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Self-Completion of the Patient-Generated Subjective Global Assessment Short Form Is Feasible and Is Associated With Increased Awareness on Malnutrition Risk in Patients With Head and Neck Cancer

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Abstract

Background: We aimed to assess feasibility of self-completion of the Patient-Generated Subjective Global Assessment Short Form (PG-SGA SF) by head and neck cancer patients, and to assess self-reported increased awareness regarding malnutrition risk after self-completion. *Methods:* Participants were randomized to complete the PG-SGA SF by paper or app. Feasibility was assessed by time needed to complete the PG-SGA SF, perceived difficulty, and help needed during completion. Participants were asked if they knew what malnutrition was (yes/no) and if they could define "malnutrition." They were also asked 9 questions on whether they perceived increased awareness of malnutrition risk after having completed the PG-SGA SF and 2 on their intention to change lifestyle habits. *Results:* Of all participants (n = 59; 65.9 ± 12.6 years; 73% male), 55% completed the PG-SGA SF paper version and 46% the Pt-Global app. Median time needed for self-completion of the PG-SGA SF was 2 minutes 41 seconds (interquartile range: 1 minute 49 seconds–3 minutes 50 seconds). Forty-eight percent needed help with completion, indicating acceptable feasibility. Participants who completed the Pt-Global app needed help significantly more often (66%; 21/32) than those who completed the PG-SGA SF paper version (26%; 7/27) (*P* = 0.005). All difficulty scores were excellent. For 7/9 questions on malnutrition risk awareness, >50% of the participants answered positively. *Conclusion:* The results of this study show that self-completion of the PG-SGA SF by head and neck cancer patients is feasible and that awareness regarding malnutrition risk may increase after completing the PG-SGA SF. (*Nutr Clin Pract.* 2020;35:353–362)

Keywords

head and neck cancer; malnutrition; nutrition assessment; nutrition screening; PG-SGA

Introduction

Malnutrition has been defined as "a state of nutrition resulting from lack of intake or uptake of nutrition that leads to altered body composition (decreased fat-free mass) and body cell mass leading to diminished physical and mental function and impaired clinical outcome from disease."[1] Malnutrition is a common and severe problem in patients

across a number of medical conditions. In hospitalized patients, the prevalence of malnutrition is reported as being up to 50%, depending on the criteria used and the patient population.[2] Patients with head and neck cancer are among the populations with a higher risk for malnutrition.[3-5] At diagnosis, nearly 20% of patients with head and neck cancer are estimated to be at risk,[4] and shortly after cancer treatment, prevalence may be increased to about 50%.[5] Malnutrition and malnutrition risk are associated with poorer outcomes, such as increased length of hospital stay,[6,7] increased number of readmissions,[8] lower quality of life, decreased survival,[7] and increased healthcare costs.[7,9,10] Hence, nutrition screening is an important component of the nutrition care process.[11]

In general, nutrition screening aims to identify patients as being at risk or not and to identify patients that require nutrition intervention.[1,11] Current screening procedures, for example, the Malnutrition Universal Screening Tool (MUST) and the Short Nutritional Assessment Questionnaire (SNAQ), mainly focus on identification of patients who are already malnourished by using criteria such as critical weight loss and low body mass index (BMI). However, in patients with head and neck cancer, it is important to anticipate future malnutrition risk. These patients have elevated risk of malnutrition during all phases in the course from diagnosis through rehabilitation, because of oral symptoms related either to the cancer and its location or the cancer treatment.[4,5,12] Additionally, nutrition screening in patients with head and neck cancer should also focus on identifying underlying risk factors and addressing risk factors for malnutrition, for example, nutrition impact symptoms and comorbidities.

The Patient-Generated Subjective Global Assessment Short Form (PG-SGA SF, © FD Ottery 2005, 2006, 2015) has been shown to be valid as a screening tool for the oncology setting.[13] The PG-SGA SF comprises the first 4 Boxes of the full Scored PG-SGA (PG-SGA, © FD Ottery 2005, 2006, 2015). The PG-SGA is a 4-in-1 instrument to screen, assess, and monitor malnutrition and its risk factors, and to triage for interdisciplinary interventions.[14-17] The PG-SGA has demonstrated good concurrent and predictive validity and is considered the reference method to assess malnutrition in cancer patients.[18] The 4 Boxes of the PG-SGA SF were designed to be completed by the patient and to address weight history (Box 1), food intake (Box 2), nutrition impact symptoms (Box 3), and activities and function (Box 4).[18]

Although the PG-SGA has been globally utilized in both clinical practice and research settings since late 1990s, little is known about the feasibility of the PG-SGA SF. Although the instrument was designed to be completed by the patient, it is unclear if and how self-completion of the form may impact the patient's knowledge and awareness of malnutrition risk. Knowledge of malnutrition and its risk

factors may empower the patient in proactively anticipating or identifying these risk factors for themselves, empowering them to report these risks to their healthcare team, and to self-advocate for intervention. Therefore, in this study, we aimed to assess the feasibility of using the PG-SGA SF in hospitalized patients with head and neck cancer, and to assess increased self-reported awareness regarding malnutrition risk after completing the PG-SGA SF. We hypothesized that patients with head and neck cancer can complete the PG-SGA SF in <5 minutes. Furthermore, we hypothesized that the majority (>50%) of the patients: (1) can complete the PG-SGA SF without help, and (2) will report increased awareness of malnutrition risk after completing the PG-SGA SF.

