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國際婦幼營養專題研討會

11th

INTERNATIONAL
SYMPOSIUM ON MATERNAL
& INFANT NUTRITION

論文集

SYMPOSIUM
PROCEEDINGS

-53



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Heinz Institute of Nutritional Sciences

11th International Symposium

~~Maternal and Infant Nutrition~~

~~TABLE OF CONTENTS~~

Title Page	page
Organization and Program	E. 3
Faculty	E. 4
Opening Remarks – – Dr. David L. Yeung	E. 10
Dr. Yang Xi Qiang	
Contents of Articles Presented	
1. Brain Development and Intelligene in the Prenatal and Infancy Period	E. 13
Dr. Yao Kainan	
2. Effects of PEM on Mental Development and Behavior	E. 15
Dr. Y. K. Amdekar	
3. Neonatal Brain, Visual Acuity and Dietary Lipids: the Essential Role of DHA	E. 20
Dr. J. B. Cloughley	
4. Carbohydrates and Behavior	E. 39
Dr. G. H. Anderson	
5. Development and Behavior in Iron Deficient Children	E. 60
Dr. Li Tingyu	
6. Iodine Deficiency and Mental Retardation	E. 68
Dr. Chen Zhupei	
7. Study of the Effects of Zinc on Brain Development	E. 74
Dr. Hong Zhaoyi	
8. The Neurological Effects in Baby Rats Born to Copper Deficient Mothers	E. 77
Dr. Zheng Huilian	
9. The Importance of B-Vitamins in Neural Development and Functions	E. 82
Dr. Kenny Koh	
10. Childhood Obesity in China	E. 91
Dr. Ding Zongyi	
11. The Effects of Lead Exposure on Growth and Development of Children: what we found in China	E. 96
Dr. Shen Xiaoming	

12. Effects of Infant Feeding Practices and Weaning on Behavior and Food
 Preferences in Childhood E. 108
 Dr. Li Haiqi
13. Influence of Eating Breakfast on Attention and Learning in the Classroom E. 118
 Dr. G. S. Guldán
14. Food Based Dietary Guidelines for Young Children E. 126
 Dr. Marilyn D. Schorin
15. Students Posters (Editor and Director)
 Dr. Zhang Maoyu

PROCEEDINGS

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Editor: Gu Jingfan
Professor
Institute of Hygiene and Environmental Medicine
1, Da Li Dao, Tianjin, 300050
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Heinz Institute of Nutritional Sciences
China Focal Point, Yantang, Shahe, Guangzhou
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P. R. China 510507

ORGANIZATION

Symposium Chairperson: Dr. David L. Yeung, President
Heinz Institute of Nutritional Sciences
Dr. Yang Xiqiang, President
Chongqing Children's Hospital
Organizing Committee: President Zhou Yade
Professor Gu Jingfan
Professor Li Haiqi
Student Poster Co-ordinator: Professor Zhang Maoyu

Communication Focus:

Department of Nutrition and Food Hygiene
West China University of Medical Sciences
Chengdu, Sichuan 610041
Professor Li Haiqi
Department of Primary Child Care
Chongqing Children's Hospital
Chongqing Medical University
Chongqing P. R. China 400014
Tel: 023 - 63632756 Ext. 3457 or 3403
Fax: 023 - 63501479

Alice Wang
Heinz Institute of Nutritional Sciences
China Focal Point, Yantang, Shahe
Guangzhou, P. R. China 510507
Tel: 020 - 87706218 Ext. 841
Fax: 020 - 87705808

Faculty

David L. Yeung
Director - corporate Nutrition
5700 Young Street, 21st Floor
North York, Ontario, Canada
M2M 4K6
Tel: 416 - 226 - 7504
Fax: 416 - 226 - 5064

G. Harvey Anderson, Ph. D.
Department of Nutritional Sciences
Faculty of Medicine
University of Toronto
Toronto, Ontario Canada M5S 3E2
Tel: (416) 978 - 1832
Fax: (416) 978 - 5882

Dr. Y. K. Amdekar
E . 4

President, Pediatric Society of India
Deep Lakshmi, 34 Road
Off S V Road
Bandra, Mumbai India 400 050

Dr. J. B. Cloughley
Clover Corporation
Saint Wiifred's House
Haltwhisle Northumberland
United Kingdom NE49 ODW
Tel: 44 – 1434 – 322800
Fax: 44 – 1434 – 322500

Dr. Georgia Guldan
Lecturer
Food and Nutritional Sciences Program
The Chinese University of Hongkong
Shatin, New Territories, Hongkong
Tel: (852) 2609 – 6253
Fax: (852) 2603 – 7206

Dr. Kenny Koh
Roche(China) Investment Ltd.
China Vitamin Marketing
100 Long Dong Avenue
Shanghai, P. R. China 201203
Tel: 021 – 5855 – 8888
Fax: 021 – 5855 – 5142

