Valutazione a distanza dello stato nutrizionale

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SOCIETÀ ITALIANA DI GERONTOLOGIA E GERIATRIA

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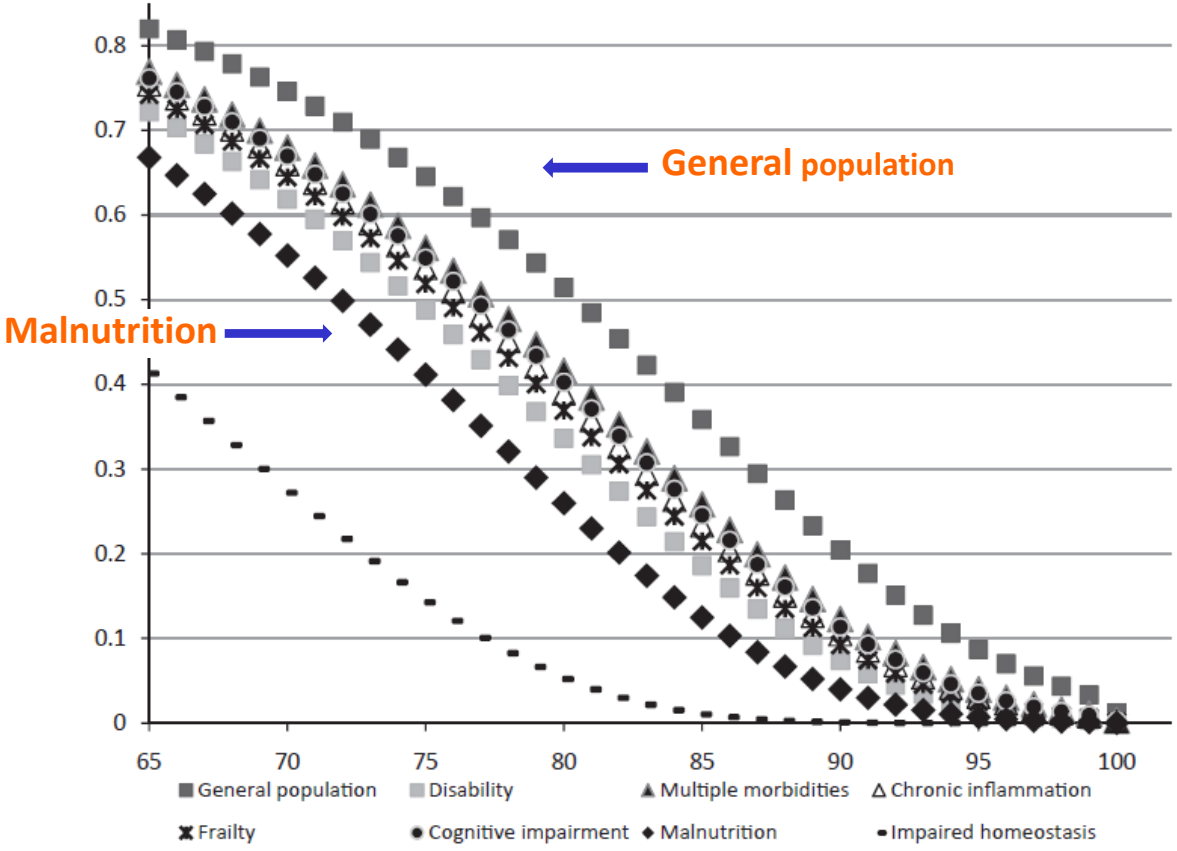
Disclosure

Nell'ultimo biennio **ho avuto** rapporti con le seguenti aziende farmaceutiche:

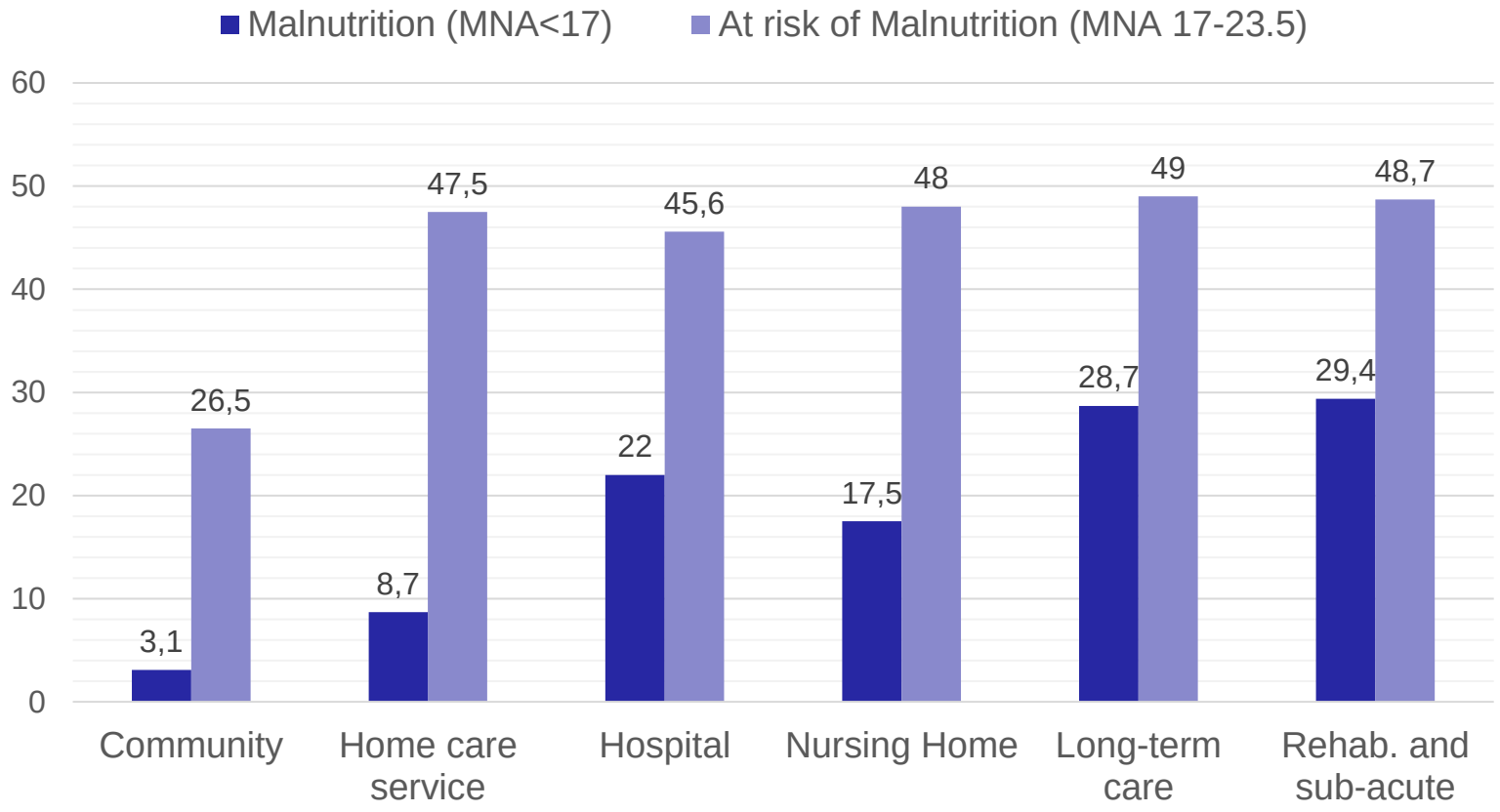
Abbot, Vifor, Nutricia, Angelini, Italfarmaco

