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Prevalence of Undernutrition and Its Contributing Factors among Cancer Patients in Africa: A Systematic Review and Meta-Analysis of Observational Studies

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Malnutrition · Africa · Cancer · Meta-analysis

Abstract

Introduction: Cancer poses a significant burden in Africa, where limited resources and infrastructure compound the challenges of managing the disease. Undernutrition, a critical concern among cancer patients, can profoundly affect treatment outcomes and overall prognosis. Despite its importance, the prevalence of undernutrition among African cancer patients remains poorly understood. ***Methods:*** Five major databases were searched for observational studies that reported the prevalence of undernutrition, from inception till February 2024. Study selection, data extraction, and quality assessment were conducted by at least two independent reviewers. The NIH criteria for observational studies were used for quality assessment. A random-effects meta-analysis model was used to estimate the overall undernutrition prevalence, with subgroup analyses conducted based on country and population characteristics. ***Results:*** Twenty-four studies involving 4,283 participants met the inclusion criteria and most studies included children (41%), followed by adults (37%) and women (19%). The overall undernutrition prevalence among African cancer patients was estimated at 32.8% (95% CI, 25.1%, 41.67%) with substantial heterogeneity observed (I^2 = 95.4%, $p < 0.0001$). Subgroup analyses revealed significant variations in prevalence across countries and population groups. ***Conclusion:*** Undernutrition is a serious issue among African cancer patients and requires an urgent response with targeted interventions. Tailored nutritional support strategies, considering demographic and regional contexts, are essential for improving patient outcomes.

Plain Language Summary

Cancer is a significant health challenge globally, with an increasing burden observed in Africa. Malnutrition among cancer patients exacerbates treatment outcomes and quality

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of life. Our systematic review, covering 26 studies across 11 African countries, assessed malnutrition prevalence. We found an overall prevalence of 28.57%, with variations across countries and population groups. Malawi and South Africa reported the highest prevalence rates. Factors such as age, gender, cancer type, and treatment modalities influenced malnutrition risk. Addressing malnutrition early in cancer care is crucial for improving patient outcomes. Our findings underscore the need for tailored interventions and comprehensive approaches to cancer care in Africa to enhance patient well-being and quality of life.

Introduction

Cancer is a complex and heterogeneous group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. It is the second leading cause of death worldwide, with 10.0 million cancer-related deaths and, in 2020, approximately 19.3 million new cases of cancer [1]. Recently, the burden of cancer has been escalating across Africa, with over 70% of cancer-related deaths recorded in low- and middle-income countries, further exacerbated by limited healthcare resources and infrastructure [1]. Among the multifaceted challenges faced by cancer patients, undernutrition, which refers to the inadequate intake of energy and nutrients necessary for maintaining proper health, stands out as a crucial concern that may drastically impact treatment outcomes, quality of life, and overall prognosis [2].

Effective cancer management depends on having adequate nutritional status, which boosts patients' overall resilience, enhances immunological function, and reduces side effects associated with treatment [3]. Undernutrition can affect the function and recovery of every organ system leading to compromised wound healing, impaired drug metabolism, and increased susceptibility to infections [4]. In the context of cancer, undernutrition is particularly concerning, and it affects up to 80% of those with advanced-stage disease and between 40% and 20% of first-time cancer-diagnosed cases [5]. As a result, individuals who are malnourished may demonstrate low rates of therapeutic response and increased treatment-associated side effects, ultimately affecting patient survival [6].

Undernutrition can differ significantly between children and adults due to varying physiological needs and developmental stages [7]. Undernutrition in children can severely affect their growth and cognitive development, leading to stunting (low height-for-age), which indicates chronic undernutrition, and wasting (low weight-for-height or BMI), which indicates acute undernutrition [8]. On the other hand, in adults, undernutrition often leads to weakness and muscle wasting, which may progress to sarcopenia, characterized by a progressive loss of skeletal muscle mass and strength. This condition can lead to physical disability, decreased quality of life, and increased mortality [9, 10].

Undernutrition is one of the major challenges facing Africa, particularly the sub-Saharan region. According to estimates, there were 181 million undernourished people in the region in 2010 and 222 million in 2016 [11]. Although the effects of undernutrition on cancer outcomes are well established [2], the prevalence of undernutrition among African cancer patients is still poorly understood. The complexities of interacting factors affecting nutritional status and access to care are influenced by the different socioeconomic, cultural, and geographical contexts of African countries. In addition, the diversity in the availability and application of standard nutritional screening techniques in clinical practice across the continent contributes to the uncertainty about undernutrition prevalence [12]. To bridge this knowledge gap, this systematic review aimed to assemble and evaluate existing observational studies that investigate the prevalence of undernutrition and its contributing factors among children and adult patients in Africa, aiming to improve nutritional support and overall care for this vulnerable population and ultimately improve outcomes for cancer patients throughout Africa.

Methods

This study strictly adhered to the PRISMA guidelines [13] and was registered on PROSPERO (CRD42024499372).

Search Strategy

We systematically searched five major databases – PubMed, Google Scholar, Scopus, Virtual Health Library, and Web of Science – between September 2023 and February 2024, to identify relevant observational studies. The search employed a combination of Medical Subject Headings and keywords related to cancer, undernutrition, and Africa (details available in online suppl. Table S1; for all online suppl. material, see https://doi.org/10.1159/000542390).

Study Selection

Our study population included patients of any age diagnosed with cancer and residing in African countries. Inclusion criteria covered observational studies, comprising cross-sectional, cohort, and case-control designs, and published in English. Exclusion criteria encompassed

studies conducted outside Africa, interventional studies, and those not reporting on undernutrition in cancer patients. Conflicts during the screening process were resolved through discussion among reviewers. Rayyan's website [14] was utilized for study selection management and tracking.

