

Aashma Dahal, Lecturer, Madan Bhandari Academy of Health Sciences
Dr. Neeti Bhat, Co-Founder, Research Institute of Collaborative Development

RATIONALE & OBJECTIVE

There is an intricate interplay between health and education as we may fail to benefit if we pursue one while neglecting the other. But, leveraging this interdependence of health and education may deliver a more profound impact through mutual reinforcement. One of the most successful innovative programs being "school meals", where students are provided with nutritious lunch at the school thereby improving education and health outcomes of the students. Despite this, it is imperative to acknowledge that these interventions have not fully achieved their goals as narrow focus on mitigating immediate hunger through basic sustenance and neglecting the educational component might impede the transformative impacts of such programmes. By integrating education into health, we can create a synergistic effect that prepares individuals who are able to make informed decisions about their health. But a noticeable gap exists particularly within school systems. The school curricula of Nepal lacks emphasis on improving student's ability to improve informed nutritional choices. This is a matter of concern because it is during formative years that habits are formed and behavior are shaped especially as prevalence of nutrition related diseases are on rise. Therefore, in this study we aimed to:

- To assess the inclusion of nutrition education in school curricula, identify gaps and propose strategies for integrating effective nutrition education for better nutrition outcomes in school going children.

METHODS

We followed Taba's model of curriculum development for analysis of the curriculum. To diagnose the need, a narrative review was conducted to identify the prevailing nutrition-related disorders in Nepal. The Basic Education Curriculum, 2077 (Grade 6-8) was reviewed for the learning outcomes. The subjects of grade 6-8 were mapped for their content on nutrition. The content was evaluated based on following questions: Are the curriculum's learning goals challenging, clear, and appropriate; is its content aligned with its learning goals? Is it accurate and appropriate for the intended audience? Is the instructional design engaging and motivating for the intended student population? Is the system of assessment appropriate and designed to guide teachers' instructional decision making? Do its learning goals reflect the vision promoted in national standards in health? Does it address important individual and societal needs? Strength and weaknesses of content of each grade were also analyzed. In order to ensure alignment with global standards, the national curriculum was compared with international and strategies were recommended.

RESULTS

Although, there is a high prevalence of obesity, anemia, and micronutrient deficiencies among school-going children in Nepal, the national curriculum has significant shortcomings when it comes to relevant content and accuracy of information on these topics. The objectives are clear and challenging. However, they may not be entirely suitable for 21st-century learners, as they predominantly focus on theoretical aspects. To better align with the needs of contemporary education, the objectives should transcend basic comprehension and encompass activities like analysis, evaluate and , create as well as incorporate attitude development. The nutrition education was delivered to students through course called health, population and education. The strengths and weakness of content of Grade six is shown in Table 1, grade seven in Table 2 and grade eight in Table 3.

Table 1: Strength and Weakness of Grade 8 Nutrition Education

Strengths	Weakness
<ul style="list-style-type: none"> Dedicated Nutrition Chapter: There is a separate chapter dedicated to nutrition education and highlights its importance. Coverage of Nutrition Disorders: Nutrition related disorders like, marasmus, rickets, anemia, night blindness, and scurvy are well covered. Symptoms and Preventive Measures: The signs and symptoms of these disorders and offers practical preventive measures, enhancing students' understanding. Balanced Diet: Balanced diet, locally produced food are encouraged. Practical skills like preservation of nutrients are given. 	<ul style="list-style-type: none"> Inaccurate Information: Inaccurate information is given Lack of coherence: For eg. enhancing awareness of marasmus in the context of night blindness. Lack of Clarity: It should follow a logical and comprehensible structure for students in presenting complex ideas on nutrition related disorders. Superficial Approach: While discussing complex topics like malnutrition, the curriculum has a superficial approach, which may hinder students' understanding. Inadequate Visuals: Limited images and visuals to aid learning as visuals are essential for comprehensive learning at school level. Missing Cognitive and Emotional Aspects: Integration of the cognitive and emotional components, are lacking. These aspects are important for wholesome learning. Practical Activities not emphasized. The absence of practical activities in the content limits students' ability to apply their knowledge and skills. Inadequate information regarding Processed Foods: The curriculum doesn't sufficiently address processed foods, including their definition, examples, and their impact on health.

