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Hospitalization for surgical procedures is lower among immigrants than among non-immigrant preschool children: results from a region-wide study in Italy.

Ugo Fedeli, Natalia Alba, Francesco Zambon, Francesco Avossa, Paolo Spolaore

SER – Epidemiological Department, Veneto Region

Via dei Carpani 16/Z

31033 Castelfranco Veneto (TV), Italy

Corresponding author:

Francesco Zambon

SER – Epidemiological Department, Veneto Region

Via dei Carpani 16/Z

31033 Castelfranco Veneto (TV), Italy

e-mail: frazambon@libero.it

Phone: +39 0423 732793

Fax: +39 0423 732791

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ABSTRACT

Background: Whether immigrant children receive unnecessary treatments and surgical procedures to a greater extent than non-immigrants remains controversial. The study investigates whether hospitalization rates differ between immigrant and non-immigrant preschool children and the extent to which such differences relate to specific pathological conditions.

Methods: All discharges occurring to children aged 1-5 years between 2005 and 2007 in the Italian Region of Veneto (4,8 million inhabitants) were analyzed by Diagnosis Related Groups-DRGs. Crude and age-standardized hospitalization rate ratios-RRs of immigrant versus Italian children were computed.

Results: Hospitalization rates for medical conditions were similar between immigrant and Italian children. However, hospitalization rates among immigrant children were significantly lower than those among Italians for all the most frequent surgical DRGs. RRs of immigrant versus Italian children were 0.46(0.41–0.51) for tonsillectomy/adenoidectomy and 0.46(0.38–0.57) for testes procedures in males; 0.44(0.38–0.49) for tonsillectomy/adenoidectomy and 0.47(0.34–0.65) for extraocular procedures in females. Only circumcision procedures were more frequent (four-fold excess) among immigrants.

Conclusion: Hospitalization rates for all most frequent surgical procedures are significantly lower among immigrants compared to non-immigrant preschool children. Reduced surgery rates among immigrants might result from a complex interplay between parental attitudes and knowledge on pediatric conditions, language barriers, and access to primary care.

What is already known on this subject?

Studies on hospitalization rates among immigrant and non-immigrant preschool children have come to conflicting results. On the one hand, an excess of hospitalization, including recourse to unnecessary treatments, has been reported among immigrant compared to non-immigrant children. On the other hand, hospitalization for specific surgical procedures has been found lower among immigrants.

What does this study add?

Hospitalization rates for medical conditions are similar among immigrant and non-immigrant preschool children.

However, hospitalization rates for surgical procedures are significantly lower among immigrants. Such differences are vast and registered for all the most frequent surgical procedures.

INTRODUCTION

Studies on pediatric hospitalization suggest that a large proportion of admissions are discretionary.[1-3] However, whether this discretion applies to hospitalization of children born to immigrants remain controversial.

On the one hand it has been found that immigrant children carry a greater risk of receiving unnecessary surgical treatments and, in general, have hospitalization rates higher than native-born children.[4-7] On the other hand, hospitalization for certain elective surgical procedures has been found lower in immigrant children than in non-immigrant classmates.[8-10]

This study investigates whether hospitalization rates differ among immigrant and non-immigrant preschool children and the extent to which such differences, if any, relate to specific surgical procedures.

METHODS

The study was carried in Veneto, an Italian Region with a population of 4.8 million (January 2007). In Italy each child with regular residency (irrespective of citizenship) has access to a family pediatrician, who provides ambulatory care and refers to other specialists in case of need; hospital care in public hospitals is free, covered by general taxation.

Hospital admissions for all causes occurring from January 1st 2005 to December 31st 2007 to residents in Veneto aged 1-5 years were extracted from the regional archive of the Hospital Discharge Records-HDR. Such archive includes discharges for all medical and surgical procedures from public and private health service providers, and also includes discharges of residents hospitalized outside the Region.

The mean study population consisted of 227097 children (51% males), of which 13% were immigrant. For the purpose of this study we defined as immigrant those children with foreign

citizenship (born outside Italy or born in Italy to foreign parents). The proportion of children born in Italy from foreign parents is rising; in 2007 these latter were mainly from Eastern Europe (42%), Northern Africa (22%), Central and Southern Africa (12%), and Asia (22%). We obtained figures on the Veneto population by gender, age and citizenship from the Italian Institute of Statistics website [11].

In order to deal with a more homogeneous population the analysis was restricted to preschool children aged 1-5 years and excluded newborns and infants aged < 1 year. Crude hospitalization rates per 1000 children-years by gender, citizenship, medical and surgical Diagnosis Related Groups-DRGs were computed. Since immigrants are more represented among younger children, hospitalization rate among immigrant and Italian children were compared by means of age-standardized rate ratios-RRs with 95% Confidence Intervals.

As data were anonymized, patients with repeated admissions could not be identified. All analyses were carried out using Stata, version 9.

RESULTS

There were 64975 discharges among children aged 1–5 years in the study period; of these 43024 (66%) hospital admissions were related to medical and 21951 (34%) to surgical DRGs. The most frequent surgical DRGs were tonsillectomy/adenoidectomy (n=11103, 51% out of surgical DRGs), hernia procedures (n=1487, 7%), testes procedures for nonmalignancy (n=1419, 6%), extraocular procedures except orbit (n=1311, 6%), miringotomy with tube insertion (n=727, 3%), penis procedures (n=635, 3%), and circumcision (n=520, 2%).

