



## ANALYSIS OF ARTICLES ON THE TOPIC OF MATERNAL NEAR MISS THROUGH THE IRAMUTEQ PROGRAM

### ANÁLISE DE ARTIGOS SOBRE O TEMA *NEAR MISS* MATERNO POR MEIO DO PROGRAMA IRAMUTEQ

### ANÁLISIS DE ARTÍCULOS SOBRE EL TEMA DE *NEAR MISS* MATERNO A TRAVÉS DEL PROGRAMA IRAMUTEQ

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#### RESUMO

**Objetivo:** identificar o foco das pesquisas brasileiras sobre o tema *near miss* materno nos últimos seis anos. **Método:** análise, por meio do *software* IRAMUTEQ®, de *corpus* textual composto por discussões de 13 artigos com o tema *near miss* materno, de acordo com as variáveis região e tipo de estudo. **Resultados:** o *corpus* textual foi dividido pelo programa em cinco classes e foi identificado que os temas mais abordados nas pesquisas são: deficiências no sistema de saúde; a identificação do *near miss* materno; fatores maternos associados ao *near miss*; saúde mental e fatores socioeconômicos. **Conclusões:** apesar de possuírem um grande papel em casos de *near miss* materno, as relações entre os fatores raciais, econômicos e sociais das mulheres e a evolução de seus casos para *near miss* ainda não são amplamente exploradas nos estudos. Foi identificado também que as pesquisas se concentram em regiões como Nordeste, Sul e Sudeste.

**Palavras-chave:** Near Miss. Complicações na Gravidez. Saúde Materna.

#### ABSTRACT

**Objective:** identify the focus of Brazilian research on the maternal near miss theme in the last six years. **Method:** analysis, by means of the IRAMUTEQ® software, of text corpus composed by discussions of 13 articles with the topic maternal near miss, according to the variables region and type of study. **Results:** The text corpus was divided by the program into five classes and it was identified that the most addressed themes in the research are: health system deficiencies; identification of the maternal near miss; maternal factors associated with the near miss; mental health and socioeconomic factors. **Conclusions:** Although they play a large role in near-miss cases, the relationships between women's racial, economic and social factors and the evolution of their cases to near-miss are not yet widely explored in the studies. It was also identified that the research is concentrated in regions such as the Northeast, South and Southeast.

**Keywords:** Near Miss. Pregnancy Complications. Maternal Health.

#### RESUMEN

**Objetivo:** identificar el foco de las investigaciones brasileñas sobre el tema de *near miss* materno en los últimos seis años. **Método:** análisis, mediante el *software* IRAMUTEQ®, de un *corpus* textual compuesto por discusiones de 13 artículos con la temática de *near miss* materno, según las variables región y tipo de estudio. **Resultados:** el *corpus* textual fue dividido por el programa en cinco clases y se identificó que los temas más abordados en la investigación son: deficiencias en el sistema de salud; la identificación de *near miss* materno; factores maternos asociados con *near miss*; factores socioeconómicos y de salud mental. **Conclusiones:** a pesar de tener un gran papel en los casos de *near miss* materno, las relaciones entre los factores raciales, económicos y sociales de las mujeres y la

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evolución de sus casos para *near miss* no son todavía ampliamente exploradas en los estudios. También se identificó que las investigaciones se concentran en regiones como Noreste, Sur y Sudeste.

**Palabras-clave:** Near Miss. Complicaciones del Embarazo. Salud Materna.

## **INTRODUCTION**

Maternal near miss is defined as "a woman who almost died, but survived a serious maternal complication, occurring during pregnancy, childbirth or within 42 days after the end of pregnancy".<sup>1</sup>

Near miss cases have a similar profile to maternal mortality and it is estimated that on average one death occurs every 15 cases of near miss.<sup>(2,3)</sup> Therefore, studying them is an efficient way to monitor the quality of care and understand what can be improved to prevent maternal death.

The contributions and effectiveness of IRAMUTEQ software for textual discursive analysis of research, that is, in the analysis in qualitative investigations, have been pointed out in studies.<sup>4-6</sup>

The above software has also been invited for systematic review analysis of various study objects, with the firm purpose of identifying what was published during a certain period of time, a cross-cutting in time and studies, the ascertainment of the most emerging results and considerations.<sup>7</sup>

The effectiveness of the use of the software is signaled as a possibility to highlight and, perhaps, prioritize issues and, in this sense, guide decision making.<sup>8</sup>

The objective of this study was to analyze the focus of Brazilian research on maternal near miss in the last six years, according to the regions where they were conducted, and the different types of studies conducted.

