Research Article

The Effect of Maternal Mental Health on Child Nutritional Status in El-Minia City

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Abstract
Background: Under nutrition is one of the most serious and most neglected problems of children in developing countries. Basic causes of under nutrition are multiple. It was suggested that poor physical or mental health in mothers may have adverse consequences on their children's nutritional status. **Subjects and methods:** A cross sectional study was conducted on children in the age group (٦-٢٤ months) attending the four health offices of El-Minia city during the period between fifth of November ٢٠١٢ to sixth of April ٢٠١٣. Data were collected by a questionnaire which included socio demographic, feeding practices, child related data and screening for maternal common mental disorders (CMD) by WHO questionnaire. Child weight and length were measured. **Results:** ٣٥٠ children were studied, ٢٪ of children were moderately underweight, ١٢.٩٪ moderately stunted, ٧.٤٪ were severely stunted. Under nutrition was not significantly higher in children whose mothers probably have CMD (٦٥.٤٪). Under nutrition was significantly higher among males (٥٧.٧٪), among children who refused food during illness (٨٣.٣٪), children whose mothers did nothing when child refused food (٤٢.٣٪) and children who started complementary feeding at age ≤ ٦ months (٧٨.٢٪). Child weight and length were significantly associated positively with child's age of cessation of breast feeding. **Conclusion and recommendations:** maternal CMD may adversely affect child nutritional status by undermining maternal feeding practices. It is important to intervene early by nutrition education message to mothers about healthy feeding practices.
Key words: Common mental disorders, children, nutrition, El-Minia

Introduction
Undernutrition is a major problem in Egypt and affects about one-third of children under-five as Egypt Demographic and Health Survey ٢٠٠٨ (EDHS) found that ٢٩٪ of children under the age of five were stunted, ٦٪ were underweight and ٧٪ were wasted. Results from the EDHS ٢٠٠٨ indicate that chronic malnutrition rates increased in Egypt over the last decade as the prevalence of stunting increased from ٢٣٪ in ٢٠٠٠ to ٢٩٪ in the ٢٠٠٨ (EDHS, ٢٠٠٨)

Evidence from South Asia had shown an association between maternal depression and impaired child growth. In Goa, malnourished children had a risk ٢.٣ times higher than non-malnourished children of having a depressed mother and Rahman et al., estimated that reduction in the prevalence of maternal depression could lead to a reduction in child growth retardation of up to ٣٠٪. But, yet maternal mental health is largely neglected in child health programs in developing countries (Trudy et al., ٢٠٠٥).

Subjects and methods
Study design:
This study was a cross sectional study that was conducted in the four health offices of El- Minia city during the period between fifth of November ٢٠١٢ to sixth of April ٢٠١٣.

Study population:
١. Inclusion criteria: All children in the age group between six and twenty four

months who were with their mothers who visited four health offices of El-Minia city during the period between fifth of November ٢٠١٢ to sixth of April ٢٠١٣.
٢. Exclusion criteria: Infants beyond age range, infants and children who were not with their mothers, children not from El-Minia city.

World health organization (WHO) twenty items questionnaire:
WHO twenty items questionnaire scored as if the answer of the question is no; the score is zero and if the answer of the question is yes; the score is one. Item scores are summed to obtain a total score. A score above cut-off point indicates the existence of a probable mental disorder and if score is below cut off point indicates non probable mental disorder (Girmay et al., ٢٠١٠). A cut-off point of ≥٧ had been used in this study.

Anthropometric measurements to asses child nutritional status include: Weight

and length were measured using standardized methods.

Ethical considerations:
In each health office of the four health offices in El-Minia city, before starting in collection of subjects of the study, a consent was obtained from mothers to participate in the study after giving an idea about study and its objectives.

Statistical analysis:
Data entry and analysis were all done by using software SPSS (Statistical Package for the Social Sciences) version ١٦. Quantitative data were presented by mean and standard deviation, while qualitative data were presented by frequency distribution. Correlation, student t test, Chi Square test and regression were done. The probability of less than ٠.٠٥ was used as a cut off point for all significant tests. Graphics were done using Excel ٢٠٠٧.

