Original

REVISTA PREVENÇÃO DE INFECÇÃO E SAÚDE (REPIS)

Child deaths from congenital malformation occurred in a northeastern capital from 1996 to 2016

Óbitos infantis por malformação congênita ocorridos em uma capital do nordeste no período de 1996 a 2016

Las muertes infantiles por malformación congénita ocurrieron en una capital del noreste entre 1996 y 2016

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ABSTRACT

Objective: to analyze the relationship between knowledge and the adequacy of nursing annotations and their determinants. **Method**: An exploratory, descriptive and quantitative approach, carried out in the Medical Clinic and in the Adult Intensive Care Unit of a Brazilian university hospital. A total of 114 professionals and 41 medical records were included. **Results**: The professionals had a high mean score of knowledge and a low mean score of adequacy and there was no correlation between them (*rs* = -0,122; *p* > 0.05). The knowledge score was higher for professionals graduated in Nursing. The mean score of adequacy was higher for the professional category nurse if packed in Medical Clinic and with the professional that was dissatisfied with the training. **Conclusion**: there is no relationship between the professional's knowledge about nursing notes and the adequacy of the notes, which leads to serious ethical, legal and patient safety issues.
Descriptors: Medical record; Continuing education; Legislation; Nursing team; Patient safety.

RESUMO

Objetivo: analisar a relação entre o conhecimento e a adequação das anotações de enfermagem e seus determinantes. **Método:** Estudo exploratório, descritivo e de abordagem quantitativa, realizado no setor de Clínica Médica e na Unidade de Terapia Intensiva Adulto de um hospital universitário brasileiro. Foram incluídos 114 profissionais e 41 prontuários. **Resultados:** Os profissionais apresentaram um alto escore médio de conhecimento e um baixo escore médio de adequação e não houve correlação entre eles (*rs* = -0,122; *p* > 0,05). O escore de conhecimento foi maior para os profissionais graduados em Enfermagem. Já o escore médio de adequação foi maior para a categoria profissional enfermeiro, se lotado na Clínica Médica e se o profissional estava insatisfeito com as capacitações. **Conclusão:** não existe relação entre o conhecimento do profissional sobre anotações de enfermagem e a adequação das anotações realizadas, fato que leva a serias questões éticas, legais e de segurança do paciente.
Descritores: Prontuário; Educação continuada; Legislação; Equipe de enfermagem; Segurança do Paciente.

RESUMÉN

Objetivo: analizar la relación entre el conocimiento y la adecuación de las anotaciones de enfermería y sus determinantes. **Método**: Estudio exploratorio, descriptivo y de abordaje cuantitativo, realizado en el sector de Clínica Médica y en la Unidad de Terapia Intensiva Adulto de un hospital universitario brasileño. Se incluyeron 114 profesionales y 41 prontuarios. **Resultados**: Los profesionales presentaron una alta puntuación promedio de conocimiento y un bajo puntaje promedio de adecuación y no hubo correlación entre ellos (*rs* = -0,122; *p* > 0,05). La puntuación de conocimiento fue mayor para los profesionales graduados en Enfermería. La puntuación promedio de adecuación fue mayor para la categoría profesional enfermero, abarrotados en la Clínica Médica y profesionales insatisfechos con las capacitaciones. **Conclusión**: no existe relación entre el conocimiento del profesional sobre anotaciones de enfermería y la adecuación de las anotaciones realizadas, hecho que lleva a serias cuestiones éticas, legales y de seguridad del paciente.
Descriptores: Prontuario; Educación contínua; Legislación; Equipo de enfermería; Seguridad del paciente.