Dr. Marilyn D. Schorin
Group Manager, Nutrition and Scientific Offices
Pepsi- Cola Company
100 Stevens Avenue
Valhalla, New York, U. S. A. 10595
Tel: (914) 742 – 4828
Fax: (914) 742 – 4749

Dr. Yao Kainan

Vice Dean
Second Clinical College
Xi An Medical University
Xi An, P. R. China 710004

Professor Li Haiqi
Director
Department of Primary Child Care,
Chongqing Children's Hospital
Chongqing Medical University
Chongqing P. R. China 400014

Li Tingyu, Associate Professor
Department of Primary Child Care
Chongqing Children's Hospital
Chongqing Medical University
Chongqing P. R. China 400014

Professor Zheng Huilian
Department of Primary Child Care
Chongqing Children's Hospital
Chongqing Medical University
Hongqing P. R. China 400014

Professor Shen Xiaoming
Vice Director
Shanghai Children's Medical Center
Shanghai Second Medical University
Shanghai P. R. China 200092

Professor Hong Zhaoyi
Vice President
Xin Hua Hospital
Shanghai Second Medical University
Shanghai P. R. China 200092

Professor Ding Zongyi
Director
Department of Nutrition,
Beijing Research Institute of Pediatrics
No. 56 Nan Li Shi Road
Beijing, P. R. China 100045

PROGRAM

Tuesday, October 7, 1997

8:15am – 9:00am Registration
9:00am – 10:00am Opening Ceremony

Session 1

Moderator: Gu Jing Fan Liu Dongsheng
10:00am – 10:30am Development of brain and intelligence in perinatal and infantile period
 Dr. Yao Kainan
10:30am – 11:15am Effects of protein-calorie malnutrition on mental development and behaviour
 Dr. Y. K. Amdekar
11:15am – 11:30am Break
11:30am – 12:15am Neonatal brain, visual acuity and dietary lipids
 Dr. J. B. Cloughley
12:30am – 1:30pm Lunch

Session 2

Moderator: Chen Xuecun Zhou Yunzhen
1:30pm – 2:15pm Carbohydrates and behavior
 Dr. G. H. Anderson
2:15pm – 2:45pm Iron deficiency and psychomotor development in early childhood
 Dr. Li Tingyu
2:45pm – 3:15pm Iodine deficiency disorders and their effects on learning
 Dr. Chen Zhupei
3:15pm – 3:30pm Break
3:30pm – 4:00pm Zinc and brain development
 Dr. Hong Zhaoyi
4:00pm – 4:30pm Possible association between copper and mental development
 Dr. Zheng Huilian
4:30pm – 5:00pm Discussion
6:00pm – Symposium Banquet

Wednesday, October 8, 1997

Session 3

Moderator:	Zheng Deyuan Qin Huisheng
9:00am – 9:45am	B-Vitamins in neural development and function Dr. Kenny Koh
9:45am – 10:15am	Overnutrition and behaviour during childhood Dr. Ding Zhongyi
10:15am – 10:30am	Break
10:30am – 11:00am	The effects of lead exposure on growth and development of children: What we found in China Dr. Shen Xiaoming
11:00am – 11:30am	Effects of infant feeding practices and weaning on behaviour and food preferences in childhood Dr. Li Haigi
11:30am – 12:00am	Discussion
12:30am – 13:30am	Lunch

Session 4

Moderator:	Jiang Zaifang Li Tong
1:30pm – 2:15pm	Influence of breakfast eating on attention and learning in the class- room Dr. G. S. Guldán
2:15pm – 3:00pm	Food-base dietary guidelines for young children Dr. Marilyn D. Schorin
3:00pm – 3:15pm	Break
3:15pm – 3:45pm	Discussion
3:15pm – 4:15pm	Summary: Importance of Nutrition in Development and Behaviour Dr. David L. Yeung
4:15pm – 5:00pm	Closing Ceremony
6:00pm	Supper

Opening Remarks

Dr. David L. Yeung

President – Heinz Institute of Nutritional Sciences

President Zhou, Leaders of Chongqing Municipality, President Ge, Professor Gu,
President D. Lam, Professor Yang.

Ladies and gentlemen

It gives me great pleasure to welcome you to the 11th Heinz Institute of Nutritional Sciences Symposium. We are pleased to be in Chongqing as guests of the Chongqing University of Medical Sciences and the Chongqing Children's Hospital.

The theme of this year's symposium is most interesting as it deals with nutrition, mental development and behaviour, a subject we have never dealt with before. We are fortunate to have Chinese and foreign experts to enlighten us on this subject.

