



# Malnutrition Diagnosed via Global Leadership Initiative on Malnutrition (GLIM) Criteria – Association with Clinical Outcomes and Predictive Value: A Systematic Review of Systematic Reviews

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## ABSTRACT

**Objectives:** Malnutrition is very common in people with cancer. The Global Leadership Initiative on Malnutrition (GLIM) recommendation on criteria has been proposed as a gold standard for diagnosing malnutrition. The diagnosis of malnutrition includes phenotypic criteria such as unintentional weight loss and etiologic criteria such as reduced food intake. The aim of this review is to summarise the evidence on the GLIM-defined malnutrition association with clinical outcomes and its predictive value.

**Methods:** A systematic search was conducted in PubMed, CINAHL, and MEDLINE databases. A total of 6 systematic reviews with and without meta-analysis were identified and included for analysis. Five were systematic reviews with meta-analyses and 1 systematic review without meta-analysis.

**Results:** GLIM-defined malnutrition is associated with decreased survival, disease-free survival, increased post-operative complications, increased overall complications, and prolonged length of stay. It has predictive value for worsening clinical outcomes.

**Conclusion:** The results support the use of GLIM criteria and indicate their predictive value for clinical outcomes. There is robust evidence indicating the association and predictive value of GLIM-defined malnutrition for clinical outcomes in people with cancer to recommend its use in clinical practice. Thus, the GLIM criteria depend on prior screening tools used and the consistency of muscle mass assessment.

**Implications for Nursing Practice:** Nutrition care is a fundamental aspect of cancer nursing practice and nurses need to be aware of the signs of malnutrition. The GLIM criteria are relevant to be used also in cancer nursing practice for the early detection of malnutrition among people with cancer.

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## INTRODUCTION

Malnutrition is very common among people with cancer.<sup>1–3</sup> Unfortunately, the literature shows that the high prevalence of malnutrition and its negative consequences have not been adequately prioritised in people with cancer<sup>1</sup> and people with cancer are among the most malnourished of all patient groups.<sup>4</sup> For example, the systematic review by Bian et al.<sup>5</sup> found that in a population of 15,089 malnourished patients, 31% were cancer patients. Based on the Global Leadership Initiative on Malnutrition (GLIM) criteria the prevalence of malnutrition among cancer patients was 44% (95% CI, 36%–52%).<sup>5</sup>

The GLIM includes phenotypic criteria with 3 components (unintentional weight loss, low body mass index, and reduced muscle mass based on objective measures and/or physical exam) and the etiologic criteria with 2 components (reduced food intake/assimilation and inflammation/disease burden such as chronic or acute disease, or injury with severe systemic inflammation, or socioeconomic/environmental starvation). The diagnosis of malnutrition requires at least 1 phenotypic criterion and 1 etiologic criterion. The top 5 GLIM criteria for malnutrition are unintentional weight loss (>5% within past 6 months, or >10% beyond 6 months), low body mass index BMI (BMI <20 if <70 years, or <22 if >70 years), reduced muscle mass, reduced food intake or assimilation and disease burden/inflammation.<sup>6</sup>

Malnutrition has several clinical consequences. Malnutrition has been related to worse overall survival<sup>7–10</sup> and disease-free survival.<sup>7,8</sup> Malnutrition can also alter the anti-cancer effects of different treatments<sup>11</sup> In surgical cancer patients, malnutrition is an independent

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## Layperson Summary

### What we investigated and why

Malnutrition is very common among people with cancer. Early detection and treatment of malnutrition are important for preventing and decreasing the negative impact of malnutrition on clinical outcomes such as survival and complications. This review aims to explore the association between the Global Leadership Initiative on Malnutrition (GLIM) criteria used to define malnutrition and clinical outcomes.

### How we did our research

The original search identified a total of nine reviews and meta-analyses, of which six papers were included for analysis.

### What we have found

Malnutrition defined by using GLIM criteria had a negative impact on overall survival, disease-free and disease progression-free survival, postoperative complications, and length of stay. The results indicate the predictive value of GLIM criteria for clinical outcomes.

