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Nutrition Capacity Development in Malawi: update on activities

Photo Credit: LUANAR

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MALAWI ACTIVITIES

Develop and implement nation's first dietetics program

Develop first national food composition table

Integrate nutrition into medical school curriculum



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DIETETICS IN AFRICA

- 60% of African countries do not have RD training programs
- Handful of countries have standards of practice, code of ethics, credentialing requirements and scope of practice of dietitians
- Most countries lack opportunities and policies on continuous professional development
- **Very high dietitian to patient ratios in most African countries**



Low	Medium	High	Very High		
USA	Australia	South Africa	Zimbabwe	Ghana	Malawi
22/100 000	6.5/100 000	1.6/100 000	0.12/100 00	0.02/100 000	0.06/100 000



SITUATION IN MALAWI

- Very few qualified staff/mentors/preceptors in clinical dietetics implementation where student placement will be done
- Lack of clinical nutrition departments in most Malawian hospitals
- Lack of government funding for the program
- Limited and resource constrained training sites for dietitians



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AIM OF PROGRAM

*...to **build nutrition capacity** by equipping the learners with knowledge, attitude and skills in **nutrition support** at the bedside in the hospital as well as **health promotion** and disease prevention nutrition interventions at the clinic and community levels.*



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STUDENT PROFILE

- **Holder of Bachelor of Science**

Prerequisite coursework

Basic sciences

Biology, Chemistry, Anatomy & Physiology, Biochemistry, Microbiology

Human nutrition

Public health nutrition Food sciences & food service management

- **Grade Point Average of 2.6**
- **Experience in clinical setting is added advantage**



CURRICULUM STRUCTURE

20 months postgraduate diploma

30 weeks classroom time

- Medical Nutrition Therapy
- Nutritional Biochemistry
- Nutritional Epidemiology
- Nutritional Counselling & Behaviour Change
- Biometric Research Methods & Design
- Biostatistical Data Analysis
- Global Nutrition Programs
- Health Care Ethics



CURRICULUM STRUCTURE

Practical placement under supervision

30 weeks 1200 hours

6 weeks surgery &
critical care

6 weeks adult
Medicine

8 weeks pediatric
care

Clinical rotations

4 weeks community
nutrition

4 weeks food service
management

2 weeks research

The structured learning experience

1. Conferences/workshops

- Journal clubs
- Seminars
- Practical trainings/workshops

Medical/surgical rounds/ grand rounds

2. Independent study

- Literature reviews
- Community and food service projects
- Clinical case presentations
- Research development

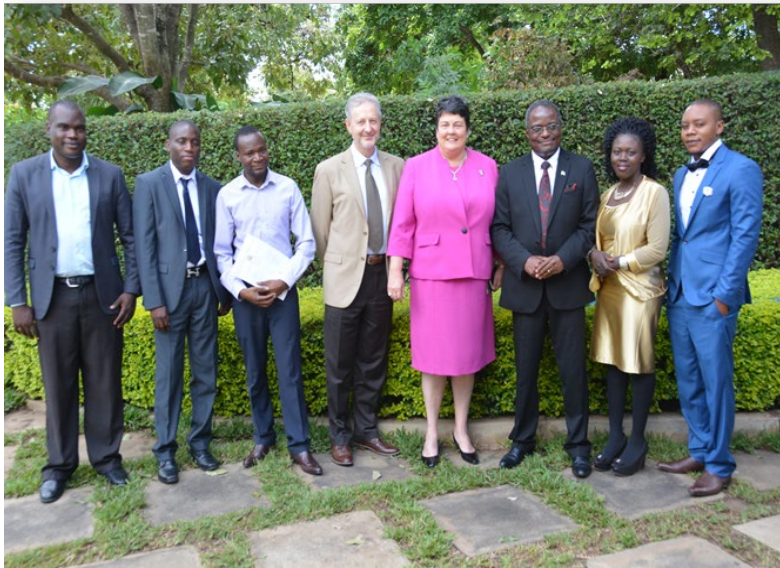


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THE FIRST COHORT GRADUATES

*My overall feeling is honor and I am very excited to be one the pioneers of this program in Malawi. I feel extremely happy to be a dietitian trained in Malawi, because to me I feel the best dietitian for Malawians is a Malawian dietitian, trained in Malawi, and who can understand what Malawians want for their health. **Humphrey Chatenga***