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INTRODUCTION

Congenital anomalies are maladjustments that are still seen in the development of prenatal origin evident at birth, and can be structural (physical congenital defect), functional (neuromotor changes) or metabolic, such as: innate errors of metabolism, phenylketonuria, among others. The causes presented may be genetic, environmental or multifactorial. Researchers report that in most cases the etiology remains unknown and environmental causes (teratogens) reveal few mainly in underdeveloped countries.[1]

The numerical expansion of congenital abnormalities is evidenced by the socioeconomic, sociodemographic and epidemiological situation of the study population, thus revealing the following factors: nutritional status, congenital syphilis, diseases observed during pregnancy, genetic disorders, drug or illicit drug use, maternal age and other environmental factors associated with ionizing radiation (methyl mercury and lead).[2]

It was evidenced that in Brazil and in the world, around 2% to 5% of the underage ones, present some type of congenital defect.[3-4] Of these approximately 60% are of unknown origin, 6% are classified as chromosomal and 20% diagnosed as Mendelian inheritance.[3-5] Those related to environmental factors or those resulting from genetic/environmental interaction are higher and exhibit marked difficulties in identification when compared to those related to other factors.[6]

Studies conducted in Brazil report that the congenital defect may be, for didactic reasons, classified as major or minor. Congenital defects described as major present greater death rates, as minor congenital deformations, commonly without surgical, medical or aesthetic indication, precede normal phenotypes, may manifest in a single or multiple form and may be related to major medical deformations.[7]

Although there have been favorable gains for the health of the Brazilian population, demonstrated by the reduction of diseases linked to nutritional deficiency, life-threatening conditions and control of diseases caused by viruses, bacteria, worms and others, a considerable number of child deaths are associated with genetic and congenital diseases, producing a social problem that can be accompanied by a specific public policy.[8]

It is admitted that through the knowledge regarding the characterization of children with congenital malformation who died, it is of great importance for the organization of specific studies related to the causes of the congenital defect in order to offer treatment strategies, care and prevention, as well as humanization and care in the care of children with malformations.

According to this context, this study aims to characterize infant deaths due to congenital malformation occurred in Teresina (PI) from 1996 to 2016.

METHODS

Quantitative, retrospective and documentary study, consisting of secondary data. We included infant deaths of residents in Teresina, from 1996 to 2016, registered in the Department of

Informatics of the Unified Health System (DATASUS), listing, infant death from congenital malformation, deformities and chromosomal anomalies. Statistical data were obtained from the municipality of Teresina (PI), located in northeastern Brazil, population of 814,230 inhabitants, 94.27% of urbanized area, 1,392 km2 of area and 584.95 inhab./km^2, according to 2010 census.[9]

Teresina is located in the north-central Piaui mesoregion, forming a transition strip between the northeastern semiarid and the Amazon region. It is the first planned Brazilian capital, founded on August 16, 1859.[9]

The study consisted of all infant deaths due to congenital malformation of Teresina residents, inserted in SIM via DATASUS from 1996 to 2016, totaling 974 records of children up to 364 days old. The age range from 28 to 364 days was chosen because it had the highest number of deaths when compared to superior age range.

The research included a period of 20 years, according to years (1996 to 2016) existing in the mentioned database. The congenital anomalies used in the present study were grouped as follows: Q6 - Q18 (malformations of the nervous system, neck and face); Q20 - Q24 (congenital malformation of the heart); Q25 - Q28 (malformation of arteries, veins and vascular system); Q30 - Q31 (Larynx and nose malformation); Q32 - Q34 (Congenital malformation of trachea, bronchi and lungs): Q35 - Q40 (Congenital malformations of digestive tract.

Data extraction took place in April 2019, according to the information sheet in the database, DATASUS / SIM, in which the following variables were extracted; year of death occurrence; characterization of deaths (age, birth weight, gender, race / color, place of occurrence, investigation of death); characterization of months of infants who died (ages, education, gestational age, type of gestation, mode of delivery, relationship of death to childbirth).[10]

The data obtained were recorded in a Microsoft Excel spreadsheet. The results were presented in tables, the statistical analysis was descriptive, by reading the absolute (N) and relative (%) frequencies. Then the results were confronted with the theoretical framework.

