INFANT MORTALITY AND ASSOCIATED FACTORS: A STUDY ACCORDING TO SOCIO-OCCUPATIONAL TYPOLOGIES[1]

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ABSTRACT

Analyzing infant mortality in the Maringá Metropolitan area, according to Socio-Occupational Typologies. This is an ecological study with all infant deaths from residents of Maringá, Sarandi and Paiçandu municipalities, from 2004 to 2008. We used data from the Brazilian Mortality Information System and Brazilian Information System on Live Births. The divisions of the territory by Socio-Occupational Typologies were defined from the variable "occupation of the family head". The other variables were categorized for subsequent logistic regression analysis. For Socio-Occupational Typologies whose occupation and won of the head of household are lower infant mortality rates are higher, mainly for the Agricultural Medium Low Tipology (18.2 deaths per thousand live births) and Manual Worker (16.4 deaths per thousand live births). Strong association with infant death was observed with Apgar at 1st and at 5th minute less than seven (OR=23.2, and 71.8, $p<0,001$, respectively), birth weight less than 2500g (OR=20.7 $p<0,001$), less than 37 gestational weeks (OR=22.7, $p<0,001$) and congenital anomalies (OR=23.5, $p<0,001$). The socio-spacial segregation resulted in heterogeneous conditions of access and resoluteness to health services, showing the need for targeted health actions to different urban areas formed by Socio-Occupational Typologies.

Keywords: Infant mortality. Income. Residence characteristics. Maternal-child health services.

INTRODUCTION

Infant mortality is used as an indicator of health and development as it synthesizes socioeconomic and health characteristics of the population. It is a grievance vulnerable to the effects of living conditions and the effectiveness of sectorial health actions such as the provision and implementation of programs focused on women's health and child[1].

The downward trend in infant mortality rate (IMR) has been occurring throughout the Brazilian territory, from 47.1 deaths per thousand live births in 1990 to 22.5 in 2010[2]. In the State of Paraná this reduction was 30.5% from 2001 to 2010 decreased from 17.4 to 12.1 per thousand live births, respectively[2].

Advances in the structure and organization of the Brazilian Unified Health System (SUS) are enabling improvements in access and quality of care especially to the poorest populations[3]. However there are regional differences in the country, because while the Southern region had coefficient of 12.9 in 2007, the Northeast remained with the highest levels of 27.2 deaths per thousand live births[2].

Therefore, reducing the IMR is still a challenge, considering the regional differences and the drop rate that is lower than desired, especially for neonatal component that is not significantly decreased since 1980[4]. So it becomes necessary to carry out studies in specific areas to trigger health actions directed to the differences.

The Metropolitan Region of the municipality of Maringá (RMM), located in the Northwest of the State of Paraná, instituted by State Law 83/1998, is composed of 26 municipalities. Maringá, by concentrating much of the industrial production, trade and service activities provided an intense migratory process with increasing

population and formatting of that agglomeration which includes the municipalities of its surroundings[5].

Maringá, the main city, Sarandi and Paiçandu are considered conurbated, forming a single spot of urban occupation, with high socio-economic and spatial interaction, configuring a cluster. The history of the foundation and occupation of these municipalities reproduced processes of social inequalities, as the interests of the real estate market predominated, with value land in central areas of the host city and a decrease in the value of urban land in the outskirts. This has resulted in residential occupation predominantly medium and high economic strata of the population residing in the center, and low and lower middle on the outskirts intra and inter, including Sarandi and Paiçandu as housing options for large numbers of people[5].

The objective of this study was to analyze infant mortality in the Metropolitan Region of Maringa, according Socio-Occupational Typologies (SOT). This typology results from studies within the Observatory Network of the Metropolis (INCT/CNPq/IPPUR/UFRJ) and correlates the geographical area in connection with the occupation and the head of the household income. By studying the occurrence of infant mortality in accordance with the SOT, it is considered the heterogeneity in the social and demographic profile of the population making it possible to capture the specific groups of the population differences and target specific health actions and policies. This analysis perspective of child mortality by SOT is still little explored, not being found scientific articles using this method yet.

