

Hyperosmolar hyperglycaemic state and diabetic ketoacidosis

- A 5-year retrospective study in an university hospital

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INTRODUCTION

Hyperosmolar hyperglycaemic state (HHS) and diabetic ketoacidosis (DKA) are the two most serious acute metabolic complications of Diabetes Mellitus (DM). The authors propose to characterise the admissions for HHS and DKA at an university hospital during a 5-year period. The triad of uncontrolled hyperglycemia, metabolic acidosis, and increased total body ketones concentration characterizes DKA. HHS is characterized by severe hyperglycemia, hyperosmolality, and dehydration in the absence of significant ketoacidosis.

METHODS

An observational, descriptive and retrospective study in adults admitted to the Braga Hospital between January 2009 and October 2013 due to HHS and DKA. The information was accessed via the patients' electronic records. Statistical analysis was carried out using SPSS® (v.21).

INCLUSION/EXCLUSION CRITERIA

Inclusion criteria: More than 18 years old. For patients with DKA, all the following criteria: plasma glucose > 250 mg/dL, pH < 7,30, HCO₃⁻ < 18mEq/L, urine or serum ketones. For HHS: plasma glucose > 600 mg/dL, serum osmolality > 320 mOsm/L and absence of significant ketones. Exclusion criteria: Transferred for admission to another hospital.

POPULATION CHARACTERIZATION

71 patients were admitted with HHS. There was a dominance of female patients (62%). The median age was 77 years (± 12,7 years).