The Association Between Geriatric Syndromes and Survival



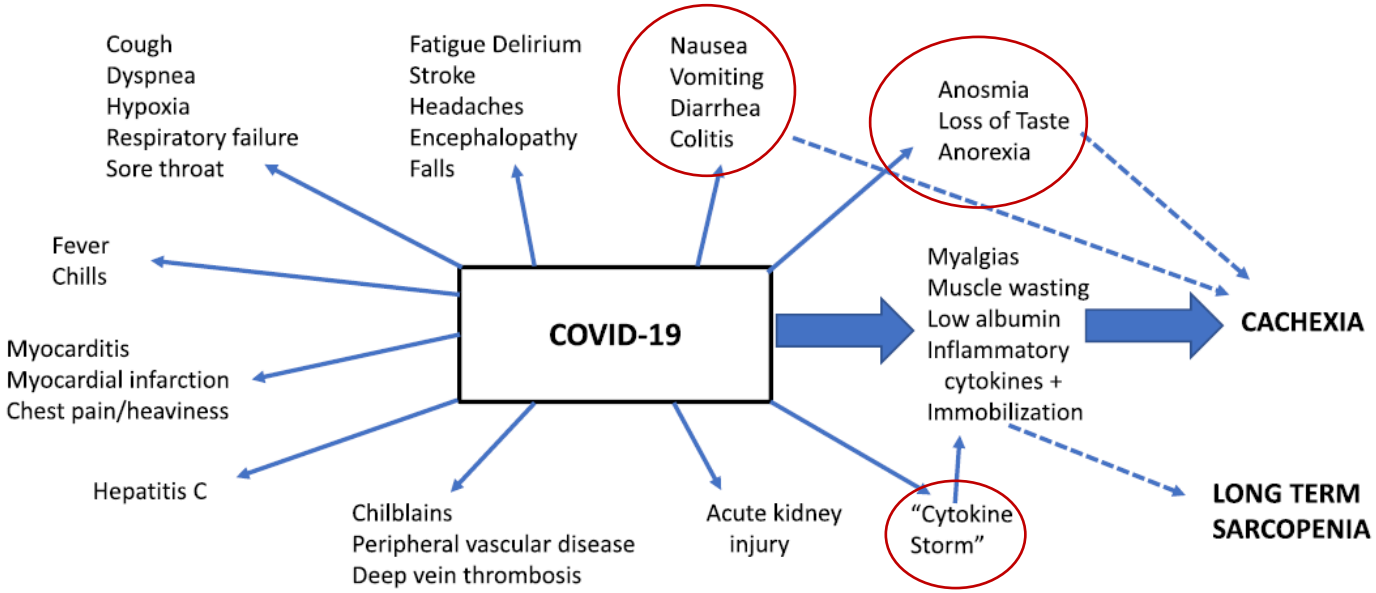
Kane R et al J Am Ger Soc 2012

Prevalence of Malnutrition and Risk of Malnutrition (MNA score) according to Healthcare Setting



Cereda E. et al. Clinical Nutrition 2016

COVID-19: a major cause of malnutrition?



Morley JE et al. Journal of Cachexia, Sarcopenia and Muscle 2020

Clinical Nutrition xxx (2018) 1–38

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journal homepage: http://www.elsevier.com/locate/clnu

ESPEN Guideline

ESPEN guideline on clinical nutrition and hydration in geriatrics

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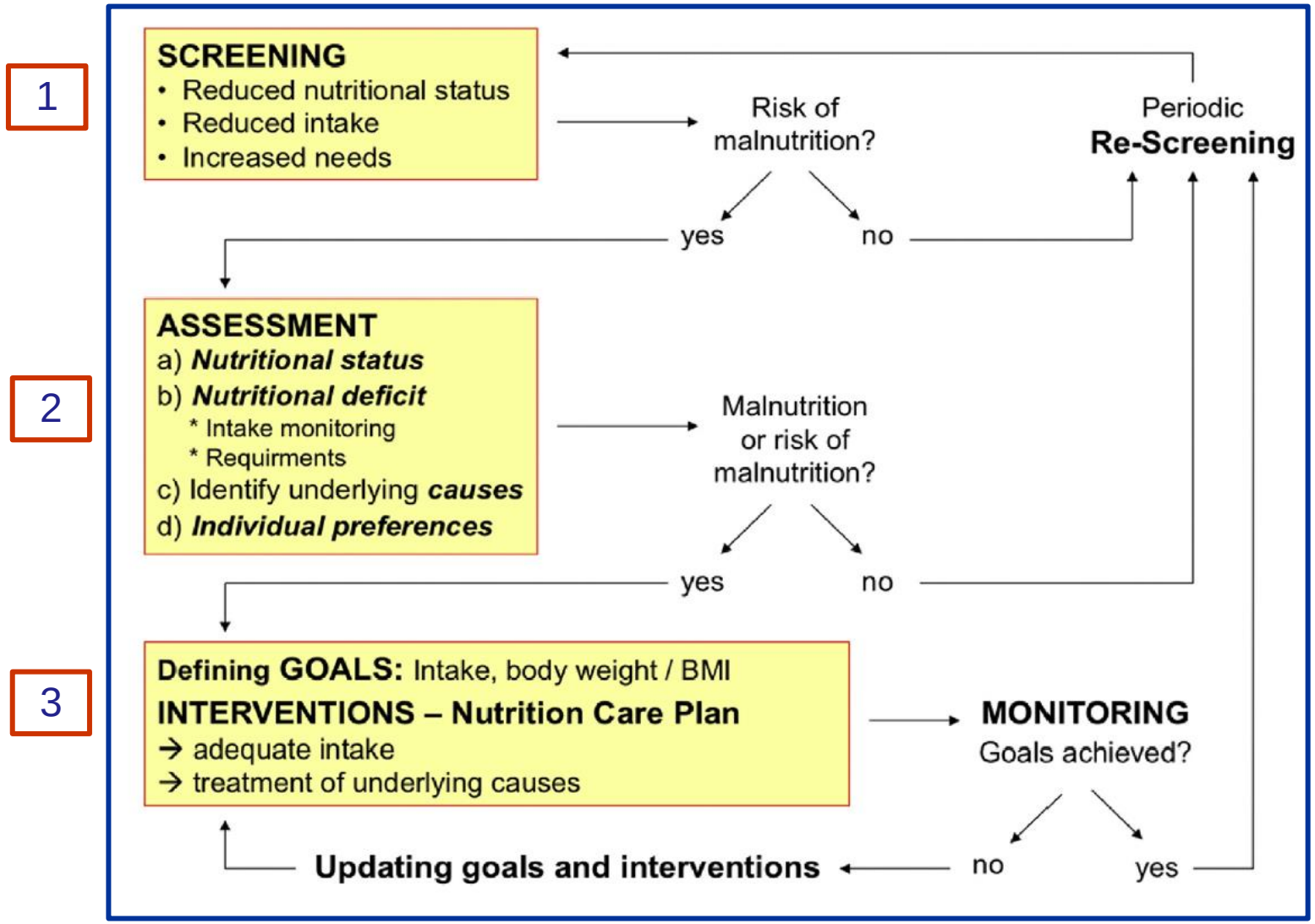