### What it means

Early detection of the risk of malnutrition and timely diagnosis are important for preventing the consequences of malnutrition and for managing malnutrition in people with cancer. The current evidence supports the use of GLIM criteria to diagnose malnutrition. By early diagnosis and treatment, the negative impact of malnutrition can be decreased. Nutrition care is a multidisciplinary responsibility. Nutrition care is a fundamental aspect of cancer nursing practice. Cancer nurses need knowledge of malnutrition and nutrition-related problems in oncology. Therefore, the GLIM criteria are useful for cancer nursing practice in identifying and monitoring the impact of care for the timely management of malnutrition.

risk factor for complications,<sup>7,9,11</sup> mortality, wound healing, and length of hospital stay.<sup>11</sup> Treatment toxicities and physical disability are associated with generalized loss of muscle mass, termed secondary sarcopenia among people with cancer undergoing chemotherapy.<sup>12</sup> Specifically, the loss of skeletal muscle, with or without loss of fat, predicts risk of post-operative complications, physical impairment, chemotherapy toxicity, and mortality.<sup>13</sup>

Furthermore, malnutrition induced weight loss, impaired physical performance and systemic inflammation are all associated with an unfavourable prognosis, an increased toxicity of anticancer treatments resulting in reductions or interruptions of scheduled treatment, reduced quality of life and overall state and well-being.<sup>13</sup> Even if the person with cancer is well-nourished at the start of the clinical journey, the anti-cancer therapy can deteriorate their health status and result in unfavourable outcomes.<sup>11</sup>

Early detection and treatment of malnutrition are of critical importance.<sup>14</sup> Identifying nutrition-related symptoms, especially at an early stage, would facilitate proactive malnutrition prevention,<sup>14</sup> prevention of sarcopenia caused by malnutrition,<sup>15</sup> promote recovery and improve prognosis.<sup>2,13</sup>

The clinical relevance of preventing and treating cancer-associated malnutrition is widely acknowledged and recommended by guidelines issued by international societies such as ESPEN (European Society for Clinical Nutrition and Metabolism) and ESMO (European Society for Medical Oncology).<sup>15</sup> The 2017 ESPEN guidelines,<sup>13</sup> the 2021 ESPEN practical guidelines<sup>2</sup> and the 2021 ESMO Clinical practice guidelines<sup>16</sup> targeted at medical oncologists and health care professionals stress the importance of multidisciplinary teams working together to ensure

timely identification of malnutrition. These guidelines are similar to those published for instance in the US by ASPEN (American Society for Parenteral and Enteral Nutrition) and ASCO (American Society of Clinical Oncology). Thus, it is acknowledged that guidelines mostly include grade B and C recommendations indicating that the strength and quality of the evidence supporting them are not at the highest level since the relevant literature is frequently underpowered. Grade A requires robust evidence from multiple high-quality studies, ensuring that the benefits significantly outweigh any potential harms. Nevertheless, there is increasing evidence obtained in larger samples and through implementing timely interventions that reinforces the importance of recognizing and treating malnutrition in people with cancer.<sup>14</sup>

The ESPEN guidelines<sup>13</sup> and ESMO clinical practice guidelines<sup>16</sup> support evidence-based clinical nutrition and recognition of the nutrition needs of people with cancer, but also provide a framework for enhancing nursing practice in tandem with other guidelines and diagnostic criteria. Thus, although malnutrition remains a global concern and has been acknowledged as a contributor to death and illness, there has been a lack of a gold standard for diagnostic testing for clinical practice.<sup>17</sup> The GLIM recommendations on criteria for diagnosing malnutrition were published in 2019.<sup>6</sup>

The GLIM criteria were established to normalize the diagnosis of malnutrition; however, their use is not standard practice, and discussion remains regarding their dependency on a choice of prior screening tools and difficulties in consistent assessment of muscle mass.<sup>18</sup> Thus, in a recent meta-analysis, by Huo et al.,<sup>19</sup> the GLIM criteria had high diagnostic accuracy for malnutrition, and the criteria seem to have the potential to be used as a gold standard for diagnosing malnutrition in clinical practice.<sup>17</sup> Moreover, their use supports the early detection of malnutrition. Therefore, they should be known to cancer nurses. After their publication, more evidence has been published on their predictive value for clinical outcomes in people with cancer, emphasizing the importance of increasing their clinical use. Therefore, in this overview of systematic reviews with and without meta-analysis, we aim to summarise the evidence on the association of GLIM defined malnutrition with clinical outcomes and its predictive value.