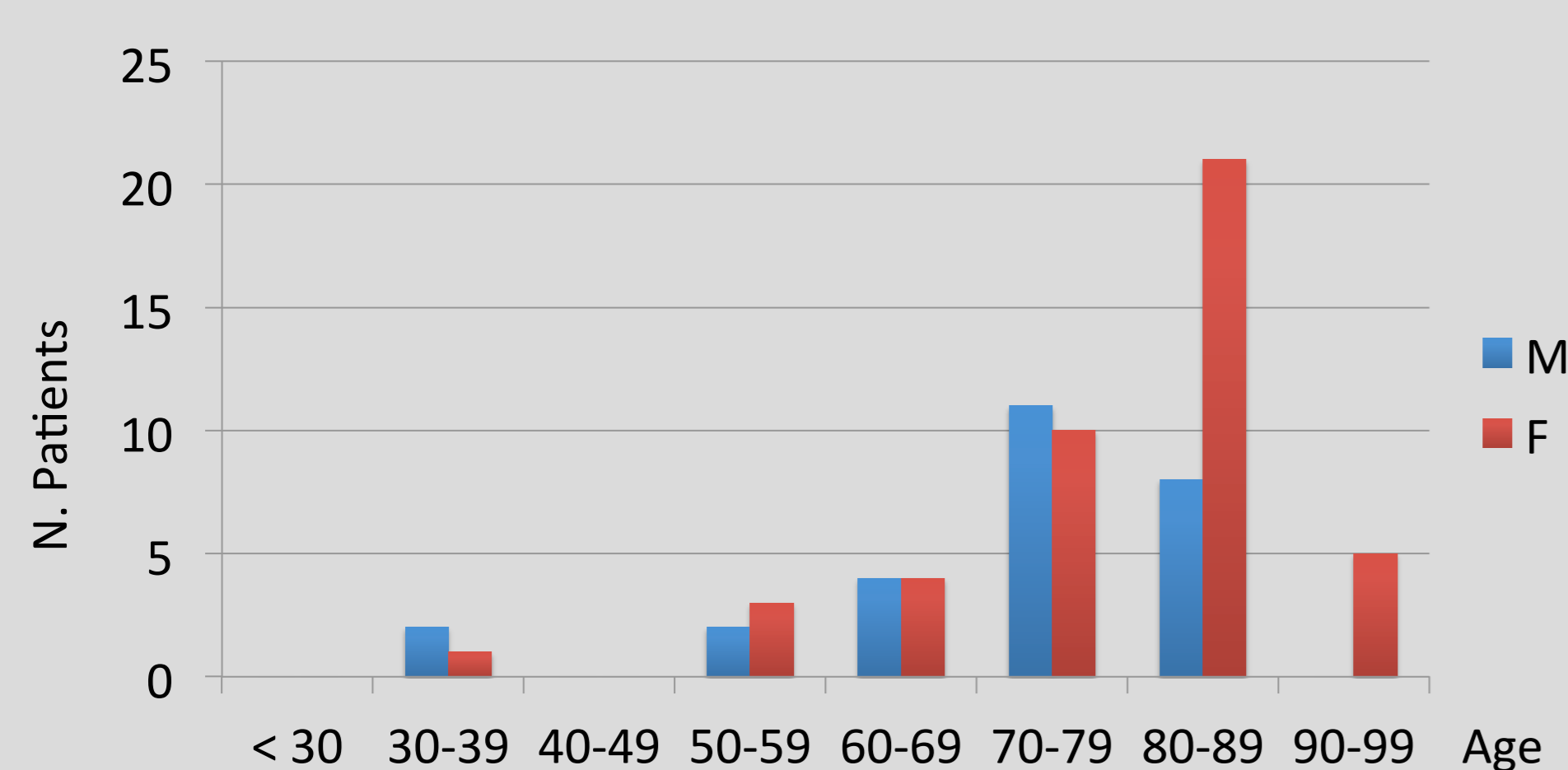


Fig.1-Age and sex of patients

38% were considered to have economic difficulties. A quarter of the patients were unaware they were diabetic. Of the known diabetic patients, 58% were previously followed by the general physician.

