



ARS TOSCANA
agenzia regionale di sanità

Qualità della cura ai pazienti diabetici migranti in Toscana: Uno studio retrospettivo.

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BACKGROUND & AIMS of the STUDY

- The incidence rate of diabetes has been reported higher among migrants who are moreover facing a worse quality of care as compared with non-migrants. This assumption has been found true also in Italy.
- In this context whether migrants are correctly addressed to a standard quality of care for diabetes and are subsequently properly followed up, are the questions raised by the present study, which compares migrants with non-migrants (Italian residents) followed up 5 years since January 1st, 2011 to December 31st, 2015 in Tuscany, a region of central Italy.

METHODS

- After identifying all patients with diabetes resident in Tuscany along the period January 1th 2011-December 31st, 2015 and recruited according to a validated algorithm by regional administrative databases, they have been divided into two groups: Italian residents, and migrants registered with the Regional Health Service.
- Migrants mostly came from High Migration Pressure Countries (HMPC), presenting some differences concerning gender and age among countries of origin (Table 3a). Migrants who entered Italy without permission are not registered with the RHS and are, consequently not included in this analysis.
- Compliance to one or repeated GCI (Guideline Composite Indicator), a process indicator of care quality including one annual assessment of HbA1c and at least two among eye examination, serum lipids measurement and microalbuminuria, was tested in migrants compared to Italian residents with diabetes living in Tuscany, Italy along the observation period. For those with no GCI, the analysis was repeated for the chance of being tested by at least one or more HbA1c measurements.
- The probability of fulfilling at least one GCI along the observation period, was then compared between migrants and Italian residents, through a logistic regression analysis, after adjusting for gender, age, therapy, Charlson index, and having or not received an antidiabetic drug therapy. The expected number of GCIs or HbA1c, conditioning on having already fulfilled at least one GCI or HbA1c, during the period under observation, was obtained through a truncated Poisson model evaluating the Incidence Rate Ratio (IRR) after adjusting for the same covariates used for the logistic regression.
- The analysis was finally completed by comparing migrants and Italian residents with diabetes, after fully matching for main confounders, by means of Coarsened Exact Matching method.
- All statistical analyses were carried out by means of STATA ver. 13.0 (STATA, College Station, TX, USA).

RESULTS

- Main characteristics of Italian residents and of migrants, composed of 130,874 Italian individuals and respectively of 3,992 migrants, is reported in Table 1
- Migrants were on average younger, with females outnumbering males and had a lower amount of previous co-morbidities as testified by Charlson Index. Antidiabetic therapy at baseline was different between the two groups with migrants having a higher prevalence of those with no drug therapy and of those with only insulin. Oral therapy was significantly more prevalent in Italian residents with no difference between those in treatment with insulin in association with oral drugs; Table 1.
- Compliance to at least one GCI as well as to any of its components was significantly lower in migrants than among Italian residents, independently of the country of origin, even after full matching for confounders; Tables 2 and 3.
- The probability of having at least one GCI was significantly lower in migrants than among Italian residents; Fig 1. Even the chance of having more than 1 GCI, as evaluated by the Incidence Rate Ratio (IRR), was significantly lower in migrants, after adjusting for confounders; Fig 1.
- These results were confirmed after fully matching the two cohorts for age, gender, previous hospitalizations and baseline therapy by Coarsened Exact Matching; Fig 1.
- Furthermore we measured the probability of having performed at least 1 HbA1c test in those with no GCI, here used to indicate a “minimally essential” quality of care in patients with diabetes. Such a probability was significantly lower in migrants as compared with Italian residents even after matching procedure; Fig 2.
- Finally, the probability of having more HbA1c tested during the period, in these individuals with no GCI, was again lower among migrants, remaining this gap significant after the matching analysis; Fig 2.

CONCLUSIONS

- According to this study, carried out in Tuscany, Italy, migrants with diabetes have a significantly reduced chance - by about 20%- of adhering to a standardized quality of care indicator (GCI) than diabetic Italian residents, and of being more properly followed up along the 5-yr period, even after correcting for baseline observed differences.
- Even among those who did not comply to at least one GCI, the chance of being tested by HbA1c measurement, here used as a minimal indicator of quality of care, in a single or repeated manner over time, is reduced in migrants by 10-15%.
- All this requires further investigation to better capture the reasons of this discrepancy, meantime promoting a more proactive behavior by Regional Health Care professionals to overcome this gap.

	Italian residents	Migrants	<i>P</i>
No.	130,874	3,992	
Age (mean ± SD)	66.7±13.1	51.5±12.9	0.0001
Males (%)	49.9	46.8	0.0001
Charlson index >0 (%)	45.9	24.3	0.0001
No drug therapy at baseline (%)	17.6	22.9	0.0001
Only insulin (%)	7.9	10.0	0.0001
Only oral drugs (%)	66.1	58.8	0.0001
Insulin + oral drugs (%)	8.4	8.1	0.5217
Adherence to at least 1 GCI (%)	50.0	43.5	0.0001
Percentage of measured HbA1c (%)	85.8	74.2	0.0001
Test of urinary albumin excretion (%)	50.3	44.1	0.0001
Lipid profile assay (%)	85.7	74.3	0.0001
Eye examination (%)	63.2	55.7	0.0001

Table 1 - Characteristics of Italian residents and of migrants.