I was in London last week to update the president and senior vice presidents of the H. J. Heinz Company about HINS. They were praising the loyalty of the members of the Scientific Advisory Council, and acknowledging the symposium in China to be the longest running Heinz symposia anywhere. We were awarded a grant for another year. I too would like to publicly thank all our council members for their faithful service.

I would like to acknowledge the Chongqing University of Medical Sciences for cosponsoring this year's symposium, President Zhou, Dr. Li Haiqi, Prof. Gu Jingfan and Ms. Wang Lizhi for organizing it, and Prof. Zhang Mao Yu for co-ordinating the poster session. We are grateful for the generous contribution of Clover Corporation and Clover Health Care, Heinz UFE of Guangzhou, Hoffmann-La Roche, China and PepsiCo of the USA. Without their support this symposium might not be possible.

It's regrettable that Madam Wang Funglan, Madam Yu Rumu and Dr. Lin Jaimei cannot be with us here. Their long-standing support has been invaluable.

WELCOMING REMARKS

Madam Yeuk-Mu Yu
The Consultant of Chinese Food Industrial Association
October 3, 1997

Dear President Zhang Xiuli:

I am very happy to learn that 11th International Symposium on Maternal & Infant Nutrition will be held in Chongqing on October 7. I would like to send my congratulations for the success of the symposium in advance.

I know that the theme of this international symposium is "Nutrition, Mental Development and Behavior". It will mainly discuss the relations between the nutrition of newborns and the infants, and their mental development and behavior. Also the effect of protein, energy, fat, vitamins and micronutrients on infant mental development will be discussed in depth in this symposium.

Infantile stage is the basic period during the whole life. The way infants are fed is critically important for them. Infant nutrition is a key issue related to our national policy "Give a Good Birth and Good Care."

Every progress on nutritional sciences is of social significance for now and future. As expected, many new academic achievements in scientific research will be reported in this symposium. Doubtlessly, they are beneficial to our work of "Give a Good Birth and Good Care", a basic work to create 21st century civilization.

Wish all experts and participants good health and happiness!

WELCOMING REMARKS

Professor Zhou Ya De President of Chongqing Medical University

Dear Representatives, Guests and Friends:

The 11th International Symposium on Maternal and Infant Nutrition is opening in Chongqing today, with the funding support of Heinz UFE Ltd. and all participants efforts. On behalf of Chongqing Medical University, I would like to express my congratulations and warmly welcome to all domestic and foreign participants and experts.

Nutrition is the necessity on which all living things rely for existence. Scientific and rationalized nutrition is very important to human health improvement, social development and world's future. It is also a bench mark to value the civilization, life quality and living quality of a nation, a country and society. For this reason, all civilized countries consider nutritional sciences critical to a society & nation's development. With the progress of science & society, many new contents and concepts have occurred in nutrition fields which need to be further studied.

With solely strategic foresight and sagacity, Heinz UFE Ltd. has been active in supporting nutrition research and developing the nutrition food. Under its constant support, International Symposium on Maternal & Infant Nutrition has been successfully hosted in China for 10 times in China. The theme of 11th symposium, "Nutrition, Mental Development and Behavior" is of distinct and far-reaching significance. Nutrition plays a key role in children's physiology, psychology, physics and mental growth, because they are at a growing stage. This is just the key topic of this symposium.

I hope that all representatives and experts take this opportunity to strengthen the academic exchange and cooperation, to make contributions to the human's health and future.

I would like to thank Heinz UFE Ltd., for giving us the opportunity to host this symposium, and offer our service, as well as provide us the opportunity to learn from all of you in such a favorable condition.

I would also like to thank all parties who have offered any kind of sponsorship to this symposium.

I would warmly welcome all of you to visit our university, which is just next to this hotel.

I wish a successful symposium and your nice stay in Chongqing.

Brain Development and Intelligence in the Prenatal and Infancy Period

Yao Kai Nan

(Resume)

Dr. Yao Keinan graduated from the medical faculty of the Xi'an Medical University (XMU) in 1960 and joined the fellowship program "Developmental and Behavioral Pediatrics (DBP)" at the Albert Einstein College of Medicine in New York during 1985 – 1987. He became the chief doctor and professor in 1994 and has been employed in the following: Vice Dean of the Second Clinical College (SCC) in XMU; Vice Director of Faculty of Maternal and Children Health Care (CHC), Pediatrics and DBP Research Group in SCC, etc. He also served as: Vice President of CHC of China, the chief – editor of the Chinese Journal of CHC and President of CHC Association of Shanxi, etc. He has been mainly involved in research and medical activities of DBP, and published about 56 articles.

(Abstract)

A. Basic concept.

1. Intelligence.
2. Crystallized and fluid intelligence.

B. Intelligence neurobiological bases.

1. Neurobiological bases of crystallized intelligence.
2. Neurobiological bases of fluid intelligence.
3. Neurobiological bases of operative abilities.

