

## A tunisian multicenter study among young doctors, nurses and nutritionists

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### Introduction - Aim

- Type 1 diabetes mellitus is increasing worldwide in childhood. **Education** is an essential part of the package care at diagnosis. It addresses children with newly diagnosed type 1 diabetes and their families and is made by young doctors and paramedical staff (nurses and nutritionists).
- The aim of the study was to assess the knowledge of the medical and paramedical staff concerning the global management of type 1 diabetes in children

### Methods

- Cross sectional survey (November 2017-January 2018): **6 pediatric centers** (located in the main 3 tertiary care centers of the capital, Tunis) and one primary care center.
- Evaluation by a questionnaire:
  - knowledge about diabetes:** physiopathology, signs and symptoms, urine examination, A1C, injection sites, treatment regimen, symptoms, causes and management of hyperglycemia and hypoglycemia
  - Food knowledge:** dietary effect on blood glucose, food group knowledge, adequate food consumption.

### Results

- 105 persons** were recruited (Table 1)

	N	%
Sex		
Male	30	28,6
Female	75	71,4
Age (years)		
[24-34]	81	77,1
≥35	24	22,9
Place of studies		
Tunisia	101	96,2
Abroad	4	3,8
Function		
Nurse	38	36,2
Intern	34	32,4
Resident	18	17,1
Nutritionist	15	14,3

Table 1. Socio-demographic characteristics of health care participants

#### Definition of type 1 diabetes, and A1C

- 35% had a good knowledge about physiopathology of T1D (Fig.1)
- Definition of A1C were known by 23.8% but the A1C goal values were **ignored by more than 40%**.

