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INTRODUCTION

Double Burden of Malnutrition is “Coexistence of undernutrition along with overweight, obesity or diet-related non-communicable diseases (NCDs), within individuals, households and populations, and across the life-course (1,2).”

Listed among the top ten leading risk factors for NCDs, underweight and obesity are emerging as a challenge worldwide (1,3). Developing countries, including India, have primarily focused on the high prevalence of undernutrition and no national policies/programmes are there to address overnutrition/obesity.

OBJECTIVES

To determine the prevalence of double burden of malnutrition among mother-child dyads (child aged 3-5 years) and, potential predictors for this coexisting double burden of malnutrition.

METHODS

Community based, cross-sectional study on 350 mother-child dyads (children aged 3-5 years) from urban poor settings of Delhi. Anthropometric assessment of the dyads was done in order to categorise the mother-child dyads into different forms of malnutrition using z scores and BMI (4,5).

RESULTS

Based on BMI-for-age (BAZ) and Height-for-age (HAZ) scores of the child and BMI of the mothers, of the 350 mother-child dyads-
-20% were typically DBM (UC/OM)
-Only 23% were normal pairs (NC/NM).
- Corresponding households were UC/UM 3%; UC/NM 5%; NC/OM 30%; NC/UM 7%; OC/NM 3%; OC/OM 7%; OC/UM 2%.

Association between child’s nutritional status and mother’s BMI (Body mass index) was found to be significant (p< 0.02)

Among, all dual burden households, the odds of being at chronic disease risk among mothers as assessed from waist circumference and waist height ratio was 3.1 (95% CI 2.2-4.5)

Table 2: Multivariate binary logistic for forecasting predictors

<table>
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<tr>
<th>Variable</th>
<th>P-value</th>
<th>Odds Ratio (exp B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers weight</td>
<td>.000</td>
<td>1.12</td>
</tr>
<tr>
<td>Mothers Height</td>
<td>.022</td>
<td>0.93</td>
</tr>
<tr>
<td>Age at marriage</td>
<td>.032</td>
<td>1.14</td>
</tr>
<tr>
<td>Height-for-age (child)</td>
<td>.000</td>
<td>0.24</td>
</tr>
<tr>
<td>Weight-for-height (child)</td>
<td>.000</td>
<td>0.40</td>
</tr>
<tr>
<td>Sofa in house (adding to leisure)</td>
<td>.003</td>
<td>7.3</td>
</tr>
<tr>
<td>Having bank account</td>
<td>.020</td>
<td>0.45</td>
</tr>
<tr>
<td>Day time sleep in children</td>
<td>.001</td>
<td>2.9</td>
</tr>
<tr>
<td>Mothers spending more time in eating</td>
<td>.000</td>
<td>13.5</td>
</tr>
<tr>
<td>More time in light leisure activities</td>
<td>.000</td>
<td>2.7</td>
</tr>
<tr>
<td>Initiation of complementary feeding before 6 months</td>
<td>.041</td>
<td>1.6</td>
</tr>
</tbody>
</table>

CONCLUSION

While maternal education is at the core of the problem, Poverty alleviation strategies coupled with awareness about appropriate diet and lifestyle patterns is imperative considering the easy access to processed non-nutritious food to address this emerging public health concern.

REFERENCES


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Objective: to describe the growth patterns of children aged 6 – 59 months in the last 15 years by using data from 2000, 2005, 2010 and 2015 Demographic and Health Surveys (DHS); and from 2012 and 2015 Comprehensive Food Security and Vulnerability Analysis (CFSVA).

Methods: Height for Age Z-scores (HAZ) and Weight for Height Z-score (WHZ) were used to analyze Rwandese child growth patterns. HAZ and WHZ were calculated using WHO 2006 growth standards. The size of the sample varied along the surveys and years from 3542 children aged 6 - 59 months in 2015 DHS to 6087 children aged 6 - 59 months in 2000 DHS. District-level analysis was conducted to understand the geographical disparities in the stunting trends. Focus was put on children aged 6-59 months.