1
SCREENING
• Reduced nutritional status
• Reduced intake
• Increased needs
Risk of malnutrition?
Periodic Re-Screening
yes
no
2
ASSESSMENT
a) Nutritional status
b) Nutritional deficit
* Intake monitoring
* Requirments
c) Identify underlying causes
d) Individual preferences
Malnutrition or risk of malnutrition?
yes
no
3
Defining GOALS: Intake, body weight / BMI
INTERVENTIONS – Nutrition Care Plan
→ adequate intake
→ treatment of underlying causes
MONITORING
Goals achieved?
Updating goals and interventions
no
yes

The Nutrition Risk Screening -NRS-2002-

Table 2: Final screening			
Impaired nutritional status		**Severity of disease** (≈ increase in requirements)	
Absent **Score 0**	Normal nutritional status	Absent **Score 0**	Normal nutritional requirements
Mild **Score 1**	Wt loss >5% in 3 mths or Food intake below 50-75% of normal requirement in preceding week.	Mild **Score 1**	Hip fracture* Chronic patients, in particular with acute complications: cirrhosis*, COPD*. *Chronic hemodialysis, diabetes, oncology.*
Moderate **Score 2**	Wt loss >5% in 2 mths or BMI 18.5 - 20.5 + impaired general condition or Food intake 25-50% of normal requirement in preceding week	Moderate **Score 2**	Major abdominal surgery* Stroke* *Severe pneumonia, hematologic malignancy.*
Severe **Score 3**	Wt loss >5% in 1 mth (>15% in 3 mths) or BMI <18.5 + impaired general condition or Food intake 0-25% of normal requirement in preceding week in preceding week.	Severe **Score 3**	Head injury* Bone marrow transplantation* *Intensive care patients (APACHE>10).*
Score:	+	**Score:**	**= Total score:**
Age	if ≥ 70 years: add 1 to total score above	**= age-adjusted total score:**	

Score ≥3: the patient is nutritionally at-risk and a nutritional care plan is initiated

Score < 3: weekly rescreening of the patient. If the patient e.g. is scheduled for a major operation, a preventive nutritional care plan is considered to avoid the associated risk status.

MUST: Malnutrition Universal Screening Tool

STEP 1
BMI score

BMI (kg/m²)
0 > 20,0
1 = 18,5-20,0
2 ≤ 18,5

+

STEP 2
Calo ponderale

Calo ponderale in 3-6 mesi
0 ≤ 5%
1 = 5-10%
2 ≥ 10%

+

STEP 3
Effetto patologia acuta

Paziente con patologia acuta
e presenza o probabilità di intake nullo per > 5 dì

STEP 4
Rischio globale di malnutrizione

STEP 5

0
Basso rischio
Cure cliniche di routine
- Ripetizione dello screening:
  - in ospedale: settimanalmente
  - nelle cliniche: mensilmente
  - in comunità: annualmente per gruppi speciali (> 75 anni)

1
Rischio Medio
Monitoraggio
- Intake nutrizionale per 3 dì se il paziente è in ospedale o in clinica
- Se è migliorato o con adeguato intake: osservazione
- Se non è migliorato: intervento secondo le linee guida locali
- Ripetizione dello screening:
  - in ospedale: settimanalmente
  - in case di cura: mensilmente
  - in comunità: ogni 2-3 mesi

≥ 2
Rischio elevato
Trattamento*
- Fare riferimento al dietista, al team nutrizionale o implementare le linee guida locali
- Migliorare e incrementare l'intake nutrizionale
- Monitorare e rivedere il piano di cura:
  - in ospedale: settimanalmente
  - nelle case di cura: mensilmente
  - nelle comunità: mensilmente

* La procedura va seguita finché il paziente può trarne beneficio.

Figura 2
Malnutrition Universal Screening Tool (MUST).

Mini Nutritional Assessment MNA®

Screening

A Presenta una perdita dell' appetito? Ha mangiato meno negli ultimi 3 mesi? (perdita d'appetito, problemi digestivi, difficoltà di masticazione o deglutizione)
0 = grave riduzione dell'assunzione di cibo
1 = moderata riduzione dell'assunzione di cibo
2 = nessuna riduzione dell'assunzione di cibo ☐

B Perdita di peso recente (<3 mesi)
0 = perdita di peso > 3 kg
1 = non sa
2 = perdita di peso tra 1 e 3 kg
3 = nessuna perdita di peso ☐

C Motricità
0 = dal letto alla poltrona
1 = autonomo a domicilio
2 = esce di casa ☐

D Nell' arco degli ultimi 3 mesi: malattie acuteo stress psicologici?
0 = sì 2 = no ☐

E Problemi neuropsicologici
0 = demenza o depressione grave
1 = demenza moderata

J Quanti pasti completi prende al giorno?
0 = 1 pasto
1 = 2 pasti
2 = 3 pasti ☐

K Consuma?
- Almeno una volta al giorno dei prodotti lattiero-caseari? sì ☐ no ☐
- Una o due volte la settimana uova o legumi? sì ☐ no ☐
- Oni giorne della carne, del pesce o del pollame? sì ☐ no ☐

0.0 = se 0 o 1 sì
0.5 = se 2 sì
1.0 = se 3 sì ☐.☐

L Consuma almeno due volte al giorno frutta o verdura?
0 = no 1 = sì ☐

M Quanti bicchieri beve al giorno? (acqua, succhi, caffé, té, latte...)
0.0 = meno di 3 bicchieri
0.5 = da 3 a 5 bicchieri

Valutazione dello stato nutrizionale

24-30 da 24 a 30 punti	☐	stato nutrizionale normale
17-23.5 da 17 a 23,5 punti	☐	rischio di malnutrizione
meno 17 punti	☐	cattivo stato nutrizionale

12-14 punti: stato nutrizionale normale
8-11 punti: a rischio di malnutrizione
0-7 punti: malnutrito

Per una valutazione più approfondita, continuare con le domande G-R

Valutazione globale

G Il paziente vive autonomamente a domicilio?
1 = sì 0 = no ☐

H Prende più di 3 medicinali al giorno?
0 = sì 1 = no ☐

I Presenza di decubiti, ulcere cutanee?
0 = sì 1 = no ☐

P Il paziente considera il suo stato di salute miglioreo peggiore di altre persone della sua età?
0.0 = meno buono
0.5 = non sa
1.0 = uguale
2.0 = migliore ☐.☐

Q Circonferenza brachiale (CB, cm)
0.0 = CB < 21
0.5 = CB ≤ 21 CB ≤ 22
1.0 = CB > 22 ☐.☐

R Circonferenza del polpaccio (CP in cm)
0 = CP < 31
1 = CP ≥ 31 ☐

Screening tool for Sarcopenia diagnosis

SARC-F Screen for Sarcopenia

Component	Question	Scoring
Strength	How much difficulty do you have in lifting and carrying 10 pounds?	None = 0 Some = 1 A lot or unable = 2
Assistance in walking	How much difficulty do you have walking across a room?	None = 0 Some = 1 A lot, use aids, or unable = 2
Rise from a chair	How much difficulty do you have transferring from a chair or bed?	None = 0 Some = 1 A lot or unable without help = 2
Climb stairs	How much difficulty do you have climbing a flight of 10 stairs?	None = 0 Some = 1 A lot or unable = 2
Falls	How many times have you fallen in the past year?	None = 0 1–3 falls = 1 4 or more falls = 2

Malmstrom TK, Morley J. JAMDA 2013

How to Assess Nutritional status…?

