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MENTAL HEALTH IN MOTHERS OF MALNOURISHED CHILDREN *

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INTRODUCTION

The Pan American Health Organization reviewed a number of surveys conducted in Caribbean and Latin American countries and concluded that the prevalence of mainutrition ranged from 39.7% to 82.2% (PAHO - 1976) (1). The prevalence of moderate and severe forms of malnutrition was between 10.8% and 53.0%.

Many studies have already been carried out to assess the extent of malnutrition in rural and urban areas in different regions of Brazil. The prevalence of malnutrition in urban areas in the State of Sao Paulo (Southeast Brazil) has been estimated at around 30%, and in the Northeast, even in urban areas, the prevalence was found to be over 60% (Monteiro & Benicio 1926) (2). In the city of Sao Paulo, the prevalence of moderate and severe cases was found to be 3.6% by Silva & Iunes (3).

There are several demographic, socioeconomic and cultural factors associated with malnourishment among which the following should be mentioned: family income (4,5,6,7,8), food prices, family size, eating habits and parent education (9).

There have been a few studies that suggest an association between mothers' mental health and malnutrition in their children: Wurfgaft et al. (1984) (10) showed that a mother's negative emotional past life was a risk factor for malnutrition in her children. In a study conducted in the United States (1977) (11) 11 mothers of malnourished children were compared with 11 mothers of eutrophic siblings to study psychosocial maternal factors related to malnourished infants. The investigators applied an informal, unstructured interview to assess their relationship with their offspring, spouses and with family and friends. The study showed that mothers of malnourished children had more emotional problems and were in a lower income group than controls.

The aim of the present study is to investigate the mental health status of mothers of malnourished children from low income families and see how their mental health is related to other relevant variables such as income, years of schooling, age and children.

METHODS

A case-control design was selected to study the mental health status of mothers of malnourished children. The study was conducted in a primary medical care setting in the city of Embu, a low-income housing region in the outskirts of Metropolitan Sao Paulo, which has been a recipient of internal migration flow.

Mothers of children of up to 2 years old with moderate and severe cases of malnutrition according to Gomez criteria (see Instruments section) were consecutively selected in two Primary Health Care Units during a six month period. Mild cases of malnutrition were hot included in the study in that they can go back and forth to normality and could obscure the interpretation of findings. In any case it is more important to study moderate and severe cases in that they present a higher risk of health complications and even death.

All the mothers of eutrophic children up to 2 years old attended the same Primary health Care Centers during the same time period as those with malnourished children to ensure that cases and controls had a similar socio-economic-cultural background. We made sure that control mothers had had no malnourished child in the past. For identifying mothers with a probable psychiatric disturbance the "Adult Psychiatric Morbidity Questionnaire (QMPA -

TABLE I
ODDS RATIO FOR MOTHE
FOR MALNUTRITION IN

mother's mental status	=
mother's schooling	=
age of the mother	=
children	=
	=
per cap income	=

* p < .05

TABLE II
ODDS RATIO FOR MENTA
LOGISTIC REGRESSION

Model	ch
mental health	
m.h., age	
m.h., children	
m.h., income	
m.h., schooling	

* p < .05

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TABLE I
ODDS RATIO FOR MOTHER'S MENTAL STATUS AND OTHER POSSIBLE SELECTED RISK FACTORS FOR MALNUTRITION IN HER CHILDREN

		Cases N= 79		Controls N= 60		Odds Ratio	95% C.I.
		N	%	N	%		
mother's mental status	= >7	51	64.6	27	45.0	2.23	(1.06, 4.70)*
	<7	28	35.4	33	55.0		
mother's schooling	= <4	43	54.4	37	61.7	.74	(.35, 1.55)
	>4	38	45.6	23	38.3		
age of the mother	= <30	48	60.8	43	71.7	.61	(.28, 1.34)
	>30	31	39.2	17	28.3		
children	= <3	55	69.6	46	76.7	.70	(.30, 1.60)
	= >3	24	30.4	14	23.3		
per cap income	= <.2	26	32.9	15	25.0	1.47	(.65, 3.34)
	>.2	53	67.1	45	75.0		

* p < .05

TABLE II
ODDS RATIO FOR MENTAL HEALTH OF MOTHERS ADJUSTED FOR SELECTED RISK FACTORS BY LOGISTIC REGRESSION

Model	statistics to enter new terms		Adjusted Odds Ratio
	chi square	p value	
mental health	5.31	.0212*	2.23
m.h., age	1.50	.2200	2.19
m.h., children	.55	.4569	2.18
m.h., income	.79	.3732	2.19
m.h., schooling	.78	.3785	2.24

