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International News at Glance

Early nutrition and its connection with fetal development

There is a growing body of evidence describing the importance of early nutrition in the etiology of the double burden. Inappropriate development or adaptation to an imbalanced diet during fetal development leaves the individual ill prepared to manage an energy dense diet in adulthood. These ideas are encapsulated in the life course approach to nutrition, recognising that a balanced nutrient supply, from conception through to old age, is a key determinant of health. At all stages in life, the flow through metabolic pathways is adjusted in response to changes in the diet so that the supply of nutrients supports growth and repair. . In pregnancy, the situation is further complicated by the demands of the growing fetus. This means that there are interactions, not just between the components of the mother's diet, but also with nutrients released by the mobilization of her reserves. The flows of macronutrients through the pathways of intermediary metabolism also depend on an adequate supply of micronutrients. Without these essential cofactors, the flow through metabolic pathways can be severely compromised. It is possible to envisage situations where multiple mild deficiencies combine with an excess of energy to create an outcome that is just as damaging to fetal development as a diet deficient in a single component.

Proceedings of the Nutrition Society,William D. Rees, Volume 78, Issue 1, February 2019 , pp. 88-96.

Fast Facts

Milk and other dairy products are often targeted for their energy content and many mistakenly believe that dairy should be limited to avoid weight gain. Meta-analysis and existing reviews have identified protective or neutral associations between consumption of milk and dairy products and childhood obesity. In epidemiological studies, a high relative to low or no consumption of milk and other dairy products has been consistently found to be not associated, or inversely associated, with obesity and indicators of adiposity in children and adolescents. There are a number of supportive mechanistic data by which milk, dairy products and calcium could moderate absorption, storage and usage of fat, appetite and the metabolic activity of gut microbiota. In all cases, more work is needed to substantiate these mechanisms.

Dougkas, A., S. Barr, S. Reddy and C. D. Summerbell. 2019. A critical review of the role of milk and other dairy products in the development of obesity in children and adolescents. Nutrition research reviews. 32(1):106-127.

Clinical Nutrition Corner

Muscle loss: The new malnutrition challenge in clinical practice

Ageing, successful ageing, and nutritional status

The world population is ageing and many people experience frailty, disability and chronic disease as they get older, which is linked to impaired skeletal muscle and bone health.

Muscle as a metabolically active organ

Skeletal muscle is vital to mobility, posture, strength and balance and allows the performance of exercise and activities of daily living. Muscle plays a central role in protein metabolism acting as a reservoir of amino acids when the protein needs of the body are not met by dietary intake, and enables maintenance of the protein content of other essential tissues and organs.

Malnutrition contributes to skeletal muscle mass loss

Malnutrition is an increasingly prevalent condition that is the result of lack of intake or uptake of nutrients leading to altered body composition (decreased muscle)and body cell mass.

Factor responsible for muscle mass and function loss

Muscle accretion and muscle loss have a noticeable life trajectory, i.e. depending on an individual's age. Loss of muscle mass and strength is a natural part of ageing. Peak muscle mass and strength are achieved around the age of 25 years but after the age of 40 to 50, loss of skeletal muscle mass accelerates due to decreased physical activity and altered protein metabolism.

Clinical conditions associated with skeletal muscle loss

Beyond ageing, muscle decline is associated with pathological states and chronic diseases, such as malnutrition, cancer, neurodegenerative disease, chronic kidney disease, COPD, sepsis, and immune disorders.