AT ADMISSION

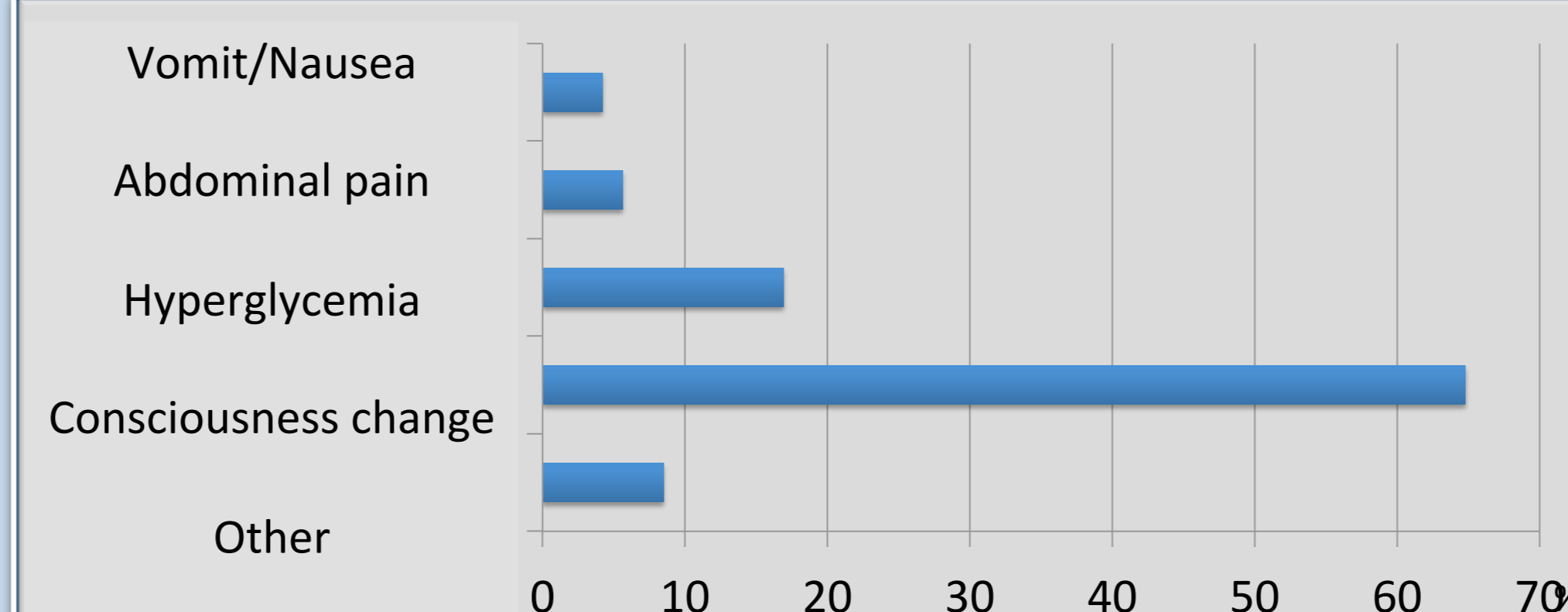


Fig.2-Clinical manifestation at admission

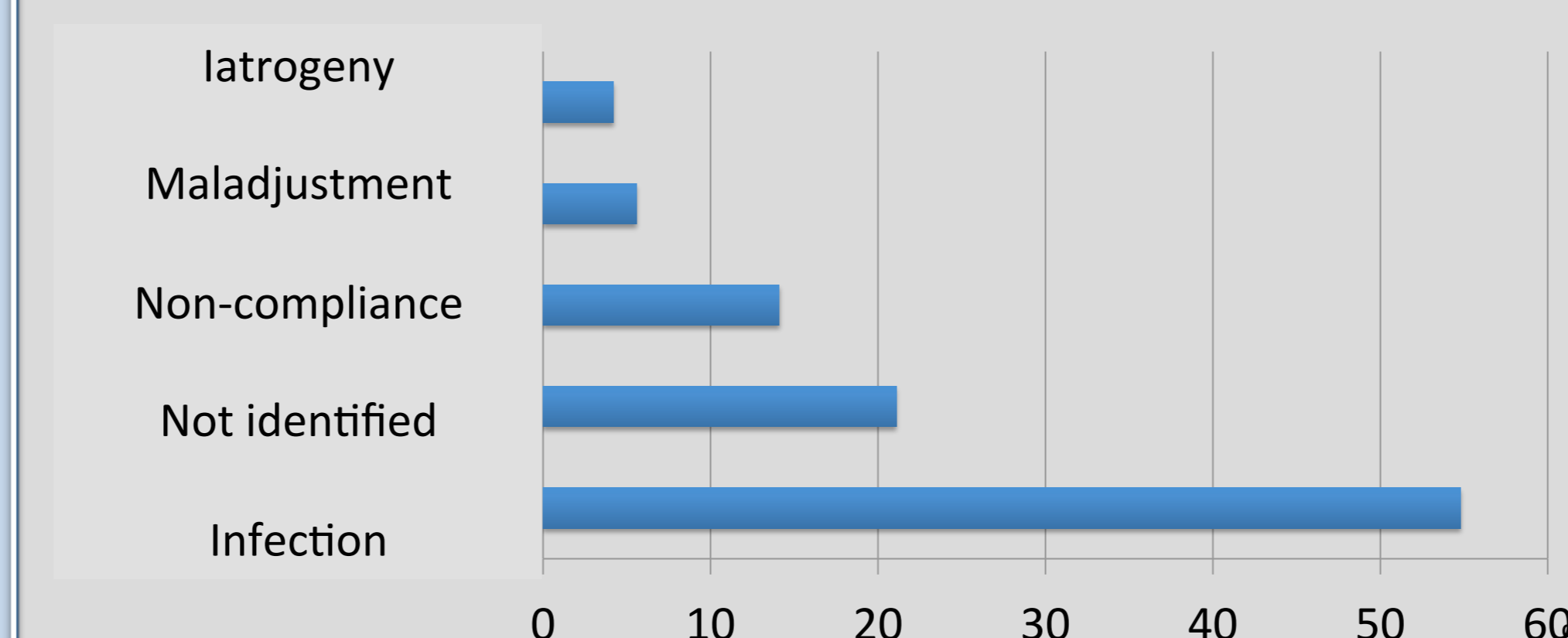


Fig.3 - Precipitating factors

HOSPITALISATION

A quarter of the patients remained in intermediate care for a mean time of stay of 1,35 days.