Results
Table (١): Characteristics of the studied children attending El-Minia city health offices from November ٢٠١٢ to April ٢٠١٣

Variables		Frequency (No)	Percent (%)
Child Sex	**Male**	١٥٣	٤٣.٧
	Female	١٩٧	٥٦.٣
Total		٣٥٠	١٠٠
Residence	**Urban**	٢٩٣	٨٣.٧
	Rural	٥٧	١٦.٣
Total		٣٥٠	١٠٠
Birth weight (BW)	**Low BW < ٢٥٠٠ gm**	٣٤	٩.٧
	Normal BW ٢٥٠٠-٤٠٠٠ gm	٣٠٢	٨٦.٣
	High BW > ٤٠٠٠ gm	١٤	٤
Total		٣٥٠	١٠٠
Variables		**Range**	**Mean ± SD**
Child age in months		٦ - ٢٤	١٢ ± ٤.٦
Child birth order		١ - ٨	٢.٢ ± ١.١
Children weight (Kg)		٦ – ١٥	٩.٣ ± ١.٦
Children length (Cm)		٥٦ – ٨٨	٧١.٧ ± ٦.١

Complete data were available for ٣٥٠ children included in the study which entered into statistical analysis and table (١) showed that studied children age ranged between ٦ and ٢٤ months with mean of ١٢ ± ٤.٦, they were between first and eight birth order with mean of ٢.٢ ± ١.١, ٥٦.٣٪ were females, ٤٣.٧٪ were males, those with history of low birth weight were ٩.٧٪, ٨٣.٧٪ were living in urban areas, ١٦.٣٪ were living in rural areas and their weight ranged between ٦ and ١٥ kilograms with mean of ٩.٣ ± ١.٦ and their length ranged between ٥٦ and ٨٨ centimeters with mean of ٧١.٧ ± ٦.١ centimeters.
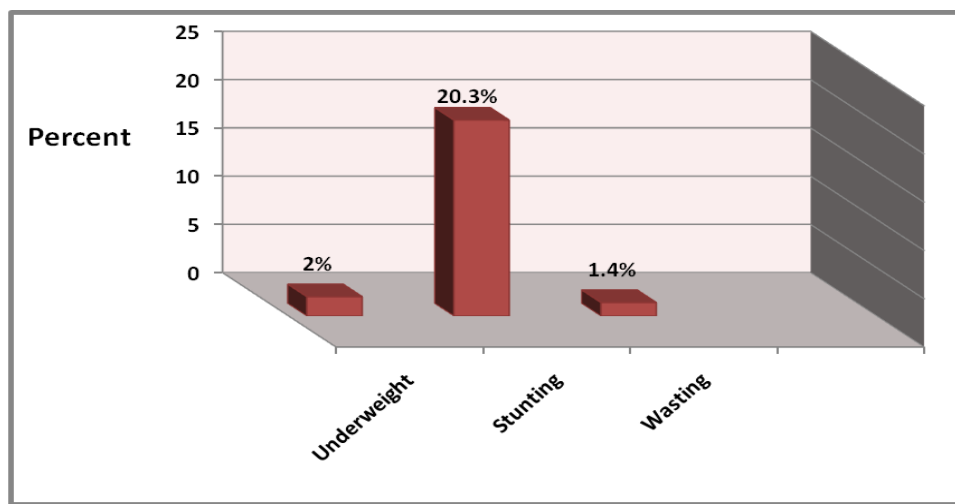

Figure (١): Under nutrition among studied children:
Figure (١) showed that ٢٠.٣٪ of studied children were stunted, ٢٪ were underweight and ١.٤٪ was wasted.

Table (٢): Frequency distribution of common mental disorders among participated mothers attending El- Minia city health offices from November ٢٠١٢ to April ٢٠١٣:

Maternal common mental disorders (CMD)	Frequency (No)	Percent (%)
Probable had CMD	٢٥٠	٧١.٤
Probable did not have CMD	١٠٠	٢٨.٦
Total	٣٥٠	١٠٠

Table (٢) showed that ٢٥٠ (٧١.٤٪) of mothers of studied children probable had common mental disorders; while ١٠٠ (٢٨.٦٪) of mothers probable did not have common mental disorders.