Outcomes and Data Extraction

Two independent reviewers rigorously screened studies against inclusion criteria. EndNote software [15] was used for duplicate removal and efficient management of references. A standardized spreadsheet, developed in Microsoft Excel (v2310), facilitated use for data extraction, including author details, publication year, country, study design, patient characteristics, undernutrition prevalence, cancer types, and factors associated with undernutrition, and discrepancies were resolved through discussion with a third author.

Risk of Bias Assessment

In the process of quality assessment for our systematic review and meta-analysis, we utilized the National Institutes of Health (NIH) criteria [16], comprising 14 yes/no questions. Each "yes" response was assigned a score of 1, and we calculated a total score for each study by summing these individual scores. This systematic scoring system allowed us to quantitatively evaluate the methodological quality of each study. Furthermore, to provide a concise summary of the overall adherence to the NIH criteria, we calculated the percentage of "yes" responses for each study, categorizing them as "strong" (≥80%), "good" (70–79%), "fair" (60–69%), or "poor" (<60%).

Statistical Analysis

Descriptive statistics were employed to summarize patient characteristics, and we employed a random-effects meta-analysis model to combine prevalence estimates from individual studies, accounting for both within-study variability and between-study heterogeneity. This approach is chosen because of the expected variation in study populations, methodologies, and settings across included studies. Heterogeneity between studies was assessed using the I^2 statistic, which quantifies the proportion of total variation across studies that is due to heterogeneity rather than chance. Substantial heterogeneity was defined as a significant p value ($p < 0.1$) of Q-statistic and I^2 values greater than 50%. To explore potential sources of heterogeneity, subgroup analyses were conducted based on population type and geographical region. All statistical analyses were performed using the Meta package (v6.5-0) in R statistical software v4.3.1.2.

Results

Characteristics of the Included Studies

Initially, 3,152 records were identified from databases, with 739 duplicates removed. Subsequently, 2,413 records underwent screening, leading to the inclusion of 24 studies [17–40] (shown in Fig. 1). Summary characteristics of the included studies are provided in Table 1. The studies were conducted across eleven African countries, and most studies were performed on children (41%), followed by adults (37%), women (19%), and the elderly (4%). The predominant study designs were cross-sectional (60%) and prospective cohort (30%). The most frequently reported cancers in the adult population were colorectal cancer (44%), breast cancer (37%), and lung cancer (30%). In pediatric studies, on the other hand, the predominant cancers were leukemia (41%), Burkitt lymphoma (41%), and Wilms tumor (41%). The nutritional risk assessment involved various methodologies across studies, with Mid-Upper Arm Circumference (MUAC) and Subjective Global Assessment tool being the most commonly used to assess the nutritional status.

Quality Assessment

The quality assessment of studies included in our systematic review yielded diverse findings. Eleven studies (42%) were categorized as "poor quality," and eight studies (31%) were categorized as "good quality," while 23% were deemed "fair quality." Notably, only 4% of studies achieved a "strong quality" rating. Average NIH scores across study designs, with case-control and cross-sectional studies averaging 8 points, were suggestive of moderate adherence, while prospective cohort and retrospective studies scored higher at 8.875.

Overall Prevalence of Undernutrition in Africa

The meta-analysis of the prevalence of undernutrition among all cancer patients revealed an overall prevalence of 32.8% (95% CI, 25.1%, 41.67%) (shown in Fig. 2). However, the heterogeneity assessment unveiled substantial heterogeneity across the studies ($I^2 = 95.4\%$, $p < 0.0001$). These findings suggest a notable level of variability in undernutrition prevalence estimates among African cancer patients, prompting a cautious interpretation of the pooled result.

Prevalence Based on Country

The subgroup analysis of undernutrition prevalence among cancer patients in Africa, considering different countries, revealed notable variations in estimates.