## METHODS

The protocol of transparent reporting of systematic review and meta-analysis (PRISMA)<sup>20</sup> and the Methodology for Joanna Briggs Institute (JBI) umbrella reviews<sup>21</sup> were used to guide the review. Umbrella reviews are a relatively new method of evidence synthesis. They offer the possibility to address a broad area of issues related to the phenomena of interest. The point is not to repeat the searches, assessment of study eligibility, risk of bias, or meta-analyses from the included reviews, but rather to provide an overall illustration of findings.<sup>22</sup>

Research questions defined to steer our review:

What is the association of GLIM defined malnutrition with clinical outcomes?

What is the predictive value of GLIM criteria for clinical outcomes?

### Search Strategy

The literature search protocol was created by 1 of the researchers. Systematic searches of PubMed, CINAHL, and Medline were carried out covering literature published between January 2019 and August 2024. The GLIM recommendations on criteria for diagnosing malnutrition were published in 2019 and therefore the review is limited to the last 5 years.<sup>6</sup> PICO guided the data search (Table 1). The selection of reviews was based on an initial screening of identified abstracts against inclusion and exclusion criteria and a second screening of full-text articles. Data retrieval is summarised in Fig. 1.

Eligibility criteria were as follows: Inclusion criteria: Systematic reviews with or without meta-analysis, adult cancer patients, published

**Table 1**  
PICO's

Criteria	Description
Patients	Adults with any diagnosis of cancer
Intervention	Malnutrition diagnosed with the GLIM criteria
Comparison	Well-nourished against malnourished
Outcome	All clinical outcomes

in the last 5 years, published in English, GLIM criteria used for diagnosis of malnutrition in the original studies, all clinical outcomes.

Exclusion criteria: Original research papers and non-systematic reviews, opinion papers, editorials, conference proceedings.

#### Data Extraction, Quality Appraisal, and Synthesis

The data were extracted onto a pre-prepared data extraction worksheet by 1 researcher (VS), who transferred them to a worksheet