* p < .05

TABLE III
CHILDREN'S MALNUTRITION ODDS RATIO FOR PROBABLE MENTAL DISORDER IN MOTHERS
STRATIFIED BY SELECTED VARIABLES

		CASES	CONTROLS	ODDS RATIO	95% C.I.
	AGE				
SCORE					
<7	>30	7	12	3.91	(1.17, 15.07)*
	=<30	21	21		
>=7	>30	24	5	0.58	(0.16, 2.01)
	=30	27	22		
	INCOME				
SCORE					
<7	>0.2	14	22	0.50	(0.16, 2,02)
	=<0.2	14	11		
>=7	>0.2	23	16	0.56	(0.20, 1,61)
	=<0.2	28	11		
	SCHOOLING				
SCORE					
<7	=<4	19	16	0.98	(0.31, 3,08)
	>4	14	12		
:=7	=<4	18	27	0.56	(0.19, 1,64)
	>4	9	24		
	CHILDREN				
SCORE					
<7	=<3	9	5	0.58	(0.14, 2.30)
	<3	24	23		
>=7	=<3	5	19	2.61	(0.76, 9.44)
	>3	22	32		

* $p < 0.05$

TABLE IV
ODDS RATIO OF INTERACTION BETWEEN MENTAL HEALTH OF THE MOTHERS ADJUSTED FOR
EACH RISK FACTOR BY LOGISTIC REGRESSION

Odds	statistics to enter interaction		Adjusted Odds Ratio
	chi square	p value	
m.h.,age, & interaction	5.96	.0146*	1.22
m.h.,children & interaction	3.28	.0701	1.51
m.h..income & interaction	1.14	.2846	2.19
m.h.,schooling & interaction	.61	.4359	.24

* $p < .05$

RDER IN MOTHERS

Santana 1982) (12) was used. In addition, all subjects answered a questionnare including items about family income, number of children, and schooling of adult members.

INSTRUMENTS
The Adult Psychiatric Morbidity Questionnaire (QMPA)

The Adult Psychiatric Morbidity Questionnare (QMPA) is a Brazilian screening instrument designed by Santana (1982) (12) to identify psychiatric morbidity in a community. The QMPA is made up of 44 yes/no questions concerning all adult household members, and is usually answered by the mother. The validity and reliability of the QMPA can be found in Santana (1982) (12), Almeida (1984) (13) and Almeida et al. (1988) (14). At the cut-off point 7 concitivity was 83% and specificity 71%. The inter rater reliability check showed a kappa of 0.88.

Growth curve. Nutritional status of children was evaluated by comparing height and weight measurements with a growth curve. The criterion used for malnutrition was that proposed by Gomez (15). This classification considers 3 levels of malnutrition according to the child's deficit relative to the height/weight mean: first deficit from 10% to 24% (mild); second deficit from 25% to 39% (moderate); and third deficit 40% or higher (severe). The standard for normal height and weight was taken from the "Santo Andre Table Class IV" (16,17), a standardized table for Brazilian children, extensively used by Brazilian clinicians and researchers.

RESULTS

Table I shows the distribution of mothers of malnourished and eutrophic children according to mental health status, schooling, age, number of children in the family, and per capita income (see Appendix 1 for further details concerning the stratification criteria. Seventy nine cases and sixty controls fulfilled the criteria for inclusion in the study. The mean and standard deviations of cases and controls were respectively as follows: age (mean= 28.15, SD=6.85; mean=27.05, SD=6.64), per capita income (mean=0.48, SD=043; mean=0.52, SD=0.35), schooling (3.75, SD=2.87; 4.08, SD=2.86), number of children (3.27, SD=2.07; 2.88, SD=1.89).

There is no statistical difference measured by odds ratio in cases and controls but to the mental health status of the mother. Probable cases in the screening questionnaire showed a higher probability of having malnourished children (odds ratio = 2.23, 95% C.I. 1.06 – 4.70).

In Table II the association between being the mother of a malnourished child and having a probable psychiatric dusturbance was controlled by age, number of children, per capita income and schooling. The analysis was carried out using logisitic regression, where the dependent variable was the nutritional status of the child, and the independent variables were the mental health of the mother, her age, schooling, number of children and per capita income in the family. As can be seen in this table, none of the variables significantly decreased the unadjusted association between a mother's mental health status and her child's malnutrition, i.e. the higher the probability of having a malnourished child, the higher the probability of the mother being a probable QMPA case and this finding remained statistically significant when controlled singly by age, number of children, family income, and mother's schooling.

The mental health status of mothers (cases and controls) was stratified by family income, schooling, age, and number of children as shown in Table III. None of the results were statistically significant except age: mothers over 30 years old (odds ratio = 3.91 – 95% C.I. 1.17 - 15.07) were more likely to present a high score in the QMPA and have a malnourished child (ANOVA, F = 2.51, d.f.3, 135, p = 0.06).