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KEY ACHIEVEMENTS

- Standardized registered dietitian program, curriculum, clinical internship and evaluation system has been established
- The first cohort of registered dietitians are employed at Kamuzu Central Hospital
- A clinical nutrition department has been created at Kamuzu Central Hospital
- The Ministry of Health has established the first 27 dietitian posts at central hospitals countrywide
- Over 10 Malawian institutions have improved nutrition capacity because of the Dietetics Program and 407 health professionals were trained on clinical nutrition practice



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FUTURES PERSPECTIVES

- Competitive advantage as only training program for dietitians in existence in Malawi
- Leveraging strengths of institutions to jointly implement degree
 - Strong emphasis community/public nutrition intervention and food production systems at LUANAR
 - Strong focus on biomedical sciences and clinical experience from COM
- Growing public interest in nutrition, food safety and the potential of functional food to prevent illness



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FUTURE PERSPECTIVES

OPPORTUNITIES

- Leverage strengths of LUANAR and COM in jointly offered degree in dietetics
- Increased demand for dietitians at national as evidenced by the creation of 27 new posts in Malawi
- Increased global interest and donor funding in nutrition, especially relating to non-communicable diseases
- Growing public interest in nutrition, food safety and the potential of functional food to prevent illness



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FUTURE PRIORITIES

- Implementation of Masters program
 - 2 additional courses 1 thesis project
- Support the creation and growth of a vibrant association for dietitians
- Support the implementation of joint degree between COM and LUANAR to leverage the strengths of both institutions
- Develop national guidelines for dietetic practice and clinical nutrition
- Support the development of an undergraduate degree



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MEDICAL CURRICULUM REVIEW





OBJECTIVES

1. Identify the context specific goals of nutrition education for medical school students in Malawi.
2. Establish the core nutrition competencies specifically for the medical school (physicians).
3. Design and elaborate on all specific nutrition courses and their content, in addition to evaluation and examination methods.
4. Determine how the identified nutrition competencies will be incorporated in the medical school curriculum.
5. Identify challenges and barriers to implementation of effective nutrition education in medical school



WHY IS THIS IMPORTANT? SOCIAL IMPLICATIONS

1. Patients prefer to receive nutritional care from their physician. (Crowley 2016a)
2. Less registered dietitians, in relation to other healthcare providers. Therefore, need for more clinical nutrition experts. (Kohlmeier)





CURRENT PERSPECTIVES

MEDICAL STUDENTS (U.S. ,Australia and Ghana)

- The majority of surveyed students:

Feel nutrition is important (Hardman, Schoendorfer)

Dissatisfied with the quality and quantity of their current nutrition education and inadequately prepared to provide nutrition care

Do not feel competent to provide dietary advice important (Hardman, Schoendorfer)

Feel physicians are not adequately trained to provide dietary advice (Hardman)

Used either consumer resources for nutrition or did not use any resources at all (Connor, Hardman, Gomanthi)

Better prepared for diseases where nutrition is a cornerstone of treatment (e.g. diabetes) (Perlstein)

