Validity of MUST and SNAQ for undernutrition screening in hospital outpatients

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Rationale

Although undernutrition prevalence among hospital outpatients is relatively low, the numbers add up to thousands of under-nourished patients per year. The majority is unrecognized and thus untreated. Screening hospital outpatients for undernutrition may therefore be beneficial. We aimed to assess the diagnostic accuracy of MUST and SNAQ to improve recognition in this population.

Methods

This study was carried out in nine Dutch hospitals. Patients visiting the outpatient clinic were classified according to the following definition:

- severely undernourished (BMI<18.5 (≤65y) or <20 (>65y) and/or unintentional weight loss ≥5% in the last month or ≥10% in the last six months);
- moderately undernourished (BMI 18.5-20 (≤65y) or 20-22 (>65y) and/or 5-10% unintentional weight loss in the last six months);
- not undernourished.

Diagnostic accuracy of MUST and SNAQ was expressed as sensitivity (Se), specificity (Sp), positive predictive value (PPV) and negative predictive value (NPV).

Results

Out of 2236 hospital outpatients, 6% were severely, 7% moderately and 87% not undernourished according to the pre-set definition of nutritional status.

MUST and SNAQ identified 9% and 3% as severely undernourished respectively (*figure 1*). Diagnostic accuracy of both MUST and SNAQ was poor (*Table 1*).

About half of the undernourished patients were identified based on a low BMI. By post-hoc combining SNAQ with BMI, the diagnostic accuracy improved (Se=95; Sp=99; PPV=89; NPV=100).
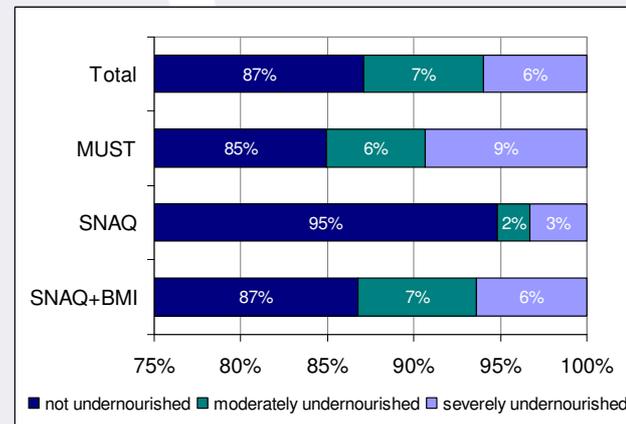

Figure 1. Prevalence of undernutrition according to the definition of undernutrition and the screening tools

Conclusions

The validity of both MUST and SNAQ is insufficient for hospital outpatients. While SNAQ identifies too little patients as undernourished, MUST identifies too many patients as undernourished. Combining SNAQ with BMI results in a valid screening tool, however it would be preferable to use the definition of BMI and weight loss.

Table 1. Diagnostic accuracy* (95%CI) of MUST, SNAQ and SNAQ+BMI

	MUST	SNAQ	SNAQ+BMI
Sensitivity	75 (67-82)	43 (35-52)	95 (90-98)
Specificity	94 (94-96)	99 (99-100)	99 (99-100)
Positive predictive value	43 (41-55)	78 (67-87)	89 (82-93)
Negative predictive value	98 (98-99)	96 (96-97)	100 (99-100)

* Diagnostic accuracy is based on 'severely undernourished' vs 'moderately and not undernourished'

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