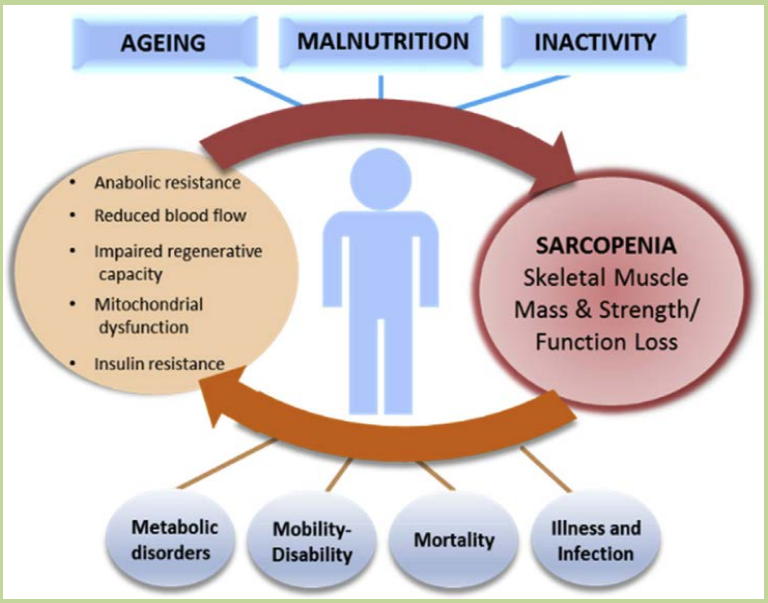
Methods to assess muscle-related outcomes

Skeletal muscle strength**,** skeletal muscle mass**,** Physical performance

Role of diet and enteral nutrition

Across the healthcare continuum, it is important to ensure that patients are able to access and consume nutritious foods which provide sufficient energy and protein, as well as micronutrients. Lifestyle interventions factors such as good nutrition and physical exercise are key to maintaining muscle or slowing muscle decline. Optimal nutrition combined with exercise has been shown to act synergistically against skeletal muscle loss in aging population.

Landi, F., M. Camprubi-Robles, D. E. Bear, T. Cederholm, V. Malafarina, A. A. Welch and A. J. Cruz-Jentoft. 2019. Muscle loss: The new malnutrition challenge in clinical practice. Clinical Nutrition. 38(5): 2113-2120.



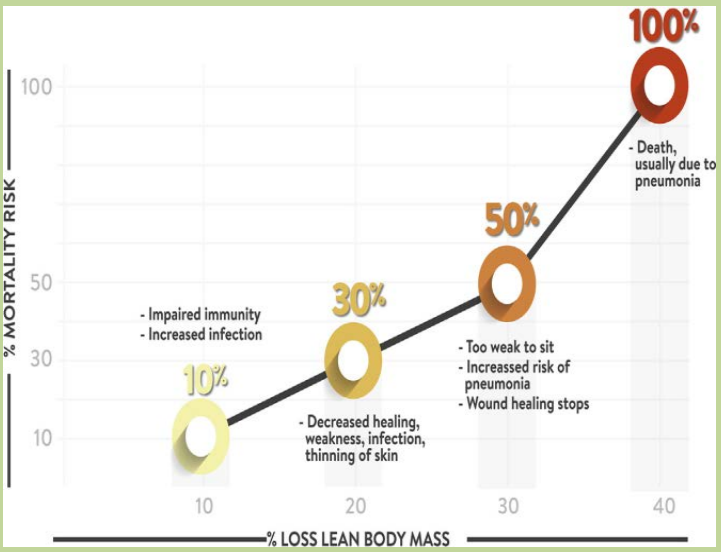


Fig-1 a. Relationship between malnutrition, and loss of skeletal muscle mass and function b. Complications increase with greater lean mass loss