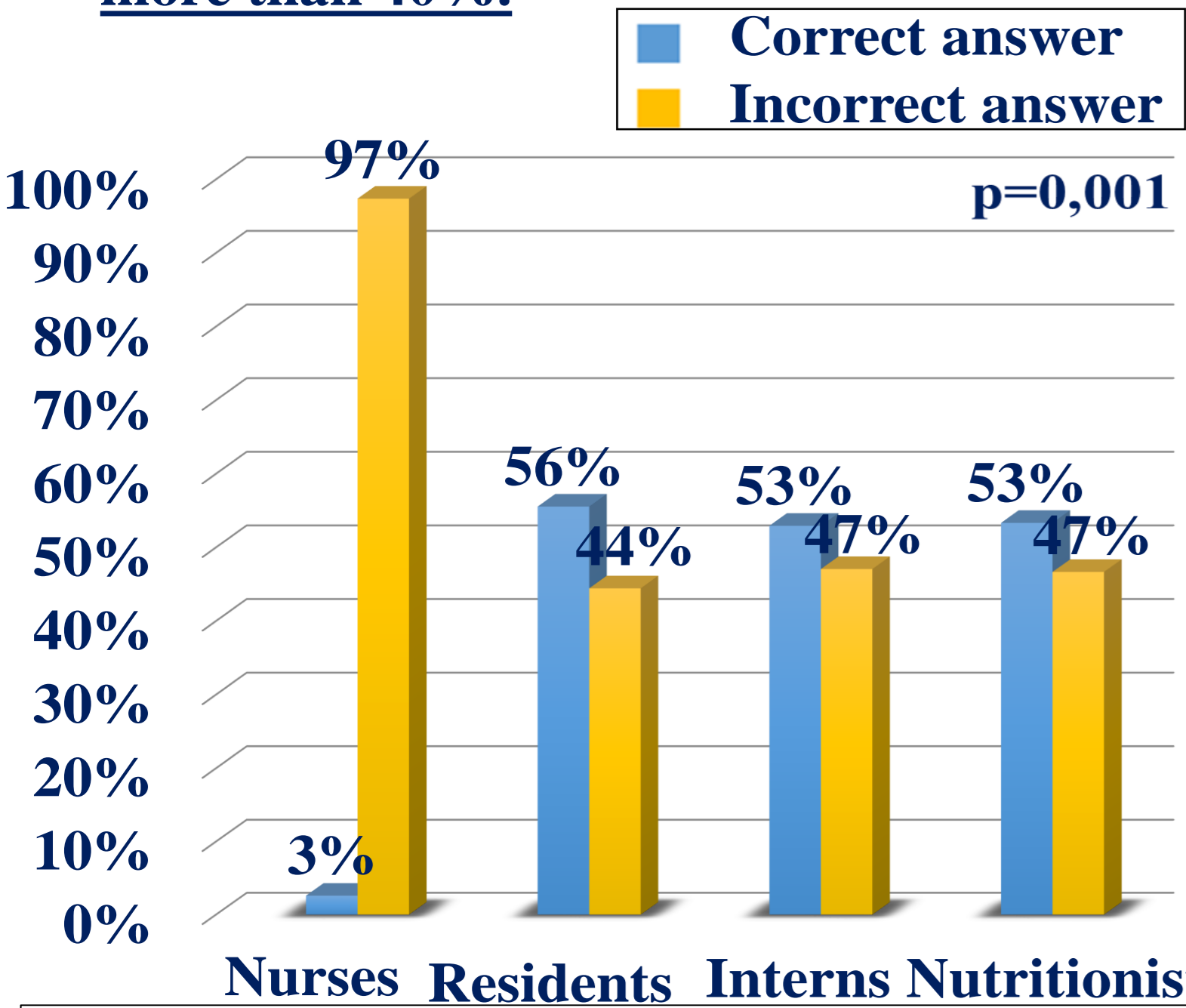


Figure 2. Knowledge about physiopathology of T1D

#### Hypoglycemia

- 53% knew the hypoglycemia threshold: nutritionists (73,3%) > residents (72,2%) > interns (52,9%) > nurses (34,2%) (p=0.02)
- 23% knew signs of hypoglycemia and 41% knew all the causes of hypoglycemia
- 34% knew how to act correctly in case of hypoglycemia (Fig.4)