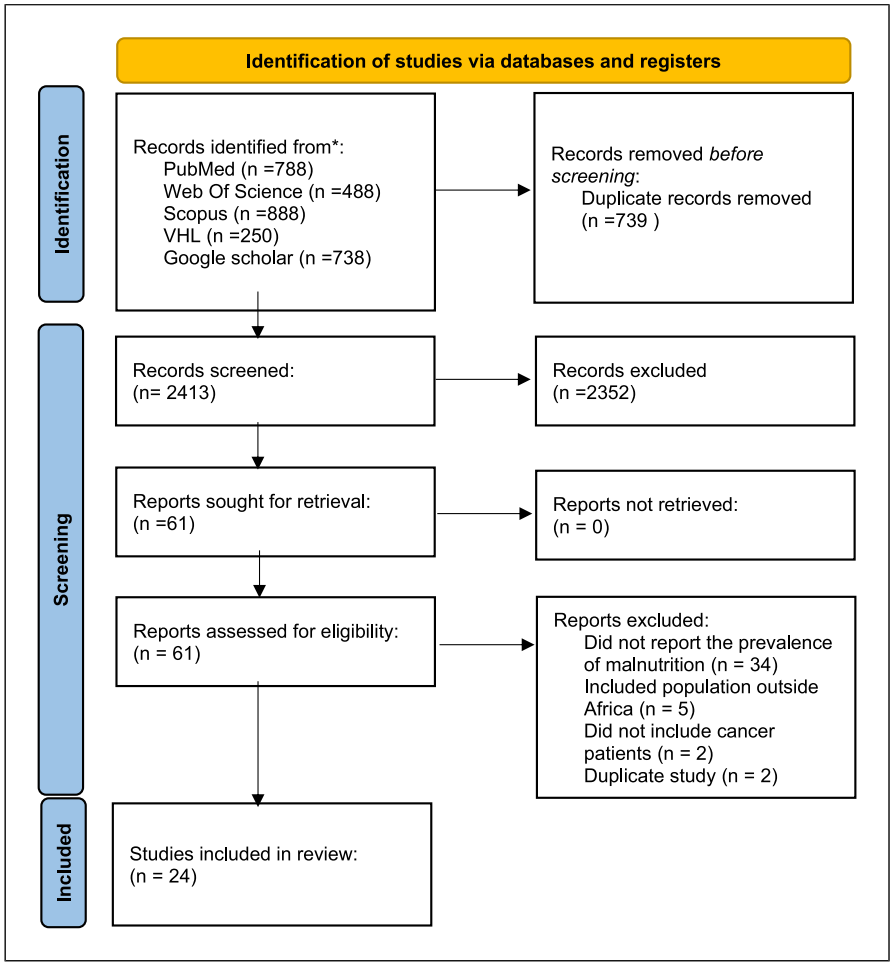

Fig. 1. PRISMA flow diagram summarizing the study selection process.

Among the diverse nations studied, the highest prevalence was found in Malawi (58.7%, 95% CI, 40.6%, 68.2%), South Africa (48.8%, 95% CI, 34%, 63.8%), and Ethiopia (37.6%, 95% CI, 21.6%, 52.5%). In contrast, Ghana (12.2%, 95% CI, 5.9%, 23.7%) and Tunisia (9.3%, 95% CI, 5%, 16.5%) reported lower prevalence (shown in Fig. 3). The subgroup analysis detected significant heterogeneity within several country-specific estimates, as evident from high I^2 values. The test for subgroup differences yielded a statistically significant result ($p < 0.01$), indicating that the observed differences in undernutrition prevalence among countries are unlikely to be due to chance alone.

Prevalence Based on World Bank Income Classification

The subgroup analysis of undernutrition prevalence among cancer patients in Africa, stratified by World Bank income classification, revealed substantial differences. Lower middle-income countries exhibited a prevalence of 16.6% (95% CI, 11.9%, 22.5%), while low-income countries showed a higher prevalence of 43.3% (95% CI, 30.5%, 57.2%). Upper middle-income countries reported a prevalence of 43.1% (95% CI, 32.8%, 54%) (Fig. 4). The analysis highlighted significant heterogeneity within the income classifications, with high I^2 values indicating substantial variability. The test for subgroup differences demonstrated a statistically significant result ($p < 0.01$), signifying that the differences in undernutrition prevalence among different income groups are statistically significant and not due to random variation.

Prevalence Based on Population

The subgroup analysis based on population characteristics continues to reveal variations in undernutrition prevalence among different groups of cancer patients in Africa. Among these subgroups, children exhibit the highest prevalence at 39.3% (95% CI, 26%, 52.3%), followed by elders with a prevalence of 33% (95% CI, 26.74%, 39.91%). Women and adults show lower prevalence at

Table 1. Summary characteristics of the included studies

Id	*N*	Age, years	Gender, M %	Population	Type/site of cancer	Recruitment dates	Assessment tool	Study design	Country	Quality rating
Apprey et al. [20] (2014)	32	6.34±0.57	Nr	Children	BL, WT	Nr	MUAC	Case-control	Ghana	Fair
Abd Allah et al. [17] (2020)	194	60–70 = 69%, 70–80 = 25%, >80 = 6%	55%	Elders	Skin, lung, breast, liver, CRC, leukemia NHL, other	May 2019 to Sep 2019	Mini-Nutritional Assessment	Cross-sectional	Egypt	Good
Adam et al. [18] (2023)	411	44.4±11.47	4%	Women	Nr	May to Aug 2020	SGA	Cross-sectional	Ethiopia	Good
Alem et al. [19] (2021)	84	≤38.25 (25%), 38–47 (23.8%), 47–55 (25%), >55 (26.2%)	35%	Adults	Nr	Apr to May 2019	Pg-SGA	Cross-sectional	Ethiopia	Poor
Chirande et al. [23] (2021)	151	<3 = 34%, 4–10 = 49%, >10 = 26%	52%	Children	RB, WT, BL, sarcoma, OC, NB, NHL	In 2010	MUAC	Cross-sectional	Tanzania	Poor
Gebremedhin et al. [25] (2021)	281	44.51±13.45	48%	Adults	Breast cancer, CRC, lung cancer, GC, NPC	Four weeks	SGA	Cross-sectional	Ethiopia	Good
Izuegbuna et al. [29] (2022)	45	Age ≥18	Nr	Women	Breast cancer	Jan to Jun 2018	SGA	Cross-sectional	Nigeria	Good
Kaduka et al. [30] (2017)	512	52.01±13.78	28%	Adults	Breast, genital, oral, bone, cartilage, gastrointestinal, hematopoietic, and respiratory	Jun to Jul 2016	Malnutrition Universal Screening Tool	Cross-sectional	Kenya	Good
Mansour et al. [32] (2017)	167	44±8.3	Nr	Women	Breast cancer	Aug to Feb 2016	Pg-SGA	Cross-sectional	Algeria	Fair
Muhamed et al. [33] (2012)	324	45.81±11	31%	Adults	Nr	Jan to May 2021	SGA	Cross-sectional	Ethiopia	Good
Negrichi and Taleb [34] (2010)	90	56.97±12.48	9%	Adults	CRC	Apr 2016 to Dec 2017	MUAC	Cross-sectional	Algeria	Poor
Pandey et al. [35] (2011)	200	50.8±13.5	46%	Adults	Nr	Dec 2008 to Apr 2009	Pg-SGA	Cross-sectional	Libya	Fair
Salifu et al. [36] (2022)	133	5.7±3.3	65%	Children	Leukemia, RB, lymphomas, WT, NB, OS, HL, NHL, ES	Jan to Dec 2019	MUAC	Cross-sectional	Ghana	Poor