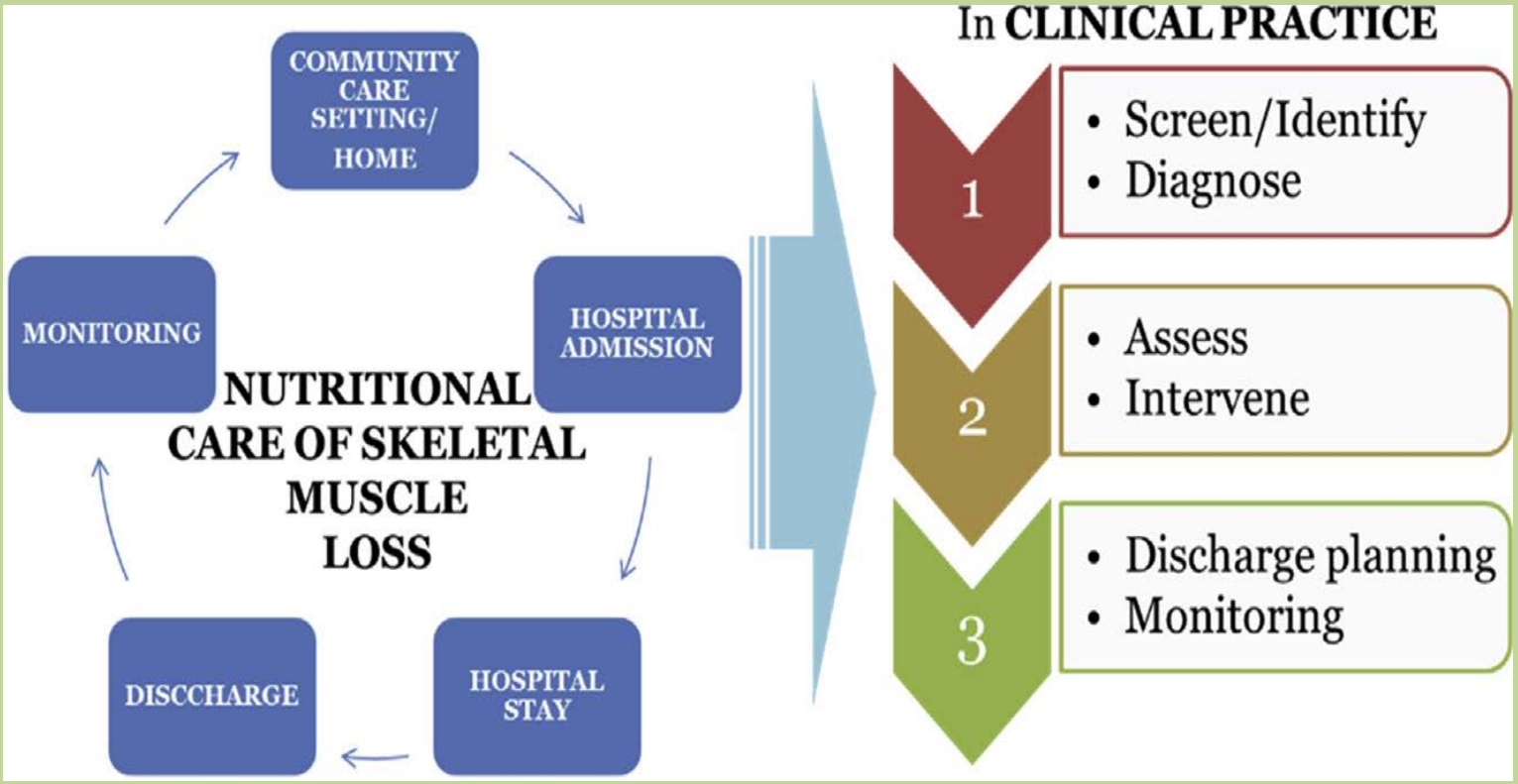


Fig-2. Skeletal muscle loss as a consequence of malnutrition

Kid's Corner

The Role of Two Human Milk Oligosaccharides, 2′-Fucosyllactose and Lacto-N Neotetraose, in Infant Nutrition

According the WHO, infants must be exclusively breastfed during the first six months of life. Human breast milk provides more than half of the child's nutritional needs during the second year of life. The infants who are formula-fed are more prone to infectious diseases, such as gastroenteritis and acute otitis media.