Table (٣): Frequency of undernutrition of studied children attending El- Minia city health offices from November ٢٠١٢ to April ٢٠١٣ in relation to different studied variables:

Variables		Nutritional status				X^2	P value
		Undernourished children(n=٧٨)		Normal children (n= ٢٧٢)			
		No	%	No	%		
Child sex	**Male**	٤٥	٥٧.٧	١٠٨	٣٩.٧	٧.٩	٠.٠٠١**
	Female	٣٣	٤٢.٣	١٦٤	٦٠.٣		
Starting complementary feeding	**≤ ٦ months**	٦١	٧٨.٢	٢٤١	٨٨.٩	٥.٩	٠.٠١*
	> ٦ months	١٧	٢١.٨	٣٠	١١.١		
Feeding during child illness	**Same food**	٦	٧.٧	١٠	٣.٧	١٠.٩	٠.٠٠١**
	Change food	٧	٩	٦٩	٢٥.٥		
	Child refused food	٦٥	٨٣.٣	١٩٢	٧٠.٨		
Maternal mental health	**with CMD**	٥١	٦٥.٤	١٩٩	٧٣.٢	١.٧	٠.١
	without CMD	٢٧	٣٤.٦	٧٣	٢٦.٨		

Table (٣) showed that there was significant higher undernutrition frequency among male studied children (٥٧.٧٪), those who had started to receive complementary feeding at age of ≤ ٦ months (٧٨.٢٪) and in those who refused food during their illness (٨٣.٢٪) But there was non significant higher undernutrition frequency among studied children whose mothers probable had CMD (٦٥.٤٪).

Table (٤): Low BMI for age frequency of studied children attending El- Minia city health offices from November ٢٠١٢ to April ٢٠١٣ in relation to maternal mental health status:

Maternal mental health	Child BMI				X^2	P
	Low BMI for age (n= ٨)		Normal BMI for age (n= ٣٤٢)			
	No	%	No	%		
Mothers probable with CMD*	٣	٣٧.٥	٢٤٧	٧٢.٢	٤.٦	٠.٠٣*
Mothers Probable without CMD**	٥	٦٢.٥	٩٥	٢٧.٨		

This table showed that the frequency of low BMI for age were higher in studied children whose mothers probable had not CMD (٦٢.٥٪) than those whose mothers probable had CMD (٣٧.٥٪) and this difference was statistically significant (٠.٠٣).

Discussion

It was found that under nutrition frequency among studied children was ٢٢.٣٪ and this frequency was higher than what was reported by Mosalem and Aboul-Fotoh (٢٠٠٨) who studied the prevelance of

malnutrition among rural preschool children; anthropometric assessment study, El-Minia, Egypt that under nutrition prevelance was ٢١٪. This difference may be due to high sample size of children in this study in comparison to Mosalem and Aboul-Fotoh (٢٠٠٨) study and different children age group included in this study which ranged between ٦ and ٢٤ months and this age group more susceptible to under nutrition. Although, children under nutrition frequency in this study was lower than what was stated by Egypt demographic and health survey (EDHS, ٢٠٠٨) at which ٢٩٪ of the children under-five years of age suffered from under nutrition but this indicated deterioration of children nutritional status in El-Mina city as there was proportional difference in under nutrition frequency in relation to children number included in this study and EDHS.

This study found that under nutrition frequency was higher among studied children whose mothers probably had CMD (٦٥.٤٪) than those whose mothers found to be not probably had CMD (٣٤.٦٪) but this difference was statistically non significant (P =٠.١). it was also found that there was significant higher frequency of studied children with low body mass index for age in those whose mothers probable did not have common mental disorders (p =٠.٠٣).

These findings were in consistent with what was found by Trudy et al., (٢٠٠٥) who studied maternal mental health and child nutritional status in four developing countries only in Peru and Ethiopia using the same WHO ٢٠ items questionnaire that there was no association between maternal common mental disorders and poor child nutritional status, Veit et al., (٢٠١٠) who studied maternal postnatal depression and child growth in an European cohort study, but in contrast to what was found by Trudy et al., (٢٠٠٥) who studied maternal mental health and child nutritional status in four developing countries but only in India and Vietnam using the same WHO ٢٠ items questionnaire that there was an association between poor maternal mental health and poor child nutritional status as it was found that mothers with CMD have significantly

higher odds of having a stunted and underweight child than those without CMD

Conclusion
There was a high frequency of child under nutrition and a high frequency of mothers who probably have common mental disorders in El- Minia city. Maternal common mental disorders found to be not directly affect child nutritional status but it was found that maternal CMD can affect child nutritional status indirectly by undermining maternal feeding practices..