Table 1 (continued)

Id	*N*	Age, years	Gender, M %	Population	Type/site of cancer	Recruitment dates	Assessment tool	Study design	Country	Quality rating
Schoeman et al. [37] (2023)	320	7.2±4.4	53%	Children	Hematological malignancies and solid tumors	Oct 2018 to Dec 2020	MUAC	Cross-sectional	South Africa	Poor
Shikuri et al. [38] (2013)	60	Nr	60%	Children	BL, ALL, HL, AML, WT, OC, GC	Nr	MUAC and BMI	Cross-sectional	Kenya	Poor
Argefa et al. [21] (2022)	175	50–64 = 35%	Nr	Women	Cervical cancer	Sep 2017 to Aug 2018	Pg-SGA	Prospective	Ethiopia	Poor
Ben Kridis et al. [22] (2018)	80	Nr	Nr	Adults	CRC, breast, gastric, NPC, bladder, lung	Jan to Jun 2015	Nutritional Risk Index	Prospective	Tunisia	Poor
Draper et al. [24] (2018)	77	4.7±2.9	49%	Children	WT	Between 2004 and 2012	MUAC	Prospective	South Africa	Fair
Israëls et al. [27] (2008)	128	7±3.75	55%	Children	BL, lymphoma, WT, NB, RMS, germ cell tumor, HRC, OS, and leukemia	Jan 2007 to Jan 2008	MUAC	Prospective	Malawi	Poor
Israëls et al. [28] (2009)	84	7.5±3	64%	Children	BL	Jan 2007 to Mar 2008	MUAC	Prospective	Malawi	Good
Lifson et al. [31] (2017)	76	4.6±3	50%	Children	WT	2004–2012	MUAC	Prospective	South Africa	Strong
Wessels et al. [39] (1999)	59	3 (range: 6–139 months)	Nr	Children	WT	1983–1996	MUAC	Prospective	South Africa	Fair
Zribi et al. [40] (2021)	201	Median age 57	Nr	Adults	CRC	Jan 2017 to Dec 2019	Serum albumin, present weight, and usual weight	Prospective	Tunisia	Poor
Huibers et al. [26] (2022)	463	6±3	58%	Children	Leukemia, lymphomas, WT, RB, sarcomas, NB	Jan 2016 to Dec 2018	MUAC	Retrospective	Malawi	Good

Nr, not reported; BL, Burkitt lymphoma; WT, Wilms tumor; CRC, colorectal cancer; NHL, non-Hodgkin lymphoma; RB, retinoblastoma; NB, neuroblastoma; NPC, nasopharyngeal carcinoma; OS, osteosarcoma; HL, Hodgkin lymphoma; ES, Ewing sarcoma; ALL, acute lymphoblastic leukemia; AML, acute myeloid leukemia; GC, gastric cancer; RMS, rhabdomyosarcoma; HRC, high-risk carcinoma; SGA, Subjective Global Assessment; Pg-SGA, Patient-Generated Subjective Global Assessment; BMI, body mass index; MUAC, Mid-Upper Arm Circumference.