MATERIALS AND METHOD

Ecological and cross sectional study of all infant deaths, residents in Maringá, Sarandi and Paiçandu, occurred from January 1st, 2004 to December 31st, 2008. The municipalities of Maringá, Sarandi and Paiçandu, with an estimated population of 385.753, 88.365 and 38.385 inhabitants in 2013, respectively, have a high level of integration, inter-flows, complementarity and socioeconomic integration[6].

Data from the Brazilian Mortality Information System were used (SIM) and Brazilian Live Birth Information System (SINASC), with the junction of the banks by deterministic linkage technique, with the Declaration of Live Birth (DLB) as identification variable. The manual corrections in the event of absence or mismatch of DLB number were determined by the date of birth, mother's name and additional information obtained in the health services. The next step was the location of addresses or mother's home district for the distribution of deaths and births in the geographical areas. The postal codes postal and telephone books were consulted to reduce the loss by absence or incomplete address. Still there was a loss of 133 records (0.4% of single bank), 31 in Sarandi, 102 in Maringa and none in Paiçandu because this municipality is composed of only one SOT (Figure 1). The SOT were the unit of analysis to verify the process of socio-spatial segregation and distribution of CMI indicating most vulnerable areas[6].

The SOT are systematized by the Observatory of the Metropolis, Maringá core, from the "occupation of the head of the family" according to IBGE demographic censuses, from the socio-occupational categories to distinguish the socio-spatial dynamics that characterize the occupation of RMM[6]. For the three municipalities there are six SOT: Upper, Middle Superior, Agricultural Medium Low, Medium Low, Popular Worker and Manual Worker considering implicit social hierarchy characterizing the population in descending order. The first categories include residents placed in high-income professionals and the latest activities, those whose labor income is lower due to the insertion in low specialization and compensation activities.

The IMR was calculated as the ratio of number of deaths in children less than one year of living births in the period, multiplied by a thousand. The death in children under one year of age, dependent variable was analyzed by SOT according to the independent variables: maternal (age, marital status and education), gestation and birth (parity, duration, type of pregnancy and delivery, number of prenatal consultations and place of birth) and newborn (birth weight, sex, Apgar score in the first and fifth minutes,

race/color and congenital anomalies). As a measure of association was used the odds ratio (OR) in the univariate analysis and the adjusted odds ratio (adjOR) in the multivariate analysis, for the logistic regression using stepwise method, with a 5% significance, using the Statistical Analysis Systems 9,3 program.

All variables with *p-value*<0.20 in the univariate analysis were included in the multivariate analysis, and the final model maintained if *p-value*<0.05, with no adjustment variables. The categories chosen as reference were at lower risk for infant mortality.
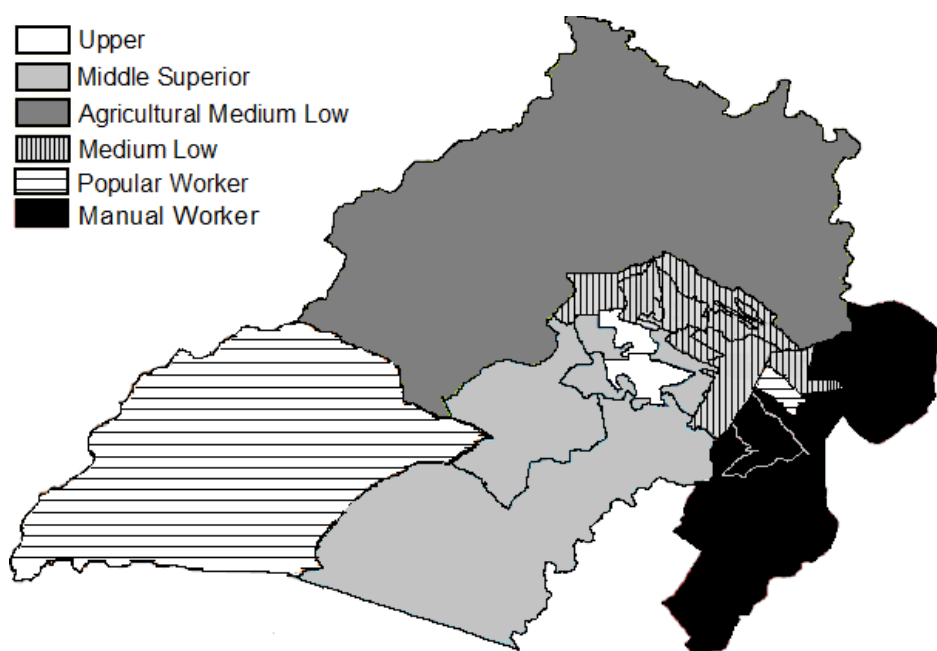