Table 1: Strength and Weakness of Grade 7 Nutrition Education

Strengths	Weakness
<ul style="list-style-type: none"> Graded Content: Grade 7 content is more challenging than Grade 6 content, which encourages students to learn more advanced concepts on nutrition. Deeper Understanding: The curriculum introduces the food pyramid and categorizes foods according to dietary needs. Visual Learning: Students are more likely to comprehend complex concepts when they use diagrams and images. Nutrient Detail: Nutrients' sources and functions are discussed in detail. Awareness of Junk Foods: Learning about junk foods allows students to realize the importance of a healthy diet. Hands-On Activities: Practical activities are for eg. collecting information about junk foods available in the market, bringing foods from home and discussing its nutritional value. 	<ul style="list-style-type: none"> Superficial Learning: Despite its graded difficulty level, this content promotes superficial learning, particularly about nutrients and sources. Complex Food Pyramid: Complex food pyramids may overwhelm students. Food pyramid misrepresents the idea of balanced food where foods are placed upon hierarchy. Further, the food temple released by the Dietary Guidelines of Nepal is not incorporated. Standardization: There are no specific guidelines for evaluating activities for nutrition education, which leaves room for misinterpretations. Rote Learning: Practices such as matching exercises and short answers may encourage rote learning, reducing opportunities for deeper understanding. Lack of exercises such as correcting the sentences involves deeper learning as it involves recognition of errors, active engagement, critical thinking, and the application of knowledge. Exclusion of Important Topics: Topics like ghee and cereals are body-building foods are not covered in the curriculum, which limits students' knowledge.

Table 1: Strength and Weakness of Grade 6 Nutrition Education

Strength	Weakness
<ul style="list-style-type: none"> Dedicated Nutrition Chapter: A dedicated nutrition chapter is included in the curriculum, emphasizing the importance of nutrition in education. Clear Categorization of Foods: Students are able to understand the content due to the simple and straightforward categorization of foods. Cultural Relevance: Culturally relevant foods and Nepali names enhance the relevance of the curriculum within the local context. Basic Framework Introduction: A basic framework for dietary requirements, energy-giving, body-building, and body-protecting foods will provide the foundation for nutrition knowledge. Fundamental Understanding Exercise: The exercises in the textbook provide students with a fundamental understanding of nutrition concepts. 	<ul style="list-style-type: none"> Lack of Depth: Although the content introduces nutrition, a deeper understanding fails to develop, potentially leaving students unprepared. Missing Portion Guidelines: For understanding a balanced diet, there is a lack of information on portions and nutrients such as fat. No Food Plate: Lack of simple and easy "food plate" model Absence of Real-Life Examples: A lack of real-life examples and practical applications makes it difficult for students to apply their knowledge in everyday situations and as a part of society. Lack of national standards of vision. Limited Visual Aids: Visual aids lack naming and descriptions, which could make it difficult for students to use them effectively. Overemphasis on Recall: Textbook exercises tend to focus on simple recall rather than fostering critical thinking and deeper understanding. Assessment Gaps: Students aren't assessed on how their nutrition knowledge can be applied in everyday life, which creates a gap for real-life application. Lack of Reflective Exercises: Less emphasis is placed on students reflecting on what they have learned, which inhibits critical thinking. Limited Question Diversity: Question types are too few for a comprehensive assessment of students' skills and knowledge. Missing Practical Skills Lessons: Curriculum does not address practical skills such as gardening, breastfeeding, cooking, and addressing obesity and undernutrition, which are vital to real-life situations.

