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Maternal mortality by sepsis. Avoidable tragedy Maternity "Concepción Palacios". 1939-2019

Mortalidad materna por sepsis. Tragedia evitable Maternidad "Concepción Palacios". 1939-2019

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SUMMARY

The purpose of this research is to know the frequency of sepsis deaths in administrative periods of health in the country, indicate associated factors, calculate the maternal mortality rate (MMR), analyze their historical evolution in the Maternity "Concepción Palacios" and formulate preventive strategies. A descriptive, retrospective, and analytical study were carried out, a type of documentary research, under a mixed paradigm. The population and sample consisted of all pregnant women who died in pregnancy, childbirth, or postpartum, from the founding of Maternity in 1939 until the end of 2019. The results report that there were 2,710 maternal deaths (MM), of which 1,844 were directly caused, with 1,691,779 live newborns (RNV), showing a global maternal death reason (MMR) of 160.18 x 100 000 RNV, there were 935 MM per sepsis with MMR from global sepsis of 55.27 x 100 000 RNV, she has had a gradual decline associated with advances in diagnosis and treatment, although limited by the social aspects related to MM. It is concluded that among the strategies to decrease MM by sepsis are sexual and reproductive health education, training, and training of health personnel in fetal-maternal medicine and critical obstetrics, analysis by theoretical premises that allow to identify the social aspects of MM by sepsis and the health reality related to its management and implement preventive public policies.

Keywords: *Sepsis, maternal mortality, Maternity "Conception Palacios".*

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RESUMEN

Esta investigación tiene como objeto conocer la frecuencia de las muertes por sepsis en lapsos administrativos de salud del país, indicar factores asociados, calcular la razón de mortalidad materna (RMM), con la finalidad de analizar su evolución histórica en la Maternidad "Concepción Palacios" y formular estrategias preventivas. Se realizó un estudio descriptivo, retrospectivo y analítico, tipo investigación documental, bajo paradigma mixto. La población y la muestra estuvo constituida por todas las gestantes que fallecieron en el embarazo, parto o puerperio, desde la fundación de la Maternidad en 1939 hasta el final de 2019. Los resultados reportan que hubo 2 710 muertes maternas (MM), de las cuales 1 844 fueron por causas directas, con 1 691 779 recién nacidos vivos (RNV), mostrando una razón de muerte materna (RMM) global de 160,18 x 100 000 RNV, hubo 935 MM por sepsis con RMM por sepsis global de 55,27 x 100 000 RNV, ella ha tenido un descenso paulatino asociado a avances en diagnóstico y tratamiento, aunque limitado por los aspectos sociales relacionados con la MM. Se concluye que entre las estrategias para disminuir la MM por sepsis están la educación en salud sexual y reproductiva, la formación y entrenamiento de personal de salud en medicina materno fetal y obstetricia crítica, el análisis por premisas teóricas que permitan identificar los aspectos sociales de la MM por sepsis y la realidad sanitaria relacionada con su manejo e implementar políticas públicas preventivas.

Palabras clave: *Sepsis, mortalidad materna, maternidad "Concepción Palacios".*

INTRODUCTION

Maternal sepsis is one of the three first global causes of maternal morbidity and mortality, in the United States of America, there are complications reported up to 10 by 10 000 live births (1,2). In the last decade, an approximate 10 % increase of severe maternal sepsis and deaths related to sepsis has been described (1,2). Maternal mortality (MM) by sepsis is associated with 50 % of the cases with chronic morbidity, including renal disease, hepatic disease, and congestive heart failure. The Group of Work for Sepsis Definitions (*Sepsis Definitions Task Force*) has published the SEPSIS-3 consensus with the updated definitions of sepsis and septic shock (3). Sepsis is defined as a potentially lethal organic disorder caused by a host's deregulated response to the infection (3). Such a definition implies severity, the need for an early diagnosis, and appropriate timely treatment. The septic shock is defined as a subcategory of sepsis in which the circulatory and the cellular metabolism alterations are profound enough to considerably increase the mortality, with three proposed criteria to define the appearance of septic shock: hypotension sustained requirement of vasopressor agents to maintain mean blood pressure (PAM) ≥65 mmHg and a serum lactate level over 2 mmol/L (3,4).

The SOFA score (*Sequential Organ Failure Assessment*) was proposed, including several conducts, laboratory, and clinical criteria. The qSOFA (*quick* SOFA) has also been proposed as useful to consider a possible infection in patients to whom a previous diagnosis has not been made, do not require laboratory tests, can be performed rapidly, and can be used for the screening of the patients in which a sepsis possibility arises (3,4). All these consensual efforts are intended to counteract the delays in the proper obstetric care, as well as the escalation of such attention, that has been found strongly related to MM by sepsis (1-4).