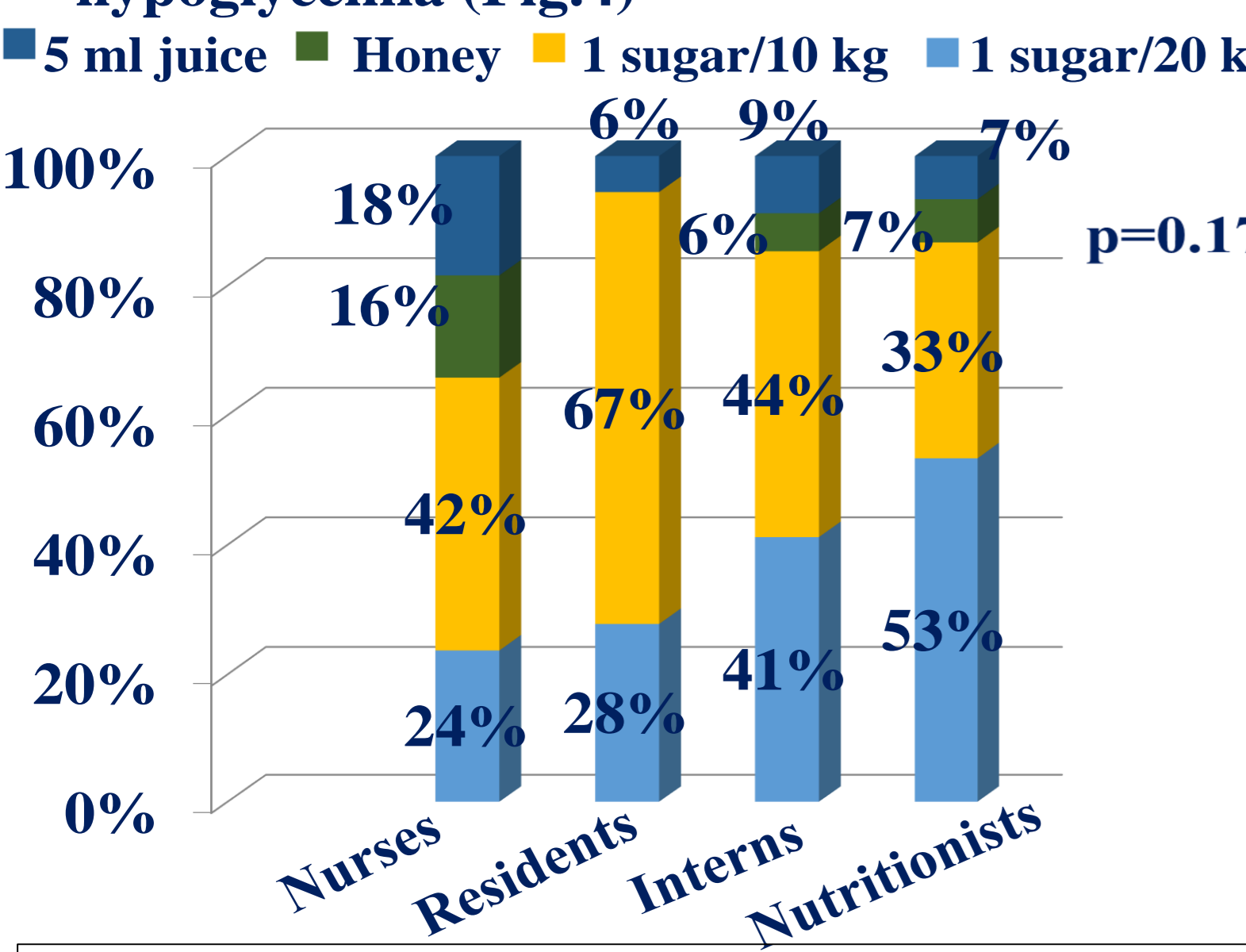


Figure 4. Knowledge about management of hypoglycemia

- Only **31.3%** of the medical and paramedical staff had received specific education in diabetes in children: seminars 42% (Fig.1).