Table 2: Comparison of Nepalese Curriculum with International Practise

Content	Nepal	Alberta Health Services, Canada	Community Voices for Health, American University, USA
Type of curriculum	Traditional curriculum	Traditional curriculum	Integrated curriculum
Categories of food	Cereals, beans & pulses, fruits & vegetables, water, milk, fish & meat	Grains, vegetables & fruits, milk and alternatives, meat & alternatives	Carbohydrate, proteins, fat & oil, minerals, Vitamins and Water
Concept of balanced diet	Only type	Appropriate amount (quantity) and type (quality) of food.	Appropriate amount (quantity) and type (quality) of food.
Knowledge about diversified foods	Names listed out	Plenty of list along with serving size provided	Typical foods and their serving sizes provided.
Over consumption nutrients	Doesn't include	Acknowledges effects of over consumption of nutrients.	Acknowledges effects of over consumption of nutrients.
Alternatives	Doesn't include	Included	Doesn't include
Healthier food	Doesn't include	Whole grains and fibers	Whole grains and fibers
Healthy behavior	Doesn't include.	Included	Doesn't include
Standardization	Lacking	Present	Present
Relevant activities to real life	Lacking	Present	Present
Reflective activities	Lacking	Present	Present
Deep learning and critical thinking activities	Lacking	Present	Present
Visual representation of balanced diet	Food pyramid.	Food plate.	Food plate
Learning opportunities related to life skills	Lacking	Present. Self perception, self esteem and role of healthy behaviours.	Lacking
Nutrition label	Lacking	Lacking	Present

So, an enhanced curriculum needs to be relevant as well as accurate while also offering opportunities for in-depth learning. Various strategies have been suggested for an enhanced curriculum, such as integrating nutrition education across multiple subjects, adoption of project-based learning approaches, incorporating behavioral change aspects, contextualized learning, replace my plate with nutrition pyramid, reflective activities, engaging parents and communities in the process, utilizing visual aids for instructional purposes, and collaborating with nutritionists to develop educational resources.

IMPLICATIONS

It is crucial to update the curriculum to empower students capable of making informed nutritional choices. This revised curriculum should prioritize promoting behavior change towards healthier nutrition practices, aiming for a significant decrease in nutrition-related disorders. Following are the implications :

- To increase stakeholder engagement in curriculum development.
- Exploration of evidence-based teaching strategies that foster critical thinking and real-life application of nutritional concepts.
- Incorporation of local and contextual culinary knowledge
- Strengthened emphasis on junk food awareness

Please visit the following link for resources we gathered for analysis. If you have any input to contribute to our research efforts aimed at producing higher-quality findings, please contact us at aashma.dahal@mbahs.edu.np or neetibhatbkt@gmail.com.



References:

- Portillo E, Look K, Mott D, Breslow R, Kieser M, Gallimore C. Intentional Application of the Taba Curriculum Model to Develop a Rural Pharmacy Practice Course. Innov Pharm. 2020;11(1):10.24926/rip.v11i1.2089. Published 2020 Mar 24. doi:10.24926/rip.v11i1.2089
- Nepal National Micronutrient Status Survey Report 2016. UNICEF Nepal. https://www.unicef.org/nepal/reports/nepal-national-micronutrient-status-survey-report-2016
- Basic Education Curriculum, 2077 (Grade 6-8), Government of Nepal, Ministry of Education, Nutrition. Sanothimi, Bhaktapur
- Hale JA. A Guide to Curriculum Mapping: Planning, Implementing, and Sustaining the Process. Corwin; 2007.
- National Research Council, Division of Behavioral and Social Sciences and Education, Center for Education, Mathematical Sciences Education Board, Committee for a Review of the Evaluation Data on the Effectiveness of NSF-Supported and Commercially Generated Mathematics Curriculum Material s. On Evaluating Curricular Effectiveness: Judging the Quality of K-12 Mathematics Evaluations. National Academies Press; 2004.