HMOS

The survival advantage of breastfed infants over non-breastfed infants is known since the 1900s. The stool bacterial composition of breastfed infants was reported to be different from that of the formula-fed infants. Additionally, the presence of an unidentified carbohydrate fraction was also reported in human breast milk.

The human milk contains three major HMO types: fucosylated HMOs (35%–50%), sialylated HMOs (12%–14%), and non-fucosylated neutral HMOs (42%–55%). Fucosylated HMOs include 2′-fucosyllactose (2′-FL), while non-Fucosylated neutral HMOs include lacto-N-neotetraose (LNnT).

Health benefit of human milk oligosaccharides

Modulation of intestinal microbiota

HMOs are intrinsic components that affect the gut micro biota by providing an energy source for the beneficial intestinal bacteria. Additionally, HMOs affect the health of the host by serving as a decoy receptor for the opportunistic pathogens in the mucosal surface. Several *in vitro* studies have demonstrated that HMOs promote the growth of certain but not all *Bifidobacterium.*

Anti-adhesive properties

HMOs improves the host defense mechanism by strengthening the gut barrier function. The HMO, 2′-FL inhibits *Campylobacter jejuni*infection and C. *jejuni*-associated mucosal inflammation. An *in vitro* study demonstrated that 2′-FL attenuates *C. jejuni*invasion by 80% and inhibits the release of mucosal pro-inflammatory signals.

Modulators of intestinal cell response

HMOs are able to directly affect the intestinal cell response reducing the cell growth and by inducing differentiation and apoptosis. Intestinal health and barrier function are considered to be the first line of defense in innate of immunity. HMOs have been reported to increase the intestinal cell maturation.

Immune modulators

One of the important properties of HMOs is the immunomodulation. HMOs directly modulate the gene expression of intestinal cells, leading to changes in the expression of cell surface glycans and other cell responses. HMOs modulate lymphocyte cytokine production and enable a more balanced TH1/TH2 response. An increasing number of *in vitro* studies suggest that HMOs exert microbiota-independent effects by directly modulating the immune response and by regulating the immune cell population and cytokine secretion.

Brain development

HMOs and their metabolic products, such as sialic acid have a role in brain development, neuronal transmission and synaptogenesis. HMOs are source of sialic acid, which is an essential nutrient for optimal brain development and cognition.

Safety and clinical outcomes

Oligosaccharides were identified as the bifidogenic factor in human milk in1930s. the most abundant oligosaccharides in the human breast milk were discovered and characterized in 1954. However, the industrial production of some of the HMOs was recently achieved. The molecular structure of industrially produced 2′-FL and LNnT is identical to that of the oligosaccharides present in the human breast milk. Unlike probiotics, HMOs are resistant to pasteurization and freeze-drying.

conclusion

HMOs can serve as soluble decoy receptors that block the attachment of viral, bacterial and protozoan parasitic pathogens to the epithelial cell surface receptors, which may add in preventing infectious diseases. HMOs are also antimicrobials that act as bacteriostatic or bactericidal agents. Additionally,HMOs enhance host epithelial and immune cell response in the neonates. .

Hegar, B., Y. Wibowo, R. W. Basrowi, R. G. Ranuh, S. M. Sudarmo, Z. Munasir and C. Manoppo. 2019. The Role of Two Human Milk Oligosaccharides, 2′-Fucosyllactose and Lacto-N-Neotetraose, in Infant Nutrition. Pediatric Gastroenterology, Hepatology and Nutrition. 22(4): 330-340.

PNDS activities at Glance

PNDS Organized its First International Conference on Non-Communicable Diseases(NCDs) with the theme of 4X4 Four Diseases and Four Modifiable Shared Risk Factors held on 1-3 November, at Avari Lahore ,Pakistan in collaboration with The Nutrition Society UK. Representatives from several national societies participated in this conference including Pakistan Society of Internal Medicine(PSIM), Pakistan Cardiac Society(PCS),Pakistan Endocrine Society(PES),Pakistan Chest Society(PCS) as well as academic institutions e.g Dow University of Health Sciences, University of Health Sciences Lahore, University of Home Economics Lahore, University of Agriculture Faisalabad.