The study complied with the determinations established by Resolution 466/2012 of the National Health Council (CNS), which regulates research involving human beings. Therefore, this study did not need to be reviewed by an Ethics Committee because its data is in the public domain and belongs to DATASUS.[11]

RESULTS

From 1996 to 2016 there were 974 under-age deaths due to congenital malformation, deformities and chromosomal anomalies in the municipality of Teresina (PI). Over these 20 years it was observed that the arithmetic mean was 48.7 deaths per year and median equal to 176 deaths revealing 18% of deaths of children under 364 days of birth (Table 01).

Table 01: Distribution of deaths due to Congenital Malformation according to year of occurrence in Teresina from 1996 to 2016. Teresina (PI), Brazil, 2019.

Year of occurrence	N	%
1996 to 1998	33	3.40
1999 to 2001	79	8.10
2002 to 2004	167	17.10
2005 to 2007	**176**	**18.00**
2008 to 2010	181	18.60
2011 to 2013	183	18.80
2014 to 2016	155	16.00

Source: DATASUS/SIM, 2019.

Regarding the profile of deaths from congenital malformation, according to age, the highest percentage of deaths occurred between the age group of 28 to 364 days (55.10%); body weight at birth from 3000 to 3999 (31.90%), male 521 (53.50%); brown race 567 (58.20%); Most deaths occurred in hospital 942 (96.70%) and only 282 (28.90%) deaths with informed summary form (Table 02).

Table 02: Distribution of the characterization of deaths due to congenital malformation, occurred in Teresina (PI), from 1996 to 2016. Teresina (PI), Brazil, 2019.

Variables	N	%
Age		
0 to 6 days	254	26.00
7 to 27 days	184	18.90
28 to 364 days	536	55.10
Body weight at birth (g)		
500 to 999	10	1.19
1000 to 1499	43	4.41
1500 to 2499	170	17.40
2500 to 2999	174	17.80
3000 to 3999	311	31.90
4000 or higher	32	3.30
Missing Information	234	24.00
Sex		
Male	521	53.50
Female	441	45.30
Missing Information	12	1.20
Race/color		

Brown	567	58.20
Black	24	2.50
White	189	19.40
Yellow	2	0.20
Indigenous	3	0.30
Missing Information	189	19.40
Site of ocurrence		
Hospital	942	96.70
Home	22	2.20
Public place	2	0.25
Other	6	0.60
Missing Information	2	0.25
Death Investigation		
With informed summary sheet	282	28.90
No summary sheet informed	16	1.72
Not investigated	346	35.50
Not applicable	330	33.88

Source: DATASUS/SIM, 2019.

Regarding the characterization of mothers of children under the year who died due to congenital malformation, there were highlights: maternal age from 20 to 29 years, 401 (41.20%); elementary school 558 (57.30%); gestational age from 32 to 41 weeks 665 (68.30%) and vaginal delivery 420 (43%).

Table 03: Characterization of mothers of infants who died due to congenital malformation, occurred in Teresina (PI), from 1996 to 2016. Teresina (PI), Brazil, 2019.

Variables	N	%
Ages		
10 to 19	161	16,50
20 to 29	401	41,20
30 to 39	173	17,70
40 to 49	31	3,30
Missing information	208	21,30
Education		
Illiterate	61	6,30
Elementary School	558	57,30
High school	87	8,90

Ignored	268	27,50
Gestational age		
< 22 weeks	8	0,86
22 to 31	41	4,20
32 to 41	665	68,30
42 and higher	16	1,64
Missing Information	244	25,00
Delivery		
Vaginal	420	43,00
Caesarean section	381	39,00
Ignored	173	18,00

Source: DATASUS/SIM, 2019.

Regarding the characterization of deaths according to ICD 10, it was found that most deaths are classified as Q20 - Q24: congenital malformation of the heart followed by Q35 - Q40: congenital malformation of the digestive tract.

Table 04: Distribution of deaths by category ICD 10 according to type of congenital malformation and age group occurred in Teresina (PI), from 1996 to 2016. Teresina (PI), Brazil, 2019.