Results: Both wasting and stunting prevalence in Rwanda decreased in the period from 2000 to 2015. Wasting started high in 2000 with 8,1% and has gradually declined reaching 1.8% in 2015. Stunting trends also show a decrease from 54.1% in 2000 to 40.6 in 2015. The stunting prevalence was 38% in 2015 if we include children under 6 months. Geographical disparities in stunting were found. It is clearly higher in rural than in urban areas. Predictably, the highest prevalence of overweight existed among urban areas reaching 9.4% in 2015. The national obesity trend shows a slight increase over the years.

Discussion: Although Rwanda has made progress towards meeting the 2025 World Health Assembly global target, the prevalence of stunting among children under five years of age remains high. Our findings illustrate a gently decrease in wasting and stunting prevalence in children in Rwanda during the last 15 years. While wasting has achieved an acceptable prevalence, the prevalence of stunting remains very high. Overweight is another form of malnutrition that may be growing among children in Rwanda in urban areas. These findings may suggest that new health policies should not only tackle undernutrition among Rwandese children but also consider the increasing overweight trend in urban areas.
**Background:**

Current societies are characterized by an increase in the prevalence of overweight and obesity, which is a general problem of the adult population and has an important impact on public health, in comparison with underweight figures. This situation also occurs in the elderly, but in these ages, sarcopenia is prevalent; it is identified among other aspects by decline of the skeletal muscle mass associated with age, in correspondence with a loss of function, identified with a low strength muscle and a slow walking speed. These entities coexist with significant implications in the quality of life of these people. The purpose is to provide preliminary data on body composition and functionality and some health and nutrition related outcomes in older adults from the Latin America and the Caribbean region.

**Methods:**

Cross-sectional study

N= 1046 volunteers over 60 years of age (31% men and 69% women) **Countries:** Argentina, Brazil, Chile, Cuba, Guatemala, Honduras, Jamaica, Mexico, Peru and Uruguay

IAEA project RLA6073 on sarcopenia. **Anthropometric variables:** weight, height and waist circumference, Body Mass Index (BMI) **Body composition by deuterium dilution:** Fat mass index: FM/H² and Fat-free mass index: FFM/H² Bioelectrical impedance analysis Maximum grip strength (MGS), Gait speed in 6 meters (GS6M) Timed up and Go (TUG) test

The measurements were performed by standardized protocols. Overweight, obesity, underweight and sarcopenia indicators were obtained. Appendicular skeletal muscle mass, corrected by height squared (ASMM) calculated from Latin-American equations.

**Cut-off point**

- MGS (female <17Kg and male <25Kg),
- TUG 10s and GS6M <1m/s.

General Linear Model on FM/H² and FFM/H² (taking as main effects sex, manual strength and performance indicators, and controlled by the BMI and the ASMM) Principal Component Analysis (PCA) were used, among others.

**Results:**

![Graph showing body composition and functionality](image)

- Low muscle strength 28%
- Impaired in GS6M test 48%
- Low risk values in TUG test and the muscle mass Declined

The results of the General Linear Model expressed the significant influence (p=0.000) of overweight and muscle mass on FM/H² and FFM/H². The TUG is only important associated with sex. Similarly, only the impact of MGS and the GS6M on FFM/H² are significant when they are associated with sex.

**Conclusions:**

This study confirms a high prevalence of overweight, obesity and sarcopenia indicators in Latin America and the Caribbean elderly people.
TRENDS OF DOUBLE BURDEN OF MALNUTRITION AMONG CHILDREN UNDER FIVE YEARS IN VIETNAM: A REVIEW FROM NATIONAL SURVEYS DURING 2000-2015

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Introduction
Double burden of malnutrition among children is still the issue in public health in many countries as well as in Vietnam.

Objectives
We describe the changes in the prevalence of malnutrition in Vietnamese children based on National Nutrition Surveillance data conducted by the National Institute of Nutrition, Hanoi, Vietnam.

Methods
National Nutrition Surveillance data which were conducted every five years by National Institute of Nutrition from 2000 to 2015 in a nationally representative samples to assess the children malnutrition status with sample-size of each survey was around 97,000 children under 59 months old in 63 provinces of Vietnam. The anthropometric assessment on nutrition status is based on 2007 WHO Growth Standard.