Figure 1- Socio-Occupational typologies of Maringa, Sarandi e Paiçandu.
Source: Organization: Observatory of Metropolis – Metropolitan Region Core of Maringa, 2007.

This study followed that recommended by Resolution 466/12 of the National Health Council about research involving human beings. The research project was approved by the Ethics Committee of the State University of Maringa (Opinion nº 527/2009).

RESULTS AND DISCUSSION

Of the 29.272 births from 2004 to 2008, 72.6% were living in Maringa, 19.8% and 7.5% of Sarandi Paiçandu. There were 310 deaths, with CMI 10.6 deaths per thousand live births. When analyzed the five years together is observed that the city of Sarandi has higher coefficients compared to Paiçandu and Maringa (14.3, 11.3 and 9.5 deaths per thousand live births, respectively) (data not shown).

For SOT whose occupation and gain the household head are lower, the IMR are higher, especially the Agricultural Medium Low (18.2

deaths per thousand live births) and Workers (16.4 deaths per thousand live births). The highest rates occurred in the early neonatal period highlighting the Agricultural Medium Low SOT with 11 deaths and post-neonatal SOT Manual Worker with 5.5 deaths per thousand live births (Table 1).

IMR of analysis in the area and study period shows that there are differences between the SOT evidenced by higher weightings in peripheral areas of the RMM, represented by the resident population in the municipalities of Sarandi and Paiçandu classified as Popular Workers and Manual Workers, in addition to Agricultural Medium Low typology belongs to the outskirts of the city of Maringa. This IMR distribution profile reinforces the core-periphery model, reflecting the uneven occupation of urban space, marginalizing the occupation of space by the economically underprivileged people[5].

There was a significant association of infant deaths with most variables highlighting maternal

ones, such as age less than 20 years (OR=1.7), women without a partner (OR=1.5), and with less than eight years of formal education (OR=1.4), the variables of pregnancy and delivery, such as less than seven prenatal visits (OR=4.8), and newborn variables, Apgar at 1st minute and Apgar score at 5th minutes shorter than seven (OR=23.2 and 71.8, respectively) low birth weight (OR=20.7), less than 37 weeks gestation (OR=22.7) and the presence of congenital anomalies (OR=23.5) (Table 2).

Table 1. Infant mortality coefficient, according to the period of death and SOT. Maringa, Sarandi e Paiçandu, 2004 a 2008.

SOT	Death < 1 year	Born alive		Early neonatal		Late neonatal		Post Neonatal	
	N°	N°	Rate	N°	Rate	N°	Rate	N°	Rate
Superior	23	2.769	8,3	13	4,7	7	2,5	3	1,1
Middle Superior	57	6.400	8,9	29	4,5	11	1,7	17	2,7
Agriculture Middle Inferior	28	1.540	18,2	17	11,0	6	3,9	5	3,2
Middle Inferior	107	11.287	9,5	67	5,9	17	1,5	23	2,0
Popular Worker	44	4.027	10,9	26	6,5	6	1,5	12	3,0
Manual Worker	51	3.118	16,4	23	7,4	11	3,5	17	5,5
Total	310	29.141	10,6	175	6,0	58	2,0	77	2,6

Of all live births births 22.7% have had less than seven prenatal visits and deaths among this percentage was 58.3% reaffirming the realization of prenatal care as a protective factor to infant death. In Paraná state, the adopted schedule for prenatal visits at least once a month until the 30th week, fortnightly visits of the 31st to 36th week, weekly visits of the 37th to 40th week, and every three days after the 40th week, with a limit maximum to 42 weeks[7]. Although this study has not explored the average number of prenatal visits, or the reasons some women have had less than 7 prenatal visits, we may infer that there are still gaps in the access to and organization of prenatal care in the municipalities studied and especially in SOT Manual Worker.