Anthropometry

- BMI <18.5)
- Weigth loss
- Skinfold Triceps
- Arm, cal, waist circumferences

Biomarkers

- Albumin(< 3.5 g/dl)
- Lymphocytes count (<1.800 mm^3)
- Pre-almbumin
- Transferrin

Imaging

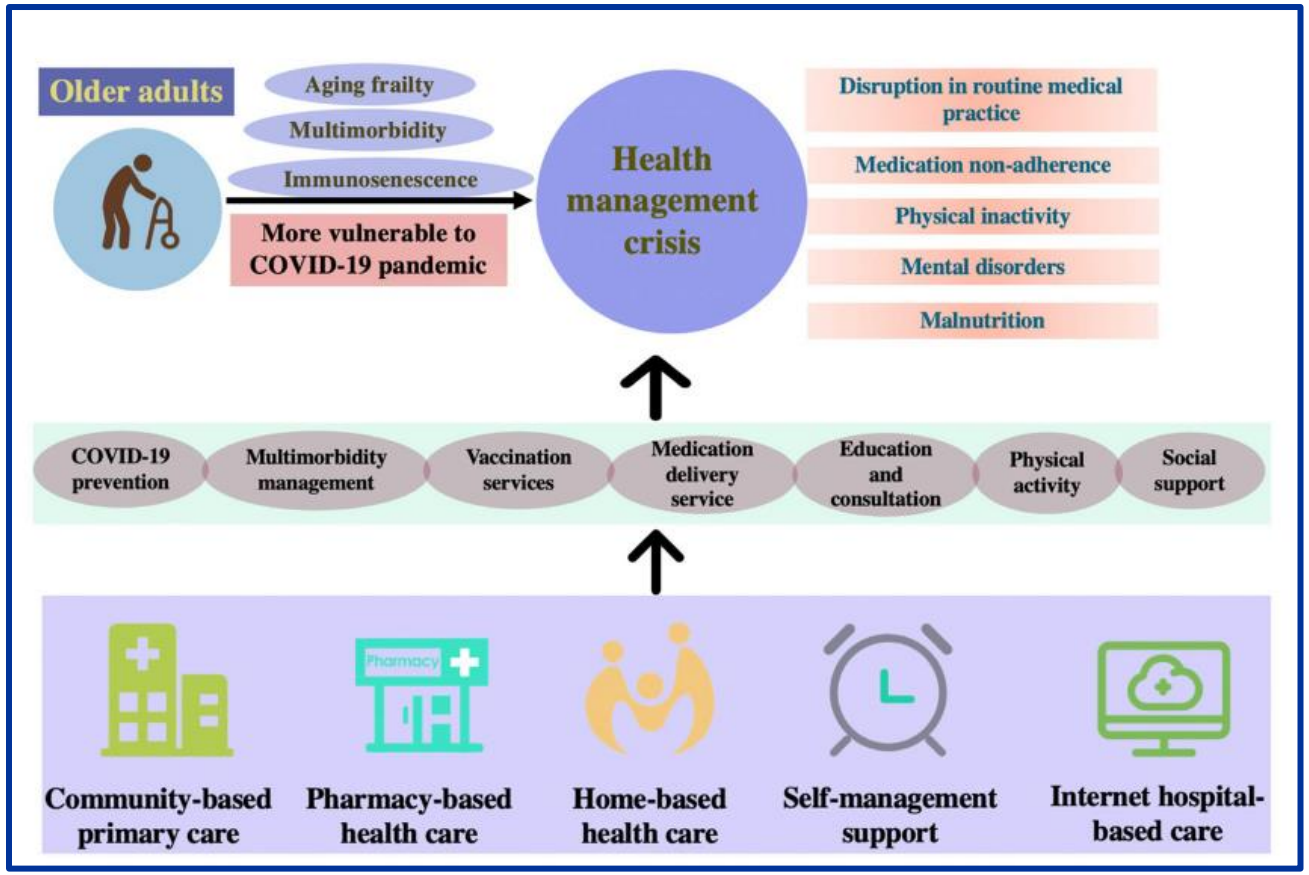
- BIA
- Dexa
- MRN

Multidimensional tools:

- MNA
- Subjective Global Assessment
- Prognostic Nutritional Index
- Nutrition Risk Index
- Prognostic Inflammatory and Nutritional Index

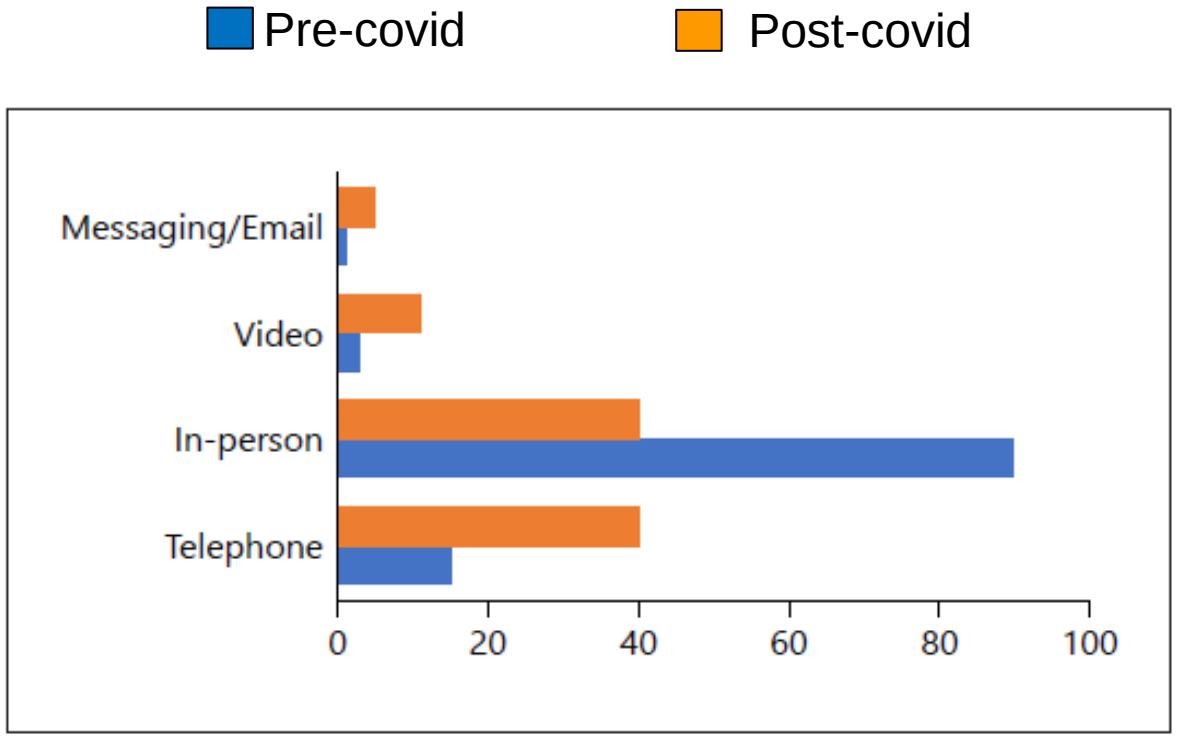
Gallagher CR et al. J Am Diet Ass 1996;69:361-369