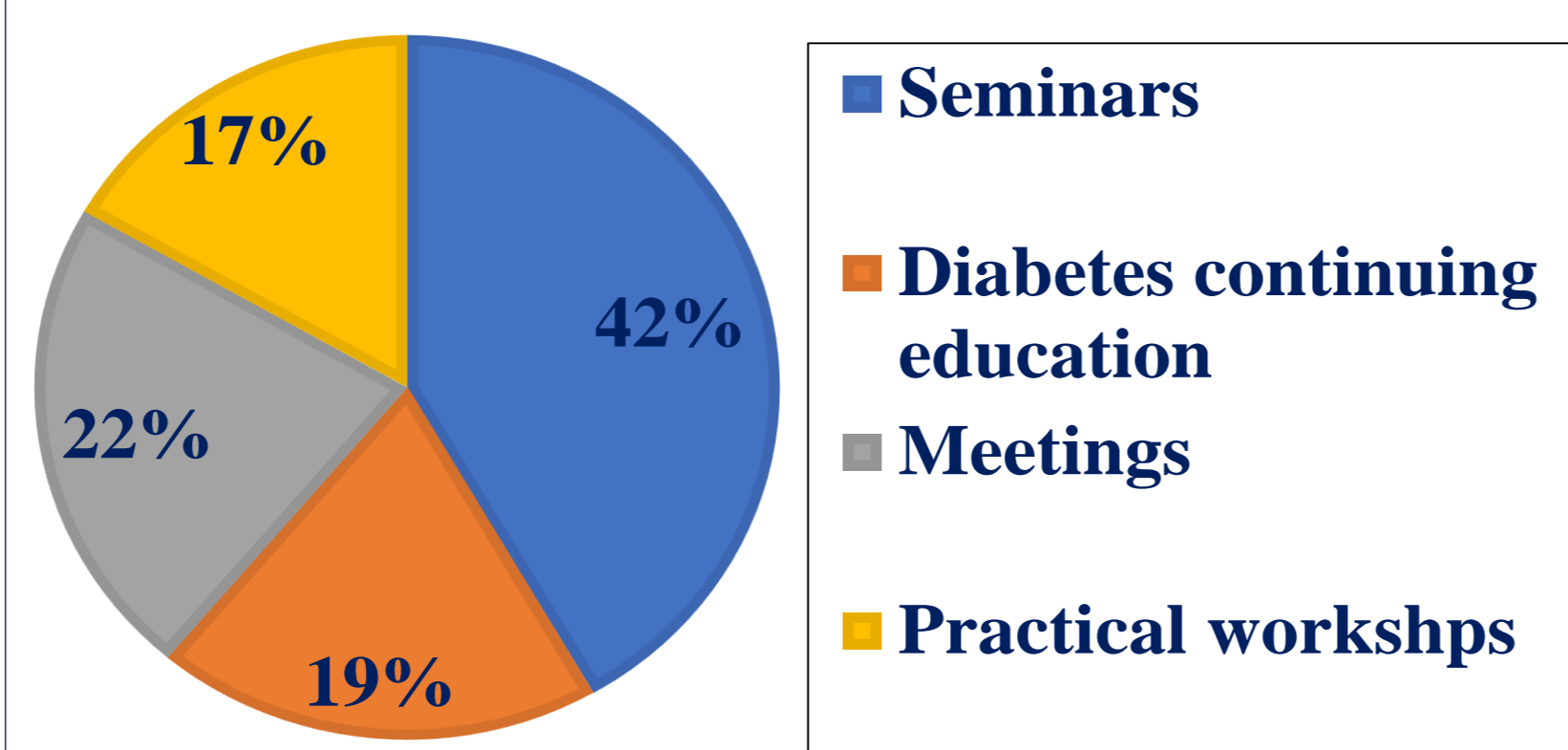


Figure 1. Type of specific education in diabetes in children

#### Cardinal Symptoms of Type 1 Diabetes

- 34% of participants has **correctly cited** polyuria, polydipsia, weight loss and asthenia (Fig.3)