The association of IMR and Apgar score reinforces the use of this variable as an important indicator of the vitality of newborn and factor associated with infant mortality, according to results of studies conducted in São Paulo[8], and Teresina/PI[9], showing that the lower the Apgar score at 1 and 5 minutes greater the chance of infant death.

Regression analysis shows the association of the IMR with four of the six variables related to the newborn, for the three municipalities together: congenital anomaly (adjOR=18.70), Apgar below seven at 1 and 5 minutes (adjOR=5.04 and adjOR=11.27, respectively), birth weight less than 2500g (adjOR= 4.17); and variables of pregnancy and parturition: less than 37 gestational weeks (adjOR=3.11) and less than seven prenatal consultations (adjOR=1.70). It is noteworthy that cesarean delivery remained in the model as a protective factor against infant death ratio (adjOR=0.61) (Table 3).

Results from a study of infant mortality showed that the spatial distribution of cesarean section rate and low birth weight children was uneven in the Brazilian regions, with the highest rate of prematurity occurring in more developed regions, and low birth weight higher in the less developed in the country[10].

The IMR analysis showed that the SOT Apgar below seven at 1 and 5 minutes represented independent risk factors for all SOT and congenital malformations for all, except for the Upper type. It is noteworthy that the

race/color remained the model for the Worker Popular typology, less than seven prenatal consultations for Manual Worker and less than 37 weeks gestational types for Middle Superior, Agricultural Medium Low, Medium Low and Popular Worker (Table 4).

Table 2. Odds ratio (OR), confidence interval (IC (95%)) and significance level (*p-value*) according to variables of the mother, pregnancy and childbirth and newborn, Maringa, Sarandi e Paiçandu, 2004 a 2008.

Variables	Born alive		Death		OR	IC		*p*-value
	Nº	%	Nº	%				
Age (years)								
< 20	4.512	15.4	72	23.2	1.7	1.32	2.23	0.0000
20-34	22.142	75.6	206	66.5	-	-	-	-
≥ 35	2.616	8.9	32	10.3	-	-	-	0.1465
Marital status								
With a partner	18.269	62.4	162	52.3	-	-	-	-
Without a partner	10.999	37.6	148	47.7	1.5	1.22	1.90	0.0002
Schooling (years)								
< 8	6.282	21.5	86	27.7	1,4	1,10	1,80	0,0068
≥ 8	22.982	78.5	224	72.3	-	-	-	-
Parity								
Primiparous	13.807	47.2	160	51.6	-	-	-	-
Multiparous	15.400	52.6	150	48.4	-	-	-	0,1239
Gestational weeks								
< 37	2.284	7.8	204	65.8	22,7	19,37	26,68	0,0001
≥ 37	26.981	92.2	106	34.2	-	-	-	-
Type of parturition								
Cesarean	20.865	71.3	154	49.7	0.4	0.32	0.49	0.0000
Vaginal	8.406	28.7	156	50.3	-	-	-	-
Number of consultations								
< 7	6.645	22.7	179	58.3	4.8	3.88	5.83	0.0000
≥ 7	22.593	77.3	128	41.7	-	-	-	-
Place of birth								
Hospital	29.214	99.8	307	99.0	-	-	-	-
Other	58	0.2	3	1.0	4.9	1.78	13.65	0.0237*
Weight (g)								
< 2500	2.398	8.2	201	64.8	20.7	17.57	24.31	0.0000
≥ 2500	26.873	91.8	109	35.2	-	-	-	-
Gender								
Male	14.969	51.1	178	57.4	1.3	1.03	1.61	0.0262
Female	14.302	48.9	132	42.6	-	-	-	-
Apgar 1 minute								
< 7	2.200	6.8	200	65.4	23.2	19.76	27.21	0.0000
≥ 7	27.036	93.2	106	34.6	-	-	-	-
Apgar 5 minutes								
< 7	281	1.0	126	41.0	71.8	63.91	80.55	0.0000
≥ 7	28.963	99.0	181	59.0	-	-	-	-