Figure 1. Trends of under-nutrition and over-nutrition among children aged less than 59 months period 2000-2015

Results
National Nutrition Surveillance data had shown that the prevalence of underweight in under five year old children had been reduced. Prevalence of stunting was 43.3% in 2000 to 24.6% in 2015 with the rate of reduction was 1.2 percentage point per year. Prevalence of wasting was 11.1% in 2000 to 6.4% in 2015. The reduction of under-nutrition was different among ecological regions and between urban and rural area. The prevalence of under-nutrition was still high in mountainous area. The trend of overweight and obesity among children under five years of age was on the increase from 0.62% in 2000 to 5.3% in 2015 with the rate of increasing was 8.5 folds during 2000 - 2015. The increasing of overweight and obesity was different between urban and rural areas.

The prevalence of overweight and obesity in 2000 was 0.9% among children living in urban and 0.5% among those living in rural. The prevalence of overweight and obesity in 2015 was 8.3% among children living in urban and 4.7% among those living in rural.

Table 1. Percentage of nutrient intake met the DRI

<table>
<thead>
<tr>
<th>Nutrient intake</th>
<th>24-35 months</th>
<th>36-59 months</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>met the DRI</td>
<td>n = 610</td>
<td>n = 1063</td>
<td>n = 1673</td>
</tr>
<tr>
<td>%</td>
<td>(95% CI)</td>
<td>(95% CI)</td>
<td>(95% CI)</td>
</tr>
<tr>
<td>Energy</td>
<td>95</td>
<td>96</td>
<td>96</td>
</tr>
<tr>
<td>(92; 100)</td>
<td>(93; 98)</td>
<td>(56; 75)</td>
<td></td>
</tr>
<tr>
<td>Vitamin A</td>
<td>62</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>(51; 72)</td>
<td>(56; 75)</td>
<td>(56; 75)</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>57</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>(53; 61)</td>
<td>(66; 74)</td>
<td>(66; 74)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3. Trend of some kind of food consumption

Conclusions
There is an upward trend in overweight and obesity among children under five years in both urban and rural areas; Weight control and prevention of overweight and obesity need to be timely and appropriate for different target groups. Proper nutrition from early childhood is required for the prevention of obesity and decreasing the risk of chronic diseases in later life.

Recommendation
There need an orientation which concentrate on intervention and prevention of under-nutrition for the children in rural areas and preventing overweight and obesity for children especially in urban areas. A rising prevalence of overweight and obesity in urban area is the urgent public health problem that need early intervention.

Acknowledgements
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Prevalence and inequality in double burden of malnutrition in Pakistan: analysis of national level cross-sectional survey data

INDICO ID: 270

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ABSTRACT:

Introduction: Pakistan is one of the many developing countries facing highest double burden of malnutrition. The aim of this study was to assess the prevalence and inequality in double burden of malnutrition in Pakistan in order to guide policy makers and government agencies to achieve the Sustainable Development Goals and Global Targets for Nutrition 2025.

Methods: The analysis was based on Pakistan Demographic and Health Survey (PDHS) 2012-13. Data on 4,285 children under-five years and 4,170 women 15-49 years were assessed for nutritional status. The wealth index was used as proxy indicator for socioeconomic status of households. The concentration index was calculated for the whole sample, as well as for subcategories defined as area of residence (urban and rural) and the sex of children.