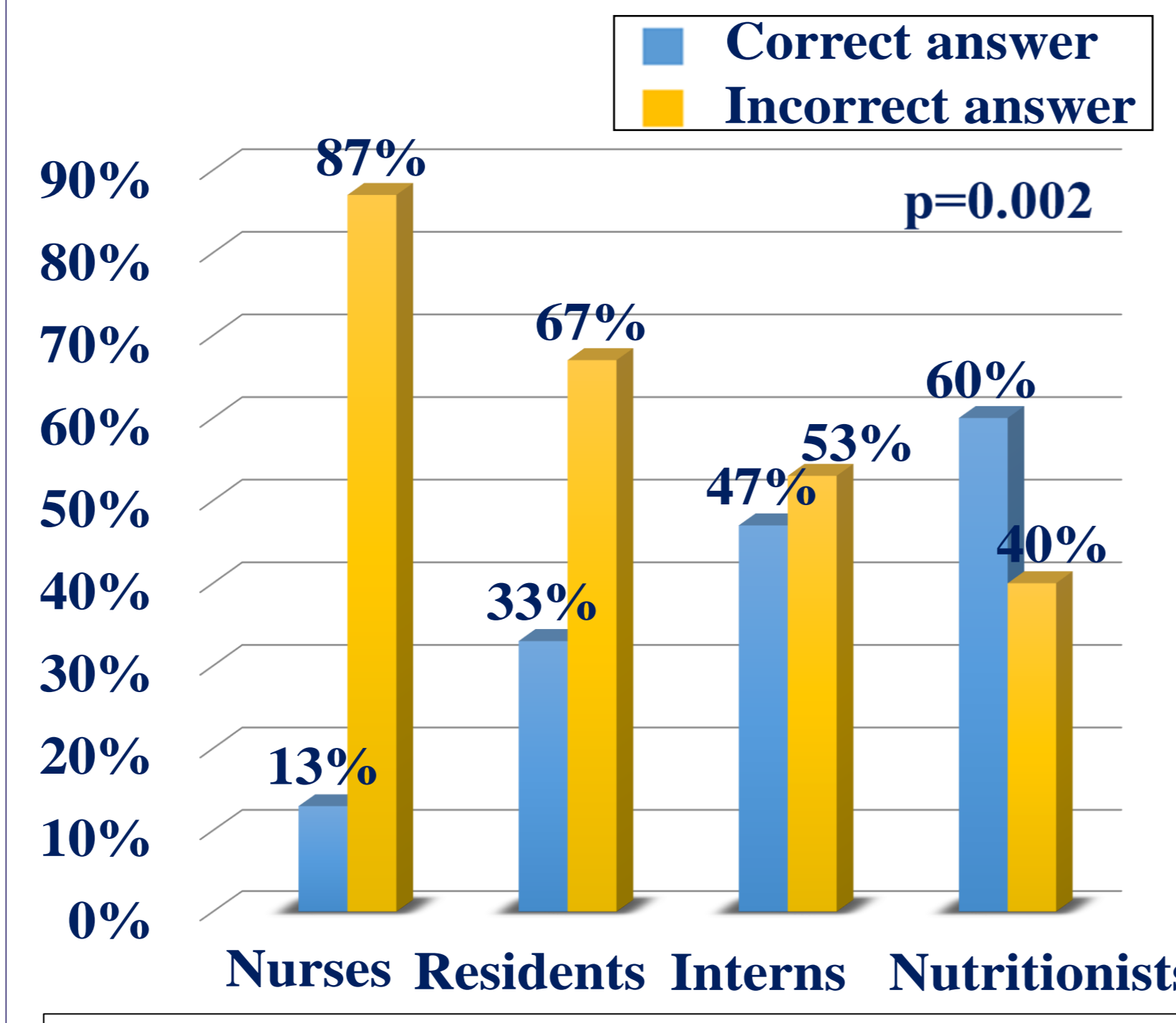


Figure 3. Knowledge about cardinal Symptoms of T1D

#### Hyperglycemia

- 20% knew the hyperglycemia threshold (Fig.5)
- 54% practice a urinary test strip in case of hyperglycemia greater than 2.5g/L.