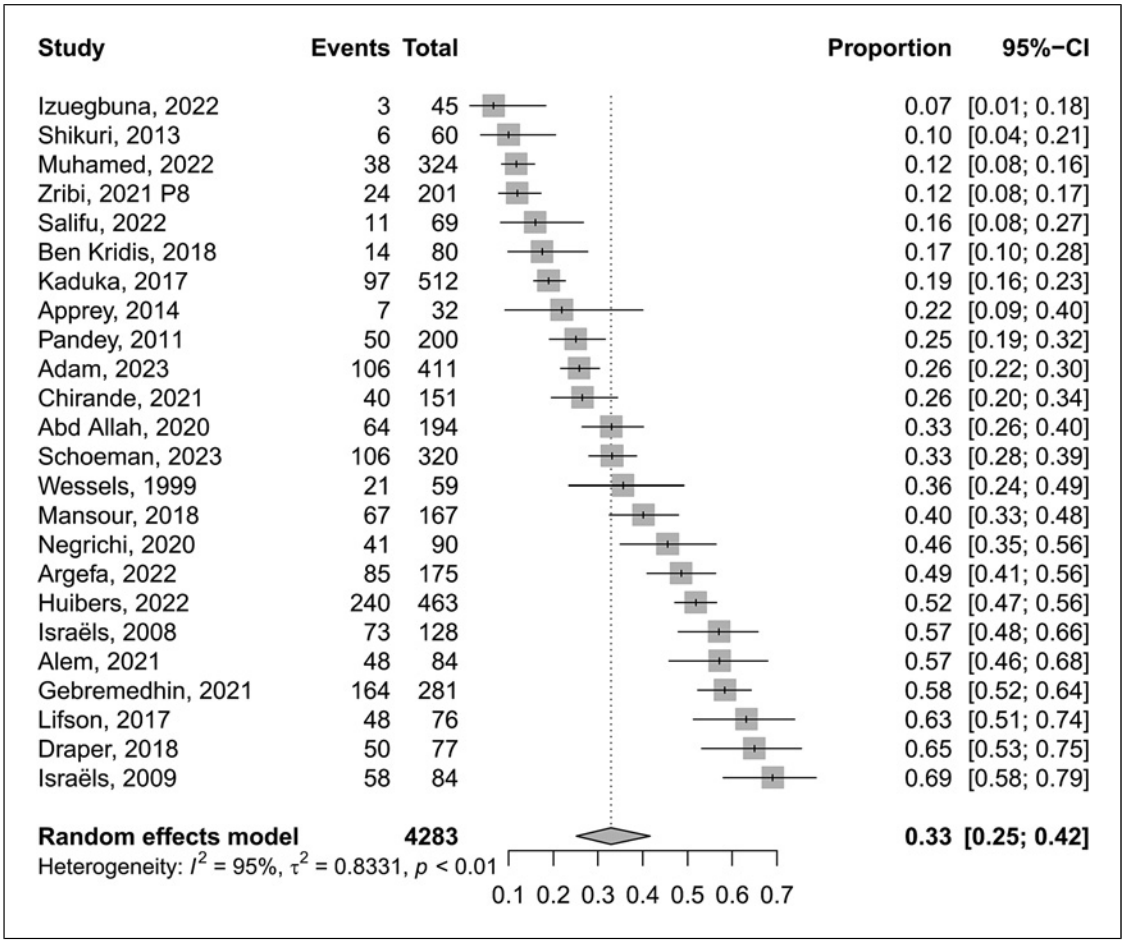

Fig. 2. Forest plot showing the prevalence of undernutrition in African cancer patients.

27.8% (95% CI, 16.3%, 43.6%) and 28% (95% CI, 13%, 48%), respectively (shown in Fig. 5). The analysis indicates substantial heterogeneity within estimates, particularly among women and adults, as evidenced by high I^2 values. However, the test for subgroup differences did not reach statistical significance (p = 0.2), suggesting that observed differences in undernutrition prevalence among population groups may be attributed to random variation.

Factors Contributing to Undernutrition among Cancer Patients

From the included studies, we identified several key factors reported to be associated with the risk of undernutrition among cancer patients, older age, male gender, lower education level, and lower income were associated with higher risk of undernutrition among cancer patients. Smoking and alcohol consumption were also linked to increased risk for undernutrition. Patients with digestive organ cancers and those undergoing chemotherapy or surgery were at higher risk for undernutrition. These findings are summarized in Table 2.

Discussion

In this systematic review and meta-analysis, we examined the prevalence of undernutrition among cancer patients residing in Africa. Given the unique healthcare challenges in Africa and the increasing burden of cancer [41, 42], understanding the prevalence of undernutrition is crucial for informing targeted interventions and improving the overall well-being of cancer patients on the continent. In our meta-analysis of 24 studies with 4,283 participants, we estimated the overall undernutrition prevalence among African cancer patients at 32.8% (95% CI, 25.1%, 41.67%). Children and elders exhibited the highest