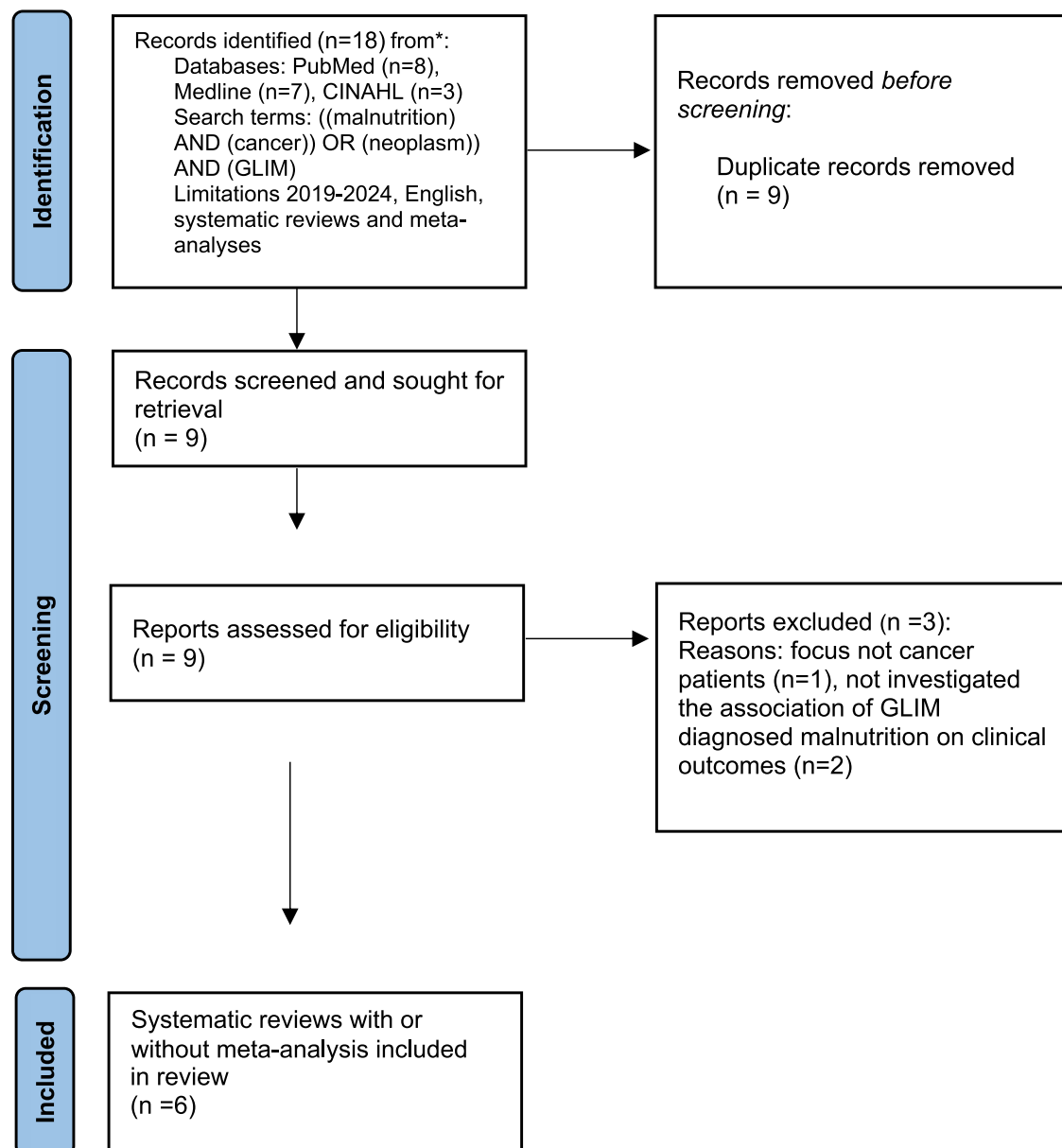
including authors, year, purpose of the review or meta-analysis, review method, and main results. Two researchers (VS, NE) independently conducted a quality evaluation using the JBI Critical Appraisal checklist for systematic reviews and research syntheses.<sup>23</sup> The synthesis of results was conducted and agreed upon by all researchers.

## RESULTS

### Selection and Characteristics of the Reviews

The original search identified a total of 9 systematic reviews with or without meta-analysis, of which 6 were included for analysis (Table 2). Five were systematic reviews with meta-analysis. Five were systematic reviews with meta-analysis,<sup>7-10,24</sup> and 1 was a systematic review without meta-analysis.<sup>5</sup>

The quality of the original systematic reviews with or without meta-analysis was assessed to be high by 2 researchers independently (Table 3).