## **METHOD**

The selection of the articles was made between January and April 2020, in the search platforms SciELO, Google Scholar and VHL (Virtual Health Library), when the descriptor "near miss" was used and, later, the descriptors "maternal" and "severe maternal morbidity" were added. Repeated articles were excluded, focusing on the inclusion/exclusion criteria established a priori. Of the 41 documents accessed, 17 were disregarded for being prior to 2014, four included dissertations, two were theses and five were revisions. The number of articles selected to compose the corpus out of 13 in the period 2014 to 2019 (Chart 1).

The types of studies included were: quantitative, qualitative and secondary data analysis.

Chart 1. Distribution of articles on maternal near miss by year and region.

Article	Author/Year	Region
Incidence of Near Maternal Miss in Childbirth and Postnatal Care: Data from the Nascer no Brasil (Born in Brazil) survey <sup>9</sup>	Dias, Domingues, Schilithz, Nakamura-Pereira, Diniz, Brum, et al., 2014	Not centered
Determinants of maternal near miss in an obstetric intensive care unit <sup>10</sup>	Souza, Souza, Gonçalves, 2015	Northeast
Maternal Near miss in intensive care unit: clinical and epidemiological aspects <sup>3</sup>	Oliveira, Costa, 2015	Northeast
Prevalence and factors associated with the Maternal Near Miss: population survey in a capital city of Northeast Brazil <sup>11</sup>	Rosendo, Roncalli, 2015	Northeast
Severe maternal morbidity in the microregion of Barbacena/MG <sup>12</sup>	Vidal, Carvalho, Grimaldi, Reis, Baêta, Garcia, et al., 2016	Southeast
Near miss and black women <sup>13</sup>	Martins, 2016	South
Maternal Near miss and health inequities: analysis of contextual determinants in the Rio Grande do Norte, Brazil <sup>14</sup>	Rosendo, Roncalli, 2016	Northeast
Identification of maternal near miss in intensive care unit <sup>15</sup>	Rudey, Cortez, Yamaguchi, 2017	South
Postpartum depression in women who have survived severe maternal morbidity <sup>16</sup>	Silveira, Gurgel, Barreto, Trindade, 2018	Northeast
Severe Maternal Morbidity: Post-traumatic Stress and Social Support <sup>17</sup>	Silveira, Gurgel, Barreto, Galvão, Vargas, 2018	Northeast
Maternal Near miss in labor and childbirth in the light of health technologies <sup>18</sup>	Santos, Medeiros, Ferrari, Serafim, Maciel, Cardelli, 2018	South
Anxiety and Depression in Serious Motherhood and Near Miss <sup>19</sup>	Silveira, Galvão, Gurgel, Barreto, Vargas, 2019	Northeast
Time trend of near maternal miss in Brazil between 2000 and 2012 <sup>20</sup>	Carvalho, Andrade, Dantas, Figueiredo, Silva, Rosendo, et al., 2019	Not centered

## CORPUS CONSTRUCTION

For the construction of the corpus, the discussions of the articles were used and the following variables were considered: the number of the article (\*art\_); the region of the study (\*reg\_), being (\*reg\_0) Research not centered, (\*reg\_1) Northeast, (\*reg\_2) Southeast and (\*reg\_3) South and the type of study (\*est\_), (\*est\_1) - Qualitative Study, (\*est\_2) Quantitative Study and (\*est\_3) Secondary Data Analysis. Acronyms were standardized, compound words, hyphenated, important terms were joined with underline and similar terms and words were standardized.

## DATA ANALYSIS

The data analysis was done in IRAMUTEQ® software (Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires), version 0.7, alpha 2, classifying the text in a lexical way, using the Descending Hierarchical

Classification (DHC) and working with Initial Context Units (ICU) and, later, using the Content Analysis technique.<sup>21</sup>

Among the words analyzed, they were considered significant ( $p < 0.05$ ), with association chi-square ( $X^2 \geq 3.8$ ).<sup>22</sup>

## RESULTS

In the Reinert Method classification,<sup>23</sup> 553 text segments were identified and classified 81.74% of them.

According to the word hierarchy analysis, five classes were created, organized in descending order according to the percentage of text segments that contain: one (24.1%); two (21%); three (18.4%); four (18.1%) and five (18.4%), highlighting classes 1 and 2, which contemplated a higher percentage of text segments. The classes were named according to the terms highlighted in their profiles (Chart2).