Materials and Methods

Through a convenience sample, a consecutive series of 87 adult patients with head and neck cancer admitted to the Department of Maxillofacial Surgery or the Department of Otorhinolaryngology/Head & Neck Surgery of the University Medical Center Groningen were asked to participate in this observational study from October 2015 through December 2015. Each patient first completed the PG-SGA SF and then completed a questionnaire developed to assess feasibility of the PG-SGA SF and to assess patient-perceived increased awareness regarding malnutrition risk.

Inclusion criteria were as follows: age ≥18 years and having a primary or recurrent squamous cell carcinoma in the head and neck region, excluding skin tumors in the region. Patients not able to understand the Dutch language were excluded from participation.

The Medical Ethics Committee of the University Medical Center Groningen ruled that no permission was needed to perform the study (reference METc 2015/135), as the study was not under regulation of the Medical Research Involving Human Subjects Act. Informed consent was obtained from all participants. Information on age; diagnosis; cancer staging according to tumor, node, and metastases Classification of Malignant Tumors[19]; cancer treatment; and comorbidities was retrieved from the medical records. The patients were asked for their highest level of education and their experience with using a smartphone or tablet. Body weight was measured using a scale chair (Prior Md 1512), and body height was measured by a stadiometer (Seca 222).

PG-SGA Short Form

Using the block randomization option of Random Allocation Software 2.0,[20] patients were randomized into 2 groups: (1) patients completing the paper version of the PG-SGA SF, that is, the first 4 Boxes of the Dutch PG-SGA (version 3.7)[21]; or (2) patients completing the patient screens of the digital version of the PG-SGA,

that is, the Pt-Global app[22] (version 1.1), on an iPad1. A PG-SGA SF score of 0–3 points was considered low malnutrition risk, 4–8 points medium malnutrition risk, and ≥9 points high malnutrition risk, using the nutrition triage recommendations of the PG-SGA as the basis.[14,23]

Feasibility

To assess the feasibility of the PG-SGA SF, time needed to complete the PG-SGA SF paper form or the patient screens of the Pt-Global app (in minutes), including time for the patient asking any questions and for the researcher answering these questions, was recorded using a stopwatch.

The questionnaire included 6 questions on perceived difficulty in completing the PG-SGA SF in terms of Boxes 1–4 for weight, food intake, nutrition impact symptoms, and activities and function, using a 4-point scale (very difficult, difficult, easy, or very easy).[21] In addition, 2 questions were posed regarding help needed during the completion of the PG-SGA SF (paper version or app), specifically if they needed help and, if so, what help was needed. Two additional questions addressed (1) familiarity with smart devices and (2) preferences regarding completing a malnutrition instrument as either paper form or app. The full questionnaire is available from HJW.

Feasibility of using the PG-SGA SF was prespecified as being considered acceptable if >50% of the participants could complete the PG-SGA SF within 5 minutes and perceived the PG-SGA SF as easy to complete. Feasibility was considered excellent if >80% of the patients could complete the PG-SGA SF within 5 minutes and perceived the PG-SGA SF as very easy to complete.

Patient Awareness on Malnutrition Risk

Prior to completing the PG-SGA SF or the patient screens of the Pt-Global app, patients were asked if they knew what malnutrition was (yes/no) and if they could define "malnutrition." A paper questionnaire was filled in after completing the PG-SGA SF and included 9 questions on whether they perceived an increased awareness of malnutrition risk after having completed the PG-SGA SF or the patient screens of the Pt-Global app, and 2 multiple choice questions on their intention to change lifestyle habits after having completed the PG-SGA SF (paper version or app). The 9 questions on malnutrition awareness used a 4-point scale (do not agree at all, do not agree, agree, or very much agree).

Statistical Analysis

Answers from the questionnaire were analyzed using IBM SPSS version 23.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics are shown as percentages (%) and frequencies (N). Data on time needed for self-completion of the PG-SGA SF (paper version or app) were tested for normality by the Shapiro-Wilk normality test. Normally distributed data are presented as mean and standard deviation (SD), and not normally distributed data are presented as median and interquartile range (IQR). The Mann-Whitney U test was used to test differences in time needed to complete the PG-SGA SF paper version vs the digital app version. The relationship between age and time needed for completing the PG-SGA SF was analyzed by Spearman's correlation coefficient (r_s). The χ^2 test was used to test differences in needed help during completion between patients that completed the PG-SGA SF paper form and patients that completed the patient screens of the Pt-Global app. Statistical significance was set at $P < 0.05$.