Characterization	N	%
Q20 – Q24 Congenital malformations of heart	780	80.00
Q25- Q28 Malformation of arteries, veins and vascular system	39	4.00
Q30 – Q31 Laryngeal malformation, nose	9	1.02
Q32 – Q34 Congenital malformation of trachea, bronchi, lungs	59	6.00
Q35 – Q40 Congenital malformations of digestive tract	77	7.90
Q6 – Q18 Nervous system, neck and face malformation	10	1.08

Source: DATASUS/SIM, 2019.

DISCUSSION

Distribution of deaths due to congenital malformation according to year of occurrence

In a study on infant mortality conducted in Santa Catarina in 2017, with data for the period 2004-2013 from SINASC and SIM, it was found that there were 10,076 deaths in children up to one year of age, of this total 80% had Its main cause is various infections and congenital malformation. Considering the populations between Teresina and Santa Catarina, there is similarity between the information obtained from.[12]

Approximately 3% of live births worldwide are estimated to exhibit some significant

congenital malformation. Different environmental and nutritional conditions may contribute to a numerical increase in the prevalence of congenital deformities. Therefore, in countries with high death rates, the main cause of death in the first year of life is mainly related to malnutrition and infectious diseases, highlighting malformations as responsible for 5% of deaths.[13]

In the municipality of Pelota from 1996 to 2008, the authors observed that infant mortality from congenital malformations had a higher rate in 2003, decreasing in the following year and remained stable until acquiring a new fall in 2007.[14] In Table 01 it was observed that the information regarding the occurrence of malformation deaths have increased every year, it can reveal an improvement in the input of the national databases.

Characterization of deaths from congenital malformation

In a study conducted in São Luís-MA, with information from 2002 to 2011, it was observed in the population of 180,298 live births of resident mothers, the following characteristics were detected: approximately 876 (0.5%) newborns, had some type of congenital malformation, body weight equal to or greater than 2,500g (76.1%) of the cases, in 55.2% of the male, mixed race and hospital birth reports. Similar data found in this study.[13]

In a prospective quantitative approach survey conducted at three tertiary-level hospital institutions in Fortaleza-Ceará in 2012, aimed at investigating the relationship between type of congenital malformation versus maternal-neonatal variable, the authors revealed the following findings: out of 159 children In three institutions with congenital malformations, there was a male prevalence, with 53% (85); in relation to body weight, 52% (82) between 2500 and 3999 grams, information corroborating with this study.[12]

Researchers from the compiled literature found that there is an important association of children with low birth weight for deformations, certainly the incidence will be higher in the number of cases when compared to microsomal newborns.[14,1]

Regarding gender, it was observed in a study conducted in a maternity hospital in Recife (PE), that of the 113 children with congenital malformation, 46.9% were male and 53.1 female,[15] information not similar to this study according to Table 02. Studies pertinent to this theme showed no statistical relationship between malformations and gender of the child.[12-13]

With regard to race/color, Brazilian studies have shown that race or color does not directly cause mortality or morbidity among ethnic groups, the relevant factor is linked to socioeconomic status, and thus the aforementioned skin colors. Most of them have low economic power, which affects their health status.[16]

As for the system affected by the malformations it was observed in a study, with information extracted from DATASUS, that the majority of deaths were: circulatory system defects (38.07%), accompanied by changes in the

nervous system (19.26%) and musculoskeletal system alterations (9.79%).[12,11]

In a study conducted in Ribeirão Preto, the authors obtained from the Committee on Maternal and Infant Mortality, from 2009 to 2011, a survey of 224 deaths of children under one year,[17] similar data found in this research.