The vulnerability of older adults during the COVID-19 pandemic: risk factors, health management crisis, effective and innovative strategies to promote geriatric health care



Zhu Y et al., Clin Inter Aging 2022

Method of medical consultation pre- and post-COVID-19 global spread, USA



Senderovich H.et al., Gerontology 2021

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Editorial

A simple remote nutritional screening tool and practical guidance for nutritional care in primary practice during the COVID-19 pandemic

SUMMARY

Challenging periods like the COVID-19 pandemic require fast and efficient adaptations of the healthcare system. It is vital that every patient has access to nutritional care as a part of primary healthcare services, even if social distancing measures are adopted. Therefore, we propose a simple remote nutritional screening tool and practical guidance for nutritional care in primary practice, and their implementation into telemedicine processes and digital platforms suitable for healthcare providers. The acronym for the tool is R-MAPP, as for **R**emote – **M**alnutrition **APP**, while the tool will be available also as an app. This protocol consists of two simple validated clinical tools for identifying nutritional risk and loss of muscle mass and function –Malnutrition Universal Screening Tool ('MUST') and SARC-F (5-item questionnaire: **S**trength, **A**ssistance with walking, **R**ise from a chair, **C**limb stairs and **F**alls) - and additional practical guidance on nutritional interventions for family physicians.

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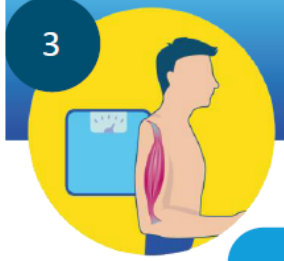
3



VALUTAZIONE

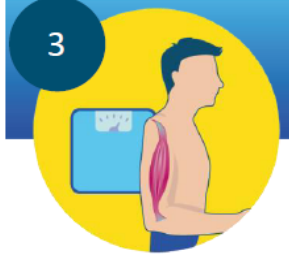
IDENTIFICARE IL RISCHIO DI MALNUTRIZIONE CON IL 'MUST'

'MUST' Malnutrition screening tool		
Qual è il tuo peso attuale?	0	> 20 (> 30 Obeso)
Qual è la tua altezza?	1	18.5-20
Calcolare l'IMC del paziente kg/m²*	2	< 18.5
Qual è il tuo peso abituale?	0	Perdita di peso<5%
Hai perso peso in maniera non intenzionale negli ultimi 3-6 mesi?	1	Perdita di peso 5-10%
	2	Perdita di peso> 10%
Il paziente è un malato critico e non ha ricevuto o è probabile che non riceva nessun apporto nutrizionale per >5 days?	0	No
	2	Si

Il 'Malnutrition Universal Screening Tool' o 'MUST' è uno strumento di screening in 5 step per identificare gli adulti malnutriti, a rischio di malnutrizione o obesi.

Sommare i punteggi del 'MUST' per calcolare il rischio di malnutrizione:

- **0** — **Rischio basso**
- **1** — **Rischio medio**
- **2 o più** — **Rischio alto**



3

VALUTAZIONE

IDENTIFICARE LA PERDITA DI MASSA MUSCOLARE E FUNZIONE CON IL 'SARC-F'

'SARC-F' Sarcopenia screening test

FORZA Quanta difficoltà hai nel sollevare e trasportare un peso di 4.5kg? *4.5kg è il peso di circa 3 bottiglie di acqua da 1,5 l*	0	Nessuna
	1	Qualche difficoltà
	2	Molta o non è capace
ASSISTENZA NEL CAMMINARE Quanta difficoltà hai nel camminare attraverso le stanze di casa?	0	Nessuna
	1	Qualche difficoltà
	2	Molta o non è capace
ALZARSI DA UNA SEDIA Quanta diffcioltà ha il paziente negli spostamenti da una sedia o dal letto?	0	Nessuna
	1	Qualche difficoltà
	2	Molta o non è capace
SALIRE LE SCALE Quanta difficoltà ha il paziente a salire una rampa di 10 scalini?	0	Nessuna
	1	Qualche difficoltà
	2	Molta o non è capace
CADUTE Quante volte il paziente è caduto nello scorso anno?	0	0
	1	1-3 cadute
	2	4 o più

Il 'SARC-F' è un test diagnostico rapido per la sarcopenia basato su 5 domande.

Un punteggio 'SARC-F' uguale o maggiore di 4 è predittivo di sarcopenia

4 DECISIONE E AZIONE

CONSULTARE, INTERVENIRE E ORGANIZZARE IL FOLLOW-UP IN BASE AI RISULTATI DELLO SCREENING NUTRIZIONALE

'MUST' Score ≤ 1 or/and 'SARC-F' Score < 4

OBSERVE AND REPEAT SCREENING
in Care Homes monthly and in community annually for at-risk groups e.g. those > 75 yrs

If you need help refer to clinical dietitian, hospital physician or implement local policy.

'MUST' Score ≥ 2 or/and 'SARC-F' Score ≥ 4

TREAT
Recommend oral nutritional supplements (ONS) or continue nutrition support; physical activity should also be encouraged if possible

If the patient is already on ONS check compliance
2 bottles is usual recommended daily dose

5 INTERVENTO

TERAPIA NUTRIZIONALE ADATTA ALLE ESIGENZE DEL PAZIENTE

ENERGY	PROTEIN	MICRONUTRIENTS
25 – 35 kcal/kg body weight/day*	> 1.0 g/kg body weight/day**	daily requirements***

SPECIAL CONSIDERATIONS: Kidney disease: formulas with modified protein and electrolytes / Diabetes: formulas with slow-release & low glycemic index carbohydrates / Dysphagia: modified texture diets and thickened drinks / Malabsorption: peptide-based formulas with medium chain triglycerides

THERAPEUTIC NUTRITION

- Consider HMB and vitamin D for patients with muscle mass and/or function loss
- Omega-3 EPA for cancer patients
- Arginine, Glutamine, Zinc, HMB, vitamin C for chronic wounds

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1 SET UP

PREPARAZIONE PER LA VALUTAZIONE NUTRIZIONALE A DISTANZA

Prima di una valutazione o intervento nutrizionale a distanza, controllare la documentazione medica per i fattori di rischio di malnutrizione e la polimorbilità e assicurarsi:

1. I BISOGNI CLINICI SIANO SODDISFATTI
2. È POSSIBILE ACCEDERE ALLA CARTELLA CLINICA DEI PAZIENTI
3. NON E' NECESSARIA UNA VALUTAZIONE FISICA
4. TUTTE LE INFORMAZIONI SULLA VISITA POSSONO ESSERE CONDIVISE DA REMOTO
5. ESISTE UN SISTEMA SICURO PER EVENTUALI PRESCRIZIONIE
6. IL PAZIENTE HA LA CAPACITÀ DI DECIDERE O SIA PRESENTE UN CAREGIVER

2 CONNESSIONE

CONTATTARE IL PAZIENTE CON IL TELEFONO O VIDEO CALL

CHECK AUDIO E VIDEO

Riesce a sentirmi/vedermi?

