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Adherence to Diabetes Care Pathways and Risk of Diabetes-Related Complications by Citizenship: A Population-Based Study from The MIGHTY Project (Cup P2022ASXKR)

Iommi Marica[1], Faragalli Andrea[1], Fontanarosa Alessandro[1], Pompili Marco[2], Carle Flavia[1,2], Barbiano di Belgiojoso Elisa[3], Skrami Edlira[1], Gesuita Rosaria[1,4] on behalf of the MIGHTY Project working group

(1) Centre for Epidemiology, Biostatistics and Medical Informatics, Politecnica delle Marche University, Ancona, Italy
(2) Regional Health Agency Marche Region, Ancona, Italy
(3) Department of Statistics and Quantitative Methods, University of Milano-Bicocca, Milano, Italy
(4) IRCCS INRCA, Ancona, Italy
MIGHTY Project working group: Elisa Barbiano di Belgiojoso, Rosaria Gesuita, Stefania M.L. Rimoldi, Dario Pescini, Paolo Berta, Nadia Solaro, Paola Chiodini, Alessandro Avellone, Antonella Zambon, Flavia Carle, Edlira Skrami, Andrea Faragalli, Marica Iommi, Silvana Antonietta Romio

CORRESPONDING AUTHOR: *Iommi Marica, m.iommi@staff.univpm.it*

INTRODUCTION

National and international guidelines on diabetes recommend continuous monitoring of this condition to prevent short- and long-term complications [1–3]. Adherence to the Diagnostic Therapeutic Care Pathway (DTCP) is evaluated by the Italian Ministry of Health using annual indicators based on five key recommendations [4], to ensure uniformity of care across all regions. However, equitable access to these services remains a public health challenge, particularly for migrant populations, who may face cultural, linguistic, or systemic barriers.

OBJECTIVE

Within the MIGrants' HealTh and healthcare access in ItalY (MIGHTY) project, this population-based study aimed to compare adherence to DTCP in subjects with new diagnosis of diabetes between migrant and Italian populations, and to evaluate the association between citizenship and diabetes complications in the Marche Region, between 2013–2023.

METHODS

A population-based cohort study was conducted using Healthcare Utilization Databases from the Marche Region, including Regional Beneficiary, Hospital Discharge, Drug Prescription, Outpatient Care, and Exemption databases.

The cohort of new cases of diabetes included adults (≥18 years) with a first diabetes-related event between 2013 and 2017, defined as: ≥2 prescriptions of glucose-lowering drugs (ATC: A10) within one year, ≥1 hospitalization with diabetes as primary/secondary diagnosis (ICD-9-CM: 250.), or ≥1 diabetes exemption (code: 013); the date of the first event was defined as the index date. Exclusion criteria were being resident in Marche Region for less than two years prior to index date, any diabetes-related events in the two preceding years, and childbirth-related hospitalizations (Major Diagnostic Category 14) during the year of inclusion in the cohort or the two prior years.

Subjects were classified as Italian or migrants from High Migratory Pressure Countries (HMPC) based on citizenship [5].

The five recommendations monitored by the Ministry of Health [4] were assessed: ≥2 HbA1c tests (PDTA-05.1), ≥1 lipid profile (PDTA-05.2), ≥1 microalbuminuria test (PDTA-05.3), ≥1 renal function test (PDTA-05.4), and ≥1 eye exam (PDTA-05.5) each per year. The adherence to each recommendation and the overall adherence, i.e. meeting at least 4 out of 5 recommendations (PDTA-05), was annually evaluated over six years from the index date for each subject.

Mixed-effects logistic models for repeated measures were used to evaluate adherence to recommendations considering as independent variables citizenship (Italian vs. HMPC), year of evaluation, sex, age groups (65-74 vs. 18-44, 45-54, 55-64, 75+ years), and Multisource Comorbidity Score (MCS) [6] classes (≤4 vs. 5-9, 10-14, 15-19, ≥20).

Diabetes-related complications were defined as a hospi-

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talization with a primary diagnosis of short- or long-term diabetes complications, or uncontrolled diabetes, or non-traumatic lower limb amputation [7]. Subjects with at least one year of follow-up, were followed up from index date to a diabetes-related complication, all-cause death, emigration out of the region, or December 31, 2023, whichever came first. Cox proportional hazards model was used to estimate the association between citizenship and risk of complications, adjusting for age groups, sex, MCS classes, and including annual adherence to each DTCP's recommendation as time-dependent covariates. Results are reported with 95% Confidence Interval (95% CI). All data were processed in compliance with the European (GDPR, EU 2016/679) and national privacy laws (D.lgs. 196/2003 and subsequent amendments).

RESULTS

The study cohort comprised 28,674 adults with newly diagnosed diabetes, of whom 1,529 (5.3%) were migrants from HMPC. At index date, migrants from HMPC were younger (mean age 50 vs. 66 years), more frequently female (59% vs. 48%), and had lower comorbidity scores (MCS median: 2 vs. 6) compared to Italians.