**FIG. 1.** Data retrieval.

**Table 2**  
Systematic Reviews with or Without Meta-Analyses Included

Author/s, year	Purpose of the review/meta-analysis	Method	Sample	Clinical outcomes measured	Main results
Brown et al., <sup>25</sup>	to determine whether GLIM defined malnutrition is predictive of survival, length of hospital stay (LOHS) and post-operative complications among people with cancer.	Systematic review	21 studies (2018-2022) In total of 28,726 adults with cancer (multiple types)	Overall survival, post-operative complications, Length of Stay (LOHS), hospital readmission	18 studies reported GLIM defined malnutrition was associated with decreased survival, and in 6 studies an association between GLIM malnutrition and longer LOHS was found. However, not enough evidence on valid conclusions on the relationship on hospital readmission. From 5 studies out from 7 exploring post-operative complications, 5 reported GLIM malnutrition was predictive of increased post-operative complications. Main conclusion of the review: GLIM defined malnutrition was consistently predictive of worse clinical outcomes.
Lidoriki et al., <sup>24</sup>	To determine the impact of GLIM defined malnutrition on postoperative complications and survival in esophageal and gastric cancer patients.	Systematic review with meta-analysis	7 studies (2021) A total of 3662 patients with esophageal and gastric cancer	Overall complications, overall survival, disease-free survival	GLIM defined malnutrition was associated with increased overall complications (pooled HR 2.58, 95% CI 1.45-4.59, $p = 0.001$ ), significantly associated with decreased overall survival (pooled HR 1.63, 95% CI 1.18-1.84, $p = 0.003$ ) and with decreased disease-free survival (pooled HR 1.78, 95% CI 1.36-2.33, $p < 0.0001$ ). Main conclusion of the meta-analysis: results support the use of GLIM criteria in clinical practice as a relatively simple and reliable tool for assessing the nutritional status of cancer patients.
Matsui et al., <sup>9</sup>	To clarify the impact of GLIM-defined malnutrition on the treatment outcomes (post-operative) of patients with cancer.	Systematic review with meta-analysis	10 studies (2020-2021) In total of 11,700 adults with cancer (multiple types)	Overall survival, post-operative complications	GLIM defined malnutrition may worsen overall survival (hazard ratio, 1.56; 95% CI, 1.38e1.75; $I^2 = 37\%$ ) and increase postoperative complications (relative risk ratio, 1.82; 95% CI, 1.28e2.60; $I^2 = 87\%$ ). Main conclusion: GLIM-defined malnutrition may worsen overall survival and increase the risk of postoperative complications in patients with cancer undergoing treatment.
Peng et al., <sup>7</sup>	To determine GLIM criteria utility in predicting clinical and survival for cancer patients.	Systematic review with meta-analysis	15 studies (2020-2022) Sample size of the cohorts of adult cancer patients varied from 218 to 3547 (	Overall complications, overall survival	GLIM defined malnourished patients experienced higher risk in overall complications compared to well-nourished patients (OR 5.94; 95% CI 3.58-9.85; $I^2 = 25.3\%$ ; $p = 0.247$ ). Main conclusion: GLIM-defined malnutrition possesses value in predicting poorer survival and clinical outcomes for cancer patients.
Xu et al., <sup>8</sup>	To examine the association between malnutrition defined by the GLIM and survival outcomes in patients with cancer.	Systematic review with meta-analysis	12 studies (2020-2022) In total of 6799 adult cancer patients	Overall survival, disease-free survival	GLIM defined malnutrition was associated with poorer overall survival (HR 1.90; 95% CI 1.58 e2.29) and disease-free survival (HR 1.51; 95% CI 1.27e1.79). Main conclusion: GLIM-defined malnutrition is significantly associated with reduced overall survival and disease-free survival in patients with cancer.
Yin et al., <sup>10</sup>	To assess association of GLIM defined malnutrition and cancer mortality in patients with cancer.	Systematic review with meta-analysis	19 studies (2019-2022) In total of 8829 adult patients with cancer	Overall survival	Significant associations were found between GLIM defined malnutrition (HR = 1.75; 95% CI, 1.43-2.15), moderate malnutrition (HR = 1.44; 95% CI, 1.29-1.62), and severe malnutrition (HR = 1.79; 95% CI, 1.58-2.02) with all-cause mortality. Main conclusions: Results suggests a significant negative association of GLIM defined malnutrition with overall survival in patients with cancer

#### Association Between GLIM-Defined Malnutrition and Clinical Outcomes

GLIM defined malnutrition association was explored in several clinical outcomes. All reviews with or without meta-analysis explored the association of GLIM defined malnutrition with overall survival and disease-free survival in 2 papers.<sup>8,24</sup> Overall complications were explored in 2,<sup>7,24</sup> postoperative

complications in 2,<sup>9,25</sup> and length of stay in one<sup>25</sup> of the analysed papers.

