Enhancing Nutritional Care in Cancer: Development and Face Validation of the Chemotherapy Dietary Adherence Scale

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Background: Dietary adherence during chemotherapy is crucial for managing side effects and maintaining nutritional status. However, there is a lack of validated tools to measure dietary adherence in this context. The aim of this study was to develop and validate the Chemotherapy Dietary Adherence Scale (CDAS) for assessing dietary adherence among cancer patients undergoing chemotherapy.

Methods: A cross-sectional study was conducted over 2 months. The CDAS was developed through a literature review and expert consultation. Face and content validation were performed with 25 experts in oncology, dietetics, and community medicine. The Content Validity Index (CVI) was calculated at both the item (I-CVI) and scale (S-CVI) levels.

Results: The expert panel comprised diverse professionals (40% public health experts, 20% medical oncologists, and 20% dietitians). Face validation showed 85% agreement on grammar, clarity, and content. The I-CVI was 0.81, and the S-CVI was 0.83, indicating strong content validity.

Conclusion: The CDAS demonstrated robust content validity and relevance for assessing dietary adherence in cancer chemotherapy patients. Further research is needed to evaluate its psychometric properties and clinical utility.

Introduction

Maintaining adequate nutrition is critical to cancer care, particularly during chemotherapy. Chemotherapy can cause various side effects, such as nausea, vomiting, loss of appetite, and taste changes, which can lead to poor dietary intake and malnutrition [1]. Malnutrition is associated with an increased risk of treatment-related complications, impaired quality of life, and poorer treatment outcomes. Therefore, adherence to dietary recommendations during chemotherapy is essential for

managing side effects, preserving nutritional status, and supporting overall well-being [2].

Dietary counselling and recommendations are routinely provided to cancer patients undergoing chemotherapy to help them meet their nutritional needs and cope with treatment-related side effects [3]. However, adherence to these recommendations can be challenging due to various factors, including the severity of side effects, lack of knowledge, and difficulties in implementing dietary changes [4].

Assessing dietary adherence is crucial for identifying patients requiring additional nutritional support or interventions. However, there is a lack of validated tools to measure dietary adherence in chemotherapy. Existing dietary adherence scales may not adequately capture cancer patients undergoing chemotherapy's unique challenges and nutritional needs [5].

Developing a reliable and valid scale to assess dietary adherence during chemotherapy can provide valuable insights into patients' dietary behaviours and enable healthcare professionals to tailor nutritional interventions accordingly. Furthermore, such a scale can facilitate research in this area, contributing to understanding the relationship between dietary adherence and treatment outcomes, quality of life, and overall well-being in cancer patients undergoing chemotherapy.

In this study, we aimed to develop and validate a scale specifically designed to assess dietary adherence among cancer patients undergoing chemotherapy treatment.

Materials and Methods

a) This cross-sectional study aimed to develop and face-validate the Chemotherapy Dietary Adherence Scale (CDAS). The study population consisted of oncology, dietetics, and community medicine experts. Over two months, the study employed purposive sampling to select 25 subject experts for the face validation process. These experts provided insights and feedback to ensure the scale's relevance and comprehensiveness in assessing dietary adherence among chemotherapy patients.

b) Methodology of Development and Face Validation of CDAS:

Item Generation

The initial pool of items for the Chemotherapy Dietary Adherence Scale (CDAS) was generated based on a comprehensive literature review of existing dietary adherence scales and nutritional guidelines for cancer patients undergoing chemotherapy. Additionally, input from a multidisciplinary team of medical oncologists, dietitians, and nurses with expertise in cancer care was sought to ensure the relevance and comprehensiveness of the items.

Content Validation

The content validity of the CDAS was evaluated through a two-step process:

Expert Panel Review

A panel of 25 experts, including medical oncologists, dietitians, and public health specialists with extensive experience in cancer nutrition, reviewed the initial pool of items. For each item, the experts rated the relevance and clarity on a 4-point scale (1 = not relevant/clear, 2 = somewhat

relevant/clear, 3 = relevant/clear, 4 = highly relevant/transparent). The Content Validity Index (CVI) was calculated for each item and the overall scale. Items with a CVI below 0.8 were revised or eliminated based on the experts' feedback.

Cognitive Interviews

To assess the clarity and comprehensibility of the items from the patient's perspective, cognitive interviews were conducted with 10 cancer patients currently undergoing chemotherapy treatment. Participants were asked to verbalize their thought process while responding to each item, and feedback on the clarity and relevance of the items was solicited. Items that were consistently misunderstood or deemed irrelevant were revised or removed.

Results

The expert panel in the Chemotherapy Dietary Adherence Scale (CDAS) content validation comprised 25 individuals with diverse backgrounds and expertise. The age distribution of the panel members was eclectic, with the majority (36%) falling within the 36-45 age group, followed by the 46-55 age group (28%), and the 25-35 and >55 age groups accounting for 16% and 20% of the panel, respectively.

Regarding gender representation, the panel had a slight majority of female experts (56%) compared to male experts (44%), ensuring a balanced perspective in the content validation process.