Lack awareness of nutrition's role in cancer and respiratory disease



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TIMELINE OF ACTIVITIES

Literature
review and
formulation
of gold
standard
tool

Review of
MBBS
curriculum
at COM

Report on
findings



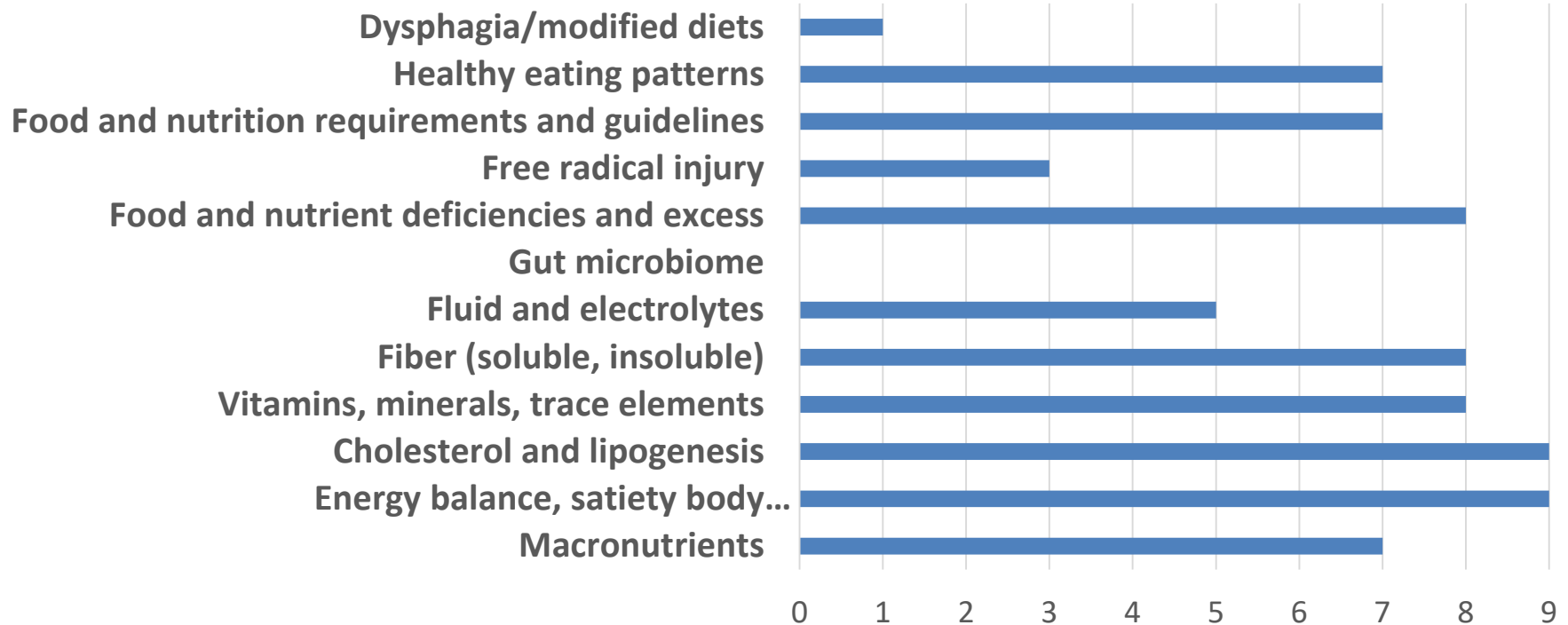
RECOMMENDED CONTENT

■

- 9 Groups spanning the U.S., U.K., Australia, and New Zealand detailed their curriculum and/or recommendations.
- Recurring themes are detailed on the next 5 slides
- Themes to be included in all components of medical training. These include;
 - Basic medical sciences.
 - Clinical application