#### Overall Survival

Overall survival was explored in all systematic reviews with or without meta-analysis, with results indicating that GLIM

**Table 3**  
Quality Appraisal of the Systematic Reviews with or Without Meta-Analysis (JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses)

Questions	Brown et al., <sup>25</sup>	Lidoriki et al., <sup>24</sup>	Matsui et al., <sup>9</sup>	Peng et al., <sup>7</sup>	Xu et al., <sup>8</sup>	Yin et al., <sup>10</sup>
Is the review question clearly and explicitly stated?	Yes	Yes	Yes	Yes	Yes	Yes
Were the inclusion criteria appropriate for the review?	Yes	Yes	Yes	Yes	Yes	Yes
Was the search strategy appropriate?	Yes	Yes	Yes	Yes	Yes	Yes
Were the sources and resources used to search for studies?	Yes	Yes	Yes	Yes	Yes	Yes
Were the criteria for appraising studies appropriate?	Yes	Yes	Yes	Yes	Yes	Yes
Was critical appraisal conducted by 2 or more reviewers?	Yes	Unclear	Yes	Yes	Yes	Yes
Were there methods to minimize errors in data extraction?	Yes	Yes	Yes	Yes	Yes	Yes
Were the methods used to combine studies appropriate?	Yes	Yes	Yes	Yes	Yes	Yes
Was the likelihood of publication bias assessed?	Yes	Yes	Yes	Yes	Yes	Yes
Were recommendations for policy and/or practice supported by the reported data?	Yes	Yes	Yes	Yes	Yes	Yes
Were the specific directives for new research appropriate?	Yes	Yes	Yes	Yes	Yes	Yes

Yes, No, Unclear, Not Applicable NA.

defined malnutrition has a significant association with decreased overall survival.

#### *Disease-Free Survival*

Disease free survival was investigated in the review with meta-analysis by Xu et al.<sup>8</sup> and Peng et al.<sup>7</sup> both concluding an association between GLIM defined malnutrition and poorer disease-free survival time. Xu et al.<sup>8</sup> investigated evidence on progression free survival. For patients with nasopharyngeal carcinoma, GLIM defined malnutrition before radiotherapy was associated with a reduced progression free survival (HR 3.70; 95% CI 1.18–11.2) when compared to well-nourished patients. Hazard ratio (HR) indicates that the event rate in the group of malnourished patients was 3.70 times higher than in the control group over a specified period. CI refers to confidence interval, indicating a statistically significant difference (true difference); in this case, it indicates a statistically significant result. Preoperative GLIM defined malnutrition was associated with worse cancer-specific survival (HR 1.30; 95% CI 1.06–1.59) in patients with pancreatic head cancer who underwent curative pancreatoduodenectomy.

#### *Post-operative Complications*

Post-operative complications such as infectious complications and post-operative pneumonia were explored in the systematic review with meta-analysis by Peng et al.<sup>7</sup> Lidoriki et al.<sup>24</sup> and Matsui et al.<sup>9</sup> Results of all 3 indicate that GLIM defined malnutrition may increase the post-operative complications. In the Brown et al.<sup>25</sup> systematic review the results from 5 studies out of 7 exploring post-operative complications, 5 reported GLIM malnutrition was predictive of increased post-operative complications.

#### *Length of Hospital Stay and Readmissions*

The association of GLIM defined malnutrition and Length of Hospital Stay (LOHS) was investigated by Brown et al.<sup>25</sup> All of the original 6 studies on the systematic review exploring this relationship, found a statistically significant association between GLIM defined malnutrition and increased LOHS. On hospital readmission, there were only 2 studies identified with heterogenic samples and therefore not enough evidence for valid conclusions about the relationship. One of the original studies found no significant association.<sup>26</sup> The second study<sup>27</sup> found GLIM defined malnutrition to be predictive of planned or unplanned admission to hospital (OR 1.76, 95% CI 1.33–2.32).

