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BACKGROUND

Malnutrition in cancer is an independent factor associated with negative clinical outcomes. We aimed to evaluate the prevalence of malnutrition across different age groups in patients with cancer in Brazil, and to identify associations with nutrition impact symptoms (NIS). Methods: In this observational, cross-sectional, multicenter study we evaluated 4.783 patients with cancer aged ≥ 20 years admitted to 45 public hospitals in Brazil. Nutritional status, nutritional risk, and nutrition impact symptoms were evaluated using the Patient-Generated Subjective Global Assessment (PG-SGA). Results: 25.5% of all participants were ≥ 65 years. In subjects aged ≥ 65 years, the prevalence of moderate/suspected and severe malnutrition was 55%, 45.4% in those aged 51 to 64 years, and 36.1% in those aged ≤ 50 years. Among the NIS with higher risk of occurrence in the subjects aged ≥ 65 years were: no appetite (OR 1.90, 95% CI 1.62-2.22, $p < 0.05$) and dry mouth (OR 1.40, 95% CI 1.18-1.67 $p < 0.05$); in the range between 51 to 64 years, compared to individuals aged ≤ 50 years: no appetite (OR 1.45, 95% CI 1.23-1.69 $p < 0.05$), dry mouth (OR 1.22 95% CI, 1.02-1.45 $p < 0.05$), and problems of swallowing (OR 1.56, IC 95% 1.25-1.96 $p < 0.05$). Conclusions: The prevalence of malnutrition and occurrence of NIS is high in Brazilian hospitalized cancer patients aged ≥ 65 years. The occurrence of the NIS was higher in the population aged > 50 years than in those aged ≤ 50 years. Nutritional screening and assessment should be performed immediately after hospitalization, in order to enable early diagnosis and multi- or interdisciplinary intervention(s).

Table 1. Odds ratio and the confidence interval for the clinical and nutritional outcomes in hospitalized adults and older adult cancer patients.

Clinical and nutritional outcomes	51-64 years vs. ≤ 50 years OR (95% CI)	≥ 65 years vs. ≤ 50 years OR (95% CI)
At least one nutrition impact symptom	1.13 (0.98 to 1.30)	*1.36 (1.18 to 1.57)
No appetite	*1.45 (1.23 to 1.69)	*1.90 (1.62 to 2.22)
Problems swallowing	*1.56 (1.25 to 1.96)	*1.43 (1.13 to 1.81)
Feel full quickly	0.85 (0.70 to 1.02)	*0.78 (0.64 to 0.95)
Dry mouth	*1.22 (1.02 to 1.45)	*1.40 (1.18 to 1.67)
Severely malnourished (PG-SGA Stage = C)	*1.55 (1.23 to 1.94)	*1.84 (1.47 to 2.31)
Malnourished (PG-SGA Stage B + C)	*1.47 (1.28 to 1.69)	*2.16 (1.87 to 2.50)
Weight and activity/function		
Weight loss	*1.21 (1.05 to 1.39)	*1.35 (1.17 to 1.56)
Decreased activity/ function	*1.42 (1.15 to 1.76)	*1.58 (1.28 to 1.96)

* $p < 0.05$; 95% CI = confidence interval; OR = odds ratio. Binary logistic regression with the ≤ 50 years as reference. PG-SGA = Patient-Generated Subjective Global Assessment

Table 2. Prevalence of nutrition impact symptoms according to the type of tumor.

Nutrition impact Symptoms	Total		Intestine		Gynecological		Upper digestive		Head/neck		Lung		Lymphoma		Leukemia		Other		Breast	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
	(n = 4783)		(n = 760)		(n = 580)		(n = 375)		(n = 353)		(n = 193)		(n = 168)		(n = 168)		(n = 1512)		(n = 674)	
No appetite	1374	28.7	245	32.2	203	35.0	137	36.5	81	22.9	86	44.6	68	40.5	58	34.5	349	23.1	147	21.8
Nausea	949	19.8	191	25.1	177	30.5	114	30.4	41	11.6	52	26.9	38	22.6	32	19.0	189	12.5	115	17.1
Vomiting	590	12.3	115	15.1	118	20.3	95	25.3	32	9.1	36	18.7	21	12.5	10	6.0	96	6.3	67	9.9
Diarrhea	223	4.7	83	10.9	30	5.2	21	5.6	7	2.0	9	4.7	12	7.1	6	3.6	33	2.2	22	3.3
Mouth sores	208	4.3	26	3.4	16	2.8	13	3.5	63	17.8	5	2.6	14	8.3	14	8.3	34	2.2	23	3.4
Things taste funny or have no taste	687	14.4	146	19.2	123	21.2	60	16.0	27	7.6	38	19.7	35	20.8	26	15.5	141	9.3	91	13.5
Smells bother me	720	15.1	165	21.7	139	24.0	67	17.9	23	6.5	46	23.8	36	21.4	32	19.0	137	9.1	75	11.1
Problems swallowing	531	11.1	42	5.5	39	6.7	116	30.9	142	40.2	37	19.2	12	7.1	8	4.8	98	6.5	37	5.5
Feel full quickly	722	15.1	136	17.9	123	21.2	94	25.1	18	5.1	37	19.2	32	19.0	32	19.0	169	11.2	81	12.0
Dry mouth	975	20.4	187	24.6	143	24.7	102	27.2	69	19.5	47	24.4	44	26.2	42	25.0	219	14.5	122	18.1