Race/color							
White	26.007	88.8	252	81.3	-	-	-	-
Non white	3.253	11.1	58	18.7	1.8	1.39	2.43	0.0000
Congenital anomaly							
Yes	184	0.6	40	12.9	23.5	18.77	29.42	0.0000*
No	29.076	99.4	269	87.1	-	-	-	-
SOT							
Upper	2.769	9.5	23	7.4	-	-	-	-
Middle superior	6.400	22.0	57	18.4	-	-	-	0.7767
Agricultural medium low	1.540	5.3	28	9.0	2.2	1.28	3.74	0.0041
Medium low	11.287	38.7	107	34.5	-	-	-	0.5632
Popular worker	4.027	13.8	44	14.2	-	-	-	0.2828
Manual Worker	3.118	10.7	51	16.5	2.0	1.22	3.18	0.0057

*Fisher's exact test.

The low birth weight and prematurity are the main factors described in the literature associated with infant mortality[9]. In this study the IMR is not associated with prematurity only for Upper and Manual Worker SOT and is associated with less than seven prenatal consultations only for SOT Manual Worker ratio (adjOR=4.05) may indicate deficiency in the capture and monitoring of pregnant women this area of study area.

Table 3. Logistic regression of the factors associated with infant mortality. Maringa, Sarandi and Paiçandu, 2004 to 2008.

Variable	adjOR	IC (adjOR, 95%)	*p*-value
Number of pre-natal consultations	1.70	1.27 – 2.28	0.0004
Type of parturition	0.61	0.46 – 0.82	0.0010
Gestational weeks	3.11	2.03 – 4.75	0.0001
Weight	4.17	2.74 – 6.36	0.0001
Apgar 1 minute	5.04	3.67 – 6.93	0.0001
Apgar 5 minute	11.27	7.71 – 16.47	0.0001
Congenital anomaly	18.70	10.92 – 32.14	0.0001

The greatest chance of death when the Apgar is less than seven at five minutes were observed in SOT Middle Superior (adjOR=27.41), followed by Agricultural Medium Low (adjOR=17.15) and Upper (adjOR=16.84), can demonstrate that the SOT residents with the best conditions, only infants who are born with low vitality has greater chances of death. The same reasoning can be extended to the association of IMR with congenital anomalies, in almost every SOT, highlighting the SOT Manual Worker (adjOR=94.82). No association was found only in the Upper SOT and Agricultural Medium Low.

In Brazil, with the reduction of child mortality has been progressively increasing the proportion of infant deaths due to congenital abnormalities and mild reduction of infant deaths from conditions originating in the perinatal period[11,12]. A study conducted from 2004 to 2008, to the cities of Maringá, Sarandi and Paiçandu showed that 4.1% of infant deaths were due to congenital anomalies[13]. The association of IMR and congenital anomaly to such an extent in the SOT Manual Workers should be investigated from the point of view of the death of frequency, as in attendance to prenatal care and delivery to risk pregnant women and newborns with congenital malformation. Importantly, the congenital anomaly is unexplored factor, signaling the importance of

other studies of its occurrence and association with infant death[14].

Infant mortality is also associated with insufficient number of prenatal consultations for all municipalities (*p*=0.0003) and the SOT Manual Worker ratio (adjOR=4.05). Studies investigating the reasons given by women for not performing prenatal report fear of revealing pregnancy, ignorance and also the rejection of pregnancy. These factors indicate certain fragility of this population, since the rejection of pregnancy influences the late access to the first prenatal visit[15] and consequently the health of the fetus and newborn. Other barriers to prenatal care are low socioeconomic status and education of women and their partner, unmarried women, lack of availability and high parity[16]. Political, culture, religion, and family and social support network also influence the use of these services[17].

Table 4. Logistic regression of the factors associated with infant mortality, according to Socio-Occupational Typologies. Maringa, Sarandi and Paiçandu, 2004 to 2008.