CONFERMARE L'IDENTITA' DEL PAZIENTE

Nome, Cognome, Data di nascita

VERIFICARE DOVE SI TROVA IL PAZIENTE

Dove si trova in questo momento? A casa, in ospedale, in una casa di cura?

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67° CONGRESSO NAZIONALE SIGG

LA LONGEVITÀ DECLINATA AL FEMMINILE

R-MAPP: Remote consultation on MAlnutrition in the Primary Practice

A simple guide to assessing patients by video or voice call

SET UP

Prepare yourself for remote consultation

Check medical documentation for malnutrition risk factors and polymorbidity:

- COVID - 19
- Ageing / frailty
- Cancer
- COPD
- IBD
- Stroke
- Post-ICU
- Chronic kidney and liver disease
- Chronic wounds
- Diabetes
- Obesity
- Other chronic dieases

CONNECT

Contact patient by phone or video call

Check audio and video
Can you hear/see me?

Confirm the patient's identity
Name
Surname
Date of birth

Check patient's location
Where are you right now?
Home
Care Home
Hospital

EXAMINATION

Malnutrition screening

Use 'MUST' and 'SARC-F' to **identify risk of malnutrition and muscle mass loss**

'Malnutrition Universal Screening Tool' or 'MUST' is a five-step screening tool to identify adults, who are malnourished, at risk of malnutrition, or obese.

'SARC-F' is a rapid diagnostic test for sarcopenia based on 5 components.

IDENTIFY MALNUTRITION RISK

Check if your patient is at risk of malnutrition by asking the following 3 questions:

'MUST' Malnutrition screening tool		
What is your current body weight? What is your height? Calculate patients BMI kg/m²*	0	> 20 (> 30 Obese)
	1	18.5-20
	2	< 18.5
What is your usual weight? Have you experienced unintentional weight loss in the last 3 - 6 months?	0	Weight loss < 5 %
	1	Weight loss 5-10 %
	2	Weight loss > 10 %
If patient is acutely ill and there has been or is likely to be no nutritional intake for >5 days	0	No
	2	Yes

*Body Mass Index (or BMI) is calculated as weight (in kg) divided by the square of height (in m)

Add 'MUST' scores together to calculate overall risk of malnutrition:

Score 0 Low Risk
Score 1 Medium Risk
Score 2 or more High Risk

IDENTIFY LOSS OF MUSCLE MASS AND FUNCTION

If your patient has one or more of the risk factors above (see in "Set up" box) or is at risk of malnutrition, check for sarcopenia.

'SARC-F' Sarcopenia screening Test		
STRENGTH How much difficulty do you have in lifting and carrying 4.5 kg? *4.5 kg is approximately the weight of a pet cat or pumpkin	0	None
	1	Some
	2	A lot or unable
ASSISTANCE WITH WALKING How much difficulty do you have walking across a room?	0	None
	1	Some
	2	A lot, use aids, or unable
RISE FROM A CHAIR How much difficulty do you have transferring from a chair or bed?	0	None
	1	Some
	2	A lot or unable without help
CLIMB STAIRS How much difficulty do you have climbing a flight of 10 stairs?	0	None
	1	Some
	2	A lot or unable
FALLS How many times have you fallen in the past year?	0	None
	1	1-3 falls
	2	4 or more falls

'SARC-F' score equal to or greater than 4 is predictive of sarcopenia

DECISION AND ACTION

Advise, intervene and arrange follow-up according to nutritional screening results

'MUST' Score ≤ 1 or/and 'SARC-F' Score < 4

OBSERVE AND REPEAT SCREENING
in Care Homes monthly and in community annually for at-risk groups e.g. those > 75 yrs

'MUST' Score ≥ 2 or/and 'SARC-F' Score ≥ 4

TREAT
Recommend oral nutritional supplements (ONS) or continue nutrition support; physical activity should also be encouraged as possible

If the patient is already on ONS check compliance
2 bottles is usual recommended daily dose

If you need help refer to clinical dietitian, hospital physician or implement local policy.

INTERVENTION

Tailor nutritional therapy to your patient's needs

ENERGY
25 – 35 kcal/kg body weight/day*

PROTEIN
> 1.0 g/kg body weight/day**

MICRONUTRIENTS
daily requirements***

SPECIAL CONSIDERATIONS: Kidney disease: formulas with modified protein and electrolytes / Diabetes: formulas with slow-release & low glycemic index carbohydrates / Dysphagia: modified texture diets and thickened drinks / Malabsorption: peptide-based formulas with medium chain triglycerides

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- Arginine, Glutamine, Zinc, HMB, vitamin C for chronic wounds
- TGF-β2 for IBD patients

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Comparative Study of R-MAPP versus classic nutritional assessment tests