The overall hospitalization rate was 95.4 per 1000 person-years (32.2 for surgical and 63.2 for medical DRGs). Discharge rates were higher among males than females with such a difference being wider for surgical DRGs (39.8 and 24.2 per 1000 in males and females respectively, with a 64% excess among males) than for medical DRGs (69.6 and 56.3 per 1000, with a 24% excess).

Table 1 shows hospitalization rates by DRG, gender and citizenship (immigrant versus Italian children): the overall recourse to hospital care for medical conditions was similar between immigrant and Italian children, with only slightly lower rates among male, but not among female immigrants.

In sharp contrast with the latter finding, age-standardized RRs indicate that overall surgical hospitalizations among immigrants were reduced by 35% in males and 47% in females. Among immigrant children hospitalization rates were significantly lower than those among Italians for all the most frequent surgical DRGs, but hernia procedures in females; only circumcision was found four times higher among immigrants.

Hospitalization rates for extraocular procedures, tonsillectomy/adenoidectomy, miringotomy, testes and penis procedures among immigrants ranged from one-third to two-thirds of figures detected among Italian children. Once hospitalizations for circumcision procedures were excluded, the RRs for all surgical DRGs in immigrant compared to Italian children was similar among males (0.57) and females (0.53).

DISCUSSION

Hospital admissions for medical conditions did not differ according to citizenship in our study population.

On the contrary, differences in hospitalization rates for surgical procedures between immigrant and Italian children were vast and pertained to all the most frequent surgical procedures.

On the whole surgical procedures, which were mostly represented by elective surgeries, accounted for about one third of the overall recourse to hospital care and involved a large proportion of preschool children, especially Italian males.

Notwithstanding the fact that national guidelines aim at reducing its occurrence, adenoidectomy/tonsillectomy accounted for about half of all discharges. On this regards, barriers in

the access of immigrant children to health services may produce a paradoxical protective effect towards inappropriate surgery. [5-6]

Circumcision was the only surgical procedure performed more frequently among immigrant children. Differently from the United States, in Europe circumcision is restricted to medical conditions affecting the foreskin;[12] high rates among foreign children are likely to be explained by ritual circumcision.

Higher hospitalization rates in males compared to females were almost completely explained by sex-specific procedures, as well as by underlying disease rates known to be higher in males (such as hernia procedures),[13] and by a 33% excess in adenoidectomy/tonsillectomy. It is worth of notice that in our analyses, despite large differences in baseline rates, the male to female ratio of adenoidectomy/tonsillectomy was similar among Italian and immigrant children (Table 1).

Different determinants such as specific underlying pathologies, reduced access to appropriate medical care, or a preferential use of emergency departments in approaching health services may play conflicting roles in shaping the recourse to hospital care among the immigrant population.[7,14]

Nonetheless, whilst hospitalization for medical DRGs is similar among Italian and foreign children suggesting that access to acute hospital care is assured to all residents irrespective of citizenship, vast disparities exist in the recourse to elective surgery. Factors such as parental attitudes and knowledge play a relevant role, and drive the four-fold excess in circumcision rates among immigrant children.

Nevertheless, the reduction of surgery rates among the foreign population extends to different otolaryngological, oculistic, urological elective procedures; this suggests difficulties in the access to primary care for appropriate evaluation and referral to the specialist.

Such difficulties may arise from parental lack of knowledge about access to health services, disparate access to information on pediatric conditions, language barriers, time schedules, or other barriers.[14] Lack in social support may also restrict the selection for day surgery procedures.

In the next few years the non-Italian pediatric population is expected to steadily increase; addressing disparities in the delivery of healthcare emerges as a core issue of public health that cannot be delayed.

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Dr Fedeli had primary responsibility for study design and drafting the manuscript.

Dr Alba and dr Avossa performed analyses and revised the manuscript

Dr Zambon and dr Spolaore participated in study design, interpretation of data and drafting the manuscript

COMPETING INTERESTS

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Table 1. Hospitalization rates by Diagnosis-Related Group, gender and citizenship, and age-standardized rate ratios of immigrant versus Italian children.

Diagnosis-Related Group	Crude Rate * 1000		Rate Ratio (95% Confidence Interval)
	Immigrant	Italians	
MALES			
All medical DRGs	66.7	70.1	0.92 (0.89 – 0.96)
All surgical DRGs	26.6	41.7	0.65 (0.62 – 0.69)
041-Extraocular procedures except orbit	1.4	2.0	0.67 (0.52 – 0.87)
060- Tonsillectomy/adenoidectomy	8.5	20.0	0.46 (0.41 – 0.51)
062- Miringotomy with tube insertion	0.4	1.4	0.34 (0.22 – 0.54)
163-Hernia procedures	2.3	3.0	0.74 (0.60 – 0.91)
340-Testes procedures for nonmalignancy	2.1	4.3	0.46 (0.38 – 0.57)
341-Penis procedures	1.3	1.9	0.69 (0.53 – 0.91)
343-Circumcision	4.1	1.1	3.68 (3.07 – 4.41)
Other surgical DRGs	6.6	7.9	0.85 (0.75 – 0.96)
FEMALES			
All medical DRGs	58.7	55.9	1.02 (0.98 – 1.06)
All surgical DRGs	13.1	25.9	0.53 (0.49 – 0.58)
041-Extraocular procedures except orbit	0.9	2.0	0.47 (0.34 – 0.65)
060- Tonsillectomy/adenoidectomy	6.0	15.1	0.44 (0.38 – 0.49)
062- Miringotomy with tube insertion	0.2	1.0	0.19 (0.09 – 0.40)
163-Hernia procedures	1.2	1.4	0.90 (0.67 – 1.20)
Other surgical DRGs	4.8	6.4	0.75 (0.65 – 0.87)