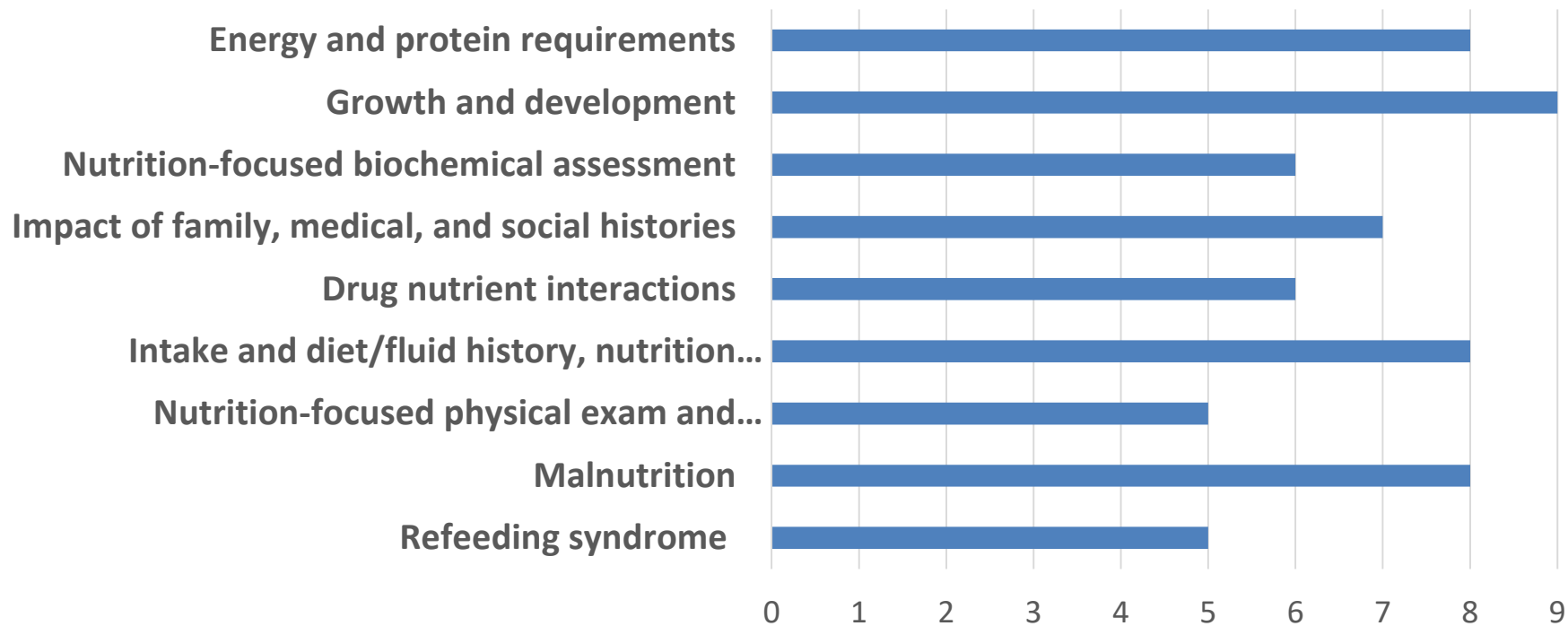
MOST COMMONLY IDENTIFIED NUTRITION PRINCIPLES



References 2,3,7,8,12,13,17,23, + unpublished data from the 2016 Northeast Nutrition Education Summit, Boston, MA



MOST COMMONLY IDENTIFIED ASPECTS OF NUTRITION ASSESSMENT



References 2,3,7,8,12,13,17,23, + unpublished data from the 2016 Northeast Nutrition Education Summit, Boston, MA



TUFTS GOLD STANDARD

- Derived from an extensive literature review

Nutrition fundamental	Nutrition across lifespan	Nutrition and organ systems
<ul style="list-style-type: none">• Nutrition assessment• Public health• Nutrition counselling• Nutrition research	<ul style="list-style-type: none">• women's health• Perinatal nutrition• Infant and paediatric nutrition• Adolescent nutrition• Adult nutrition• Geriatric nutrition	<ul style="list-style-type: none">• Cardiovascular• Gastrointestinal• Endocrine/metabolic• Hematologic/oncologic• Renal• Immune• Respiratory• Nervous system• Integumentary



PERCEIVED LIMITATIONS

There are multiple factors limiting ample and effective incorporation of nutrition concepts and assessment methods into the current curriculum;

1.Human Resources

- Scarcity of nutrition advocates and specialists equipped to educate students in this area.
- Inadequate apprenticeship of faculty in nutrition education, therefore this lack of expertise is likely to continue.

2.Attitudes

- Lack of consensus regarding optimal delivery and evaluation of medical nutrition education among faculty.



PERCIEVED LIMITATIONS

3. Structure of current curriculum Integrated System

- Congestion of curriculum doesn't lend itself to more content.
- Due to the pervasiveness of nutrition in health and disease there is no one "natural fit" on where to include nutrition content.
- Assessment across the curriculum is proportional to the amount of time spent on a given subject matter, so nutrition content may not appear in examinations.



