>
<td>1264</td>
<td>354 (67.8)</td>
<td>534 (62.7)</td>
</tr>
<tr>
<td>GLP-1 receptor agonists</td>
<td>1076</td>
<td>1214</td>
<td>354 (67.8)</td>
<td>534 (62.7)</td>
</tr>
</tbody>
</table>

### Notes
- DPP-4, dipeptidyl peptide-4; eGFR, estimated glomerular filtration rate; GLP-1, glucagon-like peptide-1; HbA1c, glycated hemoglobin; SGLT2, sodium-glucose cotransporter-2; UACR, urinary albumin-to-creatinine ratio.
- BMI: body mass index, DPP-4, dipeptidyl peptide-4; eASCVD, established atherosclerotic cardiovascular disease; GLP-1, glucagon-like peptide-1; SGLT2, sodium-glucose cotransporter-2.
- *According to European Society, 2021 Guidelines: very high risk includes eASCVD.
- By country: Bahrain, 10%; Egypt, 20%; Jordan, 33%; Kuwait, 42%; Qatar, 56%; South Africa, 28%; UAE, 64%.
- By country: Bahrain, 10%; Egypt, 3%; Jordan, 4%; Kuwait, 25%; Qatar, 15%; South Africa, 16%; UAE, 24%.

## Table 2