When analyzing the medical, social causes and public policies related to the MM from a historical perspective, it can be observed that de Venezuelan State has shown concern when performing multiple meetings, declaration of principles, and even proposing goals that have not been reached, or the figures are too far from the agreed objectives to solve this problem that infringes the women rights to have maternity in proper health conditions, as well physically as emotionally, and that generates safety and welfare for her and the newborn (5). Furthermore, the analysis of the MM with theoretical premises transcending the positivist paradigm for a constructivist one, born from the hermeneutical comprehension of the historical study of medical causes, such as sepsis, has been previously proposed by Cabrera (6), as a derivation of the work of Karolinski et al. (7), which performed the proposal of a model to address the MM, established in seven fields: Prioritization and knowledge of the problem that is referred to its definition, causes and consequences, to the contextual characterization that implies the territoriality, the social and political context. The

methodological range implies the triangulation of quantitative and qualitative information for results analysis. Knowledge management implies gathering information from the problem for making decisions and then to perform the formulation of policies that can be articulated with the investigation. The innovation generates new tools for addressing new problems and lastly, its implementation (7).

Therefore, starting from the proposal of Cabrera (7), the analysis of the historical evolution of the MM with theoretical premises allows the planning of public policies strategies before the need for prevention, diagnosis, and early management of the extreme maternal morbidity (MME by its acronym in Spanish) for this cause, this requires the timely and appropriate training of healthcare staff in the areas of obstetric and fetal-maternal medicine. This reflection needs to be considered in a moment in which the third level care centers have difficulties properly manage the causes of MME and MM, as it happens in the Maternity "Concepción Palacios" (MCP by its acronym in Spanish). Cabrera et al. (8), determined that the RMM in the MCP in 2018 was 191.59 by 100 000 live newborns (RNV by its acronym in Spanish), the highest reported in the literature in the history of this healthcare center.

In 2015 the Rate of MM (RMM) was 239 by 100 000 live newborns (RNV) in developing countries, while in developed countries it was 12 by 100 000; the highest estimated risk of MM through life is 1 in 4 900 in developed countries compared to 1 in 54 in low-income countries (9,10).

This study was performed to know the frequency of maternal death by sepsis in the country's health administrative lapses, indicate associated factors, calculate de maternal mortality (RMM) rate, analyze its historical evolution in the Maternity "Concepción Palacios" and formulate preventive strategies.

MATERIALS AND METHODS

This is a descriptive, retrospective, and analytical study of documental research type, framed in the mixed paradigm (quantitative and qualitative). The population and the sample were constituted by all the pregnant women who died during pregnancy, labor or postpartum, during the 1939 – 2019 period, al maternal death by sepsis-related with pregnancy, labor, and postpartum who died within the mentioned period were included, without the exclusion of any of them. The instrument used for gathering the data was the file, which is considered as an information storage unit under a format or scheme, which can be a database or a file amongst others. The documents of the historical repertory of the Government of the Capital District and the nation were reviewed and registered to compare the historical events with the maternal deaths, understanding as administrative lapses in the different presidential periods. Likewise, a secondary source established at the national level for the sentinel surveillance of maternal and infant mortality that was implemented by the "Ministerio del Poder Popular Popular para la Salud" *[Venezuelan Health Ministry]* in 2006 was used.

This source of information is available in the Epidemiologic Unit of the MCP. Therefore, for gathering the relevant data for the investigation, those documents with related information with the variables of the research study were revised, using them in their available medical files and the maternal mortality surveillance systems (SIVIGILA) (11). For the performance of this research, the SIVIGILA MMI and SIVIGILA MM2 files were requested in writing before the Epidemiologic Unit of the MCP maintaining confidentiality, respecting the rights of the data included in the file of epidemiologic surveillance of maternal death. All the quantitative information was registered in an annualized fashion, in a database using the program Excel version 2016 for Windows; it was resumed in statistical tables of distribution of absolute and relative frequencies and the maternal mortality rate. The qualitative information was registered in files (12-14).

The frequencies and percentages of the nominal variables were calculated, also the RMM was estimated as the ratio of maternal death by 100 000 RNV; the direct maternal mortality (MMOD) was as well calculated as the ratio of the number of deaths by causes related to pregnancy, labor or postpartum by 100 000 RNV, and finally, the Rate of Maternal Death by sepsis as the ratio of maternal death by sepsis by 100 000 RNV.