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FUTURE

- Leverage the presence of registered dietitian to improve multidisciplinary clinical nutrition service provision.
- Integrate findings in the on-going curriculum review



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Establishing the Malawian Food Composition Database: From Scoping to Publication and Beyond

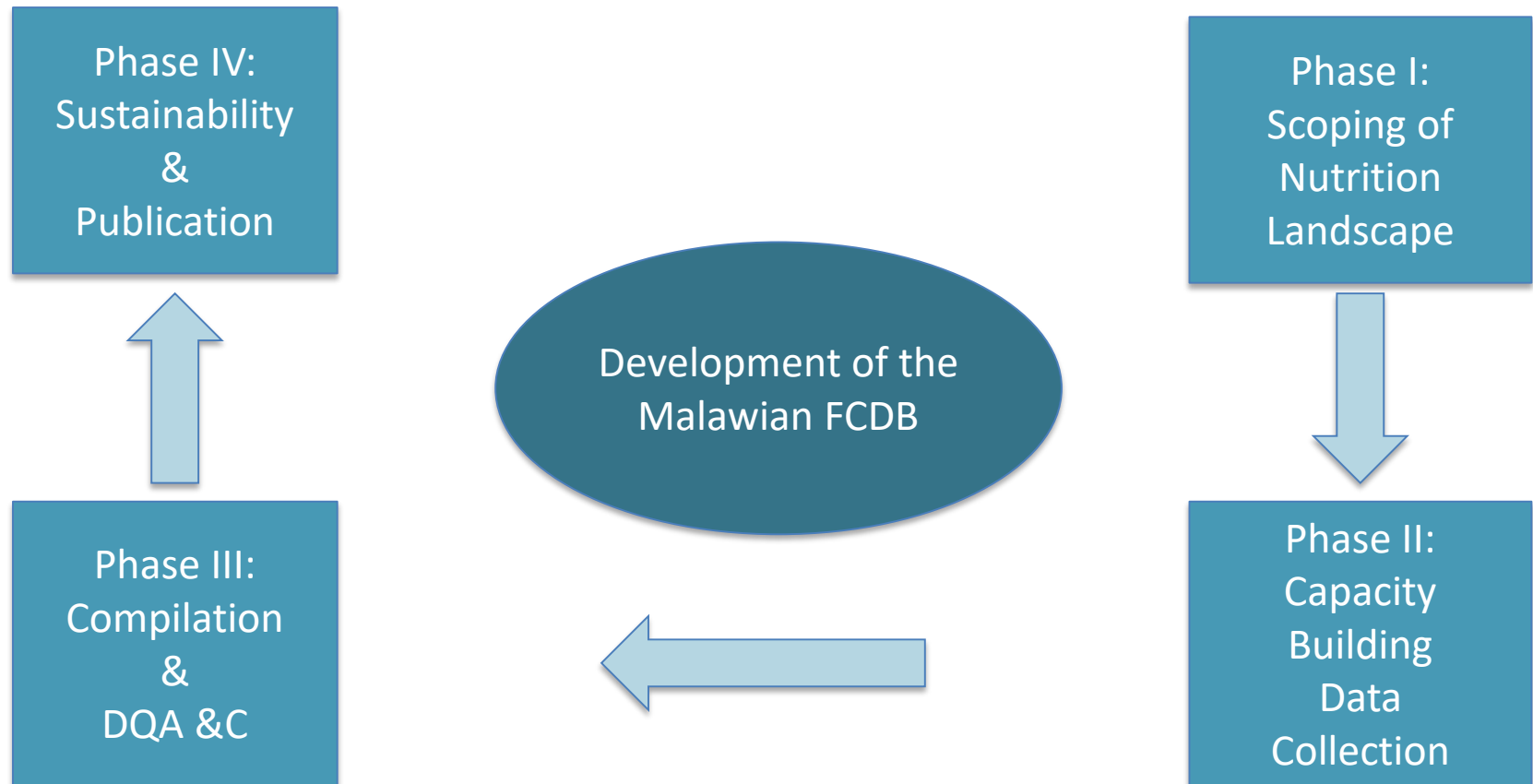


INTRODUCTION

- To address nutrition concerns such as malnutrition
 - by means of nutrition research,
 - programme implementation or
 - community based strategies
- A Country specific Food Data Base becomes crucial⁵



THE PROCESS





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SCOPING





PHASE II

Data collection

- Search all scientific data, published, unpublished
- Setting up an electronic repository
- Visits to libraries of :
 - Academic institutions, Research Centres,
 - Post grad supervisor offices
- Guided by Priority Food list
- Missing food items – additional information through
- Established platform and workshops