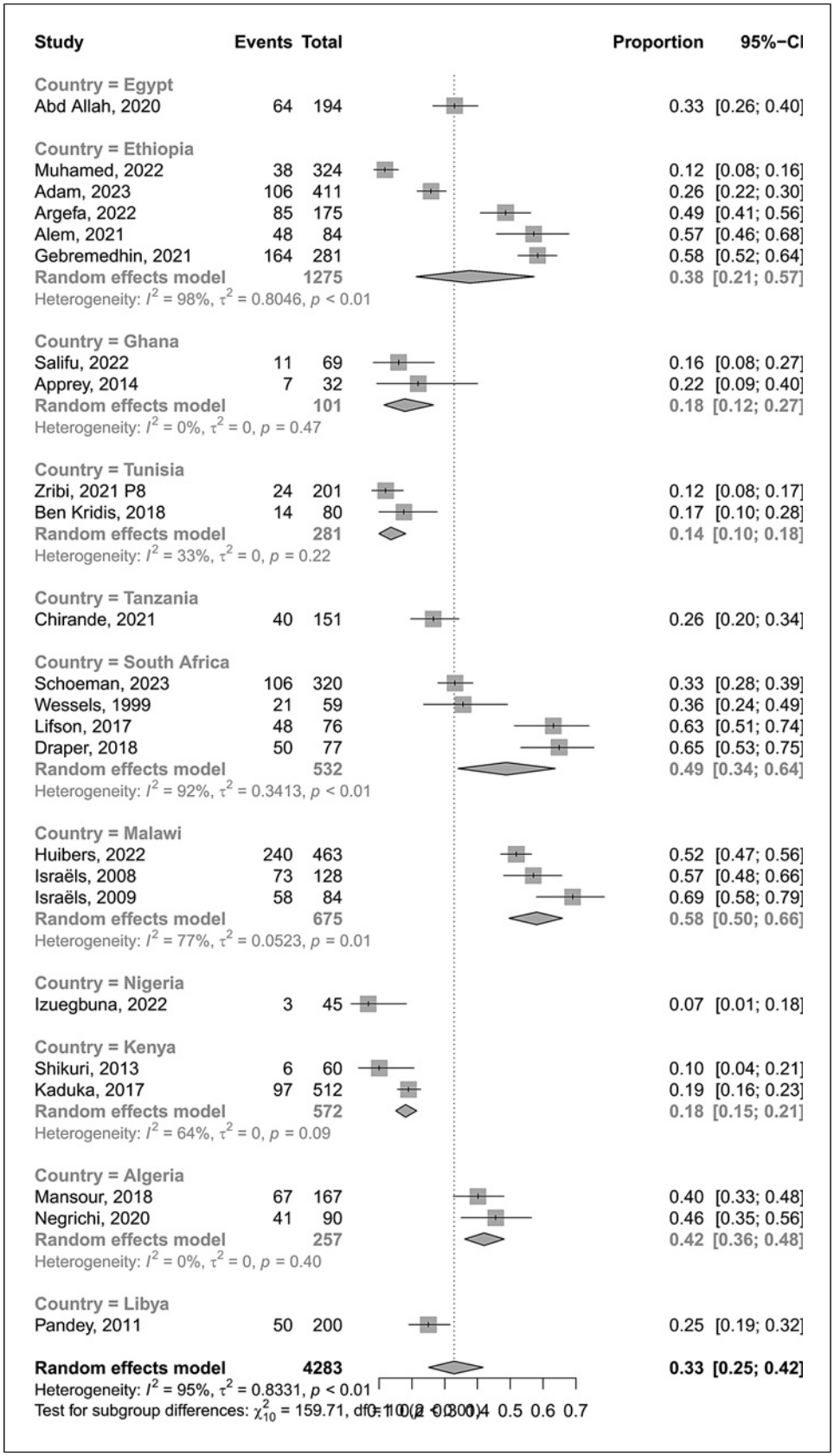

Fig. 3. Forest plot showing the prevalence of undernutrition subgrouped by country type.

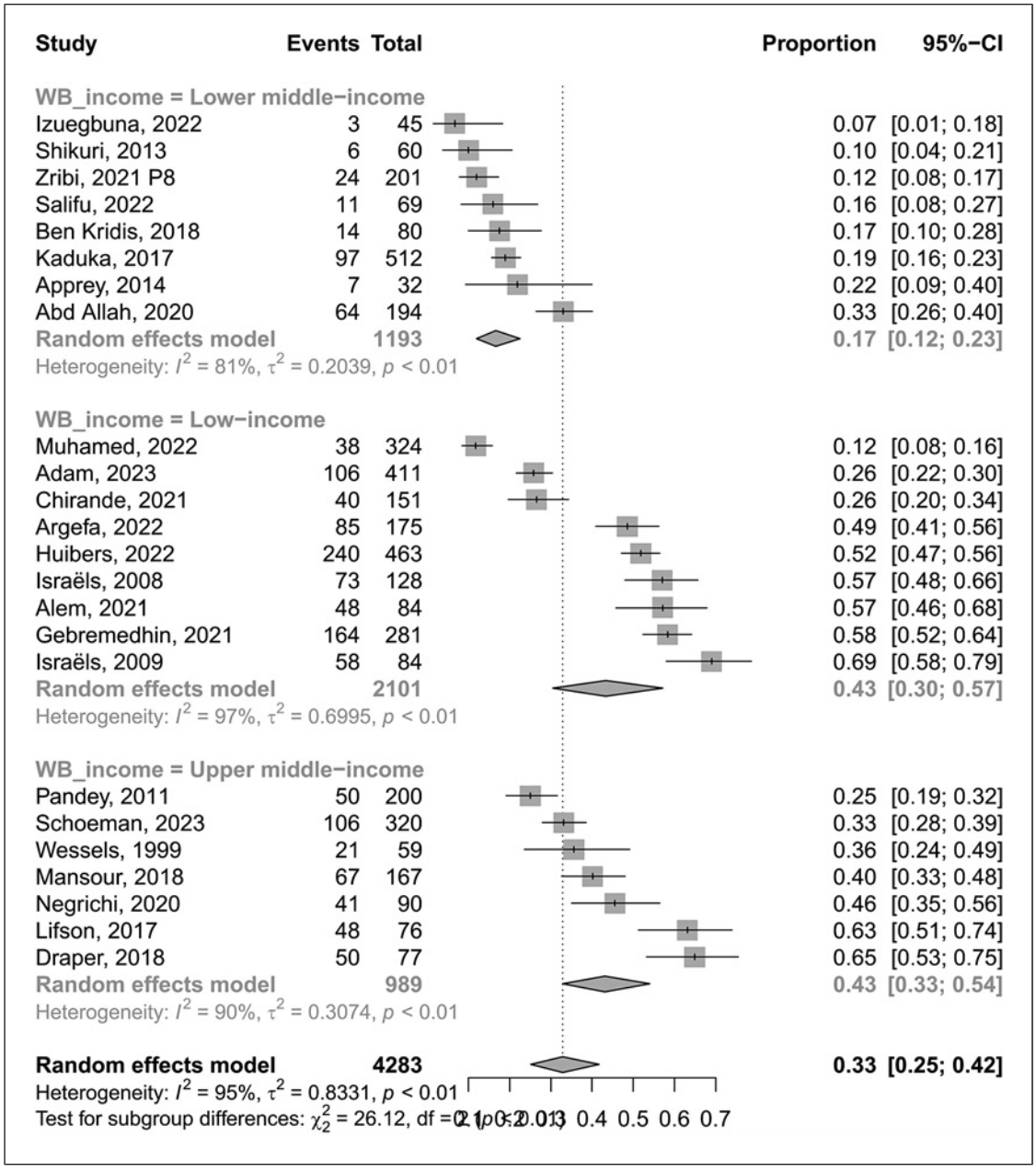

Fig. 4. Forest plot showing the prevalence of undernutrition sub-grouped by World Bank income classification.

prevalence (39.3%, 33%), and country-specific prevalence was highest in Malawi (54.8%) and South Africa (48.8%). However, these results came out with a significant level of heterogeneity between studies.