Chart 2. Naming the classes of the textual corpus on the maternal near miss and highlighting terms in the classes.

Class		Featured Terms
1	Weaknesses in the health system	Service, access, assistance, quality
2	Identification of the near miss	Criterion, WHO, identification, record
3	Associated maternal factors	Caesarean section, hypertension, bleeding, eclampsia, infection, ICU admission
4	Near miss and mental health	Depression, anxiety, psychological, social support, postpartum depression
5	Socioeconomic factors	White color, race color, black color, woman, brown color, salary, low schooling

## SIGNIFICANT VARIABLES IN THE CATEGORIZATION

Articles based on quantitative research ( $X^2 = 9.0$ ;  $p = 0.00270$ ), on research not focusing on one region ( $X^2 = 9.26$ ;  $p = 0.00233$ ) and those carried out in the Southeast region ( $X^2 = 6.53$ ;  $p = 0.01058$ ) contributed significantly to the construction of class 1 (**Weaknesses in the health system**).

Articles based on non-centric research ( $X^2 = 35.12$ ;  $p < 0.0001$ ), quantitative research ( $X^2 = 8.51$ ;  $p = 0.00353$ ) and qualitative research ( $X^2 = 5.25$ ;  $p = 0.02198$ ) contributed significantly to the construction of class 2 (**Identification of the near miss**).

Articles based on qualitative research ( $X^2 = 25.71$ ;  $p < 0.0001$ ) and those conducted in the Southeast region ( $X^2 = 12.76$ ;  $p = 0.00035$ ) contributed significantly to the construction of class 3 (**Associated maternal factors**).

For the construction of class 4 (***Near miss and mental health***), contributed significantly to the articles conducted in the Northeast region ( $X^2= 84.12$ ;  $p < 0.0001$ ) and those based on quantitative research ( $X^2= 4.79$ ;  $p= 0.02862$ ).

For the construction of class 5 (***Socioeconomic factors***), Articles based on secondary data analysis ( $X^2= 175.26$ ;  $p < 0.0001$ ) and those from the Southern region ( $X^2= 96.64$ ;  $p < 0.0001$ ).

In the construction of the word cloud (Chart 3), in which the words are grouped according to how often they appear in the corpus, it was possible to identify that, besides the terms near miss, woman and severe maternal morbidity, the terms: childbirth; no; risk; complication; maternal death and others related to the research process (study, case).

Chart 3. Word frequency of selected articles.

	<b>Word</b>	<b>Number of times it appears in the corpus</b>
1	Study	190
2	Woman	189
3	Near_miss	185
4	Case	160
5	Like	133
6	More	119
7	Larger	103
8	No	100
9	Find	99
10	To	92
11	Present	68
12	Birth	63
13	Year	57
14	Health	54
15	Also	53
16	Relationship	52
17	Criterion	51
18	Risk	50
19	Patient	47
20	Severe_maternal_morbidity	47
21	Rate	41
22	Complication	41
23	Region	39
24	Perform	39
25	Color_black	39
26	Brazil	39
27	Use	38
28	Maternal_death	38
29	Gestation	38
30	Data	38
31	White_colour	38
32	Condition	38
33	Times	36

34	ICU	36
35	Pre_natal	36
36	Research	36
37	Pregnancy	36
38	Number	35
39	Consider	34
40	Assistance	34
41	Still	34
42	Variable	33
43	Incidence	33
44	Identification	33
45	State	33
46	Control	33
47	Cesarian	32
48	Analysis	32
49	Result	31
50	Cause	31
51	Beyond	31
52	Up to	30
53	Similar	29
54	Occurrence	29
55	Important	29
56	Main	28
57	Age	28
58	High	28
59	Trend	27
60	Obstetric	27
61	Even	27
62	Significant	26
63	Factor	26
64	Increase	26
65	Note	25
66	Bleeding	25
67	Pregnant	25
68	Association	25
69	Only	25
70	Quality	24
71	Present	24
72	Population	24
73	Hospitalization	24
74	Difference	24
75	Feature	24
76	Low	24
77	Situation	23
78	Possible	23
79	Occur	23
80	Hospital	23
81	Fator_de_Risco	23
82	Outcome	23
83	Service	22
84	Related	22
85	Prevalence	22
86	Severe	22
87	WHO	21
88	Smaller	21
89	Limitation	21
90	Already	21
91	Fact	21