C. Prenatal and infantile cephalic-neural development.

1. Phase of fertilized ovum.
2. Neural development.
3. Brain development.
4. Cerebral development.
5. Neurological development.
6. Development of brain weight.
7. Cerebrocellular development.
8. Critical period of brain development.

D. Intelligence development.

1. Conception of development.
2. Intelligence development of infants.
3. Intelligence measurement.

E. Effective factors of intelligence development of infants.

1. Heredity and environment.
2. Heredity and environmental factors of intelligence development in infants.
 - 1) Action of hereditary and environmental factors in individual intelligence development.
 - 2) Action of hereditary and environmental factors affecting differences in intelligence development among persons.
 - 3) Model for combined hereditary and environmental action in intelligence development.
3. Intelligence developmental powers during infancy.

Effects of PEM on Mental Development and Behaviour

Dr. Y. K. Amdekar

(Resume)

Name: Amdekar Yeshwant Krishna

Age: 55 years

Qualifications: M. D. (Ped.), D. C. H.

Hon. Prof. of Pediatrics, Grant Medical College, University of Bombay

Hon. Pediatrician, J. J. Group of Hospitals, Bombay

President of Indian Academy of Pediatrics – 1995

Chairman, Research Advisory Committee, IAP – 1996 – 97

Post-graduate Teacher and Guider for M. D. students.

Participated in various national and international meetings

Awarded several orations and guest lectures

(Abstract)

Protein Energy Malnutrition in children is a global problem. It assumes much serious proportion in developing countries where more than 50 % of children under 5 years of age suffer from malnutrition. However the scenario is fast changing in most of the countries. There has been a distinct reduction in the prevalence of severe grades of PEM and mortality, though optimum nutrition in majority of children is not yet attained and remains a dream in most of the countries.

Malnutrition starts in utero in 30 % of babies born in India and is mainly due to poor maternal nutrition. Infants are at risk of PEM because of delayed and improper weaning while older child becomes malnourished due to recurrent infections and inadequate food availability. Low female literacy, inappropriate feeding practices, prevalent wrong beliefs and customs and socioeconomic deprivation are some of other contributing factors perpetuating malnutrition.

Possible impact of PEM on brain function has always intrigued scientists. Animal models have clearly depicted neuropathological changes in PEM. Main abnormalities observed include increased water content of brain, reduced myelination and lipid content, impaired replication and growth and decreased brain DNA content. These changes are at its worst if insult

occurred at the time of rapid brain growth. Clinical observations in children support such possibilities in humans. Neurologic abnormalities observed clinically include signs of encephalopathy, myelopathy, neuropathy and myopathy. Central pontine myelinolysis has also been reported.

Early neurological manifestations are in the form of mental changes. Signs of upper and lower motor neuron lesions are often found indicating spinal cord involvement. These changes are transitory and disappear on nutritional rehabilitation. During recovery from PEM at times, these may be a temporary deterioration, referred to as recovery syndrome. Child becomes drowsy, develops asterixis and may lapse into coma within few days of therapy. Subsequently, tremors and rigidity may develop and last for few weeks. Such changes are considered to result from transient metabolic abnormalities. Infantile tremor syndrome is a separate entity and is postulated to be due to Vit. B12 deficiency.

All the changes observed in acute phase are transient. However late effects on mental development and behaviour may not be reversible. It has been found that children suffering from PEM especially at the vulnerable time of rapid brain growth have delayed personal, social, adaptive and language development. Long term follow-up studies have demonstrated impaired cognitive functions in the form of delayed learning and problems with reading and writing. They also show poor attention span and reaction time. They exhibit behaviour changes such as restlessness, hyperactivity, and easy distractibility. They have poor interpersonal and peer relationship and are often emotionally unstable.

However there is a lack of positive evidence to establish cause and effect relationship between PEM and observed mental and behaviour changes. Prospective long-term studies are difficult. Duration, severity and onset of PEM remain often ill defined. There are always other coexistent deficiencies. Socioeconomic and cultural factors effect the outcome. Besides mental and behavioural assessment in children by standard tests (Stanford Binet, Wechler, Bayle and Criffith) may not be easy to implement in different ethnic groups and need suitable modification after validation.

Early intervention is the key to successful management. Besides nutritional rehabilitation, adequate mental stimulation, social interactions and behavioural modification are necessary. It is likely that the changes are not reversible and may leave behind permanent sequel inspite of early intervention. Hence prevention is most important. Nutrition of female child through the growing years and antenatal supplementation of extra nutrition and iron-folate along with obstetric care during pregnancy is vital for reducing the incidence of foetal malnutrition Exclusive breast feeding for first 4 – 6 months and timely introduction of weaning foods prevents PEM in early childhood. Empowerment of women is important to get the best for them. Impact of all these interventions will not be seen unless health education is properly delivered to the community.