The professional backgrounds of the panel members were diverse, with public health experts constituting the largest group (40%), followed by medical oncologists and dietitians, each accounting for 20% of the panel. This interdisciplinary composition ensured that a range informed the CDAS of perspectives relevant to dietary adherence during chemotherapy treatment.

Regarding years of experience, the panel represented both early-career and experienced professionals well. A substantial proportion (64%) of the panel members had more than 10 years of experience, with 32% having 11-15 years of experience and another 32% having more than 15 years of experience. This wealth of experience contributed to the depth of knowledge and expertise in the content validation process. Simultaneously, including professionals with 0-5 years (12%) and 6-10 years (24%) of experience brought fresh perspectives and ensured the relevance of the CDAS to current practices (Table 1).

Characteristic	Frequency (n)	Percentage (%)
Age (years)		
25-35	4	16
36-45	9	36
46-55	7	28
>55	5	20
Gender		
Male	11	44
Female	14	56
Professional Background		
Medical Oncologist	5	20
Dietitian	5	20
Public Health Expert	10	40
Years of Experience		
0-5 years	3	12
6-10 years	6	24

11-15 years	8	32
>15 years	8	32

Table 1. Demographic Characteristics of Expert Panel.

Values are expressed as frequency and percentage

Face validation

A total of 25 subject experts were involved in the face validation process. The validation criteria encompassed ten aspects, including grammar appropriateness, clarity, item unambiguity, correct spelling, font size and spacing suitability, adequacy of instructions, item construction, difficulty level, and alignment of items with the tool's intended purpose.

Most experts (85%) agreed regarding the tool's grammar, clarity, and content. However, a minority of experts (15%) disagreed with the questionnaire's construction.

Content Validity Index (CVI)

At the item level, the Item Content Validity Index (I-CVI) was computed based on evaluations from all 25 subject experts, resulting in a value of 0.81. The Scale Content Validity Index (S-CVI) was also determined, yielding a value of 0.83. Typically, a CVI of 0.7 and above indicates good content validity. In this study, the scale demonstrated a robust CVI with an average of 0.8, indicating strong content validity (Table 2).

Content Validity Index	Value	Interpretation
Item Content Validity Index (I-CVI)	0.81	Good content validity (≥ 0.7)
Scale Content Validity Index (S-CVI)	0.83	Good content validity (≥ 0.7)
Average CVI	0.8	Strong content validity

Table 2. Content Validity Index of CDAS.

Discussion

The present study aimed to develop and validate a comprehensive scale to assess dietary adherence among cancer chemotherapy patients. The Chemotherapy Dietary Adherence Scale (CDAS) was developed through a rigorous literature review, expert consultation, and content validation. The face validation and content validity index (CVI) results demonstrate the CDAS's strong content validity and alignment with the intended purpose of assessing dietary adherence in this patient population.

The face validation process revealed that most subject experts (85%) agreed on the grammar, clarity, and content of the CDAS items. However, a minority (15%) disagreed with the questionnaire's construction, suggesting potential areas for improvement in the structure or phrasing of some items. This feedback aligns with previous studies emphasizing the importance of clear and unambiguous item construction in dietary adherence scales [6].

The content validity index (CVI) analysis yielded an item-level CVI (I-CVI) of 0.81 and a scale-level CVI (S-CVI) of 0.83, both of which are above the recommended threshold of 0.7 [7]. These values indicate strong content validity for the CDAS, suggesting that the items adequately represent the construct of dietary adherence during chemotherapy treatment. Similar studies that have developed dietary adherence scales for specific patient populations have reported comparable CVI

values, ranging from 0.78 to 0.92 [8, 9].

It is noteworthy that the CDAS addresses unique challenges faced by cancer patients undergoing chemotherapy, such as managing treatment-related side effects and maintaining adequate nutrient intake despite poor appetite. This specificity sets the CDAS apart from generic dietary adherence scales, which may not capture the nuances of this patient population's nutritional needs and challenges [10].

The interdisciplinary approach involving experts from various fields, including medical oncology, dietetics, and public health, ensured a comprehensive perspective on the scale's development. This approach aligns with the recommendations of previous studies that emphasize the importance of involving multidisciplinary teams in developing patient-reported outcome measures [11].

While the present study provides robust evidence of the CDAS's content validity, future research should evaluate its psychometric properties, such as construct validity, reliability, and responsiveness to change. Additionally, comparing the CDAS's performance with existing dietary adherence scales in the oncology setting would be valuable in further establishing its validity and utility.

In conclusion, the Chemotherapy Dietary Adherence Scale (CDAS) has demonstrated strong content validity (I-CVI = 0.81, S-CVI = 0.83) and positive expert feedback, underscoring its relevance and clarity for assessing dietary adherence in cancer patients undergoing chemotherapy. Currently, statistical validation of the CDAS is underway to further establish its psychometric properties, including construct validity, reliability, and responsiveness to change. Future research directions include evaluating the scale's performance across diverse cancer populations, investigating its predictive value for treatment outcomes and quality of life, and exploring its potential integration into routine clinical practice. These efforts aim to solidify the CDAS as a valuable tool for improving nutritional care and outcomes in cancer patients undergoing chemotherapy.

Acknowledgements

Conflict of interest

Author declares no conflict of interest

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