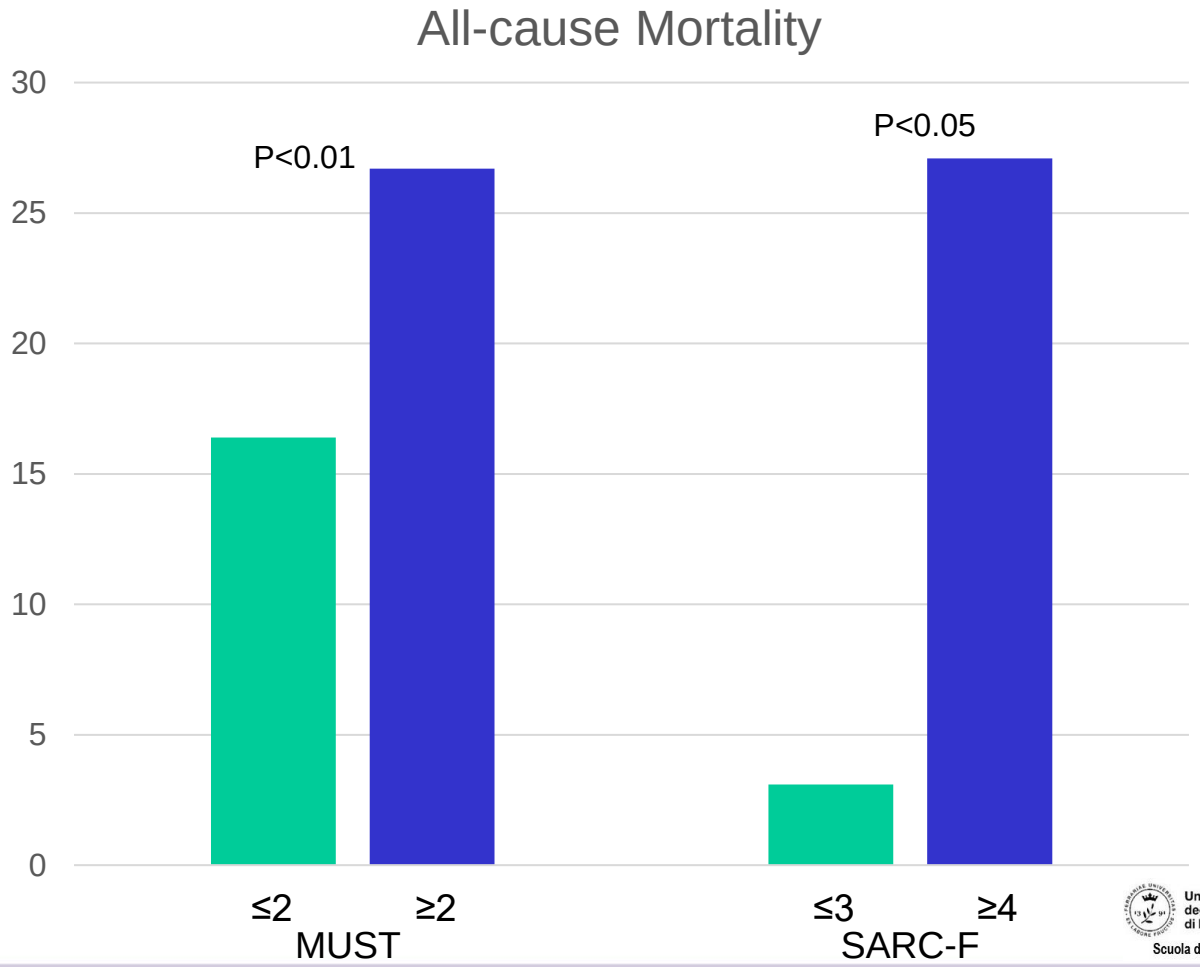
	Sensibility	Especificity	VPP	VPN	FP	FN	Chi (p)	Kappa (p)
R-MAPP vs GLIM	53,3%	54,3%	27,6%	78,1%	72,4%	21,9%	0,4	0,058 (0.6)
R-MAPP vs MNA-SF	83,3%	83,3%	16,7%	54,1%	13,3%	2,7%	0,001	0,003
R-MAPP vs MNA	66,7%	91,7%	13,3%	59,5%	6,7%	5,4%	0,0001	0,0001
R-MAPP vs SARC-F	100%	94,9%	100%	93,3%	6,7%	0%	0,0001	0,0001
R-MAPP vs MUST	100%	57,4%	3,3%	94.6%	0%	86.7%	0.4	0.3

Sanz-Paris A .et al., ESPEN virtual congress 2021

Prevalence of Risk of Malnutrition and Risk of Sarcopenia in a Reference Hospital for COVID-19: relationship with Mortality

Table 1. Basal characteristics of the patients

Parameters (total group, $n = 337$)	Basal data
Age, years	86.1±8.7
BMI	23.8±2.8
Weight, kg	62.1±10.3
Hemoglobin, g/dL	12.4±1.8
Leucocytes, $\times 10^9$/L	8.6±4.4
Platelets, $\times 10^9$/L	263.1±125.1
Fasting glucose, mg/dL	103.1±35.9
Total cholesterol, mg/dL	156.5±31.8
Triglycerides, mg/dL	143.9±52.9
Creatinine, mg/dL	1.1±0.6
Sodium, mEq/L	140.5±4.5
Potassium, mEq/L	4.5±1.0
Albumin, g/dL	3.3±0.3
Prealbumin, mg/dL	18.6±6.6
Hospital stay, days	11.1±6.7



Riesgo H et al., Ann Nutr Metab 2021

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Frequency and factors associated with sarcopenia prediction in adult and elderly patients hospitalized for COVID-19

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Keywords:
COVID-19
Body weight loss
Nutritional status
Sarcopenia
Outcome

Patients with COVID-19 may develop symptoms that interfere with food intake. Systemic inflammatory response associated with physical inactivity and/or immobilization during hospital stay can induce weight and muscle loss leading to sarcopenia and worsening the clinical condition of these patients. The present study identifies the frequency and factors associated with sarcopenia prediction in adult and elderly patients hospitalized for COVID-19. It is a cohort-nested cross-sectional study on adult and elderly patients admitted to wards and intensive care units (ICUs) of 8 hospitals in a northeastern Brazilian state. The study was conducted from June 2020 to June 2021. Sociodemographic, economic, lifestyle, and current and past clinical history variables were collected. Sarcopenia prediction was determined by the Strength, Assistance in walking, Rise from a chair, Climb stairs, and Falls (SARC-F) questionnaire compiled in the Remote-Malnutrition APP (R-MAPP). Patients were diagnosed with sarcopenia when the final score $\geq$ 4 points. The study included 214 patients with a mean age of 61.76 $\pm$ 16.91 years, of which 52.3 % were female and 57.5 % elderly. Sarcopenia prevailed in 40.7 % of the sample. Univariate analysis showed greater probability of sarcopenia in elderly individuals, nonpractitioners of physical activities, hypertensive patients, diabetic patients, and those hospitalized in the ICU. In the multivariate model, the type of hospital admission remained associated with sarcopenia prediction, where patients admitted to the ICU were 1.43 (95 % CI: 1.04; 1.97) more likely to have sarcopenia than those undergoing clinical treatment. Sarcopenia prediction was not associated with patient outcome (discharge, transfer, or death) (p = 0.332). The study highlighted an important percentage of sarcopenia prediction in patients with COVID-19, especially those admitted to the ICU. Additional investigations should be carried out to better understand and develop early diagnostic strategies to assist in the management of sarcopenic patients with COVID-19.

Lifestyle and clinical characteristics of patients with COVID-19 in a northeastern Brazilian state - Pernambuco - 2020-2021

Variable	N = 214	%
SARC-F[a]		
Strength; how much difficulty do you have lifting and carrying 4.5 kg?		
None	89	41.6
Some	79	36.9
A lot/cannot do it	46	21.5
Assistance in walking; how much difficulty do you have crossing a room?		
None	118	55.1
Some	63	29.5
A lot, making use of support/cannot do it without help	33	15.4
Rise from a chair; how much difficulty do you have getting up from a chair or bed?		
None	121	56.5
Some	64	29.9
A lot/cannot do it without help	29	13.6
Climb stairs; how much difficulty do you have climbing a 10-step stair?		
None	81	37.9
Some	83	38.8
A lot/cannot do it without help	50	23.4
Falls; how many times have you fallen in the last year?		
None	169	79.0
1–3 falls	44	26.6
4 or more falls	1	0.5
Final score (mean ± sd)	3.0 ± 2.8	
≥4 points	87	40.7
<4 points	127	59.3

Prevalence ratio both crude and adjusted to the effects of explanatory variables on sarcopenia prediction in patients with COVID-19 in a northeastern Brazilian state - Pernambuco - 2020-2021