SOT/variable	adjOR	IC (adjOR, 95%)	*p*-value
Superior			
Weight	27.86	8.47 – 91.65	0.0001
Apgar 1 minute	8.70	2.88 – 26.31	0.0001
Apgar 5 minute	16.84	3.49 – 81.35	0.0004
Middle Superior			
Gestational weeks	4.53	1.55 – 13.25	0.0058
Weight(g)	3.94	1.37 – 11.38	0.0112
Apgar 1 minute	4.66	2.24 – 9.70	0.0001
Apgar 5 minute	27.41	10.25 – 73.27	0.0001
Congenital anomaly	35.52	12.21 – 103.34	0.0001
Lower Middle Agricultural			
Gestational weeks	5.07	1.23 – 21.01	0.0250
Weight (g)	4.20	1.05 – 16.84	0.0429
Apgar 1 minute	4.10	1.33 – 12.66	0.0141
Apgar 5 minute	17.15	4.04 – 72.87	0.0001
Middle Inferior			
Gestational weeks	3.36	2.20 – 5.11	0.0001
Weight (g)	4.36	2.87 – 6.62	0.0001
Apgar 1 minute	5.20	3.79 – 7.12	0.0001
Apgar 5 minute	11.79	8.10 – 17.18	0.0001
Type of parturition	0.55	0.41 – 0.72	0.0001
Congenital anomaly	18.34	10.70 – 31.43	0.0001
Popular Worker			
Gestational weeks	2.90	1.03 – 8.17	0.0438
Weight (g)	4.46	1.63 – 12.18	0.0035
Apgar 1 minute	3.68	1.55 – 8.72	0.0031
Apgar 5 minute	9.16	3.53 – 23.75	0.0001
Race/color	3.75	1.83 – 7.69	0.0003
Congenital anomaly	8.74	1.85 – 41.30	0.0062
Manual Worker			
Prenatal consultations	4.05	1.88 – 8.72	0.0003
Weight (g)	5.01	2.53 – 9.94	0.0001
Apgar 1 minute	4.12	1.84 – 9.25	0.0006
Apgar 5 minute	11.04	4.27 – 28.58	0.0001
Congenital anomaly	94.82	24.42 – 368.25	0.0001

The fact that the SOT Medium Low have higher percentages of residents of secondary occupations (30.6%), tertiary (25.5%) and medium (21.7%) when compared to SOT Workers, for example, which has a higher percentage of the tertiary workers and therefore with lower average monthly income, can demonstrate that socioeconomic factors determine some environmental features like living near industrial areas, possibly present as determinants of infant mortality rate.

Articles review study published in English in the period from 1990 to 2011 found relationship between the effect of environmental factors such as air pollution on birth weight, prematurity and infant mortality, among other perinatal[18]. Case-control study in Rio Grande-RS in 2003 showed association of underweight with mother's living area. Living in remote areas of the city, near the industrial zone is a risk factor for infant death, with OR=4.67 when compared to controls residents elsewhere in the city[19]. For the municipalities of Maringá, Sarandi and Paiçandu still no environmental epidemiological studies assessing the association of pollution with determining factors for infant death.

Health data analysis associated with geographic areas performed in this study shows that the combination of information is a useful tool to highlight the health characteristics of women and children as those consisting of vulnerable types territories in the social hierarchy are also those who add the highest percentages of factors or conditions indicative of greater risk. It is stressed that individuals belonging to the same geographical area are exposed to the same factors, assuming that this community has a similar lifestyle, enjoying the same structure, the social and the provision of health services policies[20]. So you need to target health action strategies for each reality, mainly because of the socio-spatial segregation present in the adjacent municipalities of RMM results in heterogeneous conditions of access and resolution of/to health services.

CONCLUSION

This study aimed to analyzing infant mortality in the Metropolitan Region of Maringá, according Types Social and Occupational identified that the homogeneous geographical areas of the RMM, classified in different socio-occupational typologies present IMR and distinct factors associated with each other. Distribute health data relating them to the socioeconomic status of the population allows to know inequalities, facilitating prioritization of actions in underserved areas.