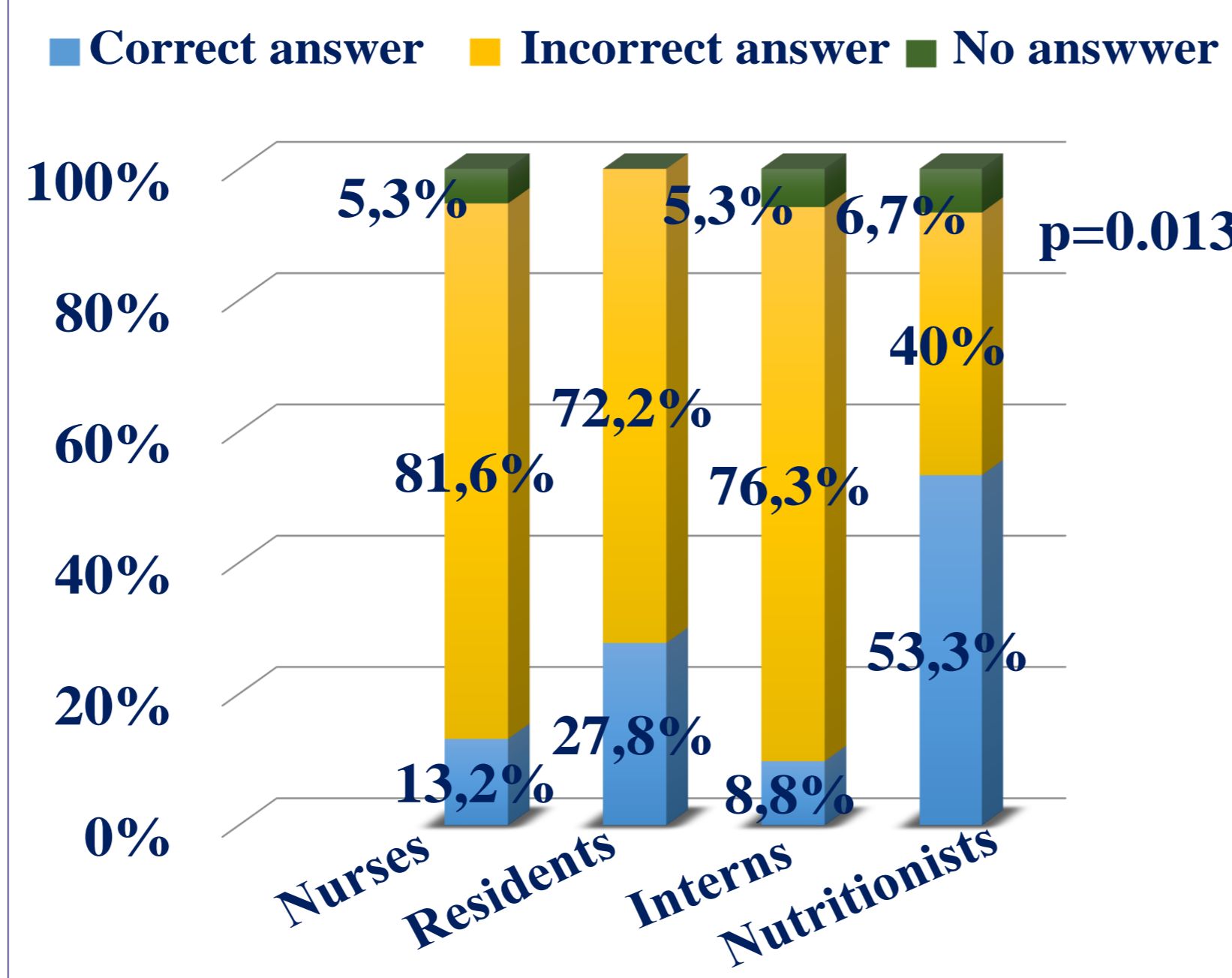


Figure 5. Knowledge about hyperglycemia

#### Food knowledge

- Only 22% knew the glycaemic index definition (p=0.680).
- 82.3% chose to favor the daily intake of slow-release carbohydrate (All nutritionists, p=0.001)
- Permitted food were correctly reported by 10,4% (Fig.6) and restricted food were correct for 13% (Fig.7).