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2.19

.24

The next step was to investigate the interaction between mental health and each of the independent variables by means of a stepwise logistic regression analysis. The results are shown in Table IV. There was a statistically significant finding in the interaction between age and mental health of the mother (odds ratio = 1.23, p < 0.03).

DISCUSSION AND CONCLUSIONS

It should be mentioned that the frequency of psychiatric disorders found in both cases and controls was very high: 45% of mothers of eutrophic children and 64.6% of mothers with malnourished children showed up as probable cases in the QMPA.

High frequency of minor psychiatric morbidity at the Primary Health Care level has previously been observed in Brazil and other developing countries.

Busnello et al. (1983) (18) reported a frequency of 48% of psychiatric morbidity in their study of 242 consecutive attenders in a primary Care Unit in Porto Alegre, Brazil; Mari (1987) (19) conducted a six month study in three Primary Care Units in the city of Sao Paulo, Brazil, to assess the extent and nature of psychiatric morbidity in that setting. The frequency of minor psychiatric disorders was found to be very high in the three units (56%, 50% and 47%), largely due to minor affective states (anxiety and depression). When the joint effects of sociodemographic variables were investigated the author found that women were more likely to present minor psychiatric disturbances and the lower the family income the higher the risk of a minor psychiatric condition.

Alam (1978: (20) gave a psychiatric morbidity frequency of 29% in his general practice survey in Dacca, Bangladesh. Moreover, Sen et al. (1986: (21) reported a 46% frequency for minor psychiatric morbidity in a study conducted in a Calcutta Primary Care setting.

To study the relationship between the mental health status of the mother and malnutrition of her child the following variables were regarded as potentially confounding: mother's age, schooling, number of children and per capita income.

The potentially confounding per capita income factor was minimized by the fact that the target population was made up of mothers attending two Primary Health Care Centers located in a poor housing area. These women came from low income families but they fulfilled minimal socioeconomical conditions that would enable them to provide minimal sustenance for their children. At the same time the upper limit of this population's average income was set below 1 minimum salary per capita per month (app. 50 American Dollars) since moderate and severe malnutrition are mostly detected in the urban Brazilian milieu in populations with an income below this level (Sigulem - 1980) (22). Above this income mark, other nutritional problems appear that lack the severity that characterizes malnutrition, as was stated in a paper by Zuckerman and Beardslee (23): "Low maternal self-esteem and depressive mood are important factors associated with growth failure (both height and weight) in a community-based study of preschool children" (D.Skuse, L.Doudney, E.Hoptinstall et al. unpublished results).

Mothers' mental health was the only independent variable statistically associated with child malnutrition. Per capita income, age, mother's schooling and number of children were not found to be significantly associated with child malnutrition when considered independently. Family per capita income was not statistically significant probably because all subjects came from a low income area, had similar period of schooling and a similar number of children (24) (Miettinen - 1974).

The mental health odds ratio of the mother adjusted for number of children, age, schooling and per capita income by Logistic Regression showed no significant decrease in the association between the mother's mental health status and malnutrition in her child. Thus, these variables can be excluded as confounders in the association between mothers' mental health status and their children's malnutrition in the target population.

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Age of the mother was effect-modifier of the association between mental
health status of the mother and malnutrition of the child since stratification
increased the strength of the association in the disturbed older mothers.
Therefore, there is synergism between older age and disturbed mental health of
the mother, since joint exposure to both resulted in a risk of having a
malnourished child exceeding that expected from the sum of risks from the two
separate factors as shown in Table IV (25) (Schlesselman - 1982).

In conclusion, our findings do suggest that mental health of a mother plays
an important role in the nutritional status of her children. However, these
findings were based on a case control design and this question would benefit
from further research using a longitudinal prospective methology.

APPENDIX

The independent variables were grouped as follows: per capita income (poor
income <= 0.2 minimum wage per month and "high" income   0.2 minimum wage per
month, 0.2 being equivalent to 9.60 American dollars) the 0.2 minimum wage per
month was chosen as a cut-off point because it was assumed that an income
equal or lower 0.2 would identify among the low income families those with
qualitative differeces in living characteristics, like housing conditions,
kind of job, etc. Number of children (low <=3 and high > 3) the cut-off point
3 was chosen because it was considered that low income families with more than
3 children will have much more difficulty in handling financial constraints,
time spent with each child, etc. than those families with less than 3
children. Years of schooling (low <= 4 years and high > 4 years - the cut-off
point of 4 years of schooling was chosen because in Brazil elementary school
is a 4-year course. Mother's age (<=30 years and >30 years) - the cut-off
point for age of the mother was set at 30 years because this population
identifies this moment in life as an important turning point for women, such
as being considered too old to find a husband. Mental health status of the
mother (7 without mental problems and =7 with probable mental disturbances).

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