	Italian residents	Migrants	<i>P</i>
No. (%)	3,992	3,992	
Age (mean ± SD)	51.5	51.5	1.000
Males (%)	46.8	46.8	1.000
Charlson index >0 (%)	24.3	24.3	1.000
No drug therapy at baseline (%)	22.9	22.9	1.000
Only insulin (%)	10.0	10.0	1.000
Only oral drugs (%)	58.8	58.8	1.000
Insulin + oral drugs (%)	8.1	8.1	1.000
Adherence to at least 1 GCI (%)	44.9	43.5	0.191
Percentage of measured HbA1c (%)	76.7	74.2	0.009
Test of urinary albumin excretion (%)	44.8	44.1	0.543
Lipid profile assay (%)	79.7	74.3	0.000
Eye examination (%)	55.7	55.7	0.072

Table 2 - Characteristics of Italian residents and of migrants after matching for age, sex, Charlson index and type of therapy, by Coarsened Exact Matching (CEM) non-parametric approach.

a)

	No.	Mean age (yr)	% male
Africa	1,053	49.9	57.7
European Countries (Non-European Union)	937	54.7	43.8
Latin America	268	51.8	29.1
Asia	1,096	48.9	50.9
Eastern Europe (European Union)	637	53.4	34.6

b)

	GCI=0 No. (%)	GCI >0 No. (%)	Total No.
Africa	584 (56.5)	449 (43.5)	1,033
European Countries (Non-European Union)	552 (58.9)	380 (41.1)	937
Latin America	144 (53.7)	124 (46.3)	268
Asia	623 (56.8)	473 (43.2)	1,096
Eastern Europe (European Union)	340 (53.4)	297 (46.6)	637

Table 3 - Country of provenience and main characteristics of migrants (a); Number of performed GCIs (b).