This multi-disciplinary conference aimed to provide a forum for discussion on the emerging trends in health, evidence-based research and strategies to address the growing problems of NCDs in Pakistan and promote health and well-being. This three-day scientific event featured speakers from UK and Pakistan, covering a wide programme of subject areas across the spectrum of chronic diseases and shared modifiable risk factors.

Over 450 participants from different cities of Pakistan attended the conference. These included nutritionists, dietitians, researchers and education experts, and representatives of World Health Organization, non-governmental associations.

President ArifAlvi graced the occasion by his presence as “Chief Guest” during his speech he emphasized the role of nutrition and exercise for health promotion and NCDs prevention in the country.

Dr.Romaina Iqbal addressed plenary sessions at Inaugural focused on

“4x4 Four Non Communicable Diseases and Four Modifiable Shared Risk Factors

Mark Hollingsworth (CEO The Nutrition Society, UK) hailed the conference as the best event he has ever attended around the world as First International Conference organized by any society.

Next two days of the conference were full of interesting topics and oral and poster presentations, panel discussions, workshops, career counseling sessions.

The list of sessions and workshops are as follows

Day 1

Topic: Carbohydrate Counting

Workshop Facilitators:

- Moti Khan (AKU) Registered Dietitian Nutritionist AKU
- Tasnim Z. Ali RDN (USA)

Topic: Obesity Management

Workshop Facilitators:

- Dr Rezzan Khan
- Mozamila Mughal

Topic: Digital/E- Health & NCDs

Workshop Facilitator:

- Dr. Zakiuddin Ahmed Project Director - RAH@H, King Saud University, Riyadh

Topic: Media Workshop/NCD Briefing for Health Journalists

Workshop Facilitator:

Dr. Romaina Iqbal, Dr.AbdulBasit, Dr. Javaid Khan, Dr.Khawar Kazmi, Dr. Abbas Khokhar, Mr.RobertMicheal, Syed Nasir Hussain, Fayza khan

Day 2

What makes a successful international research grant proposal?

Prof. Nicola M. Lowe. Professor of Nutritional Sciences, University of Central Lancashire, UK

Cardiovascular Diseases:

Plenary Session:

Topic: CVDs in Pakistan: Challenges & Issues

Keynote Speaker: Prof.Khawar Kazmi (NICVD)

Topic: Dietary Fats & CVDs

Keynote Speaker: Prof. Dr. Julie Lovegrove (Reading University, UK)

Diabetes Mellitus:

Plenary Session:

Topic: Primary Prevention of Diabetes

Keynote Speaker: Prof. Dr. Abdul Basit (BIDE)

Topic: Diet Quality and Diabetes

Keynote Speaker: Prof. Dr. Rubina Hakeem(CHE)

Topic:Nutritional remission of type 2 diabetes: Magic myths or facts

Keynote Speaker: Dr.Atif Muneer

Panel Discussion:

Topic:Using a multi-sectoral approach to prevent and control NCDs in Pakistan

Panel Experts: Tobacco (Dr. Ziauddin Islam), Food Industry (Dr.Nasir), Health Journalist (ArifNizami), Nutrition Expert (Lt.Cdr Rabia Anwer) Pharmaceutical Syed Nasir (Pfizer),Mian Tanveer (Lahore Chamber of Commerce) & Nadeem Iqbal(CEO, TheNetwork for Consumer Protection in Pakistan).