Drawing comparisons with global and regional perspectives, several studies conducted in different countries and settings have reported a high prevalence of undernutrition among cancer patients. In Spain, a multicenter study on adult patients found a nutritional risk of 33.9% upon admission, increasing to 36.4% at discharge [43]. Similarly, in Italy, the PreMiO study revealed a higher prevalence, with 51% showing nutritional impairment, 9% severely malnourished (Mini-Nutritional Assessment score <17), and 43% at risk of undernutrition (Mini-Nutritional Assessment score <24) [44]. French hospital surveys demonstrated an undernutrition rate of 39%, particularly notable in gastrointestinal and head and neck cancer patients [45]. In Australia, an outpatient clinic

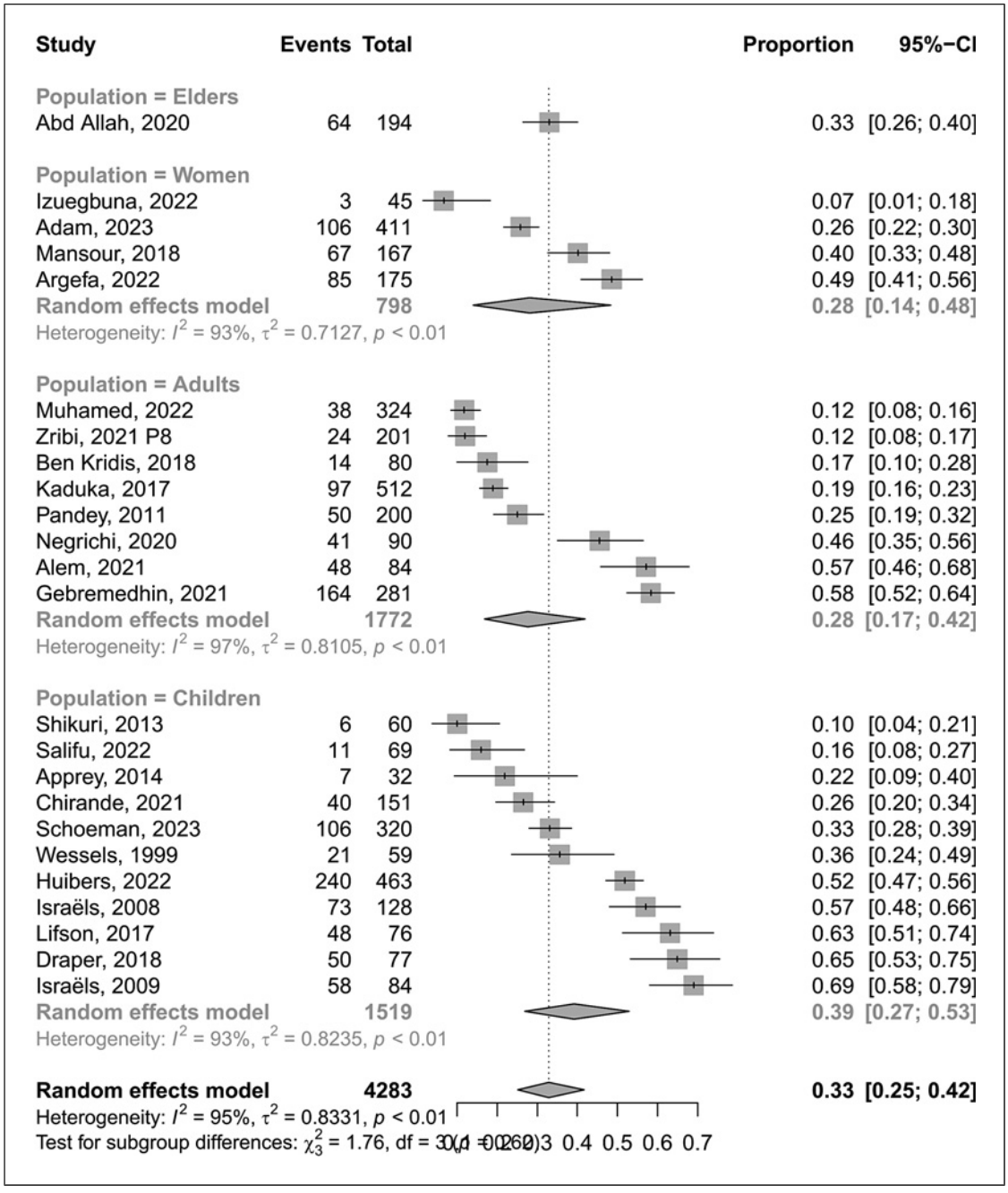

Fig. 5. Forest plot showing the prevalence of undernutrition sub-grouped by population type.

study on adult patients found 34% well nourished, 56% at risk, and 10% malnourished [46]. Additionally, a Japanese study focusing on gastric cancer patients reported an undernutrition prevalence of 19.0% [47]. In comparison, our study on cancer patients in Africa shows an undernutrition prevalence of 32.57%, falling within the range observed in these international studies.

