PhD Research Proposal

Title: Impact of Parents' and Children's Nutrition and Food Literacy on Household's Dietary Diversity, Anemia and Malnutrition in Lebanese Adolescents.

1. Background

Food literacy is determined by complex interactions of an individuals' knowledge, skills, and self-efficacy required to plan, manage, select, prepare, and eat food. Food literacy has a critical role in shaping dietary behaviors; low food literacy could be a barrier to dietary diversity and nutrient adequacy. Parents and children's food/nutrition literacy are highly interrelated. It is suggested that if parents perform well in interpreting food-related information, planning for meals, selecting the healthiest food options, preparing the food in its safest and affordable version, managing food wastage, and focusing on improving the overall diet quality, their children do this as well. Food literate parents are more likely to have children with better food consumption patterns. Household food consumption, the frequency of consumption of different food groups by a household over a definite time, determines the health and nutrition status of their children, and it is a cornerstone of food literacy analysis. Amid the threat of transitioning to nutrient-poor diets in the MENA region, the younger generation is most vulnerable to the substantial backslashes of the current situation. A recent study by Hoteit, M. et al. (2021) found that more than half the Lebanese population had poor food consumption scores and that 9 in every 16 households eat less than two meals per day, plunging Lebanese people into high vulnerabilities. A less diversified diet is associated with chronic nutrition outcomes, including micronutrient deficiencies. The dietary diversity is a recommended valid dietary assessment indicator that has been shown to reflect micronutrient intake (particularly iron). Thus, a less diversified diet urges the need to diagnose possible iron-deficiency anemia among vulnerable population. Anemia diagnosis is confirmed when blood tests indicate low hemoglobin levels based on age and gender. Even though household food security, in its availability and access components, is a significant determinant of nutritional status, being food illiterate impedes the adequate utilization of the available food. Malnutrition in early years predicts disease risk later in life. Assessing malnutrition and its correlates among Lebanese adolescents is momentous to pave the way for effective public health- and nutrition-based interventions and policies.

2. Research Objectives

2.1. Main Objective

To determine the triple interaction between food literacy, food consumption patterns, and malnutrition among Lebanese adolescents.

2.2. Specific Objectives

1. To evaluate food and nutrition literacy of parents and adolescents.
2. To assess the household food consumption patterns as an indicative score of dietary diversity at the household level.
3. To assess the nutritional status of Lebanese adolescents through anthropometric measurements and blood hemoglobin measurement.
4. To investigate the association between food and nutrition literacy and food consumption patterns at the household level.
5. To examine the association between food and nutrition literacy and the malnutrition prevalence among Lebanese adolescents.

3. Methods and Materials

3.1.Sampling procedure

At each governorate, a research team will coordinate with many healthcare centers, municipalities, and pediatricians to discuss the current research objectives. A further debate regarding the eligibility criteria of the target population and the required minimum sample size will take place.

Afterward, healthcare centers, municipalities, and pediatricians will assist in reaching the target population through a well-planned and designed protocol.

The eligible participants will be invited to arrive at the study location where a well-trained research team will be available. The research team will be trained to be sure that all members are fully competent in the skills needed to implement the research program (anthropometric

measurements, administration of questionnaires, point of care testing for hemoglobin measurements, handling urine samples).

Tools and Instruments:

- Administration of food literacy questionnaire for parents.
- Administration of nutrition literacy questionnaire for adolescents.
- Administration of food consumption patterns questionnaire to evaluate household's dietary diversity.
- Amber body scale
- Stadiometer
- BMI girth measuring tape
- Accufat skinfold caliper
- MUAC tape
- i30 Body composition machine
- Compolab point-of-care check

3.2. Sample Size

A minimum acceptable sample size of 400 respondents (parent-adolescent dyads) would be sufficient to identify differences by respondent's characteristics.

Sample Size is calculated based on the following formula:

$$n = [p\ (1-p)] * [(Z_{\propto/2})^2 / (e)^2].$$

- ✓ n =sample size.
- ✓ Z ($\propto$/2) is the reliability coefficient of standard error at 5% level of significance= 1.96.
- ✓ p represents the probability of youths who were unable to practice preventive measures the diseases (50%, no previous study).
- ✓ e refers to the level of standard error tolerated (5%) as stated by Hosmer and Lemeshow.

Governorate		Age 10-19 years	
		%	N
Population estimations 2018-2019			400
Beirut	43	5.5	22

Mount Lebanon	292	37.1	148
North Lebanon	113	14.4	58
Akkar	67	8.5	34
Beqaa	49	6.2	25
Baalbeck-Hermel	45	5.72	23
South Lebanon	107	13.6	54
Nabatieh	70	8.9	36
Total	787	99.9	**400**

3.3. Eligibility criteria of participants

Adolescent Eligibility Criteria

- Lebanese, and being part of Lebanese households.
- Aged 10-19 years old.
- Has no chronic diseases.
- Does not currently use iron or multivitamins supplements.
- Did not donate blood in the month prior assessment.

Parental Eligibility Criteria

- Lebanese.
- Aged 18-65 years old (mother or father).

4. Expected Outcomes

- Food Literacy of parents is positively correlated with the nutrition literacy of their adolescent children.
- Food literacy shapes food consumption patterns at the household level.
- Undernutrition and over-nutrition are more prevalent among adolescents with inadequate nutrition literacy, and those who belong to households with poor food consumption patterns.
- Anemia is more prevalent and severe among adolescents with inadequate nutrition literacy, and those who belong to households with poor food consumption patterns.

5. Bibliography (Recent studies in the field)

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