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PRIORITY FOOD LIST

PRIORITY FOOD LIST TO INCLUDE IN THE MALAWIAN FOOD COMPOSITION DATABASE

	STAPLES		LEGUMES		ANIMAL FOODS		VEGETABLES	FRUITS	FATS AND OILS	MISCELLANEOUS
Cereals	Maize	Priority	Beans (common,Kidney)	Meat	Beef		Amaranthus	Mango	Vegetable Cooking oil	Water
	Rice		Groundnuts		Goat meat (Chevon)		Pumpkin leaves	Banana	Avocado pears	Thobwa
	Sorghum		Soy beans		Pork		Tomato	Guava	Margarine	Maheu
	Millet		Pigeon peas (nandolo)		Mutton		Rape	Oranges	Meat fat	Tea with milk and sugar
	Wheat		Cow peas (Khobwe)		Beef Offals		Cabbage	Tangerines	Dried coconut	Black tea
	Quinoa		Bambara nuts (Mzama)		Rabbits		Ca'ts whiskers (luni)	Pineapple	Milk cream	Orange Juice
	Bread		Macadamia nuts		Liver		Chinese cabbage leave	peaches	Butter milk	Mango juice
	Scones				Fresh milk		Green beans	Pawpaw	Butter	Baobab fruit juice
	Roasted maize on cob		Hyacinth beans (Nkhungudzu)				Indian mastard (mpilu)		Animal fat	Tamarind fruit juice
	Nsima		Mung or green gram (Mphozo)		Powder milk		Beetroot	Passion fruit	Baobab oil	Guava juice
			Lima beans (Kamumpanda/Kabaifa)		Wild pig		Sweet potato leaves	Lemons		Tamarind juice
Roots and Tubers	Cassava	Others	Chickpeas(T chana)	Poultry	Chicken + Eggs		Blackjack (chisoso)	Watermelon		Chambiko
	Sweet potatoes		Sesame seeds (Chitowe)		Ducks + Eggs		Lettuce	Jujube (masau)		Samoosa
	potatoes		Lentils		Pigeons		Spinach	Tamarind (bwemba)		Zigege
	Yams		Cashew nuts (mbibu)		Quails + eggs		Peas green	Straberries		RUTF (Sibusiso)
	Cocoyams				Turkey		Okra	Mulberries		Sweet potato cake
	Plantains		Pumpkin seeds		Guinea fowl		Onion	Apples		Peanut butter
			Soy pieces		Small birds		Pumpkins leaves	Coconut		Soy milk
Imported	Spaghetti		Velvet beans (Kalongonda)				Mushrooms	Custard apple		Nyama khobwe (snacks)
	Macaroni			Fish	Tilapia		Moringa leaves	Plums		Sponge cake
	Noodles	Recipes	Bean Stew		Cat fish		Green pepper	Loquats		Tomato sauce
	Oats		Groundnut sauce (thendo)		Usipa		Carrot	Grape fruits		Nali chilli
			M'ndawwa/		Utaka		Cassava leaves	Apricot		Jam
Recipes			Pigeon pea-meat stew		Bonya		Bean leaves	Fruit salad (with syrup)		
			Soya sausages		Matemba		Egg plants	Boiled mango		Biscuits
Breakfast			Boiled bambara nuts		Kampango		Cucumbers	Dried fruits		Crackers
			Chipere (Bean Dhal)		Bombe		Limanda	Mango salad		Achaar (oil, chilli, spices)
	Maize porridge with groundnuts flour (whole flour)		Cowpeas stew				Green maize	Cashew fruit		Honey
	Mtama/mtakula (pounded maize with groundnuts)		Pigeon pea stew				Pumpkin flowers	Pomegranate		Fruit squash
			Bambara stew				Pawpaw immature fruit			Carbonated drinks



PHASE III

DATA COMPILATION

- Food groups: Ministry of Health Guidelines
- Addition: Miscellaneous group
- 8 Food Groups; 42 Components
- Data Quality Assessment (DQA) Tool (AFSA, CSPO, USDA, BLS)
- Compilation activities:
 - Data extraction, evaluation, compilation
 - Standard guiding methodologies and principles
 - Quality Assurance: through all stages FAO/INFOODS¹⁻⁶