To operationalize perceived difficulty in completing the PG-SGA SF, item difficulty (I-DI) was calculated and averaged into a scale difficulty index (S-DI).[21] Score 1 ("very difficult") and 2 ("difficult") were considered "not present", and score 3 ("easy") and 4 ("very easy") were considered "present". The I-DI is a proportional score ranging from 0 to 1, calculated by dividing the number of respondents that considered the item to be "present" by the total number of respondents. An I-DI above 0.78 was considered excellent, and an I-DI <0.78 requires further analysis of the item. An S-DI ≥0.80–0.89 was considered acceptable, and an S-DI ≥0.90 was considered excellent.[21]

Results

Sixty-five patients gave their consent to participate in the study, resulting in a response rate of 75%. Of these, 6 patients were excluded, as the diagnosis of head and neck cancer was not confirmed. Data for the remaining 59 participants (aged 65.9 ± 12.6 years; 73% male) were included in the analyses, and their characteristics are presented in Table 1. In total, 55% (32/59) of the participants completed the PG-SGA SF paper version, and 46% (27/59) completed the Pt-Global app. No significant differences in age, body weight, distribution of gender, tumor localization, risk for malnutrition, type of diet, dietary counseling, or level of education between the 2 groups were found. In total, 44% (26/59) reported having past experience with smartphone or tablet use.

Median total PG-SGA SF score, in either format, was 4 points (IQR: 2–9), with a maximum score of 16 points. Of all participants, 46% (27/59), 29% (17/59), and 25% (15/59) were categorized as being at low, medium, and high risk for malnutrition, respectively.

Feasibility

The time needed to complete the PG-SGA SF (either paper version or app) ranged from 58 seconds to 5 minutes and 5 seconds, which was considered excellent. Median time needed to complete the PG-SGA SF (paper version or app) was 2 minutes and 41 seconds (IQR: 1 minute 49 seconds– 3 minutes 50 seconds). Time needed to complete the paper

Table 1. Patient Characteristics.

Variable	Total Mean ± SD
Age, y	65.9 ± 12.6
Body weight, kg	77.7 ± 16.3
	N (%)
Gender	
Male	43 (72.9)
Female	16 (27.1)
Tumor localization primary tumor	
Larynx	11 (18.6)
Hypopharynx	7 (11.9)
Oropharynx	5 (8.5)
Nasopharynx	3 (5.1)
Oral cavity	20 (33.9)
Other	13 (22.0)
TNM classification	
T1	13 (22.0)
T2	6 (10.2)
T3	9 (15.3)
T4	21 (35.6)
Unknown	6 (10.2)
Other	4 (6.8)
Dietary counseling before study measurement	
Yes	18 (30.5)
No	41 (69.5)
Type of diet	
Normal diet	28 (47.5)
Protein dense	2 (3.4)
Energy dense	6 (10.2)
Energy and protein dense	3 (5.1)
Tube feeding	14 (23.7)
Other[a]	6 (10.2)
Highest level of education	
Elementary education	6 (10.2)
Secondary education	34 (57.6)
Higher education	16 (27.1)
Other	3 (5.1)
Experience with using a smartphone or tablet	
Yes	26 (44.1)
No	33 (55.9)
Malnutrition risk	
Low risk (0–3 points)	27 (45.8)
Medium risk (4–8 points)	17 (28.8)
High risk (≥9 points)	15 (25.4)
	Median (IQR)
Total PG-SGA SF score	4 (2–9)
Box 1: Weight	0 (0–2)
Box 2: Food intake	0 (0–1)
Box 3: Symptoms	2 (0–5)
Box 4: Activities and function	1 (0–1)

IQR, interquartile range; PG-SGA SF, Patient-Generated Subjective Global Assessment Short Form; TNM, tumor, node, and metastases Classification of Malignant Tumors.
[a]Diabetes diet; oral nutritional supplements; mashed diet; liquids only; sodium restriction.

version of the PG-SGA SF (median: 2 minutes 29 seconds; IQR: 1 minute 41 seconds–2 minutes 55 seconds) did not significantly differ from the time needed to complete the Pt-Global app (median: 2 minutes 50 seconds; IQR: 2 minutes 14 seconds–4 minutes 21 seconds). Age was significantly correlated with time needed for completing the PG-SGA SF, although the correlation was weak ($r_s = 0.297$, $P = 0.022$).

In total, 48% (28/59), that is, 7/27 (26%) for the paper version and 21/32 (66%) for the app, of the participants needed help in completing the PG-SGA SF, indicating acceptable feasibility. Reasons for needing help with completing the PG-SGA SF are presented in Figure 1. Participants who completed the app version of the PG-SGA SF needed help significantly more often (21/32) compared with those who completed the paper version (7/27) ($P = 0.005$).

Data on perceived difficulty with completing the PG-SGA SF (paper version or Pt-Global app) are shown in Table 2 and Figure 2. All I-DI scores and S-DI scores were excellent.

Patient Awareness on Malnutrition

Before completing the PG-SGA SFA (paper version or Pt-Global app), 85% (50/59) of the participants reported to know the meaning of the term "malnutrition", and 64% (30/59) were able to give a definition of malnutrition.