RESULTS

From the foundation of the MCP by President José Eleazar López Contreras on 17 December 1938 until December 2019, there were 2 716 maternal deaths, from which 1850 were MMOD, with 1 697 375 live newborns, for a global RMM of 160.01 x 100 000 RNV, with a global MMOD Rate of 108.99 x 100 000 RNV. It was registered 935 MM by sepsis with a global RMM by sepsis of 55.27 x 100 000 RNV. In Table 1 the RMM, RMMOD y RMM by sepsis Rates are presented in relation to the health administrative lapses of the country in the period 1936-2019.

Table 1

Maternal Mortality Rate -Maternity "Concepción Palacios". Administrative Lapse 1936-2019

INITIAL	FINAL	RMM (x 100000RNV)	RMMOD (x 100000 RNV)	RMM by sepsis (x 100000 RNV)
17-12-1935	05-05-1941	684,80	601,51	259,12
05-05-1941	18-10-1945	549,88	421,28	172,95
10-10-1945	17-02-1948	286,90	255,72	87,32
17-02-1948	24-11-1948	357,57	249,21	54,18
24-11-1948	13-11-1950	323, 60	246,32	33,81
27-11-1950	02-12-1952	195,55	167,62	38,43
19-04-1953	23-01-1958	149,26	115,75	39, 60
23-01-1958	14-11-1958	172,34	131,52	54,42
14-11-1958	13-02-1959	------	------	------
13-02-1959	13-03-1964	123,32	93,85	42 ,71
13-03-1964	11-03-1969	121,42	82,32	33,44
11-03-1969	11-03-1974	147,48	112,26	46, 66
12-03-1974	12-03-1979	161,75	128,52	87,78
12-03-1979	02-02-1984	198,78	153,11	84,65
02-02-1984	02-02-1989	150,94	113,00	54,08
02-02-1989	21-05-1993	172,42	135,41	71,11
21-05-1993	05-06-1993	-------	-------	-------
05-06-1993	02-02-1994	164,65	132,98	88, 66
02-02-1994	02-02-1999	101,13	81,35	41,77
02-02-1999	30-07-2001	81,33	64, 51	47, 68
30-07-2001	11-04-2002	172,90	146,03	40,88
11-04-2002	13-04-2002	-------	-------	-------
13-04-2002	14-04-2002	-------	-------	-------
14-04-2002	04-02-2007	172,90	146,03	40,88
04-02-2007	05-03-2013	91,30	63,20	14,04
09-01-2013	2018	137,12	87,44	27,82
05-03-2013		218,25		
19-04-2013	2019	107,56	107,56	

In Figure 1 it is observed the RMM of the country and that of the MCP, with a big difference between the national data and the maternity data, assessed until 2016 because the national official data is known only up to 2016.

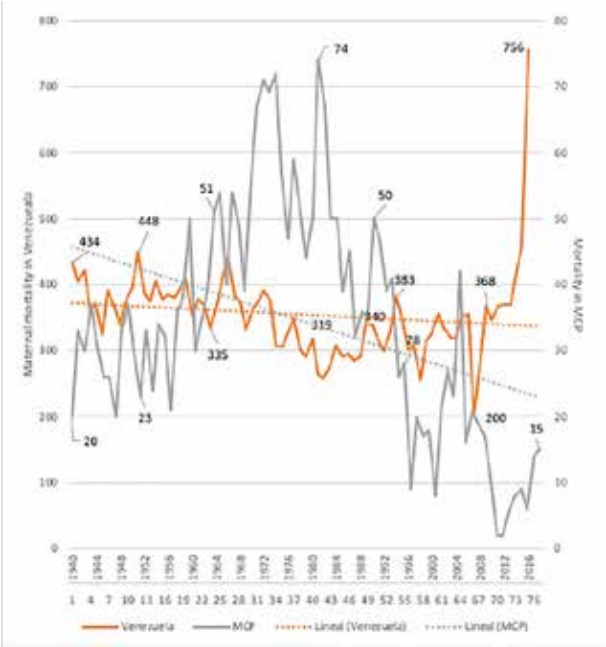

Figure 1. Maternal Mortality Venezuela and Maternity "Concepción Palacios". 1939 – 2016.

Following, four figures related to MM in the MCP from 1939 to 2019 are presented. In the first one the behavior of RMM as a health indicator can be visualized, and in the second one, the maternal death rate caused by direct effects of pregnancy (Figures 2 and 3).