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COMPILATION RESEARCH TEAM



MALAYSIAN FOOD COMPOSITION TABLE 2015
FATMAHAWATI BAKAR & TEAM

COMPILATION





PHASE IV

Sustainability

- Overall management will be done by DHNA
- The Country's Policy Advisory Team will act as advisory body
- Nutrition Research & Surveillance Technical Working Group
- Operating under the National Nutrition Committee
- Actively support the implementation of FC activities
- GoM & Research institutions responsible for updates
- Under the leadership of LUANAR with other academic institutions
- Starting on the way forward



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PUBLICATION

- Planned:
- Publication will be made available
- Through open access
- Links DHNA and TUFTS
- Database access via
- Link DHNA and TUFTS website



GOVERNMENT OF MALAWI



Food Code	Ref. No	Food Item	Food Group	Moisture (g)	Energy Calculated (kCal)	Energy Calculated (kJ)	Nitrogen (g)	Total protein (g)	Total Fat (g)
MM03_0001	R20B	Beef mince, fried, (Nyama ya ng'ombe yogaya yokazingira)	Animal	67.3	169	663	2.54	16.9	9.3
MM03_0002	R27	Beef stew, (Nyama ya ng'ombe yokazingira)	Animal	73.6	94	399	2.70	16.9	1.3
MM03_0003	WA	Beef, kidney, raw, (Impeyo ya ng'ombe)	Animal	77.9	99	416	2.78	17.4	3.1
MM03_0004	WA	Beef, liver, raw, (Chilwindi cha ng'ombe)	Animal	71.0	133	559	3.10	19.4	4.4
MM03_0005	R53	Beef, liver, stew, (chilwindi cha ng'ombe chokazingira)	Animal	78.7	113	474	1.38	8.6	5.9
MM03_0006	22	Beef, raw, (Nyama ya ng'ombe)	Animal	72.1	95	402	3.27	20.5	1.5
MM03_0007	WA	Beef, tripe, raw, (Nthumbwana za ng'ombe)	Animal	84.2	82	343	1.94	12.1	3.7
MM03_0008	23	Caterpillar, dry, roasted, (Usta laphirichore, (Nyamanyama zoolcha)	Animal	14.7	377	1588	10.16	63.5	11.3
MM03_0009	23	Caterpillar, roasted, (Imbrasia entii, (Mphalabungu zoolcha)	Animal	20.7	308	1300	7.12	44.5	7.6
MM03_0010	R41	Chicken stew, (Nkhuku yokazingira)	Animal	72.5	157	655	2.39	14.9	9.8
MM03_0011	26	Chicken, meat with skin, free range, local, raw, (Nkhuku ya chikuda)	Animal	73.1	129	541	3.38	21.1	4.9
MM03_0012	9	Crabs, boiled, (Nkhana/Nkhala zowitsa)	Animal	51.0	191	810	6.68	41.8	2.7
MM03_0013	R59	Egg, chicken, boiled, (Dzira la nkhuku lowitsa)	Animal	72.2	164	684	2.24	14.0	11.4
MM03_0014	R61	Egg, chicken, scrambled, (Dzira la nkhuku lokanya)	Animal	66.6	231	957	1.59	10.0	20.4
MM03_0015	MZF	Egg, chicken, whole, raw, (Dzira la nkhuku)	Animal	75.0	148	616	2.02	12.6	10.3
MM03_0016	9	Egg, duck, boiled, (Dzira la bakha lowitsa/lowattsas)	Animal	70.0	153	638	2.07	12.9	10.6
MM03_0017	R63	Eggs, chicken, boiled, with peas, (Mazira a nkhuku owitsa, ndi nsawawa)	Animal	82.4	97	405	0.68	4.2	5.6
MM03_0018	R60	Eggs, chicken, boiled, with tomatoes, (Mazira a nkhuku owitsa othila tomato)	Animal	77.0	140	585	0.92	5.7	9.7



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LIMITATIONS

- Data of components
- Indirect method
- Imputation
- Borrowed
- Recipe calculations
- Missing data



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CONCLUSION

- Bold strides have been made establishing the MFCDB
- Tables & DB: hot off press
- Additional outcomes:
- 3 x poster presentations:
- 12th IFDC (2017)
- 2 x oral presentations:
- 1 National Nutrition Congress (2018)
- 1 x 13th IFDC (Oct 2019)



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