

# NUTRITIONAL STATUS AND NUTRITIONAL RISK IN DANISH HEAD AND NECK CANCER SURVIVORS 1-5 YEARS AFTER RADIATION THERAPY – RESULTS FROM A NATIONWIDE CROSS-SECTIONAL SURVEY

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## Rationale and objective

Head and neck cancer (HNC) survivors are at risk of developing nutrition impact symptoms, but evidence is sparse on how nutritional status and risk are affected ≥1 year posttreatment.

The objective was to assess nutritional status and risk in Danish HNC survivors 1-5 years after treatment.

## Methods

The population for this nationwide cross-sectional survey was identified through a national clinical quality database. All Danish HNC survivors treated with radiation therapy of curative intent within 1-5 years (n=1937) were invited.

Self-reported data were used to assess nutritional status and risk with:

- Body mass index (BMI)
- Nutritional Risk Screening 2002 (NRS 2002)
- Malnutrition Universal Screening Tool (MUST)
- The Scored Patient-Generated Subjective Global Assessment Short Form (PG-SGA SF)

Self-reported information on precancer body weight, own evaluation of current body weight, and use of enteral nutrition (EN) and oral nutritional supplements (ONS) was registered.

Differences between subgroups based on time interval since treatment completion were tested.

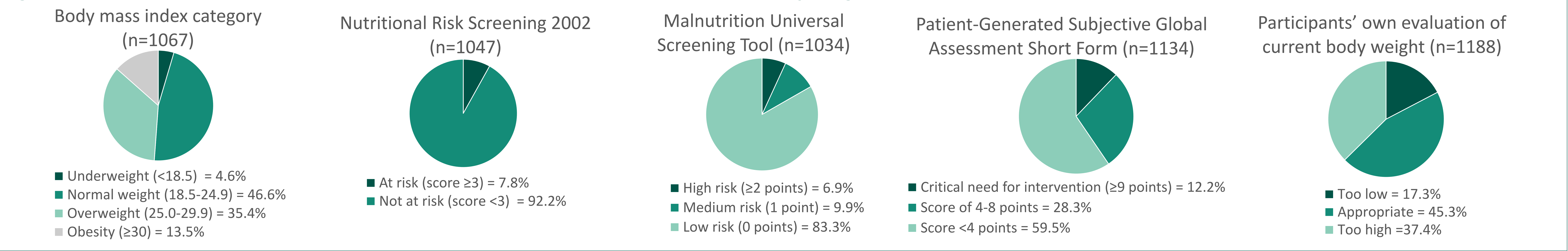
## Results

In total, 1190 (61.4%) responded. While 4.6% of participants were underweight, 17.3% considered their body weight too low. In 48.4%, current body weight amounted <95% of precancer weight. According to NRS 2002, 7.8% were at nutritional risk, while MUST categorised 6.9% at high risk of malnutrition. In PG-SGA SF, 12.2% had a score ≥9 which indicates critical need for intervention. EN was required by 11.7%, and 10.0% required ONS. The only significant difference between subgroups that could indicate gradual improvement over time was seen in use of ONS (p=0.012).

## Conclusion

Nutritional status and risk are still adversely affected in some HNC survivors 1-5 years after treatment. Results could indicate that few spontaneous improvements occur over time, why continuous nutrition screening and proper nutritional interventions should be offered.

Figure 1: Participants’ nutritional status, nutritional risk and own evaluation of current body weight



| Table 1: Participant demographics (n=1190)  |             |
|---------------------------------------------|-------------|
| Age (mean ± SD)                             | 65.6 ± 9.1  |
| <b>Gender</b>                               |             |
| Male                                        | 891 (74.9%) |
| Female                                      | 299 (25.1%) |
| <b>Cancer diagnosis</b>                     |             |
| Larynx                                      | 251 (21.1%) |
| Pharynx                                     | 839 (70.5%) |
| Oral cavity                                 | 100 (8.4%)  |
| <b>Time interval from radiation therapy</b> |             |
| 12-23 months                                | 345 (29.0%) |
| 24-35 months                                | 296 (24.9%) |
| 36-47 months                                | 267 (22.4%) |
| 48-59 months                                | 282 (23.7%) |

| Table 2: Differences in nutritional characteristics between subgroups based on time interval since treatment | 12-23 months posttreatment | 24-35 months posttreatment | 36-47 months posttreatment | 48-59 months posttreatment | Difference between subgroups p-value |
|--------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--------------------------------------|
| <b>Body mass index</b>                                                                                       |                            |                            |                            |                            |                                      |
| Median (interquartile range)                                                                                 | (n=317)<br>24.9 (5.6)      | (n=262)<br>24.7 (5.2)      | (n=233)<br>25.3 (6.0)      | (n=255)<br>24.8 (4.6)      | 0.157                                |
| <b>Nutritional Risk Screening 2002</b>                                                                       |                            |                            |                            |                            |                                      |
| Median score (interquartile range)                                                                           | (n=314)<br>0 (1)           | (n=254)<br>0 (1)           | (n=227)<br>1 (1)           | (n=252)<br>0 (1)           | 0.602                                |
| <b>Malnutrition Universal Screening Tool</b>                                                                 |                            |                            |                            |                            |                                      |
| Median score (interquartile range)                                                                           | (n=302)<br>0 (0)           | (n=254)<br>0 (0)           | (n=226)<br>0 (0)           | (n=245)<br>0 (0)           | 0.521                                |
| <b>Patient-Generated Subjective Global Assessment Short Form</b>                                             |                            |                            |                            |                            |                                      |
| Median score (interquartile range)                                                                           | (n=331)<br>3 (5)           | (n=278)<br>3 (5)           | (n=254)<br>2 (4)           | (n=271)<br>2 (4)           | 0.057                                |
| <b>Current body weight in percentage of precancer weight</b>                                                 |                            |                            |                            |                            |                                      |
| Median (interquartile range)                                                                                 | (n=320)<br>94.4 (12.1)     | (n=275)<br>94.6 (12.9)     | (n=240)<br>96.8 (9.9)      | (n=254)<br>95.6 (11.0)     | 0.002*                               |
| <b>Use of ONS and/or EN</b>                                                                                  |                            |                            |                            |                            |                                      |
| Currently using ONS but not EN                                                                               | (n=341)<br>48 (14.1%)      | (n=293)<br>28 (9.6%)       | (n=266)<br>25 (9.4%)       | (n=277)<br>17 (6.1%)       | 0.012*                               |
| Currently using EN but not ONS                                                                               | 36 (10.6%)                 | 19 (6.5%)                  | 24 (9.0%)                  | 26 (9.4%)                  | 0.329                                |
| Currently using ONS and EN                                                                                   | 13 (3.8%)                  | 9 (3.1%)                   | 5 (1.9%)                   | 6 (2.2%)                   | 0.483                                |

EN: Enteral nutrition, ONS: Oral nutritional supplements.  
Differences between subgroups were tested with Kruskal-Wallis H test for continuous variable and Fisher’s Exact test for categorical variable. \*p≤0.05.

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