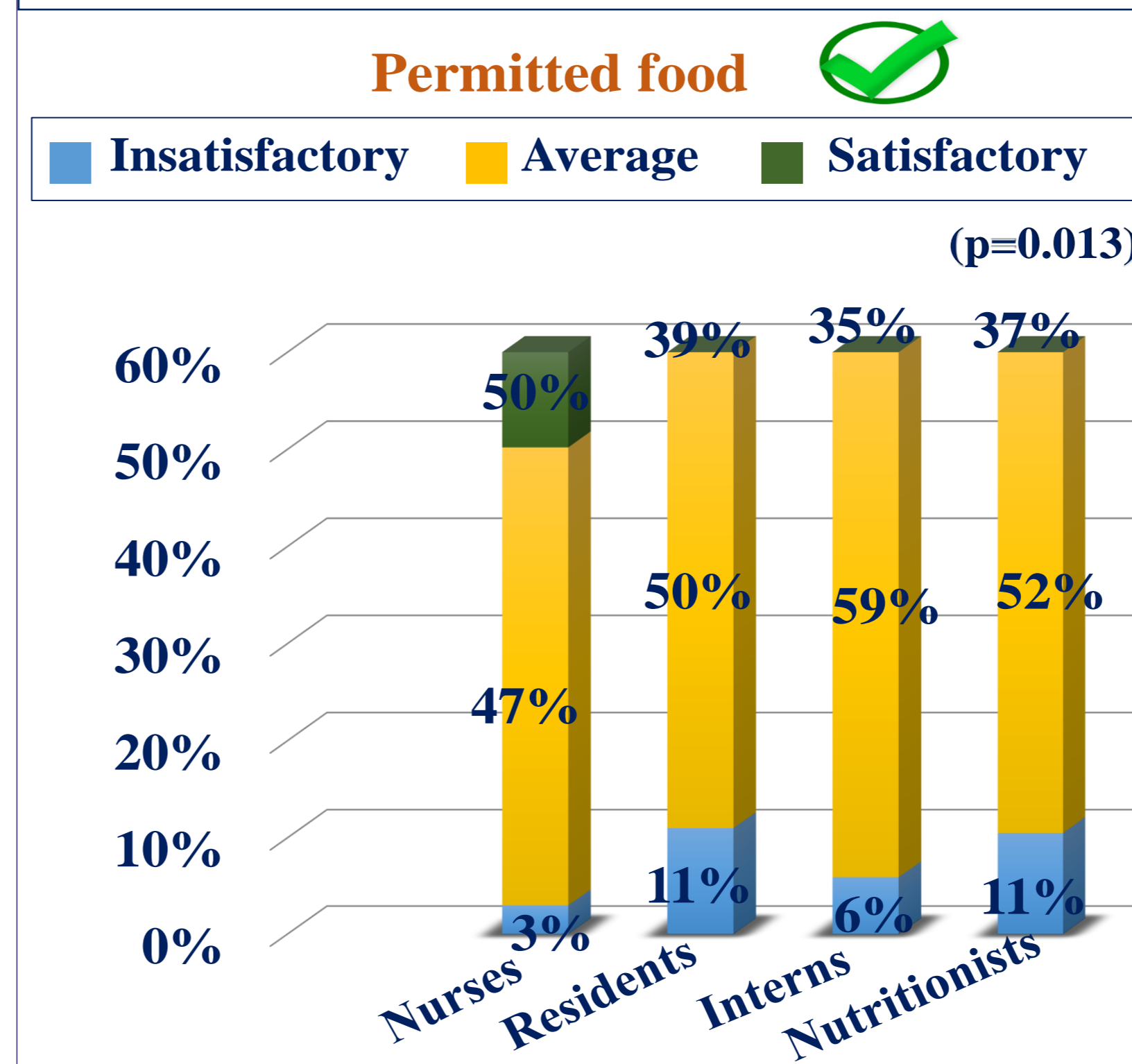


Figure 6. Knowledge about permitted food in T1D

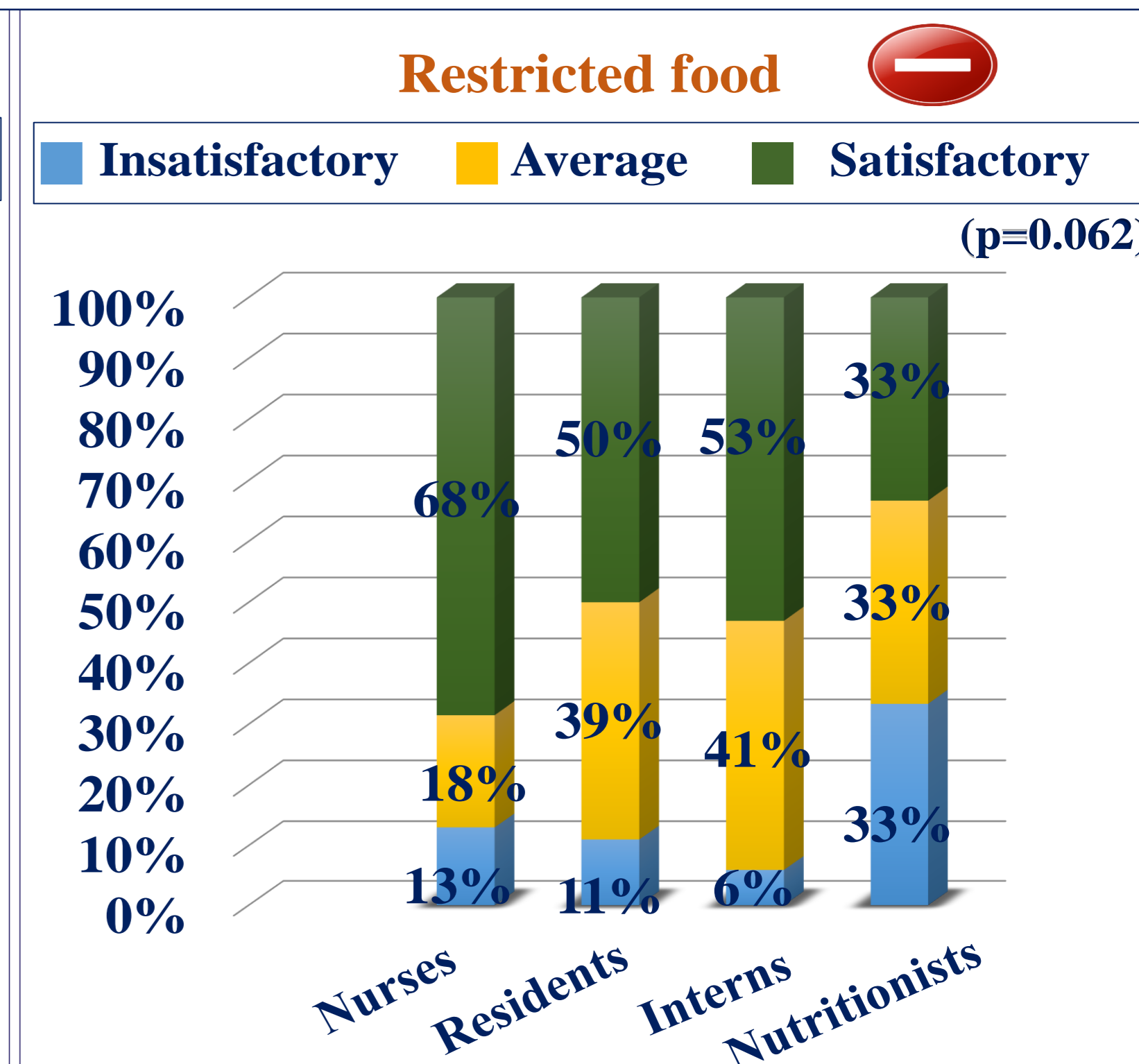


Figure 7. Knowledge about restricted food in T1D

#### Diabetes and sports

- Almost 90% said that sport is a key in the T1D management even though the mechanism was ignored by more than 58% (Fig.9).