Maternal characterization of deaths from congenital malformation

As for age, it was found in a secondary research on infant deaths of mothers living in Teresina from 2005 to 2014, that the vast majority of infant deaths were from mothers aged 20 to 29 years, similar data to ours, as the characteristics The authors found that most mothers were between 20 and 34 years old (70.8%), mixed race (54.6%) with complete or incomplete elementary school and lived with their partner and 56.7% of the children were born by caesarean section.[18]

In a study conducted from 2007 to 2008, with variables related to the prevalence of congenital malformations in children born in three maternity hospitals in Campina Grande (PB), the authors collected the following maternal data: mothers had an average age of 20 years, with four to seven years of study (42.6%); age of newborns (37 and 41 weeks). Regarding the delivery, 96 (50.5%) vaginal and 93 (48.9%) cesarean sections. Similar Information Found in this study.[19]

Regarding the type of pregnancy and the relationship between death and childbirth, it was observed in a descriptive study, based on data from the Live Birth Declaration and SINASC for the period from 2006 to 2016, consulted in the second half of 2017. It was found that 96.1% of pregnancies were single and only 3.9% twin.[20] The study shows that there is no association as to the type of pregnancy, given that most pregnancies are of single fetus.[1]

Characterization of deaths from congenital malformation in minors

In a study conducted in the state of Bahia, the evaluation of the information reveals that from 2012 to 2016 there were a total of 7406 live births due to the occurrence of congenital anomalies, with a record of 1424 cases in 2012 (19.22%), 1395 in 2013 (18 83%), 1298 in 2014 (17.52%), 1515 in 2015 (20.45%) and 1774 in 2016 (23.95%), which shows the highest incidence recorded in 2016. The average number of live births with congenital anomalies in this period equate to 2,468 individuals. The most evident congenital anomalies were: congenital deformities of the musculoskeletal system (48.04%), followed by congenital deformities of the nervous system (16.74%), genitourinary defects (8.81%), digestive deformities (8.47%), chromosomal anomalies (3.01%) and congenital malformations of the circulatory system (2.17%),[12] although there was little association with major congenital anomalies when comparing these data with this research conducted in Teresina (PI).

In their research titled: "Major Causes of Childhood Mortality in Brazil in 1990 and 2015: Estimates from the Global Burden of Disease Study," the researchers announced that the two main causes of child deaths were prematurity and congenital anomalies. These were considered the leading cause of death in the

South, Midwest and Southeast regions except Minas Gerais and Goiás.[21]

Corroborating with this study, it was observed in a study conducted in northeastern Brazil, that the categories of congenital malformations with central nervous system involvement reached 21.07% of the total malformations that occurred singularly or associated. Other elements that are recognized as facilitating and may increase the risk of deformities such as: neural tube closure, diabetes mellitus, maternal obesity, early antenatal exposure to anticonvulsant drugs, twin pregnancy and folic acid antagonists.[13]

CONCLUSION

The study has characteristics relevant to the number of deaths that occurred in the period of 20 years (1996 to 2016), 974 deaths of children under one year of age from 28 to 364 days of birth, with body weight of 4000 grams and more weight, male gender, race/color brown, most deaths occurred in the hospital with the informed investigation form. The maternal characteristics highlighted were: ages between 20 and 29 years, elementary school, gestational age between 32 and 41 weeks and via vaginal delivery. Regarding the characterization of death, death by congenital malformation of the heart was evidenced.

This study contributes to seek knowledge in conjunction with the prevalence of malformations as well as their relationship with sociodemographic and maternal-child characteristics focusing on strategies for the humanized planning of nursing care in a neonatal therapy unit.

As limitations to the study, it was observed that the database presents absence of data that are presented as “without information or the term ignored”, elements that hindered the organization of categorizations according to ICD-10.

The results show the importance of the relationship between the characteristics of the underage and the mother's profile, given that the thematic framework of this study points to solutions that can be worked on in pre-conceptual planning, prenatal and reproductive planning.

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JFR contributed to the conception or design of the work; COR, LAASN, VORB and RMA in data collection, analysis and interpretation; OMC, ALIR, in the writing of the article and critical review; APIR and PCBP in the final version to be published. All authors agree and are responsible for the content of this version of the manuscript to be published.

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CONFLICTS OF INTEREST

The authors declare that no have conflicts of interest.

AVAILABILITY OF DATA

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Does not apply.

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