#### *Predictive Value of GLIM Defined Malnutrition on Clinical Outcomes*

GLIM defined malnutrition was consistently predictive of worse clinical outcomes in the Brown et al.,<sup>25</sup> systematic review without meta-

analysis. The clinical outcomes measured were overall survival, post-operative complications, LOHS and hospital readmission. Thus, for hospital readmission, there was not enough evidence for valid conclusions about the relationship. Also, Peng et al.<sup>7</sup> systematic review with meta-analysis showed GLIM defined malnutrition has value in predicting poorer overall survival and clinical outcomes for cancer patients.

## **DISCUSSION**

We aimed to identify recent evidence on the association between GLIM defined malnutrition and clinical outcomes in people with cancer and the predictive value of the GLIM criteria. GLIM criteria were published in 2019 for the diagnosis of malnutrition<sup>6</sup> and a body of evidence indicates that the criteria have high diagnostic accuracy for malnutrition and are recommended to be considered a gold standard for diagnosing malnutrition in clinical practice.<sup>18</sup> However, there is ongoing discussion on their use as a standard due to the inconsistency of tools used in the screening of malnutrition and the availability and lack of standard practice to assess muscle mass.<sup>18</sup> Kurik et al.<sup>18</sup> recently proposed using GLIM as a combined nutrition screening and assessment tool and selecting a single standard accessible muscle assessment method. Thus, further development is needed towards a standardized, accessible, simple and consistent version of GLIM to increase its use and ensure the correct identification of malnutrition.<sup>18</sup>

Nevertheless, the use of GLIM criteria based on our overview of systematic reviews with or without meta-analysis demonstrates an increase in the evidence of the association of GLIM defined malnutrition with decreased survival, decreased disease-free survival, increased post-operative complications, increased overall complications, and prolonged LOHS. The results of a systematic review without meta-analysis<sup>25</sup> and a systematic review with meta-analysis<sup>7</sup> showed the predictive value of GLIM defined malnutrition for overall survival, post-operative, and overall complications.

The original studies included in analysed reviews with or without meta-analysis were conducted with different types of cancer and stages. Malnutrition is prevalent in adult cancer patients, with its severity being influenced by a variety of factors, including cancer stage, tumour site, treatment approach, age, and underlying illnesses.<sup>7,8</sup> Thus, further research is needed to identify the association of GLIM criteria with clinical outcomes, predictive value, and their diagnostic accuracy for different types of cancer, multiple types of cancer, and stages. Furthermore, the certainty of evidence was low in 2 of the systematic reviews with meta-analyses mostly due to measurement bias.

Nutrition assessment serves as the basis for malnutrition diagnosis, which includes the cause, severity and type of malnutrition.<sup>28</sup> First, it needs to be noted that nutrition screening (i.e. by using screening tools such as MUST, PG-SGA, NRS-2002) is used to determine the risk of malnutrition. It provides the preliminary information and is different from nutrition assessment, which then allows the actual diagnosis of malnutrition. The diagnosis of malnutrition can be



made by using the GLIM criteria. Nurses are on the front-line of care to identify the signs of malnutrition and ensure a timely diagnosis and that a nutrition care plan is initiated. However, nurses need further training in using the GLIM criteria in practice.

Person-centred nutrition assessment and guidance are important elements of nursing practice when supporting people in cancer treatment and in the provision of care.<sup>29,30</sup> Person-centred care is not complete without nutrition care as nutrition interventions directly improve clinical and socioeconomic outcomes.<sup>31</sup> It is thus important to establish a systematic and validated approach to cancer nursing that can proactively support patients' nutrition needs throughout their treatment.<sup>29</sup> Such an approach also illustrates the important front-line role that nurses have in organising nutrition care and reinforces the multidisciplinary mission.<sup>2,13,16</sup>