Results on patient awareness of malnutrition risk after completion of the PG-SGA SF (paper version or app) are presented in Figure 3. A majority (>50%) of the participants answered positively for the following questions regarding: understanding the meaning of the term "malnutrition"; understanding the consequences of malnutrition; understanding being at risk for malnutrition; knowing that weight loss during illness is not desirable; knowing that decreased food intake may result in weight loss quickly; knowing that symptoms may increase risk for malnutrition; and monitoring of body weight. For all statements, participants who were familiar with the term "malnutrition" prior to completing the PG-SGA SF (paper version or app) answered with a positive answer more frequently compared with the total studied population.

Of all participants who completed the PG-SGA SF, 10% (6/59) reported an intention and 20% (12/59) a possible intention to change food intake and lifestyle habits. The majority (75%, 12/16) of the patients reporting an intention or possible intention to change food intake and lifestyle habits had a medium or high risk for malnutrition. All 6 participants reporting intention and 11 out of the 12 participants with possible intention to change food intake and lifestyle habits after completing the PG-SGA SF were familiar with the term "malnutrition" prior to completing the PG-SGA SF.
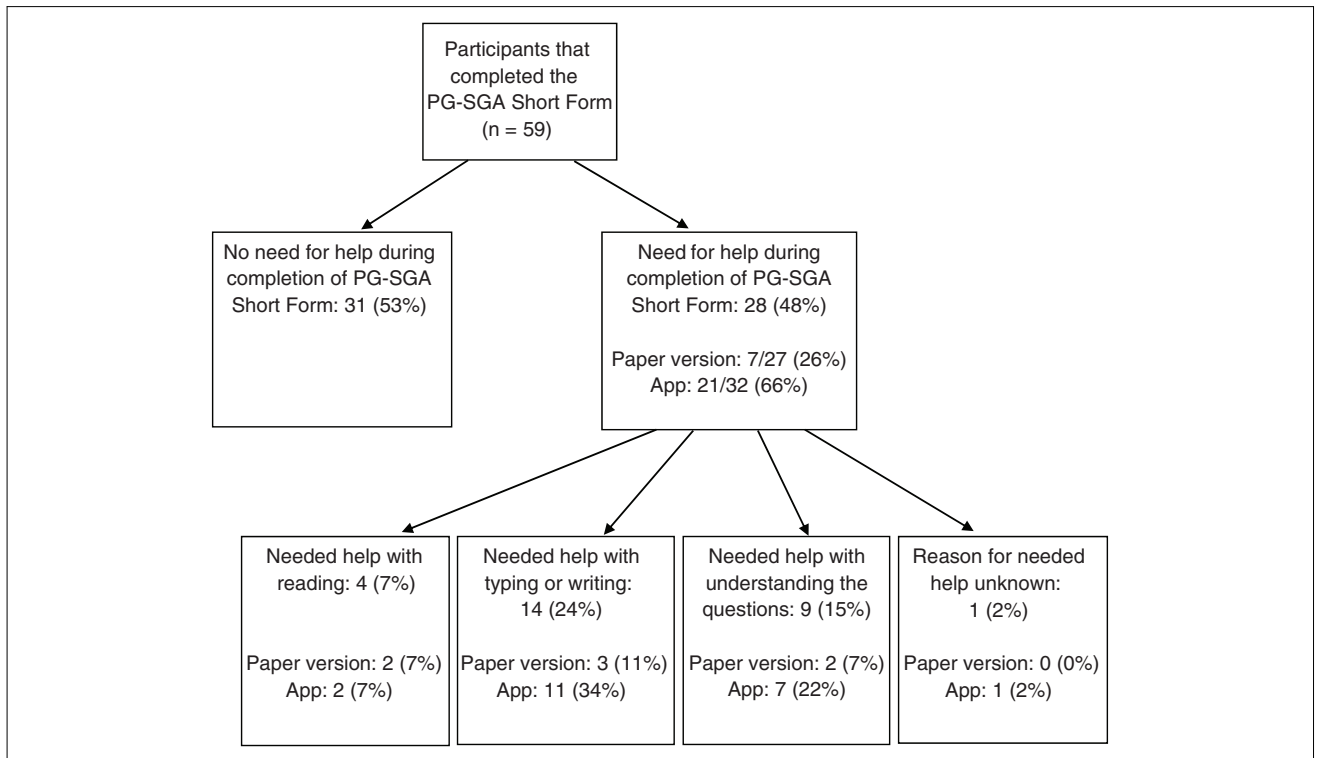
Figure 1. Proportion of patients needing help with completion of the PG-SGA Short Form (paper version or app) and reasons for needing help. PG-SGA total percentage may not equal 100% due to rounding. PG-SGA, Patient-Generated Subjective Global Assessment.

Table 2. Patient's Perceived Difficulty With Completing the PG-SGA Short Form as Item and Scale Index Scores (n = 59).