Migrants from HMPC compared to Italians showed lower observed adherence to all DTCP recommendations: HbA1c (26.1%, 95%CI 25.1-27.1 vs. 36.0%, 95%CI 35.7-36.2), lipids (43.4%, 95%CI 42.2-44.5 vs. 61.3%, 95%CI 61.1-61.6), microalbuminuria (27.0%, 95%CI 25.9-28.0 vs. 31.3%, 95%CI 31.0-31.5), renal function (46.8%, 95%CI 45.7-47.9 vs. 66.2%, 95%CI 66.0-66.5), eye exam (6.7%, 95%CI 6.1-7.3 vs. 8.4%, 95%CI 8.3-8.6), and overall adherence (15.6%, 95%CI 14.7-16.4 vs. 20.3%, 95%CI 20.1-20.6). Mixed-effect models confirmed lower adherence among migrants, except for eye exams (Figure 1).

Of 24,992 with ≥1 year follow-up, 3,229 experienced complications (3,161 Italians, 68 migrants). Six-year complication-free survival was 85.7% (Italians) vs. 94.1% (migrants). In the adjusted Cox regression model, citizenship was not significantly associated with the risk of developing diabetes complications (HR=0.98; 95% CI: 0.77–1.26; p=0.896).

CONCLUSIONS

This study highlights differences in adherence to recommended diabetes care pathways between Italians and migrant populations. However, these differences did not translate into a higher risk of developing diabetes-related complications. Longer period of observation might be required to evaluate the impact of citizenship on adverse diabetes- related outcomes. Sustained monitoring and culturally tailored interventions remain essential to ensure equitable access and prevent future health inequalities.

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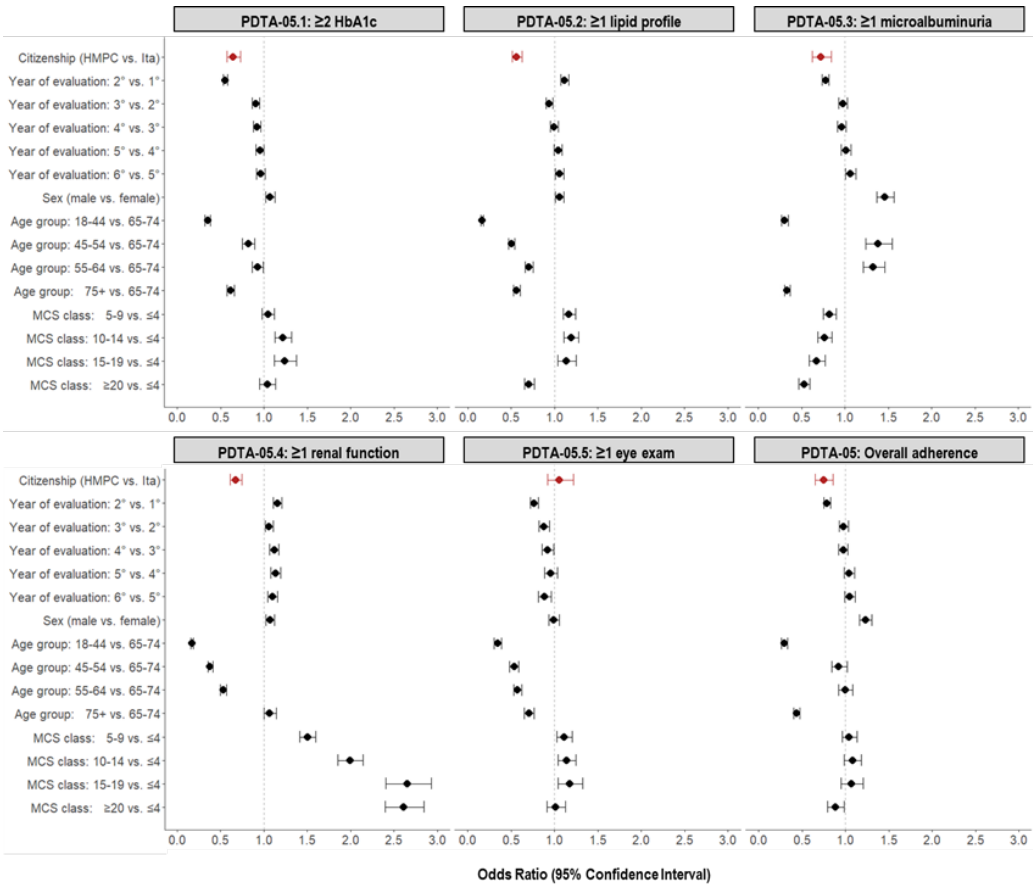
Figure 1. Probability of adherence to the DTCP's recommendations according to citizenship (red dots), adjusted for year of evaluation, sex, age group, and Multisource Comorbidity Score. Results from the mixed-effects logistic models for repeated measures



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