92	Highlight	21
93	Color Race	20
94	Professional	19
95	Use	19
96	Social	19
97	Death	19
98	Maternal_mortality	19
99	Maternal_morbidity	19
100	Group	19
101	Frequency	19
102	Hypertensive_diseases	19
103	Service	19
104	Admission_in_ICU	19
105	Access	19
106	Country	18
107	Identify	18
108	Due to	18
109	Clinical	18
110	Associate	18
111	Relate	17
112	Reduction	17
113	Less	17
114	I manage	17
115	Information	17
116	Development	17
117	Consultation	17
118	Born_living	16
119	Very	16
120	Moment	16
121	Great	16
122	Explain	16
123	Evidence	16
124	Contribute	16
125	So	16
126	High	16
127	Use	15
128	When	15
129	Presence	15
130	Percentage	15
131	Maternal	15
132	Care	15
133	Above	15

The term study appeared 190 times; case, 160 times; no, 100; delivery, 63; risk, 50; complication, 41 and maternal death, 38.

In some other articles<sup>13-14,16,19</sup> which were part of the corpus, the relationship of the near miss with: black women; postpartum depression; post-traumatic stress and social support was discussed. But, as can be seen, in categorization and in the word cloud, discussion of most of these topics was not frequent enough to be highlighted, with the exception of postpartum depression, which was part of class 4 (Chart 2), and the relationship of near miss to race and color, which is highlighted in class 5 (Chart 2) and has related terms in the word cloud.

## **DISCUSSION**

### **HEALTH SYSTEM DEFICIENCIES**

Deficiencies in the health care system are related to delay in care, difficulty in accessing specialized care and non-humanized care, quality and lack of access to prenatal care.

In a study, the delay in care was shown to be frequent in a group of maternal near miss women.<sup>24</sup> The obstacles encountered by pregnant women are: access to the first service; delay in making an appointment and lack of attachment to the professional.<sup>25</sup> Despite these obstacles, studies in which the reach of prenatal care to the population is high reveal that, in a low percentage of women who did not have prenatal care, the low quality of service is evident, since, although the majority had access to consultations, more than half presented near miss.<sup>3</sup>

### **NEAR MISS IDENTIFICATION**

The WHO's<sup>26</sup> clinical, laboratory and management criteria, collected from the medical records, allow the early identification of the maternal near miss and can prevent the cases from dying as an outcome.

Among the criteria, the clinician is the most advantageous, as he does not need a complex laboratory or hospital structure.<sup>3</sup> This advantage is important in a country like Brazil, where there is precariousness and different access to health.

### **ASSOCIATED MATERNAL FACTORS**

The associated maternal factors are those related to the patient's evolution to near miss such as: caesarean section; hypertension; eclampsia; infection; admission in Intensive Care Unit (ICU); HELLP syndrome; maternal care provided; pulmonary complications and social inequalities.

Studies confirm that ICU admission related to near miss is due to hypertensive, pulmonary and hemorrhagic complications, which have, as treatments, invasive procedures, such as red blood cell transfusion.<sup>(11,15)</sup>

### **NEAR MISS AND MENTAL HEALTH**

The relationship between near miss and mental health involves several aspects such as: depression; anxiety; social and family life; personal history; social support; mother's relationship with the baby; traumatic events and premature birth.

Studies identify that women who experience extreme life-threatening manifestations have greater vulnerability in mental health.<sup>27</sup>

### **SOCIOECONOMIC FACTORS**



Among the socio-economic factors related to the near miss are: race; color (white, black, brown); level of schooling; marital status and family income.

In a retrospective study of more than five thousand women in five Brazilian regions, it was pointed out that the risk of maternal near miss was almost twice as high in women over 40 years of age and with low schooling, which shows the influence of schooling on the near miss outcome.<sup>28</sup>

## CONCLUSION

"In UHS, a woman's choice of delivery is limited, unlike the private sector [...]".<sup>12:136</sup>

Therefore, it is identified that the women most affected by maternal morbidities, highly related to cesarean section and low quality of care, are those with less education and financial power, which reflects in their access to health.

According to the analysis of the discussions in the articles, it is possible to identify that most social, economic and racial factors, although these are very relevant to the maternal near miss outcomes, are still little explored in the researches.

It is also identified that there has recently been a study on the subject in the North and Midwest regions.

Both qualitative and quantitative studies were relevant for obtaining data in the different classes.

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