

# Nutritional Status and Nutrition Impact Symptoms (NIS) in patients with COVID-19

M. K. Larsen<sup>1</sup>, A. W. Knudsen<sup>1</sup>, A. M. Larsen<sup>1</sup>, P. Sonne<sup>1</sup>, H. O. Jensen<sup>1</sup>, T. Munk<sup>1</sup>

<sup>1</sup>Dietetic and Clinical Nutritional Research Unit, EFFECT, Copenhagen University Hospital – Herlev and Gentofte, Herlev & Gentofte, Denmark



## INTRODUCTION

At present, knowledge regarding the nutritional status and which Nutrition Impact Symptoms (NIS) to target in the nutritional therapy offered to hospitalized patients with COVID-19 is limited.

## AIM

The aim was to describe the nutritional status and nutrition impact symptoms (NIS) in patients with COVID-19 referred to nutritional therapy by a clinical dietician.

## METHOD

This was a retrospective observational study. Patients admitted to Herlev Gentofte Hospital with COVID-19 in 2020 and referred to clinical dietitians were enrolled.

Data were collected on:

- Nutritional status, route and intake
- Nutrition impact symptoms (NIS)
- Inflammation
- Length Of hospital Stay (LOS)
- 30-days mortality
- Readmissions within 30 days

## ACKNOWLEDGEMENTS

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## RESULTS

We included 81 patients, 41 (51%) male, median age 75 (IQR: 63-83), and median BMI 25 (IQR: 21-28) (Table 1). Total LOS was median 10 days (IQR: 6-17). Patients were referred to the clinical dietitians at median day 4 (IQR: 3-8). Nutrition route was primarily oral 70 (89%). The 3 most common NIS were; no appetite 50 (88%), shortness of breath 26 (55%), and early satiety 20 (47%) (Figure 1). Vitamin-D status (s-25-OHD) was measured in 21 (26%), of these, 4 (19%) had s-25-OHD below 50 nmol/l.

At the 30 days follow-up 23 (28%) patients were dead, of these 16 (70%) before discharge. The surviving patients were younger (median 72 vs. 82 y, p=0.002), and fewer were admitted from a care facility (17 vs. 48%, p=0.005). Survivors had at baseline a lower p-CRP (50 vs. 97 mg/L, p=0.004), higher p-albumin (28 vs. 24 g/L, p=0.009) and b-Neutrophils (6 vs. 5 10<sup>9</sup>/L, p=0.008) (Table 1). Survivors had a higher intake compared to their energy requirement (43 vs. 25%, p=0.001), and protein requirement (34 vs. 23%, p=0.032). A total of 21 (26%) was readmitted within 30 days.

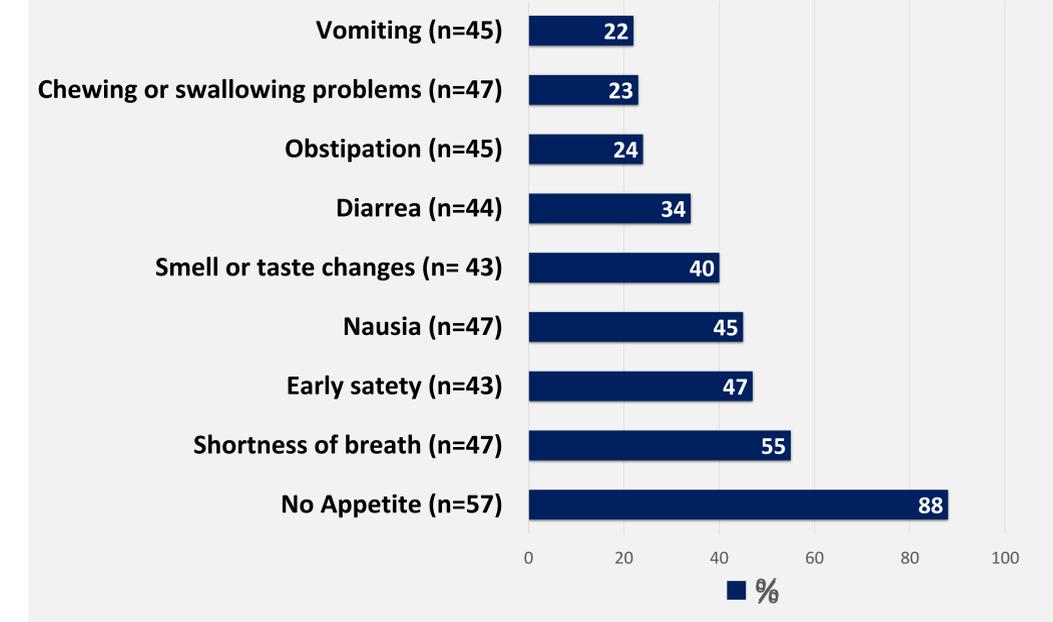
Table 1. Patient characteristics divided by mortality	n	All n=81	Survived n=58	Dead <sup>1</sup> n=23	p-value
Sex, male	41	41 (51 %)	31 (53 %)	10 (43 %)	0.418
Age, years	81	75 (63-83)	72 (60-81)	82 (74-90)	<b>0.002</b>
<b>Nutritional status</b>					
BMI, kg/m <sup>2</sup>	75	25 (21-28)	26 (22-28)	24 (21-27)	0.390
p-25-OHD, nmol/L	21	91 (63-105)	86 (48-102)	106 (92-112)	0.111
<b>Nutritional intake &amp; route</b>					
Energy covered ≥ 75%, yes	49	7 (14 %)	7 (19%)	0 (0 %)	0.167
Protein covered ≥ 75%, yes	49	4 (8 %)	4 (11 %)	0 (0 %)	0.562
Intake pr. os, yes	79	70 (89 %)	53 (91 %)	17 (81 %)	0.236
Intake tube feeding, yes	79	11 (14 %)	7 (12 %)	4 (19 %)	0.470
<b>Inflammation</b>					
p-CRP, mg/L	81	58 (30-97)	50 (24-77)	97 (50-153)	<b>0.004</b>
b-Leukocytes, 10 <sup>9</sup> /L	81	8 (6-10)	7 (5-9)	8 (6-14)	0.053
b-Neutrophils, 10 <sup>9</sup> /L	80	6 (4-9)	5 (4-7)	8 (5-12)	<b>0.008</b>
p-Albumin, g/L	81	27 (24-31)	28 (25-32)	24 (20-27)	<b>0.009</b>

Data are presented as number of participants (%) or median (IQR). Differences between groups are analyzed by un-paired T-test/Mann-Whitney-test or Chi<sup>2</sup>/fishers-test as appropriate. A p-value < 0.05 is considered statistically significant. <sup>1</sup> Dead before discharge or within 30 days after discharge.

## CONCLUSIONS

Most patients with COVID-19 had a nutritional intake below requirement, which might be caused by the presence of several NIS. Therefore, nutritional therapy targeting NIS is relevant in this group of patients. Further, as a part of assessing nutritional status the vitamin-D status should be measured more frequently, as vitamin-D deficiency was evident in 1/5 of the patients.

Figure 1. Frequency (%) of Nutrition Impact Symptoms (NIS) among patients admitted with COVID-19



## CONTACT INFORMATION



**EFFECT**

[martine.kjaersgaard.larsen@regionh.dk](mailto:martine.kjaersgaard.larsen@regionh.dk)  
[anne.wilkens.knudsen.01@regionh.dk](mailto:anne.wilkens.knudsen.01@regionh.dk)