In the following two figures the maternal mortality rate caused by sepsis is presented. In Figure 4 the decreasing behavior since the founding of the MCP until the beginning of the decade of 1950, and then the asymptotic behavior by the end of the decade of 19 90 and a stabilization in clear decrease at the beginning of the XXI century.

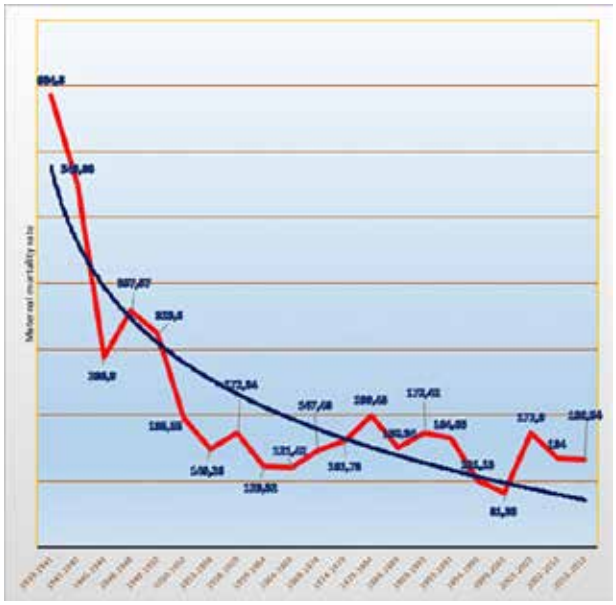

Figure 2. Maternal mortality rate Maternity "Concepción Palacios". Administrative lapse 1939-2019.

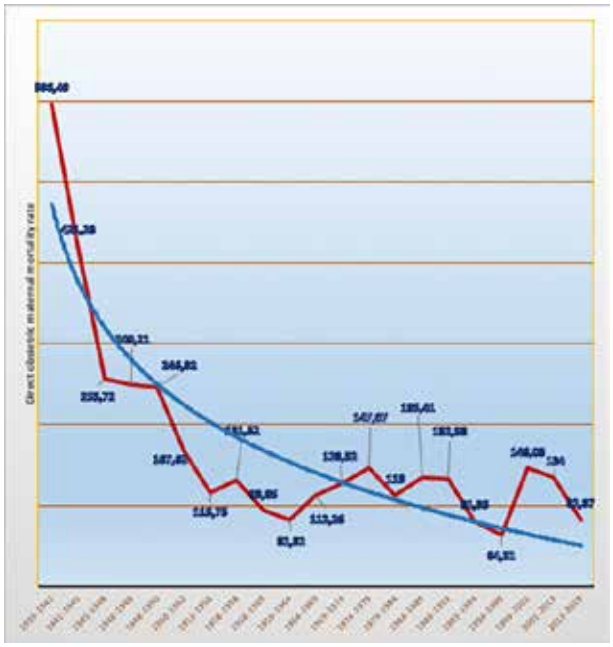

Figure 3. Direct obstetric maternal mortality rate Maternity "Concepción Palacios". Administrative lapse 1939-2019.

In Figure 5 the number of maternal deaths by sepsis occurred since the founding of the MCP until 2019 are shown, the highest absolute

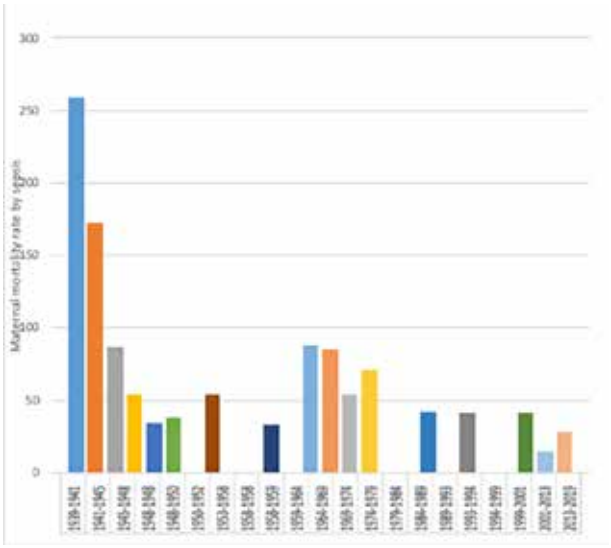

Figure 4. Maternal mortality rate by sepsis by administrative lapse Maternity "Concepción Palacios" 1939 - 2019.

frequency is observed in the decade of 70´sand 80´s, years that were also those with the biggest assistance for obstetric events, with international recognition in the year 1973 in which there were 47 851 RNV and 106 maternal deaths by sepsis.

