



Metabolic control and complications in Italian people with diabetes treated with continuous subcutaneous insulin infusion

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Lepore G., Bonfanti R., Bozzetto L., Di Blasi V., Girelli A., Grassi G., Iafusco D., Laviola L., Rabbone I., Schiaffini R., Bruttomesso D., Italian Study Group on the Diffusion of CSII (Ansaldo E., **Battezzati M.**, Balbo M., Lera R., Secco G.G.)

Collaborators (224)

Author information

1. Unit of Endocrine Diseases and Diabetology, ASST Papa Giovanni XXIII, Bergamo, Italy.
2. Pediatric Department and Diabetes Research Institute (OSR-DRI), IRCCS Ospedale San Raffaele, Milan, Italy.
3. Department of Clinical Medicine and Surgery, Federico II University, Naples, Italy.
4. U.O di Endocrinologia e Diabetologia, ASL Salerno, Distretto 63, Italy.
5. U.O di Diabetologia ASST Spedali Civili, Brescia, Italy.
6. Endocrinologia, Diabetologia e Metabolismo, Città della Salute e della Scienza Turin, Italy.
7. Regional Center of Pediatric Diabetology "G.Stoppoloni" - University of Campania, Naples, Italy.
8. Department of Emergency and Organ Transplantation, Section of Internal Medicine, Endocrinology, Andrology and Metabolic Diseases, University of Bari Aldo Moro, Bari, Italy.
9. Department of Pediatrics, University of Turin, Turin, Italy.
10. UOSD Diabetologia, Ospedale Bambino Gesù, Rome, Italy.
11. Metabolic Diseases, Department of Medicine-DIMED, University of Padua, Padua, Italy. Electronic address: daniela.bruttomesso@unipd.it.

Abstract

BACKGROUND AND AIM:

The objective of this cross-sectional study was to evaluate the degree of glycaemic control and the frequency of diabetic complications in Italian people with diabetes who were treated with continuous subcutaneous insulin infusion (CSII).

METHODS AND RESULTS:

Questionnaires investigating the organisation of diabetes care centres, individuals' clinical and metabolic features and pump technology and its management were sent to adult and paediatric diabetes centres that use CSII for treatment in Italy. Information on standard clinical variables, demographic data and acute and chronic diabetic complications was derived from local clinical management systems. The sample consisted of 6623 people with diabetes, which was obtained from 93 centres. Of them, 98.8% had type 1 diabetes mellitus, 57.2% were female, 64% used a conventional insulin pump and 36% used a sensor-augmented insulin pump. The median



glycated haemoglobin (HbA_{1c}) level was 60 mmol/mol (7.6%). The HbA_{1c} target (i.e. <58 mmol/mol for age <18 years and <53 mmol/mol for age >18 years) was achieved in 43.4% of paediatric and 23% of adult participants. Factors such as advanced pump functions, higher rate of sensor use, pregnancy in the year before the study and longer duration of diabetes were associated with lower HbA_{1c} levels. The most common chronic complications occurring in diabetes were retinopathy, microalbuminuria and hypertension. In the year before the study, 5% of participants reported ≥ 1 episode of severe hypoglycaemic (SH) episodes (SH) and 2.6% reported ≥ 1 episode of ketoacidosis.

CONCLUSIONS:

Advanced personal skills and use of sensor-based pump are associated with better metabolic control outcomes in Italian people with diabetes who were treated with CSII. The reduction in SH episodes confirms the positive effect of CSII on hypoglycaemia.

CLINICAL TRIAL REGISTRATION NUMBER:

[NCT 02620917](https://clinicaltrials.gov/ct2/show/study/NCT02620917) (ClinicalTrials.gov).

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KEYWORDS:

Acute and chronic complications; Continuous subcutaneous insulin infusion (CSII); Diabetes mellitus; Metabolic control