As we explored the factors contributing to the observed heterogeneity in undernutrition prevalence among African cancer patients, several key explanations are worth highlighting. First, age emerged as a significant predictor of undernutrition, with children and elders facing heightened risks. This finding resonates with existing literature [43, 48–50], which underscores the vulnerability of these age groups to

Table 2. Factors contributing to the risk of malnutrition

Sociodemographic factors		
	Age	Older patients are at higher risk ($p = 0.012$) [17]. Elders (>65 years) are 2.5 times more likely to be malnourished (95% CI: 1.3–38.51) [12]
	Gender	Males are more susceptible ($p < 0.001$, 95% CI: 2.01, 5.73) [30, 40]. Males are 3.39 times more likely to be malnourished than females [30]
	Education	Lower education is linked to increased risk [17, 25]. Patients with no proper education are 1.7 times more likely to be malnourished [25]
	Income	Lower income is associated with higher risk [33, 37]. Patients with the lowest wealth index are more likely to develop malnutrition [33]
Harmful health practice		
	Smoking	Strong association with malnutrition [30] (95% CI: 1.81, 5.60). Smokers are 3.19 times more likely to be malnourished [30]
	Alcohol	Consumers have a higher risk [30] (95% CI: 1.20, 3.38). Alcohol consumers are twice as likely to be malnourished as nonconsumers [30]
Cancer-related factors		
	Cancer stage	Later stages increase risk (95% CI: 1.02, 5.17) [25, 30]. Stage 4 cancer patients are 7.2 times more likely to have malnutrition (95% CI: 1.3–38.51) [25]
	Type of cancer	Digestive organ cancers pose a higher risk (95% CI: 1.22, 5.35) [30]. Patients with digestive organ cancer are 2.56 times more likely to be malnourished [30]
	Type of treatment	Chemotherapy and surgery increase risk (95% CI: 1.35, 7.86) [17, 40]. Patients undergoing surgery are 3.26 times more likely to be malnourished [40]

undernutrition in the context of cancer. Pediatric cancer patients face unique challenges due to increased nutritional needs compounded by the effects of cancer treatments [51]. Similarly, elders are normally affected by aging-related nutritional disorders such as sarcopenia, cachexia, and anorexia due to the aging process [52], which are further exacerbated by the side effects of tumor therapy, associated inflammatory reactions, and type of tumor [17, 53, 54].

Second, gender differences in undernutrition susceptibility were also evident, with male cancer patients exhibiting higher prevalence. Several studies indicate that males are more prone to gastrointestinal, neck, and head cancer, which are more associated with the risk of undernutrition than other types due to tumor-associated consequences such as difficulties in swallowing and digestive disturbance [55–57].

Due to tumor-induced inflammatory reactions, and mechanical obstruction, the site of the tumor or type of cancer is reported as another significant predictor of undernutrition [58]. Also, cancer therapy has a role in increasing the risk of undernutrition, particularly chemotherapy and surgeries. These treatments often induce adverse nutrition-related outcomes, such as lack of appetite, alteration of taste, and digestive disturbances, which can exacerbate undernutrition among cancer patients [4, 59].

Our findings underscore the urgent need for targeted interventions. Tailoring nutritional support strategies to specific demographic groups and geographical contexts is crucial. Addressing undernutrition early during cancer treatment can potentially enhance the overall quality of life for patients, minimize treatment-related complications, and reduce mortality risks [60, 61]. Healthcare practitioners, policymakers, and researchers should collaborate to develop and implement evidence-based interventions that consider the diverse needs of this population, particularly for populations living in the most southern regions like Malawi and South Africa, ultimately improving outcomes and fostering a more comprehensive approach to cancer care in Africa. Future studies should explore the underlying factors contributing to undernutrition, considering the interplay of socioeconomic, cultural, and healthcare delivery factors. We recommend that all cancer centers implement standardized nutritional assessment tools, such as the Subjective Global Assessment or Nutritional Risk Index, for adult patients at the time of diagnosis. For pediatric patients, appropriate screening tools such as MUAC or the SCAN tool should be used. This approach will help provide timely interventions and improve patient outcomes [62]. Longitudinal studies could provide insights into the temporal evolution of undernutrition during disease duration. Moreover, examining the effectiveness of tailored interventions aimed at specific demographic groups and

regions would contribute valuable knowledge to guide evidence-based practices.

While our study contributes valuable insights, it is essential to acknowledge certain limitations. First, the heterogeneity observed across the included studies may introduce variability into our pooled prevalence estimate, limiting the generalizability of this estimate to different settings in Africa. Additionally, the reliance on different tools and criteria for diagnosing undernutrition in individual studies could contribute to methodological heterogeneity. Furthermore, the observational nature of the included studies limits our ability to establish causation or assess the temporal evolution of undernutrition among cancer patients in Africa. Regional variations in healthcare infrastructure and access may also impact the generalizability of our findings. Despite these limitations, our study provides a comprehensive overview and highlights the importance of nutritional support to African cancer patients.

Conclusion

Our study sheds light on the prevalence of undernutrition among African cancer patients, emphasizing the urgency of targeted interventions to address this pressing issue. We found that children and elders are at higher risk for undernutrition compared to other demographic groups, requiring special attention to those vulnerable groups. The complexities of undernutrition in cancer care require comprehensive and context-specific approaches to improve the quality of cancer care and outcomes in Africa. Policymakers must prioritize access to nutrition resources and healthcare services to support these vulnerable groups.

Statement of Ethics

This study was exempted from ethical approval or informed consent because it does not involve direct human participation.

Conflict of Interest Statement

All authors have no relevant competing interest to disclose.

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Author Contributions

Qasi Najah and Rasha Selim: conceptualization, methodology, data analysis, and drafting of the final manuscript. Nereen A. Almosilhy: data extraction and drafting the final manuscript. Ahmed Asar, Moustafa Ibrahim, Ameerh Alerab, and Ebtesam Aldieb: data extraction.

Data Availability Statement

The data supporting the findings of this study are available within the article and its supplementary materials. Further inquiries can be directed to the corresponding author.

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