

The Dynamics of Nutrition Research in West Africa: Tracking the Evidence



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Why did we track nutrition evidence in the region?

At a point where there is a strong need to make the best use of available resources in order to address multiple malnutrition burdens in low- and middle-income countries, there is a growing demand for evidence that can effectively inform decision-making (Ioannidis et al. 2014; Dobrow, Goel, Upshur 2004).

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There is, however, a rapidly increasing body of research literature on nutrition (Bastian, Glasziou, Chalmers 2010) which often uses highly technical language; the resulting information overload impedes the efforts of decisionmakers to distill what is relevant and applicable to their context (Dobrow, Goel, Upshur 2004). Obtaining systematically synthesized evidence (both quantitative and qualitative) on a regular basis enables them to make evidence-informed decisions and has the potential to improve policy and practice.

[Transform Nutrition West Africa](#) developed a quarterly evidence tracker to digest all nutrition-relevant research evidence published in the West Africa region. Drawing on systematic review techniques, it identified, catalogued, ranked, and summarized the best available evidence on nutrition in a rapid, timely, and systematic manner. These evidence summaries were published and disseminated among decisionmakers in a quarterly E-newsletter. To facilitate the availability of this research evidence to decisionmakers in the region and to enhance its usability, this note reports on the dynamics of the tracked evidence over a 2.5-year period; it also offers a succinct visualization of the synthesized evidence. The applied [search syntax](#), the [technical note](#), and the full [database](#) can be accessed online.

Key messages

- Anglophone countries are the most reported on (52 percent) and English remains the main publication language for the included studies.
- The majority of studies (40 percent) are observational and most score well on our quality criteria.
- Undernutrition, micronutrient deficiency, and infant and young child feeding practices are the issues most frequently reported on among studies on children under five, while overweight/obesity is most frequently reported on in studies of the adolescent population.
- Dietary diversity/quality/consumption, diet-related noncommunicable diseases, and nutrition knowledge are the issues most frequently reported on in studies on adolescents and women of reproductive age.
- The majority of studies (54 percent) reports on the prevalence and drivers of malnutrition, with far fewer reporting on effective policies (7 percent) and programs (31 percent); this constitutes a significant gap in the retrieved research.
- The [online visualization tool](#) for available evidence is a potentially important information source for decisionmakers.

Approach to Capturing Evidence

This evidence note summarizes the best available evidence on nutrition-relevant topics¹ in the West Africa region over the 2.5-year period from June 2018 to January 2021. The search was carried out quarterly in the bibliographic database [MEDLINE](#), in [Google Scholar](#), and in key nutrition-relevant websites for the region. The search strategy was developed using a variety of Medical Subject Heading (MeSH) terms as well as broad nutrition-specific and nutrition-sensitive terms. The titles and abstracts of the retrieved studies were screened against our predetermined eligibility criteria (see the [Technical Note](#) for additional detail). The retained studies (n = 1,230) were scored from lowest (0) to highest (7) using a composite score for their relevance and for the rigor of the research methods used; studies were then ranked. In order to identify the best available evidence, only studies with a score between 5 and 7 were included in the evidence tracker (see the [Technical Note](#) for additional detail). To ensure that the included evidence touched on a range of methodologies, qualitative studies were scored independently using the COREQ (COConsolidated criteria for REporting Qualitative research) [checklist](#). Data were extracted at the abstract level for the retained studies (n = 399). The quality of retained studies was assessed using a broad critical appraisal checklist, which assessed sampling, data collection and analysis, and limitations of the study design.

¹ Nutrition-relevant means that the policy and/or program can be either nutrition-specific (addressing the immediate determinants of nutrition) or nutrition-sensitive (addressing the underlying causes of undernutrition).

For all study designs, we checked the overall study reporting, that is, the consistency of the study's stated objectives with its conclusions. The quality of the study corresponded to its compliance with a specific number of our checklist criteria, with "good" quality corresponding to the observance of at least three of the criteria (see Table 3 in the Technical Note).

General Characteristics of the Included Studies

A total of 399 studies was included in this synthesis. Although 60 percent of the studies are reporting on Ghana and Nigeria, all West African countries are represented in the retained studies. About half of the studies (52 percent; $n = 209$) reported exclusively on Anglophone countries, while Francophone countries (25 percent; $n = 101$) and Lusophone countries (1 percent; $n = 4$) were reported on much less often, with the remainder of the studies (21 percent; $n = 85$) being reports on multiple countries from which data on individual countries could be extracted.