Items of the PG-SGA SF	I-DI	S-DI
Questions about body weight (Box 1)	0.97	
Questions about food intake (Box 2)	0.95	
Questions about symptoms (Box 3)	0.88	0.92
Question about activities and function (Box 4)	0.90	

Each item in the PG-SGA SF was scored by the respondent using the following 4-point scale: very difficult, difficult, easy, or very easy. I-DI was calculated and averaged into an S-DI. Score 1 ("very difficult") and score 2 ("difficult") were considered "not present," and score 3 ("easy") and score 4 ("very easy") were considered "present." The I-DI is a proportional score ranging from 0 to 1, calculated by dividing the number of respondents that considered the item to be present by the total number of respondents. An I-DI above 0.78 was considered excellent, and an I-DI <0.78 requires further analysis of the item. An S-DI ≥0.80–0.89 was considered acceptable, and an S-DI ≥0.90 was considered excellent. I-DI, item difficulty index; PG-SGA SF, Patient-Generated Subjective Global Assessment Short Form; S-DI, scale difficulty index.

Of all participants, 70% (41/59) reported no intention to change food intake and lifestyle habits. The most reported reason (63%, 26/41) for lack of intention to change intake or lifestyle habits was categorized as "not necessary," whereas a small proportion (7%, 3/41) had already changed habits. In 15% (6/41) of the participants, the reason for no intention to change habits was unknown, and the other 15% (6/41) of the participants reported other reasons, for example, use of tube feeding.

Two of the participants spoke with a dietitian after completing the PG-SGA SF, 8 were interested in speaking to a dietitian, and 86% (49/57) reported that they were not interested in speaking with a dietitian. Reported reasons for wanting to speak with a dietitian were as follows: appointment was already planned (n = 2), request for more tube feeding (n = 1), to discuss changes in the diet (n = 1), need to confirm the PG-SGA SF score indicating "risk for malnutrition" (n = 1), or unknown (n = 1). Reasons reported for patients not willing to speak with a dietitian, stratified per malnutrition risk category, are shown in Figure 4. Median PG-SGA SF score for participants who did not want to speak with a dietitian after completing the PG-SGA SF was 8 points.