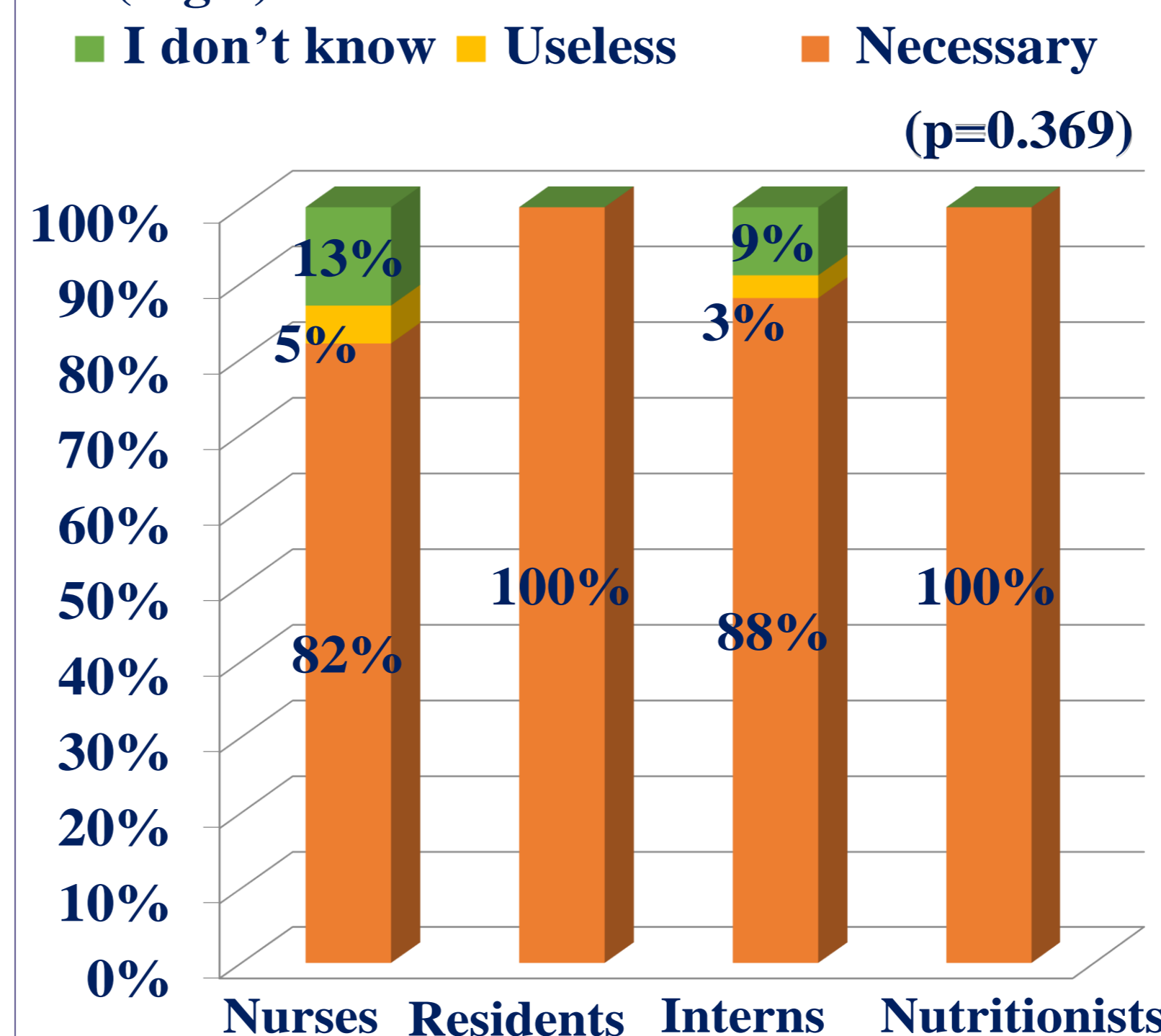


Figure 8. Knowledge about the usefulness of sports in T1D

#### Summary

	Group with highest level of knowledge	Group with lowest level of knowledge
Definition of T1D	Residents	Nurses
Cardinal symptoms of T1D	Nutritionists	Nurses
Definition and goal values for A1C	Residents	Nurses
How to perform finger-stick glucose	Residents	Nurses+ Nutritionists
Hypoglycemia threshold and signs	Residents	Nurses
How to correct a hypoglycemia	Nutritionist	Nurses
Hyperglycemia threshold and signs	Nutritionist	Nurses
Food knowledge	Nutritionist	Nurses
Definition of glycaemic index	Nutritionist	Interns
Diabetes and sports	Nutritionist	Resident+interns

### Conclusions

- Education is known to be a key in the management of T1D in children.
- Educators are not always evaluated to assess the informations they spread.
- This study highlights the gap between what they should know and what they really know in a multicentric tunisian study.
- Our results emphasizes the need to develop well-structured training programs for health professionals to upgrade their basic knowledge of T1D, and thus improve clinical and quality of life outcomes for children with T1D.