Only 10 percent ($n = 38$) of the included studies were conducted at the national level, while 67 percent ($n = 269$) were at the subnational level and 3 percent ($n = 13$) did not specify at which level they operated. Studies conducted in multiple countries or centers represented 20 percent ($n = 79$) of the included studies; of these, 22 were representative at the national level and 57 were conducted at the subnational level. The number of studies reporting on children under five (39 percent) was nearly equal to the number of studies on women of reproductive age, that is, women between 15 and 49 years (33 percent);

of the remaining studies, 13 percent focused on children (6 to 11 years old), 20 percent targeted adolescents (11 to 18 years old), and 12 percent reported on adults (over 18 years old)².

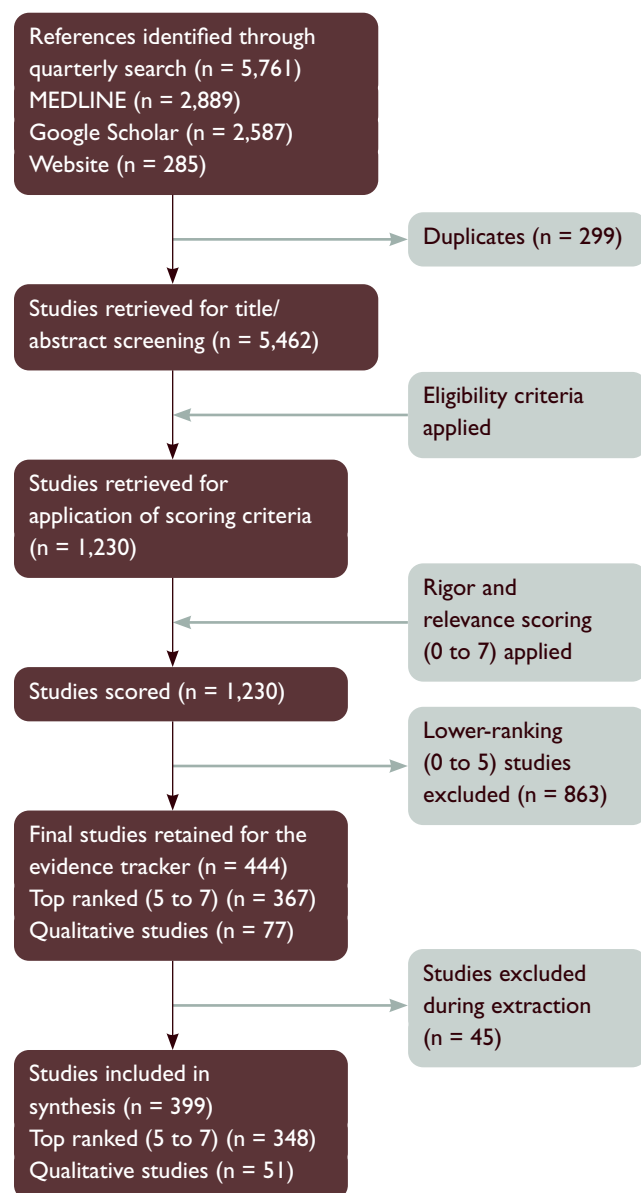
2 Includes studies that report on only one country, as well as publications that report on multiple countries.

Figure 1. Number of studies on nutrition-relevant topics published for each country in the West Africa region; this includes studies that report on only one country, as well as publications that report on multiple countries.



SOURCE: Transform Nutrition West Africa: evidence tracker database, 2021

Figure 2. Flowchart of search strategy



Even after applying our rigor and relevance criteria, which aimed to select higher-quality evidence, 40 percent of the included studies were observational in nature (n = 160) and 54 percent reported on prevalence levels of nutrition outcomes and/or their drivers (n = 217). Only 31 percent of the studies reported on program interventions, 18 percent reported on an implementation process, and only 7 percent focused on policy. When grouped together, undernutrition was the most widely reported nutrition outcome (38 percent), followed by overweight/obesity (27 percent), and dietary diversity/quality/consumption (22 percent). Less often reported were anemia or other micronutrient deficiencies (21 percent), diet-related NCDs (11 percent), and infant and young child feeding (8 percent).