Discussion

To the best of our knowledge, this is the first study that has explored the practical aspects of applying the PG-SGA SF, that is, the patient component of the PG-SGA, in hospitalized patients with head and neck cancer. The results of this study showed that self-completion of this instrument
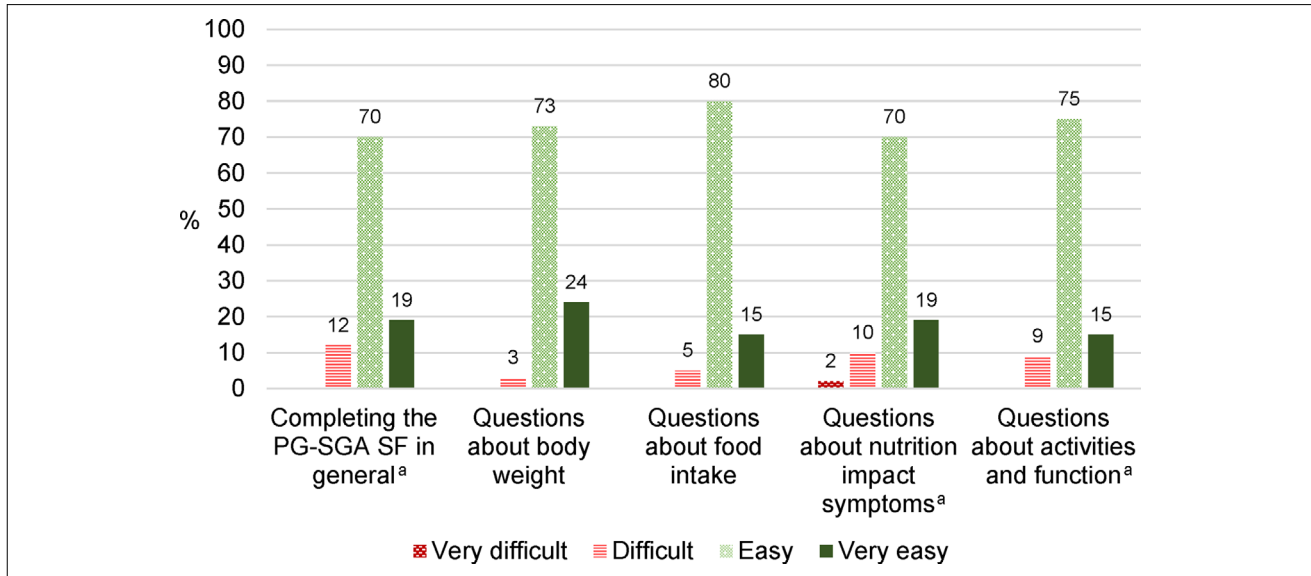
Figure 2. Patients' perceived difficulty with completing the PG-SGA SF (paper version or app) (n = 59). PG-SGA SF[a] total percentage is not equal to 100% due to rounding. PG-SGA SF, Patient-Generated Subjective Global Assessment Short Form.
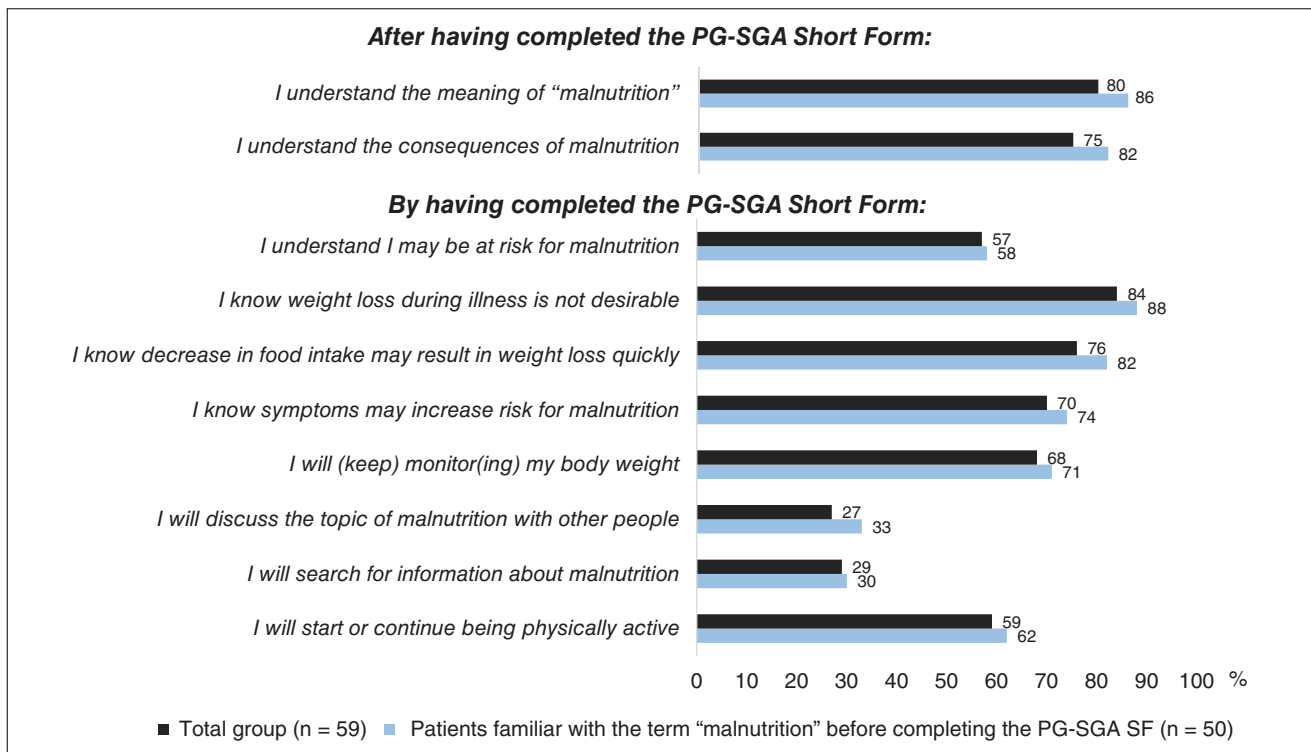
Figure 3. Proportion of patients that agreed with statement on awareness regarding malnutrition risk after completing the PG-SGA Short Form (paper version or app) in %. PG-SGA, Patient-Generated Subjective Global Assessment.

by these patients is feasible, as demonstrated by the little time required and ease of completion, either by paper form or by its digital app. Importantly, the majority of the patients with head and neck cancer who completed the

PG-SGA SF as paper or app, perceived increased awareness of malnutrition and its risk.