It is worth mentioning some limitations of this study, with information from secondary database subject to completion and reliability of the information relating to the DLB addresses, compromising the analysis and monitoring of child mortality by areas of residence. Another difficulty relates to the use of SOT which have been prepared based on the data for the 2000 Census, and to perform the analysis in this study had not yet been updated according to the census data of 2010. This limitation can affect the results one since the distribution of the population in space may have had its modified configuration, with improvement of socioeconomic conditions of the population and change the geographical location and profile of the SOT.

MORTALIDADE INFANTIL E FATORES ASSOCIADOS: ESTUDO POR TIPOLOGIAS SÓCIO-OCUPACIONAIS

RESUMO

Analisar a mortalidade infantil em municípios da Região Metropolitana de Maringá, segundo Tipologias Sócio-Ocupacionais. Estudo ecológico com população constituída por todos os óbitos infantis, de residentes em Maringá, Sarandi e Paiçandu, de 2004 a 2008. Foram utilizados dados do Sistema de Informações sobre Mortalidade e Sistema de Informações sobre Nascidos Vivos. As divisões do território por Tipologias Sócio-Ocupacionais foram definidas a partir da variável "ocupação do chefe da família". As demais variáveis foram categorizadas para posterior análise de regressão logística. Para as Tipologias Sócio-Ocupacionais cuja ocupação e ganho do chefe de família são inferiores, os coeficientes de mortalidade infantil são mais elevados, destacando-se a Agrícola Médio Inferior (18,2 óbitos por mil nascidos vivos) e Operário (16,4 óbitos por mil nascidos vivos). Associação forte com a ocorrência do óbito infantil foi observada com Apgar no 1º e 5º minuto inferior a sete (OR=23,2, e 71,8; p<0,001, respectivamente), peso inferior a 2500g (OR=20,7; p<0,001), menos

de 37 semanas gestacionais (OR=22,7; p<0,001) e anomalia congênita (OR=23,5; p<0,001). A segregação resultou em condições heterogêneas de acesso e resolutividade dos/aos serviços de saúde, mostrando a necessidade de ações de saúde direcionadas aos diferentes aglomerados urbanos formados pelas Tipologias Sócio-Ocupacionais.

Palavras-chave: Mortalidade infantil. Renda familiar. Distribuição espacial da população. Assistência à saúde materno-infantil.

MORTALIDAD INFANTIL Y FACTORES ASOCIADOS: ESTUDIO ATRAVÉS DE LAS TIPOLOGÍAS SOCIO-OCUPACIONALES

RESUMEN

Analizar la mortalidad infantil en ciudades de la Región Metropolitana de Maringá, según las Tipologías Socio-Ocupacionales. Estudio ecológico con sujetos constituidos por todas las muertes infantiles de residentes en Maringá, Sarandi y Paiçandu, de 2004 a 2008. Fueron utilizados datos del Sistema de Informaciones sobre Mortalidad y Sistema de Informaciones sobre Nacidos Vivos. Las divisiones del territorio por Tipologías Socio-Ocupacionales se definieron a partir de la variable "ocupación del jefe de la familia". Las otras variables fueron clasificadas para posterior análisis por regresión logística. Para las Tipologías Socio-Ocupacionales cuyos carácter profesional y renta son más bajos, las tasas de mortalidad infantil son más altas, especialmente la Agrícola Medio Inferior (18,2 muertes/mil nacidos vivos) y Obrero (16,4 muertes/mil nacidos vivos). Fuerte asociación con la incidencia de la mortalidad infantil se observó con el Apgar en el 1º y 5º minuto inferior a siete (OR=23,2 y 71,8, p<0,001, respectivamente), peso inferior a 2500g (OR=20,7, p<0,001), menos de 37 semanas de gestación (OR=22,7, p<0,001) y las anomalías congénitas (OR=23,5, p<0,001). La segregación resultó en condiciones heterogéneas de acceso y resolución de los/a los servicios de salud, mostrando la necesidad de acciones de salud dirigidas a diferentes áreas urbanas formadas por Tipologías Socio-Ocupacionales.

Palabras clave: Mortalidad infantil. Renta. Distribuición espacial de la población. Servicios de salud materno-infantil.

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