Results: The prevalence of stunting and underweight in children under-five years was 45% and 30%, respectively. Boys were more likely to be stunted (48%) and underweight (33%) than girls (42%) and (27%). More than half of children whose size at birth was very small or small were stunted and 40% were underweight. Children whose mothers were underweight (BMI <18.5) had the highest levels of stunting (55%) and underweight (44%), while those whose mothers were overweight or obese (BMI ≥25) had the lowest levels of stunting (35%) and underweight (19%), respectively. Children in rural areas were more likely to be stunted (48%) and underweight (33%) than those in urban areas (37%) and (24%). Stunting and underweight ranges from a low of 21% and 10% among children whose mothers had a higher education to 55% and 39% among those whose mothers were illiterate. Children in the poorest households were almost three times as likely to be stunted (62%) and underweight (48%) than children in the wealthiest households (23%) and (16%), respectively. About 14% of women were underweight and 40% were overweight or obese. Rural women are more likely to be underweight (17%) than urban women (7%). The prevalence of overweight or obese was higher in urban women (54%) than rural women (33%). Women with no education were more likely to have a lower mean BMI than those with a secondary or higher education (23.6 kg/m2 and 26.0 kg/m2, respectively). Mean BMI showed a steady increase with increasing wealth, from 21.3 kg/m2 among women in the lowest wealth quintile to 27.1 kg/m2 among those in the highest quintile.

Conclusion: There are substantial inequalities in the prevalence of double burden of malnutrition in Pakistan, and failure to tackle these inequalities is a cause of continued social injustice since many decades. Moreover, reducing the overall rate of double burden of malnutrition does not necessarily lead to a reduction in inequality. Therefore, policy makers and government agencies should take into account the distribution of double burden of malnutrition across all socioeconomic groups and in rural and urban areas.

Key Words: Prevalence, Inequity, Double Burden, Malnutrition, Pakistan
Analysis of Persistent Organic Pollutant (POP’s) in mother’s milk and the effects in the child nutrition

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Objective

Establish the degree of exposure to POP’s of newborns in the study areas through a risk analysis.

Introduction

The organochlorine pesticides and the polychlorinated byphenyl (PCB) congeners are part of compounds currently known as Persistent Organic Pollutants (POPs) for their presence across the planet, their stability and slow biodegradation, their accumulation in fatty tissues and long half-life. Most of them are currently banned in Latin American countries due to their confirmed toxicity for humans and also in biotic communities. They persist in the environment due to their long half-lives and continue to be transferred to humans via food and water intake amongst other pathways for human exposure.

Experimental

Urban zone

Rural zone

Sampling sites

Anthropogenic activities

Flower cultivation and use of pesticides

Mothers from a rural and urban area were interviewed to identify their eating habits and contact with POP’s. The participating mums should be beginners with babies between 1.5 and 2 months old. They should also come or be from this town.

The mothers participating in the study provided 30mL of breast milk for the determination of fat content and POP’s.

Results

Food habits of participating mothers

Fat content in samples

During the first 6 months a baby is ideally fed on breast milk. Through the foods with which the mother ingests and also the environmental conditions that store POP’s compounds in their fat tissue. When a baby is breastfed POP’s can be transmitted to the baby through breast milk.

The following compounds will be analyzed

- cis-Chlordanes
- trans-Chlordanes
- Dieldrin
- Endosulfan
- Endrin
- Heptachlor
- Heptachlor epoxide (cis)
- Heptachlor epoxide (trans)
- Hexachlorobenzene (HCB)
- Lindane
- Mirex
- Pentachlorobenzene
- o,p'-DDT
- p,p'-DDT
- Cis-Chlordane
- PCB28
- Trans-Chlordane
- PCB52
- Dieldrin
- PCB101
- Endosulfan
- PCB118
- Endrin
- PCB138
- Heptachlor
- PCB153
- Heptachlor epoxide (cis)
- PCB180
- Heptachlor epoxide (trans)
- Hexachlorobenzene (HCB)
- Lindane
- Mirex
- Pentachlorobenzene
- o,p'-DDT
- p,p'-DDT

Conclusión

In order to understand the mothers’ eating habits and to know the possible exposition to POPs, in-depth interviews were carried out with mothers having children 1.5 to 2 months and native from the study area. Interviews were conducted in the local language, audio-recorded and transcribed. The consumption of foods such as fish, dairy products, meats, sausages and eggs are related to the fat content present in the breast milk samples.

Acknowledgement

This work is part of the project ARCAL RL5069 “Improving pollution management of persistent organic pollutants to reduce the impact on people and the environment (ARCAL CKL1)"