The results of our study indicate that the PG-SGA SF can be considered a "quick-and-easy" instrument for
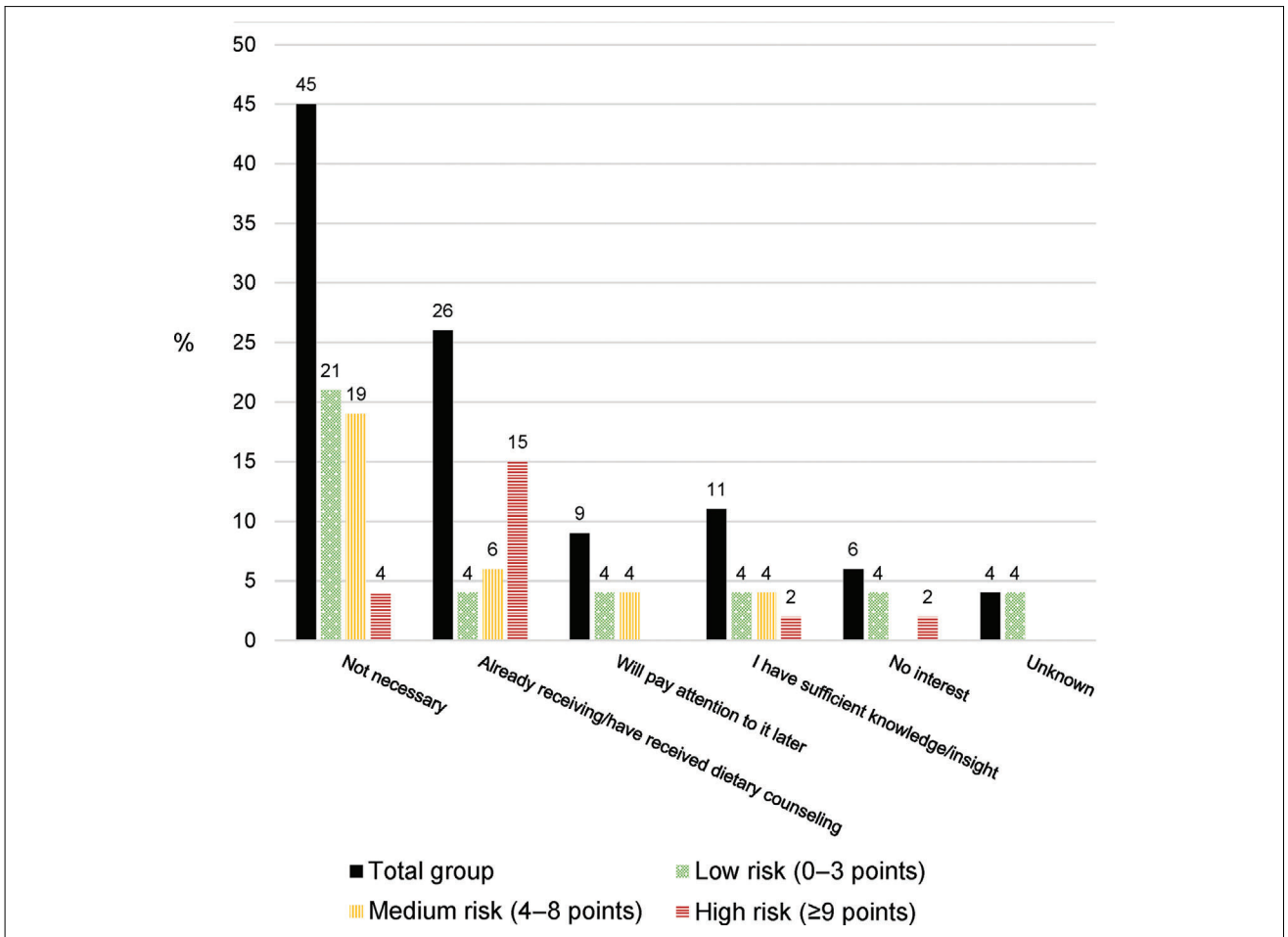
Figure 4. Reasons for not being willing to speak with a dietitian after completing the PG-SGA Short Form, stratified per malnutrition risk category in % (n = 47). PG-SGA, Patient-Generated Subjective Global Assessment.

nutrition screening. Although nearly half of the patients (48% overall, but disproportionately due to need for help with the digital app) needed help with completing the questions regarding weight history, food intake, nutrition impact symptoms, and activities and function, they needed only a short time to complete these questions (median: 2 minutes 25 seconds). Interestingly, patients who completed the paper version of the PG-SGA SF needed a little bit less time as compared with those who completed the digital version of the PG-SGA SF, but this difference did not reach statistical difference. Moreover, we consider the difference between the 2 groups to be not clinically relevant, as in both groups the median time needed for completion was <3 minutes. The slightly more time needed to complete the app could be explained by the finding that patients completing the digital version more often needed help with completion. The time considerations were mainly due to factors not related to the instrument itself but rather to factors such as reading, typing, and writing. Of note, we

found that a majority of our patients (56%) reported no experience with using a tablet or smartphone, which may also have contributed to the longer time needed to complete the digital version of the PG-SGA SF.

The time needed for self-completion of the PG-SGA SF in our study was within the range of reported time needed for self-screening by the malnutrition universal screening tool (MUST). With questions addressing only BMI and weight loss, the MUST is a screening tool that contains fewer questions than the PG-SGA SF. Studies on time needed for self-screening by the MUST reported shorter, similar, and longer durations, that is, 1.29 ± 0.57 minutes,[24] 3.1 ± 1.8 minutes,[25] and 5 ± 19 minutes,[26] respectively. The shortest duration was found in a study in patients (mean age $\approx$46 years) attending a gastroenterology clinic, using a 5-step procedure, with a digital tool equivalent to the first 2 steps of the MUST, that is, BMI and weight loss. In that study, weighing and rating of difficulty to complete the tool was included in the time recording.[24] The longest duration

was reported in a study in 205 outpatients (aged 55 ± 17 years) in which a similar screening procedure was applied, but in which time needed to rate difficulty of completion was excluded from time recording. Importantly, the results of our study show that asking the patient more questions does not necessarily result in more time needed for completion, but it does give the clinician much more information.