Independent variable	Sarcopenia prediction				*p*-Value
	Crude analysis		Adjusted analysis		
	PR	$CI_{95\%}$	PR	$CI_{95\%}$	
Age group					
Adult	Ref.		Ref.		
Elderly	1.73	(1.19;2.51)	1.36	(0.91;2.03)	0.123
Practice of physical activity					
Yes	Ref.		Ref.		
No	1.55	(0.95;2.54)	1.18	(0.73;1.90)	0.489
Diabetes					
No	Ref.		Ref.		
Yes	1.69	(1.23;2.32)	1.34	(0.95;1.89)	0.087
Hypertension					
No	Ref.		Ref.		
Yes	1.68	(1.12;2.52)	1.19	(0.77;1.85)	0.426
Type of admission					
Clinical	Ref.		Ref.		
ICU	1.57	(1.14;2.15)	1.43	(1.04;1.96)	0.025*

Barbosa de Aguiar G et al., Exp Gerontol 2022

JMIR FORMATIVE RESEARCH Long et al

Original Paper

A Digital Smartphone-Based Self-administered Tool (R+ Dietitian) for Nutritional Risk Screening and Dietary Assessment in Hospitalized Patients With Cancer: Evaluation and Diagnostic

Abstract

Background: Malnutrition is a common and severe problem in patients with cancer that directly increases the incidence of complications and significantly deteriorates quality of life. Nutritional risk screening and dietary assessment are critical because they are the basis for providing personalized nutritional support. No digital smartphone-based self-administered tool for nutritional risk screening and dietary assessment among hospitalized patients with cancer has been developed and evaluated.

Objective: This study aims to develop a digital smartphone-based self-administered mini program for nutritional risk screening and dietary assessment for hospitalized patients with cancer and to evaluate the validity of the mini program.

Methods: We have developed the R+ Dietitian mini program, which consists of 3 parts: (1) collection of basic information of patients, (2) nutritional risk screening, and (3) dietary energy and protein assessment. The face-to-face paper-based Nutritional Risk Screening (NRS-2002), the Patient-Generated Subjective Global Assessment Short Form (PG-SGA-SF), and 3 days of 24-hour dietary recall (3d-24HRs) questionnaires were administered according to standard procedure by 2 trained dietitians as the reference methods. Sensitivity, specificity, positive predictive value, negative predictive value, κ value, and correlation coefficients (CCs) of nutritional risk screened in R+ Dietitian against the reference methods, as well as the difference and CCs of estimated dietary energy and protein intakes between R+ Dietitian and 3d-24HRs were calculated to evaluate the validity of R+ Dietitian.

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Table 3. Sensitivity, specificity, positive predictive value, negative predictive value, κ value, and correlation coefficient of patients' self-screening using the NRS-2002 tool in R+ Dietitian.

Index	NRS-2002[a] in R+ Dietitian (patients' self-screening), % (95% CI)	*P* value
Accuracy	77.5 (71.7-82.5)	N/A[b]
Sensitivity	81.0 (65.4-90.9)	N/A
Specificity	76.7 (70.2-82.2)	N/A
Positive predictive value	42.0 (31.3-53.5)	N/A
Negative predictive value	95.1 (90.2-97.7)	N/A
κ value	0.42 (0.30-0.54)	N/A
Correlation coefficient	0.62 (0.54-0.70)	<.001

Table 5. Sensitivity, specificity, positive predictive value, negative predictive value, κ value, and correlation coefficient of patients' self-screening using the PG-SGA-SF[a] tool in R+ Dietitian.

Index	PG-SGA-SF in R+ Dietitian (patients' self-screening), % (95% CI)	*P* value
Accuracy	69.3 (63.1-75.0)	N/A[b]
Sensitivity	84.5 (72.1-92.2)	N/A
Specificity	64.5 (57.1-71.3)	N/A
Positive predictive value	42.6 (33.5-52.2)	N/A
Negative predictive value	93.0 (86.8-96.6)	N/A
κ value	0.37 (0.26-0.47)	N/A
Correlation coefficient	0.56 (0.47-0.64)	<.001

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Older adults' perspectives on primary care telemedicine during the COVID-19 pandemic

Satisfaction with Telemedicine (shared decision making, connectivity, logistics, and overall satisfaction)

Satisfaction with telemedicine index (each scored on a 11-point Likert scale, 0 [very dissatisfied]–10 [very satisfied]):				
Satisfied with visit quality ($n = 188$)	10 (8,10)	10 (8,10)	10 (8,10)	0.90
Satisfied with treatment plan ($n = 176$)	10 (8,10)	10 (9,10)	10 (8,10)	0.30
Satisfied with ability to get connected ($n = 190$)	10 (8,10)	10 (9,10)	10 (8,10)	0.96
Satisfaction with the convenience ($n = 182$)	10 (8,10)	10 (8,10)	10 (8,10)	0.74
Satisfaction with privacy (171)	10 (10,10)	10 (10,10)	10 10,10)	0.70
Satisfied with duration of the visit ($n = 185$)	10 (8,10)	10 (8,10)	10 (8,10)	0.92
Satisfied with ability to hear ($n = 191$)	10 (9,10)	10 (9,10)	10 (9,10)	0.48
Satisfied with comfort using telemedicine ($n = 183$)	10 (7,10)	10 (7,10)	10 (6,10)	0.32
Satisfied with how staff answered questions about the process ($n = 148$, 50 did not ask staff any questions)	10 (8,10)	10 (8,10)	10 (8,10)	0.60
Satisfaction with the quality of the video ($n = 101$)	10 (9,10)	10 (8,10)	10 (9,10)	0.80

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Older adults' perspectives on primary care telemedicine during the COVID-19 pandemic

Satisfaction with Telemedicine (shared decision making, connectivity, logistics, and overall satisfaction)

Confidence in using each of the following for telemedicine (5-point scale, not at all confident to very confident				
Landline for telephone visit ($n = 198$)	5 (5,5)	5 (5,5)	5 (5,5)	0.10
Cell-phone for telephone visit ($n = 202$)	5 (5,5)	5 (5,5)	5 (5,5)	0.57
Computer/tablet/cell-phone for video visit ($n = 198$)	5 (4,5)	5 (4,5)	5 (3,5)	0.04
	%	%	%	
How did virtual visit compare with a traditional in-person visit? ($n = 203$)				
Better than traditional visit	4.9	4.6	5.2	0.99
Same	35.1	36.1	34.0	
Worse than a traditional visit	39.5	38.9	40.2	
Not sure	20.5	20.4	20.6	

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Older adults' perspectives on primary care telemedicine during the COVID-19 pandemic

Word-cloud of participants' one-word descriptions of telemedicine primary care

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Take-home messages

- La malnutrizione è una sindrome geriatrica estremamente comune in tutti i setting assistenziali
- La valutazione nutrizionale deve essere fatta utilizzando un approccio multi-step basato su:
  1. Screening
  2. Valutazione
  3. Piano nutrizionale e assistenziale individualizzato
- La telemedicina sembra essere ben accettata dalla popolazione anziana
- Lo screening e la valutazione a distanza dello stato nutrizionale rappresenta una potenziale alternativa alla valutazione in persona