During their admission, 41% of the patients were referred to Endocrinology. At discharge, 34% were referred to Endocrinology outpatient care.

The median time of stay was 12 days (1,2± days).

4,2% (n=3) passed away during hospitalisation.

AFTER ONE YEAR...

11% (n=8) had been readmitted for the same reason
28% (n=20) had passed away.
The main reason of death was infection.

HHS

44 patients were admitted with DKA.

There was a dominance of female patients (63%). The median age was 53 years (± 20 years).

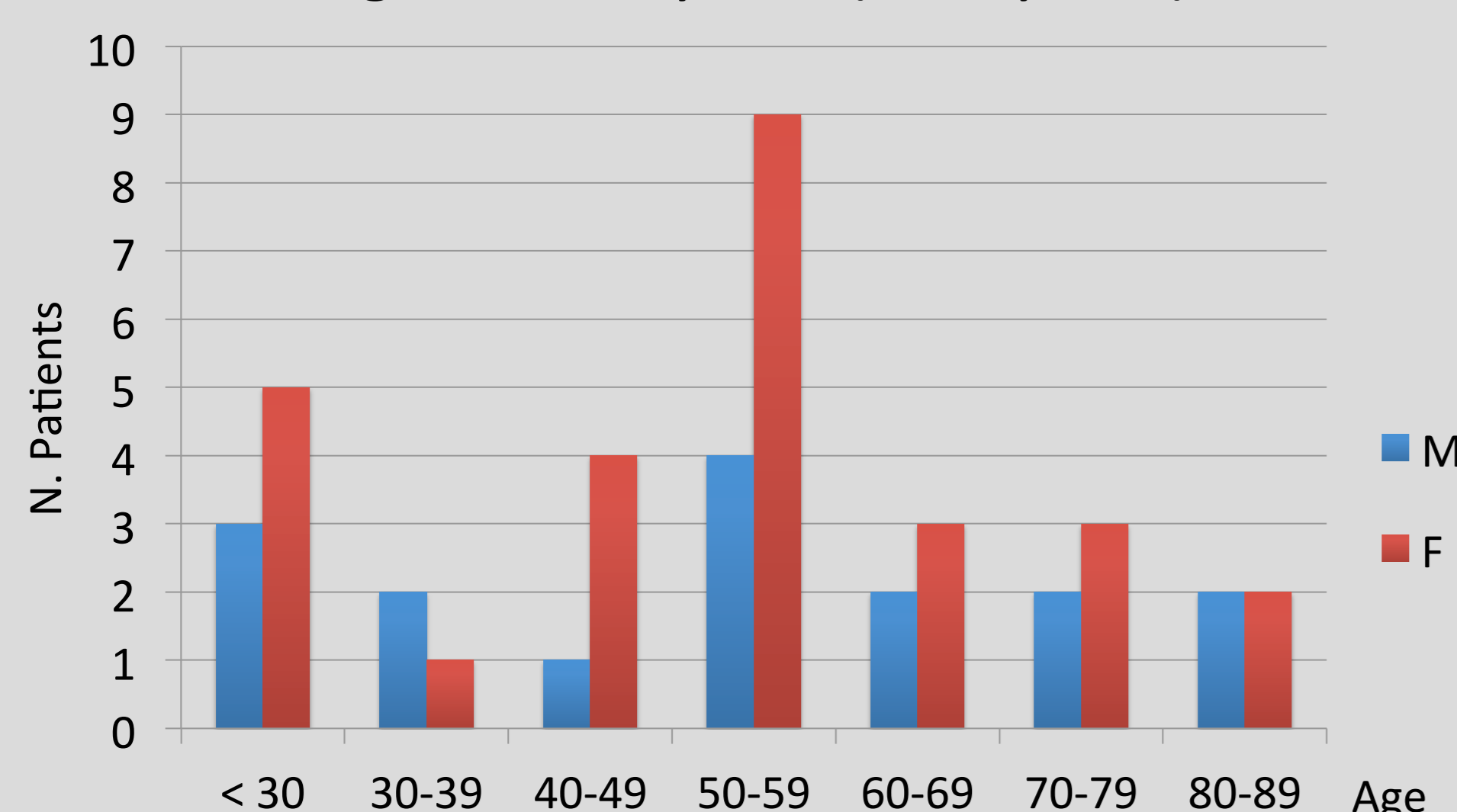


Fig.4-Age and sex of patients

52% were considered to have economic difficulties. A quarter of the patients had already a previous admission for the same reason.