Recommendation
Breastfeeding should continue with comple-mentary feeding up to ٢ years of age, and it should be on demand, as often as the child wants as recommended by WHO, ٢٠٠٩.

References
١- Abdullah S. Al-Subaie, Kamal Mohammed and Tajuddin Al-Malik (١٩٩٨): The Arabic Self-Reporting Questionnaire (Srq) As A Psychiatric Screening Instrument In Medical Patients, Annals of Saudi Medicine, Vol ١٨, No ٤

٢- Annette Pruss-Ustun, Diarmid Campbell-Lendrum, Carlos Corvalán and Alistair Woodward (٢٠٠٥): Malnutrition: Quantifying the health impact at national and local levels, Geneva, World Health Organization (WHO, Environmental Burden of Disease Series, No. ١٢)

٣- Anoop S, Saravanan B, Joseph A, Cherian A and Jacob K S (٢٠٠٤): Maternal depression and low maternal intelligence as risk factors for malnutrition in children: a community based case-control study from South India, Arch Dis Child; ٨٩:٣٢٥–٣٢٩.

٤- Anupama Hazarika (٢٠١٠): The Effect of Maternal Education and Maternal Mental Health on Child's Growth, young lives student paper

٥- Atif Rahman, Vikram Patel, Joanna Maselko and Betty Kirkwood (٢٠٠٨): The neglected 'm' in MCH program-mmes – why mental health of mothers is important for child nutrition, Tropical Medicine and International Health;١٢; ٥٧٩–٥٨٣

٦- Beatrice Olack, Heather Burke, Leonard Cosmas, Sapna Bamrah, Kathleen Dooling, Daniel R. Feikin, Leisel E. Talley and Robert F. Breiman (٢٠١١): Nutritional Status of Under-five Children Living in an Informal Urban Settlement in Nairobi, Kenya, J health popul nutr; ٢٩(٤):٣٥٧-٣٦٣

٧- Egypt Demographic and Health Survey ٢٠٠٨: Nutritional Status of the Egyptian Population in Egypt.

٨- El-Sayed Nawal, Ashry Gad Mohamed, Nofal Leila, Ahmed Mahfouz and Hamdy Abou Zeid (٢٠٠١): Malnutrition among Pre-school Children in Alexandria, Egypt, J health popul nutr; ١٩(٤):٢٧٥-٢٨٠

٩- Girmay Medhin, Charlotte Hanlon, Michael Dewey, Atalay Alem, Fikru Tesfaye, Zufan Lakew, Bogale Worku, Mesfin Aray, Abdulreshid Abdulahi, Mark Tomlinson, Marcus Hughes, Vikram Patel and Martin Prince (٢٠١٠): The effect of maternal common mental disorders on infant under nutrition in Butajira, Ethiopia, BMC Psychiatry, ١٠:٣٢

١٠- Karen A. Ertel, Karestan C. Koenen, Janet W. Rich-Edwards and Matthew W. Gillman (٢٠١٠): Maternal Depressive Symptoms Not Associated with Reduced Height in Young Children in a US Prospective Cohort Study, PLoS ONE | www.plosone.org| Volume ٥ | Issue ١٠ | e١٣٦٥٦

١١- Khaled Khatab (٢٠٠٧): Analysis of Childhood Diseases and Malnutrition in Developing Countries of Africa MÄunchen

١٢- Mosalem Fadia A. and Aboul-Fotoh Laila E. (٢٠٠٨): prevelance of malnutrition among rural preschool children; anthropometric assessment study, EL-Minia, Egypt, El-Minia Med., Bul., Vol. ١٩, No. ٢, June

١٣- Nguyen Ngoc Hien and Nguyen Ngoc Hoa (٢٠٠٩): Nutritional Status and determinants of malnutrition in children under three years of age in Nghean, Vietnam, Pakistan Journal of Nutrition ٨ (٧): ٩٥٨-٩٦٤

١٤- Pamela J. Surkan, Ichiro Kawachi, Louise M. Ryan, Lisa F. Berkman, Lina M. Carvalho Vieira and Karen E. Peterson (٢٠٠٨): Maternal Depressive Symptoms, Parenting Self-Efficacy, and Child Growth, American Journal of Public Health | Vol ٩٨, No. ١