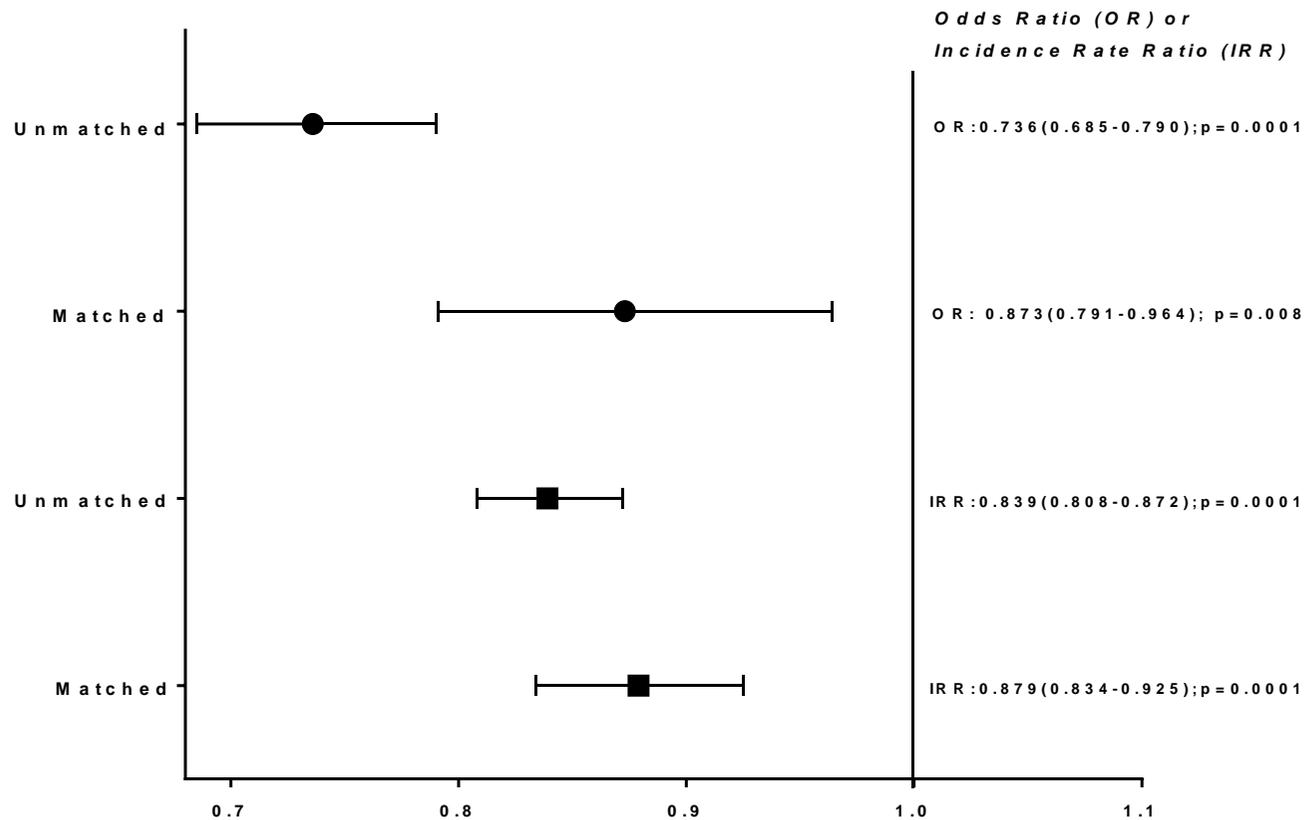


Fig 1- Probability of having at least 1 GCI performed expressed as odds ratio (OR, ●), or of more incident GCI expressed as Incidence Rate Ratio (IRR, ■), comparing unmatched and matched populations of migrants, with Italian residents

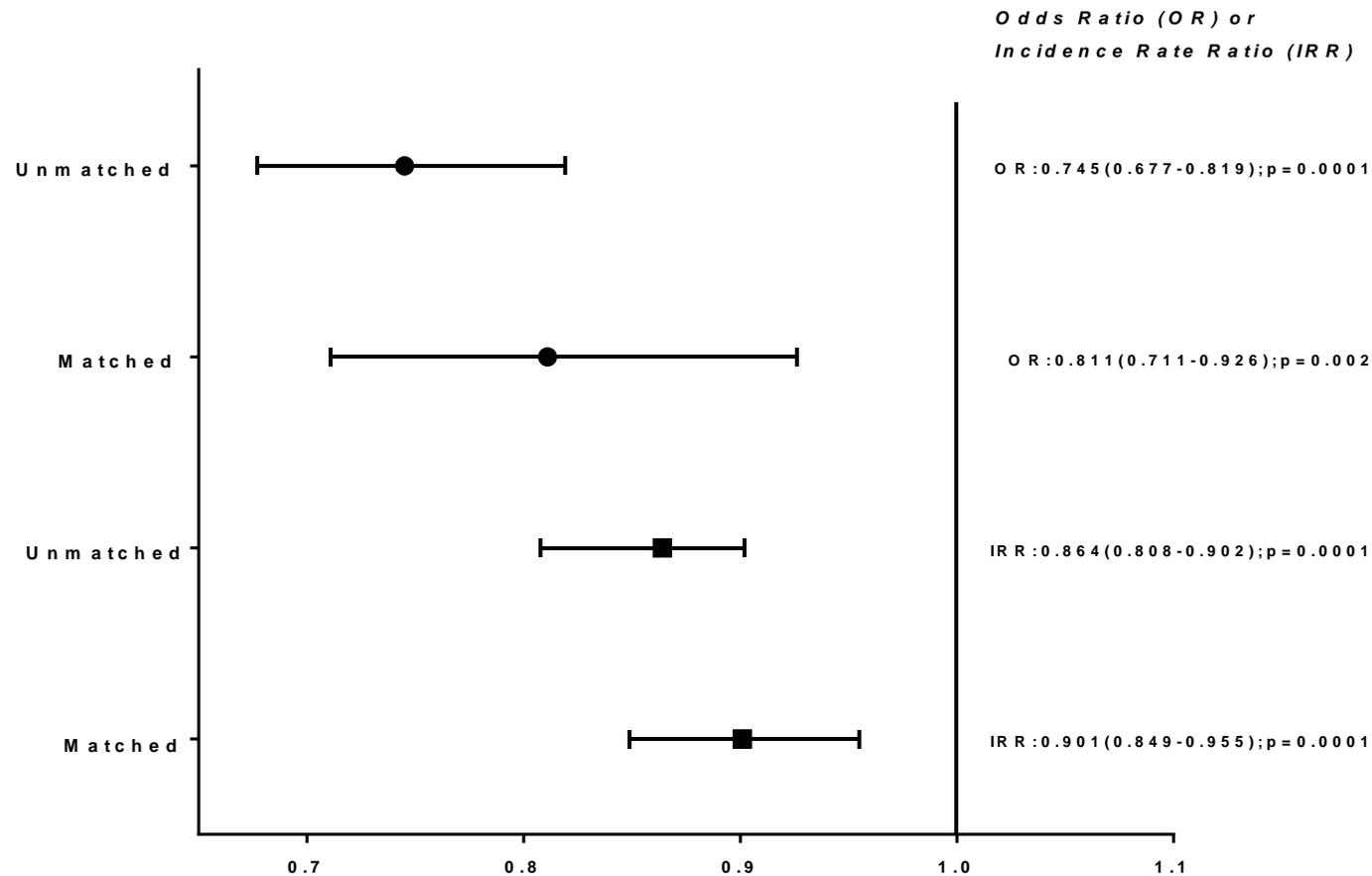


Fig 2- Probability of having at least one HbA1c measured in those with no GCI, expressed as odds ratio (OR, ●), or of more incident HbA1c after the first, expressed as IRR, ■, comparing unmatched and matched populations of migrants, with Italian residents.