Boxes 1–4 of the PG-SGA SF were all perceived as easy to complete by the patients, even though about two-thirds of the study population had a lower level of education (ie, primary or secondary education). The excellent results on perceived difficulty are in line with those found in the pilot testing of the Dutch (S-DI = 0.96),[21] Portuguese (S-DI = 0.94),[27] Thai (S-DI = 0.95),[28] and German language versions (S-DI = 0.91)[29] of the PG-SGA, demonstrating broad applicability and reproducibility across language versions. Our results on difficulty with completing the PG-SGA SF also appear to be in line with those reported on the self-completion of the MUST.[24-26,30,31] In those studies, the proportion of patients rating the MUST as easy or very easy to complete ranged from 92%[25] to 96%.[26]

The findings of the current study demonstrate that after self-completion of the PG-SGA SF, patient awareness on risk for malnutrition may increase. For a majority of the statements posed, more than half of the patients answered positively. We also found that the frequency of increased awareness was higher in the group of participants that was already familiar with the term "malnutrition" than in the total studied population. This finding may suggest that awareness is likely to further increase if patients are being informed about the consequences of malnutrition more than once. However, the long-term impact of the increased awareness on dietary intake and nutrition status was not specifically addressed in this study. We found that the majority (70%) of the patients had no intention of changing their lifestyle habits, mainly because these patients didn't feel that changing lifestyle habits or guidance by a dietitian was necessary. In addition, a large majority (86%) of the patients considered speaking with a dietitian after completing the PG-SGA SF as unnecessary. We did not explore whether patients understood the role of the dietitian. Although we cannot "validate" the patients' perspectives with the current data, about one-third of these patients had a PG-SGA score of 4 points or higher. These scores indicate that not only is intervention by a dietitian potentially required, but also potentially intervention by a member of the medical team for pharmacologic or behavioral management of nutrition impact symptoms. This suggests that patients might underestimate the need for interventions. The results of our study reinforce the importance of educational approaches for these patients, showing the importance of the role of the dietitian in the prevention and treatment of malnutrition.

The results of our study have a number of additional implications for clinical practice and future research. First, our results indicate that nutrition screening using the PG-SGA SF can be performed by the patient him/herself, as originally designed. Having the patient complete the instrument may save time from the professional, for example, if the patient fills in the form in the waiting room while waiting for the healthcare professional, allowing the healthcare professional to focus on shared decision making in relation to starting interdisciplinary interventions.

Moreover, the reported increased awareness of malnutrition risk may contribute to patient empowerment. Empowering patients, as well as their carers, on the prevention and treatment of malnutrition is important to ensure a timely start of interventions and optimize treatment compliance.[32] While the topic of nutrition is poorly addressed in many curricula of medical and nursing schools,[33-35] thus far, increasing awareness on the implications of malnutrition and malnutrition risk in patients with cancer has largely focused on the healthcare professional.[36] However, the data presented support the importance of patient awareness of malnutrition risk and the importance of increasing the awareness on why intervention by dietitians and/or other members of the medical team may be helpful. Importantly, a recent study revealed that older adults do not generally associate changes in body weight with malnutrition.[37]

The current study has some limitations that need to be considered. First, we did not use a pre-post design, which only allowed us to describe the patient's perception of whether awareness in malnutrition risk was increased. Furthermore, our study sample, that is, a convenience sample, was relatively small. To confirm a causal relationship between completing the PG-SGA SF and increasing patient awareness on malnutrition risk, we recommend the conduct of a longitudinal study with a pre-post study design and a larger sample. Second, the use of a 4-point scale in the questionnaire may have hindered patients to choose a "neutral" answering option. We chose to use a 4-point scale to be able to compare the results on perceived difficulty of the PG-SGA with results from the study on the pilot testing of the Dutch PG-SGA, in which a 4-point scale was used as well.[21] In theory, we could have used different scale options for the various questions posed in the current study; however, we wanted to avoid potential confusion for patients when using different types of answering scales. It remains unclear if this limitation has either underestimated or overestimated the reported increased awareness of malnutrition risk after completing the PG-SGA SF.

In conclusion, the results of this study show that self-completion of the PG-SGA SF by hospitalized patients with head and neck cancer is feasible, and that awareness regarding malnutrition risk in patients may increase after self-completion of the PG-SGA SF.

Acknowledgments

Statement of Authorship

H. Jager-Wittenaar, H. F. de Bats, B. J. Welink-Lamberts, and D. Gort-van Dijk equally contributed to the conception and design of the research; H. Jager-Wittenaar, H. F. de Bats, B. J. Welink-Lamberts, and D. Gort-van Dijk contributed to the acquisition and analysis of the data; H. Jager-Wittenaar, H. F. de Bats, B. J. Welink-Lamberts, D. Gort-van Dijk, B. F. A. M. van der Laan, F. D. Ottery, and J. L. N. Roodenburg contributed to the interpretation of the data; and H. Jager-Wittenaar drafted the manuscript. All authors agree to be fully accountable for ensuring the integrity and accuracy of the work and read and approved the final manuscript.

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