OUTLINE

MENTAL HEALTH IN MOTHERS OF MALNOURISHED CHILDREN (1)

by

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SUMMARY

This study's purpose is to investigate the effect of low
income mothers' mental health status on the nutritional condition
of their children (0 to 2 years of age). Seventy-nine mothers of
moderately and severely malnourished children were compared with
sixty mothers of eutrophic children in a case control design.
Nutritional status of children was evaluated by comparing height
and weight measurements with a growth curve, and the criterion
for identifying malnutrition was that proposed by Gomez (1946).
The mental health status of the mothers was assessed by the Adult
Psychiatric Screening Questionnaire (QMPA), a Brazilian screening
instrument designed by Santana (1982) to identify psychiatric
morbidity in a community setting. Mothers scoring 7 or above
were regarded as probable cases.

Mothers of malnourished children showed a higher probability
of being probable QMPA cases in the screening questionnaire (odds
ratio = 2.23,95% C.I. 1.06 - 4.70). This finding remained
statistically significant when controlling singly by income,
mothers' age, mothers' years of schooling age and number of
children. There was however an interaction between mental health
and mother's age. Those who showed up as QMPA cases and were
over 30 years old presented the highest risk of having a
malnourished child (odds ratio = 3.91, 95% C.I 1.17 - 15.07)

Introduction

The Pan American Health Organization reviewed a number of surveys conducted in Caribbean and Latin American countries and concluded that the prevalence of malnutrition 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 foun to be over 60% (Monteiro & Benicio 1986)[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 parents 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, spousess 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 to up to 2 years old, 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 not 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 sudy 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] – Santana 1982)[12] was used. In addition, all subjects answered a questionnaire including items about family income, number of children, and schooling of adult members.

Instruments
The Adult Psychiatric Morbidity Questionnaire (QMPA)

The Adult Psychiatric Morbidity Questionnaire (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 sensitivity 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.

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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=0.43,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 disturbance was controlled by age, number of children, per capita income and schooling . The analysis was carried out using logistic 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)as can be seen in Fig 1.

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 = 1.22, p< 0.02) .

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 39% of 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 millieu in populations with a 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.Heptinstall, et al, unpublished results).

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Mothers' mental heath 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 periods 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.

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 4 [25] (Schlesselman - 1982).

In conclusion, our findings do suggest that the 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 methodology.


APPENDIX 1

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 differences 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 difficulties 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)

ACKNOWLEDGEMENTS

THE MEAN QMPA SCORES BY AGE OF MOTHERS IN CASES AND CONTROLS

mean score of the mothers

Age of the mothers

■ Eutrophic   ▨ Malnourished
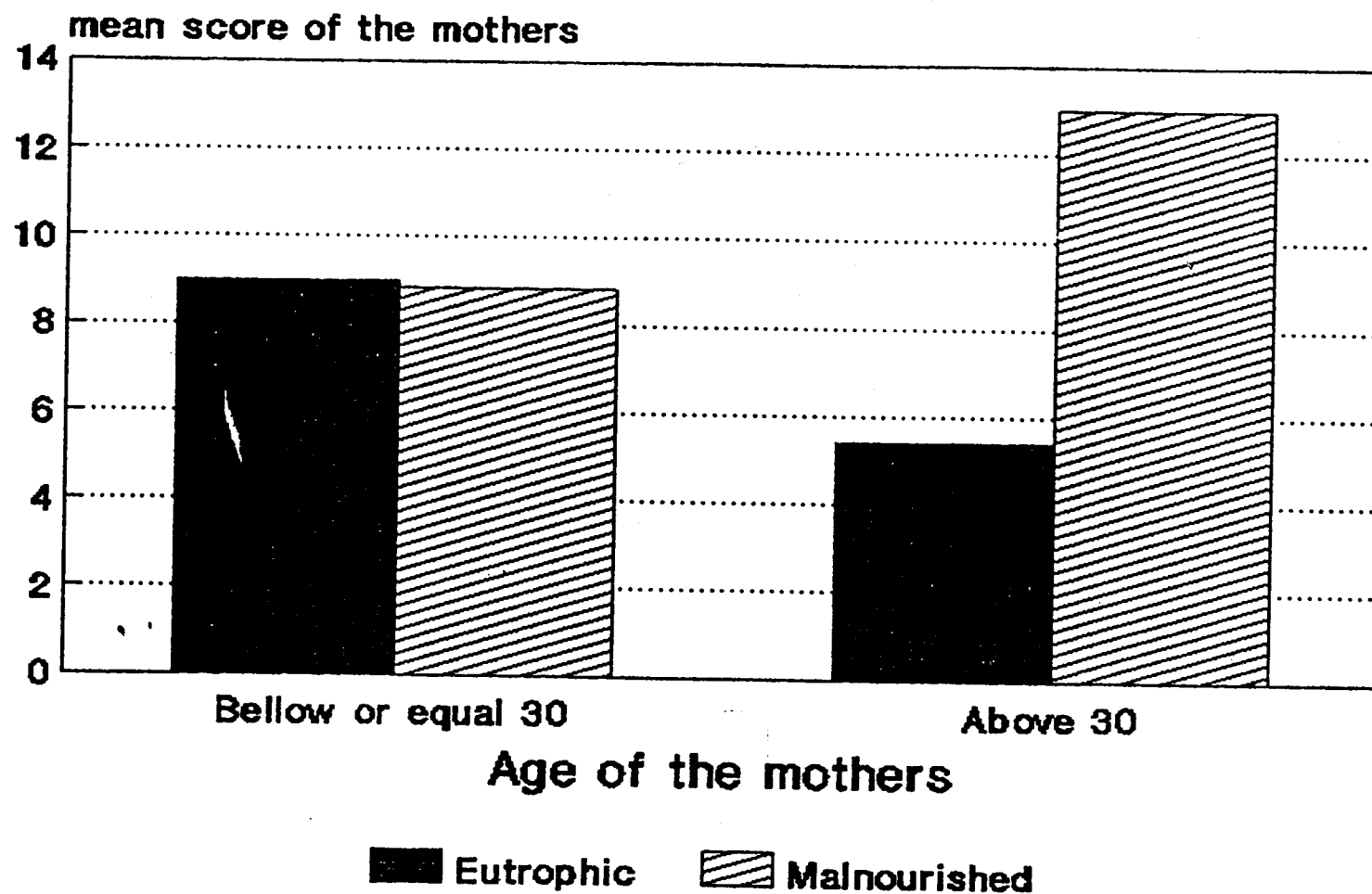
ANOVA - F = 2.51 p = 0.06

TABLE I

ODDS RATIO FOR MOTHER'S MENTAL STATUS AND OTHER POSSIBLE

SELECTED RISK FACTORS FOR MALNUTRITON 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	36	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 capita 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

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TABLE IV

ODDS RATIO OF INTERACTION BETWEEN MENTAL HEALTH OF THE

MOTHERS ADJUSTED FOR EACH RISK FACTOR BY LOGISTIC REGRESSION

Model	statistics to enter interactions		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

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