Dynamics of Included Evidence

While studies targeting children under 5 (U5) and women of reproductive age (WRA) were reporting mainly on undernutrition (n = 105 and n = 43, respectively), those targeting children 6 to 11 years, adolescents 11 to 18 years, and adults over 18 focused more on overweight/obesity or diet-related NCDs (n = 32, n = 51, and n = 18, respectively). Studies reporting on dietary diversity/quality/consumption or nutrition knowledge cut across the different age groups including U5s (n = 36), adolescents (n = 34), and WRA (n = 38) (**Table 1**). This dynamic was similar across West African countries, except for Nigeria where overweight/obesity was reported on more than was undernutrition. In three countries (Cape Verde, Cote d'Ivoire, and Ghana), studies reported equally on undernutrition and overweight/obesity. Despite the growing attention given to the

double burden of malnutrition (Popkin, Corvalan, Grummer-Strawn 2020), there was little rigorous research evidence addressing overweight/obesity, dietary diversity/quality/consumption, and diet-related NCDs. Most of the publications on overweight/obesity (n = 77), dietary diversity/quality/consumption (n = 41), diet-related NCDs (n = 28), infant and young child feeding (IYCF) (n = 9), and nutrition knowledge (n = 10) were observational studies describing the problem and/or its drivers, while those publications reporting on undernutrition (n = 53), anemia (n = 19), and micronutrient deficiency (n = 17) were mostly randomized controlled trials (RCTs). Only a few RCTs reported on overweight/obesity (n = 5), diet-related NCDs (n = 3), and IYCF (n = 6). **Table 2** shows that there was a research gap between publications that reported on the prevalence and drivers of malnutrition and those that looked at program interventions, policies, and implementation. Two countries (Cape Verde and Guinea) had no program interventions studies; there were fewer than five program interventions studies for five other countries, including Liberia (n = 1), Togo (n = 1), Cote d'Ivoire (n = 3), Guinea-Bissau (n = 3), and Senegal (n = 3). Except for studies of undernutrition, anemia, and micronutrient deficiency, the highest number of program studies was reporting on prevalence and/or drivers across all nutrition outcomes. Most policy studies were on diet-related NCDs and overweight/obesity, whereas program interventions studies were on undernutrition, anemia, and micronutrient deficiency (**Table 2**).

Table 1. Number of studies per target population and nutrition outcome

Target population (age)	Publications (nr)	Undernutrition (nr)	Overweight/obesity (nr)	Anemia (nr)	Micronutrient deficiency (nr)	IYCF (nr)	Dietary diversity/quality/consumption (nr)	Diet-related NCDs (nr)	Nutrition knowledge (nr)	Nutrition (unspecified) (nr)*	N/A or not specified (nr)
Children under 5	154	105	24	26	19	18	33	3	4	7	2
Children 6 to 11	51	23	31	12	9	2	14	10	2	3	0
Adolescents 11 to 18	78	28	49	11	10	3	30	13	8	3	0
WRA 15 to 49	133	43	33	21	12	18	33	13	8	11	20
Adults over 18	28	5	16	0	1	1	9	10	1	4	2
Health workers	13	3	0	0	0	1	0	0	2	1	7
Caregivers	8	2	0	0	1	2	1	0	2	1	2
Other	33	4	2	1	1	7	7	1	1	6	10
N/A or not specified	60	5	11	2	2	3	5	9	1	8	27

NOTE: N/A = not applicable; IYCF = infant and young child feeding; WRA = women of reproductive age; NCD = noncommunicable disease.

* Nutrition (unspecified) (nr) = non-specific nutrition categories including nutritional status, global malnutrition, or other nutrition variables such as body composition or anthropometric index means.

SOURCE: *Transform Nutrition West Africa: evidence tracker database, 2021*.

Table 2. Number of studies by focus of research and nutrition outcome

Nutrition Outcome	Problem	Interventions	Implementation	Policy
Anemia	20	27	6	2
Micronutrient deficiency	9	26	1	1
Undernutrition	69	72	20	1
IYCF	16	12	11	2
Nutrition knowledge	13	7	3	0
Dietary diversity/ quality/consumption	55	24	11	2
Overweight/obesity	92	12	3	3
Diet-related NCDs	33	6	2	4
Nutrition (unspecified)	20	7	5	3
Not specified	26	5	26	13

NOTE: This graph includes studies that report on one specific nutrition outcome only, as well as studies that report on multiple outcomes; IYCF = infant and young child feeding; NCD = noncommunicable disease.

SOURCE: *Transform Nutrition West Africa: evidence tracker database, 2021*.

Of the 76 programs (RCT) included (out of the 399 studies), supplementation — that is, food, micronutrient supplementation, Ready to Use Therapeutic Food (RUTF) — is the most common type of intervention (n = 39) implemented to address mainly undernutrition (n = 25), micronutrient deficiencies (n = 14), anemia (n = 11) and at a lesser extent dietary diversity (n = 6). Of the total 76 programs studied, a further 12 were on nutrition prevention/treatment and 10 were on food fortification/biofortification-related interventions (of the latter 10 studies, 6 addressed undernutrition and 4 addressed anemia). Four of the 76 studies focused on dietary diversity/quality/consumption, 3 were related to interventions on micronutrient deficiencies, a further 8 were on counseling/behavior change communication/nutrition and health promotion programs that were being used to address undernutrition, dietary diversity/quality/consumption, and nutrition knowledge (Table 3).