Malnutrition causes a negative effect on many clinical outcomes,<sup>13</sup> in this review the original systematic reviews with or without meta-analysis explored the association of GLIM defined malnutrition with overall and disease-free survival, overall and post-operative complications and LOHS. Disease-related malnutrition is harmful to the person with cancer both physiologically and clinically, not only impairing quality of life (QoL) but delaying recovery from the illness. To provide adequate early nutritional therapy to hospitalised people with cancer, their nutritional status must first be determined.<sup>2</sup> To detect nutritional disturbances at an early stage, screening and regular evaluation of nutritional intake, weight change, and BMI are recommended.<sup>13</sup> There are many screening tools available that nurses can use to identify the risk of malnutrition.<sup>32–34</sup> When using a nutrition screening and assessment tool, healthcare professionals should start with a valid and reliable tool, and then ensure the tool addresses disease-specific nutrition concerns.<sup>35</sup> The GLIM criteria provide a practical tool for clinical practice in the identification of malnutrition when the nutritional status of the person with cancer deteriorates. Nurses are ideally placed to perform screening and assessments to detect risk and early signs of malnutrition and monitor the effectiveness of care.<sup>29</sup>

For achieving optimal clinical and health outcomes for people with cancer adequate nutrition is essential<sup>36</sup> and therefore a shared mission for the multidisciplinary team. Nutrition care in cancer is an essential component of standard cancer care and needs to be seen as a basic right for people living with and beyond cancer.<sup>31</sup> It is the multidisciplinary team's responsibility to ensure that patients' nutrition needs are met and to deliver individualised care.<sup>2,13,16</sup> Cancer nurses need to acknowledge the importance of identifying the nutrition needs of people with cancer, early detection of malnutrition, and recognise their own role in ensuring that people with cancer have access to sound nutrition advice while also acknowledging cultural differences that might impact nutrition care.

### Limitations

Although based upon a systematic approach, some systematic reviews with or without meta-analysis could have been missed in the search. However, the systematic literature search process in main health sciences databases increased the likelihood of identifying all relevant systematic reviews with or without meta-analysis. While the analysis was conducted by a single researcher with a preprepared data extraction sheet, the multidisciplinary team of authors participated in the interpretation and presentation of the evidence and reviewed the data extraction. The exchange of information between the researchers increases the validity of this review. Validity was also increased by using the PRISMA statement to guide the review. As an umbrella review, this review relies on previously published reviews with or without meta-analysis. In an umbrella review, the searches, assessment of study eligibility, risk of bias, or meta-analyses from the included reviews are not conducted. However, to demonstrate the quality of existing evidence, the quality appraisal of the included

systematic reviews with or without meta-analysis was conducted independently by 2 researchers. Therefore, caution and professional expertise are always needed when applying the results.

### Implications for Nursing Practice

Cancer nurses need knowledge of malnutrition and nutrition-related problems in oncology, including best practices in the detection of malnutrition. They need to be aware of GLIM criteria as they are indicative of clinical outcomes. Cancer nurses are in constant contact with their patients. Therefore, they are ideally placed to be key members of the multidisciplinary team. Cancer nurses need to be able to screen for the risks of malnutrition, identify early signs of malnutrition, assess and share information with the multidisciplinary team about the nutrition status of people with cancer. The use of the GLIM criteria supports the timely diagnosis of malnutrition.

### CONCLUSION

Early detection of the risk of malnutrition, timely diagnosis, and nutrition care are of critical importance for the prevention of the consequences of malnutrition and the management of malnutrition in people with cancer. There is robust evidence indicating the association and predictive value of GLIM defined malnutrition for clinical outcomes in people with cancer. The GLIM criteria should be considered a standard for diagnosing malnutrition in clinical practice for people with cancer.

### DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work, the authors used Copilot to improve language and detect errors in references and formatting. After using this tool, the authors reviewed and edited the content as needed and took full responsibility for the content of the published article.

### DISCLAIMER

Virpi Sulosaari was a Guest Editor for the 'Nutritional Assessment in Cancer Care' Special Issue of *Seminars in Oncology Nursing*. As an author of this article, she did not participate in any editorial process or decision-making, which was handled by another editor.

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### Declaration of competing interest

All authors declared no conflicts of interest.

### CRediT authorship contribution statement

**Virpi Sulosaari:** Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Judith Beurskens:** Writing – review & editing, Conceptualization. **Alessandro Laviano:** Writing – review & editing, Conceptualization. **Nicole Erickson:** Writing – review & editing, Methodology, Formal analysis, Conceptualization.

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