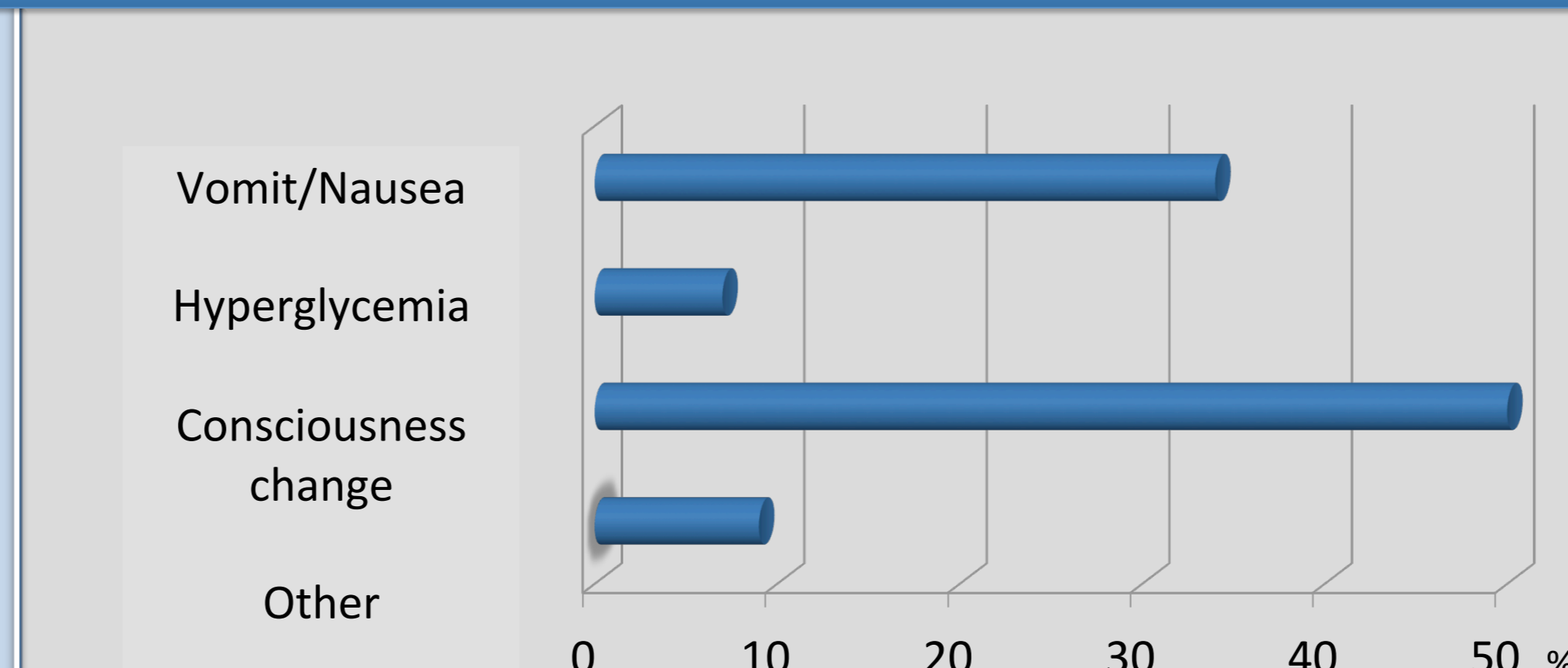


Fig.5-Clinical manifestation at admission

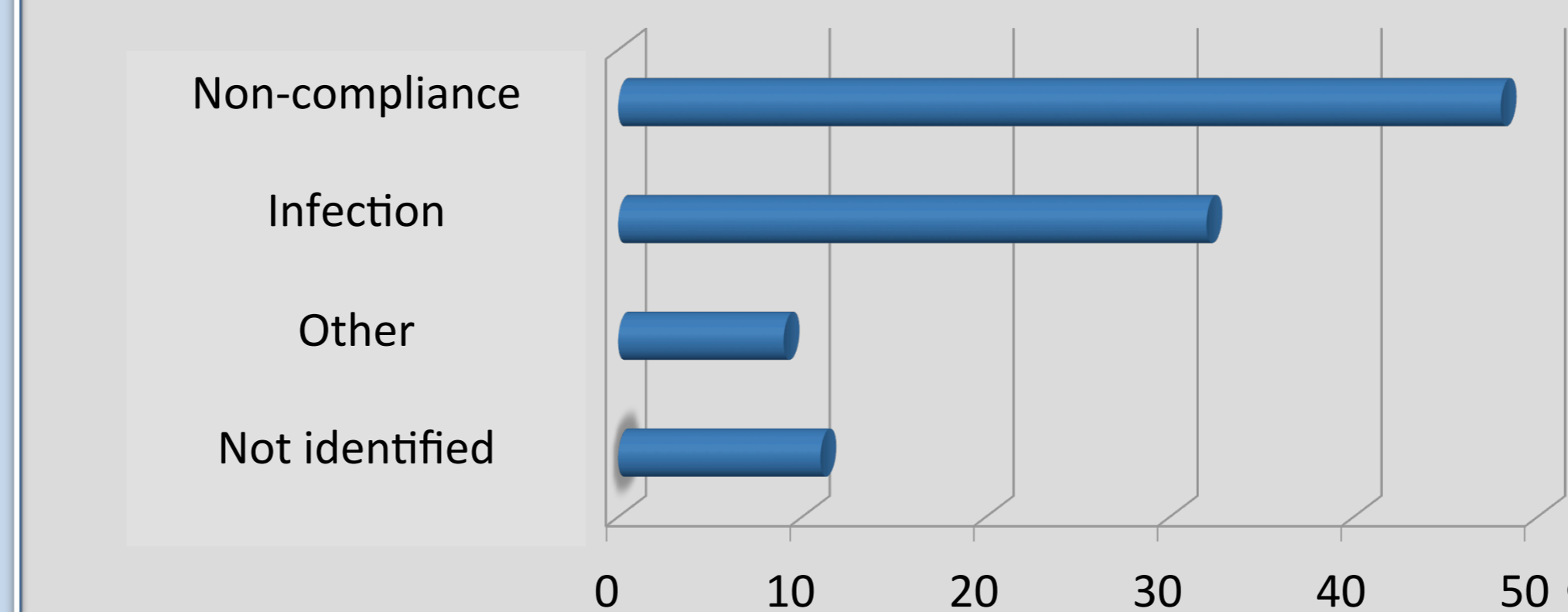


Fig.6-Precipitating factors

73% remained in intermediate care for a mean time of stay of 2,4 days.

During their admission, 65% of the patients were referred to Endocrinology. At discharge, 78% were referred to Endocrinology outpatient care.

The median time of stay was 9,8 days.

6,8% (n=3) passed away during hospitalisation.

AFTER ONE YEAR...

34% (n=15) had been readmitted for the same reason
9% (n=4) had passed away.
The main reason of death was infection.

DKA

DISCUSSION

In about 5 years, 115 patients were admitted with acute complications of DM. Considering the high rate of mortality associated with SHH only a quarter of patients being admitted to intermediate care is below what is described in scientific literature. The precipitating factor for almost half of the patients with DKA, lack of compliance with therapy, strengthens the importance of education in diabetes. The high incidence of readmissions in the year following discharge of those admitted is noteworthy. This shows a need for improved assisted care post-discharge. It is also important to emphasize the high rate of mortality at one year, specially in SHH, mainly due to infections.