School-based nutrition interventions (n = 5) were used to address undernutrition, overweight/obesity, dietary diversity/quality/consumption, nutrition knowledge, and anemia. Other nutrition-sensitive RCT programs included: (1) conditional and unconditional cash transfer programs that were used to address undernutrition, dietary diversity/quality/consumption, IYCF, and nutrition knowledge; (2) malaria prevention/treatment to address undernutrition and anemia; (3) dietary pattern/food consumption-related interventions to address mainly dietary diversity/quality/consumption; and (4) a gender/empowerment-based nutrition intervention to address undernutrition and anemia.

Table 3. Program studies by intervention type and outcome

Intervention description	Number of publications	Undernutrition	Overweight/obesity	Anemia	Micronutrient deficiency	IYCF	Dietary diversity/quality/consumption	Diet-related NCDs	Nutrition knowledge	Nutrition (unspecified)
Anemia	4	2	0	4	2	0	0	0	0	0
Breastfeeding	1	1	0	0	0	1	0	0	0	0
Conditional cash transfer/unconditional cash transfer	4	3	0	0	0	1	2	0	1	0
Counseling/BCC/nutrition and health promotion	8	6	0	1	0	1	3	0	3	0
Dietary patterns/food consumption	4	2	0	0	0	0	4	0	0	0
Food fortification/biofortification	10	6	1	4	3	1	4	1	0	0
Supplementation/food supplementation	39	25	3	11	14	3	6	2	0	3
Malnutrition prevention/treatment	12	11	0	0	0	1	1	0	0	1
Malaria prevention/treatment	4	4	0	2	0	0	0	0	0	0
Gender/empowerment-based nutrition interventions	1	1	0	1	0	0	0	0	0	0
School-based nutrition interventions	5	3	2	1	1	0	2	0	1	0

NOTE: This graph includes program studies that report on one specific nutrition outcome only, as well as program studies that report on multiple outcomes; IYCF = infant and young child feeding; NCD = noncommunicable disease; BCC = behavior change communication.

Publication quality

Overall, the studies that were included were of good quality according to our checklist criteria; the full text was unavailable for 39 studies, which hampered their quality assessment. All RCTs were scored as good quality studies, with the exception of six for which no full text was retrieved and two that had no information on the randomization. The included systematic reviews and critical appraisal publications were also of high quality and addressed important thematic areas with relevant recommendations for the West Africa region. The qualitative and mixed method studies that were included were of good quality and reported mainly on the implementation processes of programs and policies and on the drivers of nutrition problems. These studies present an opportunity for regional

implementation actors to understand the main program drivers and to learn best implementation practices. The policy analysis studies included were of good quality. They addressed or assessed current policy challenges including prevention of diet-related NCDs, multisectoral nutrition planning processes, and nutrition transition and climate change interactions affecting diets and the DBM with the exception of two studies that were missing details on methodology, the observational studies that were included were generally of high quality. The visualization of the study quality assessment (**Table 4**) can be found [here](#). The proposed evidence visualization is easy to interpret and allows access to each individual study with quality assessment. This tool also allows for easy location of outcomes or countries of interest, which makes a practical and important source of information available for decisionmakers.

Table 4. Visualization of study designs by country and nutrition outcome



Summary

This note is intended for use by the research community and by wider audiences including decisionmakers such as program designer/coordinators, and policymakers. Findings revealed that the research dynamics for nutrition are unevenly distributed across West African countries, with the most evidence on nutrition being available to Anglophone countries. Though the included publications are of high quality, the majority remains observational with far fewer reporting on effective policies and programs. Our findings indicate that in the West Africa region, undernutrition remains a high priority for children under five and for women of reproductive age, while overweight/obesity in children, adolescents, and adults is increasingly receiving attention, especially in Cape Verde, Cote d'Ivoire, and Ghana. In Nigeria, publications address the double burden of malnutrition, with more coverage of overnutrition than of undernutrition across all population groups except children under five. The highest number of policy studies included were conducted on diet-related NCDs and overweight/obesity, with fewer publications covering program interventions on undernutrition, anemia, and micronutrient deficiency. Across the region, with regard to overweight/obesity and diet-related NCDs, there is a clear need to focus research on the translation of policy into intervention programs. The visualization tool is a potentially important information source for decisionmakers as it allows for easy access to each individual study including its quality assessment and reported outcomes, and easy location of studies focused on a particular outcome or country of interest. (The evidence in this note is presented in an online visualization format available [here](#).)



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