Workshop:

Topic: Nutrition Care Plan

Workshop Facilitator:Prof Dr. Rubina Hakeem

Day 3

Breakfast Session:

Topic: Career Counseling for Students/Fresh Grads (Khorsheed Mahal)

Panelists: Prof. Ghazala Zaman, Dr.Rubina Hakeem, Mark Hollongworth, Ambreen Altamash (Wellness Manager Nestle) Dr.MehnazNasir,ShabnumRazi

Chronic Lung Disease and Tobacco

Plenary Session:

Topic:Reducing the burden of Chronic Respiratory Diseases in Pakistan

Keynote Speaker: Dr. Javaid Khan (AKUH)

Topic:Occupational Lung Diseases

Keynote Speaker: Prof Talha Mahmood,Sheikh Zaid Hospital Lahore

Topic: Environment and our Lungs

Keynote Speaker: Dr. Irfan Malik Associate Professor PGMI Lahore General Hospital

Topic: Obesity and respiratory Diseases

Keynote Speaker: Prof. Saquib Saeed KE Medical University

Topic: Nutrition Perspective for prevention and control of lung disease

Keynote Speaker: Ms. Shifa Ali (Ittifaq General Hospital)

Public Health

Plenary Session:

Topic: New Developments in Nutrition Epidemiology

Keynote Speaker: Dr. Khalid Iqbal, Associate Professor (KMU)

Topic: Trans-Fats situation analysis of Pakistan

Keynote Speaker: Dr.Saba Amjad (Heart File)

Panel Discussion:

Topic: Role of Nutritionists/Dietitians in Prevention & Control of NCDS-Developing an Action Plan

Panel of Experts: Rezzan Khan, Dr.Mahnaz Nasir , Dr. Salma Badruddin, Dr. Matina Zia, Dr. Julie Lovegrove, Mark Hollingworth ,Dr.Fazia Ghaffar

Nutraceuticals/Functional Foods:

Plenary Session:

Topic: Role of functional foods in the prevention of NCDs

Keynote Speaker: Dr. Anwar Gilani (V.C Haripur University)

Topic: Ameliorating the impact of cardiovascular diseases (cvds) through functional and nutraceutical foods.

Keynote Speaker: Dr.Imran Pasha (UAF)

Cancers

Plenary Session:

Topic: Nutritional and physical activity for cancer prevention

Keynote Speaker: Dr. Abbas Khokhar (Assistant Professor of Oncology Mayo Hosp.)

Topic: Nutrition in cancer prevention: an update

Keynote Speaker: Kehkashan Zehra(SIUT)

Workshop:

Topic: Research Methodologies My Nutrition Research Kit "Linking study design and statistical analysis plan"

Workshop Facilitator: Dr. Khalid Iqbal (KMU)

Closing ceremony started at 4:30 pm in which closing remarks were given byLt.Cdr.RabiaAnwer,Vice president of PNDS.She appreciated Dr.Romaina Iqbal's selfless efforts for NCD Conference without whom this successful event would not have been conducted. Best oral presentation award were given by Dr. SalmaH.Badruddin.

Faiza Kamal won the best oral presentation award in Diabetes session with a cash prize of Rs.5000/ from Dr.Salma H.Badruddin as a token of appreciation for young researchers/presenters.

Zehra Perveen won the best oral presentation award in Functional food session.

NEW Collaborations

A new MOU (Memorandum of understanding) was held between Pakistan Nutrition and Dietetic Society (PNDS) and Pakistan Society of Internal medicine (PSIM) in Karachi for mutual exchange of knowledge as well as professional activities.

New PNDS Chapter-KPK Chapter:

KPK chapter was launched in September. **Dr Fazia Ghaffar** is chapter incharge of KPK for taking care of new chapter. We wish her best of luck for new position.

All PNDS members are invited to submit their articles for upcoming newsletter. Kindly submit articles via email on suggested topic in one of section prescribed below.

Topic: Non-Communicable Diseases (NCDs)
Sections: International and National Findings
Clinical Practice
Kids Corner
Book Review
Deadline: 20th March 2020
Email: israr.beenish@gmail.com