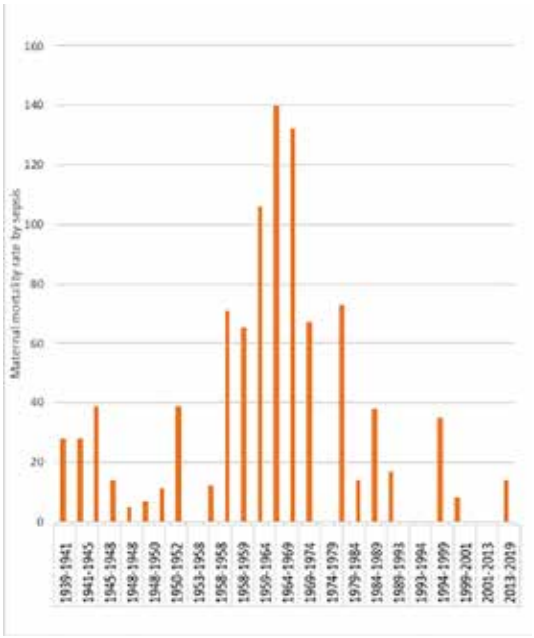

Figure 5. Maternal mortality rate by sepsis Maternity "Concepción Palacios". Administrative lapses 1939 – 2019.

Now we assess the maternal deaths in the different health administrative periods. For the transition period before de founding of the MCP, there are important aspects to consider, there were no quality medical records and most of the obstetric care was performed at home by "midwives", during the Lopez Contreras presidential period the MCP was opened and an institutionalized mixed obstetric care is established and the Healthcare and Social Assistance Ministry "Ministerio de Sanidad y Asistencia Social" is created, and official appropriate records begin to be obtained with pertinent and timely epidemiologic information. In this administrative lapse, the following data were presented: 74 MM with 10 806 RNV and an RMM of 684,80. 28 deaths by sepsis occurred, for an RMM by sepsis of 259.12 x 100 000 RNV, occupying the first position for MMOD with 37.84 %.

During the lapse from 05-05-1941 to 18-10-1948, 124 MM with 22 550 RNV and an RMM of 549.88 were presented. There were 39 deaths by sepsis, for an RMM by sepsis of 172.95 x 100 000 RNV, occupying the first position for MMOD with 41.05 %. Until this period the only antibiotic used in pregnant women was sulfa. Although penicillin existed, there was fear of using it in pregnancy. The emphasis was on the antisepsis for diminishing sepsis.

In the administrative lapse from 10-10-1945 to 17-02-1498, there were 46 MM with 16 033 RNV and an RMM of 286.90. 14 deaths by sepsis occurred, with an RMM by sepsis of 87.32 x 100 000 RNV, occupying the first position for MMOD with 34.15 %.

The first period of popular election, with duration of nine months from 17-02-1948 to 24-11-1948, in the MCP 33 MM occurred with 9 229 RNV and an RMM of 357.57. There were 5 deaths by sepsis, for an RMM by sepsis of 54.18 x 100 000 RNV, occupying the third position for MMOD with 21.73 %.

In the lapse from 24-11-1948 to 13-11-1950, there were 67 MM with 20 704 RNV and an RMM of 323.60. 7 deaths by sepsis are presented for an RMM by sepsis of 33.81 x 100 000 RNV, occupying the third position for MMOD with 13.73 %. It is inferred that one of the fundamental elements for de decrease of MM by sepsis is the institutionalization of labor, in that period the maternity, with respect for the idiosyncrasy of the population, had an at-home obstetric service, that lasted up to the end of this presidential period. In this period is incorporated the use of penicillin and this is the medical event that causes the decrease of the MM even more.

During the administrative lapse from 27-11-1950 to 02-12-1952, 56 MM are presented with 28 636 RNV and an RMM of 195.55. There were 11 deaths by sepsis, for an RMM by sepsis of 38.43 x 100 000 RNV, occupying the third position for MMOD with 22.92 %.

In the administration from 11 19-04-1953 to 23-01-1958, 147 MM occurred with 98 482 RNV and an RMM of 149.26. 39 deaths by sepsis were presented, for an RMM by sepsis of 39.60 x 100 000 RNV, occupying the second position for MMOD with 34.21 %. One of the important medical events is the use of broad-spectrum antibiotics, the medical resource that accomplish the decrease of MM by sepsis.

Once falls the dictatorship starts a brief lapse from 23-01-1958 to 14-11-1958, 38 MM are presented with 22 050 RNV and an RMM of 172.34. There were 12 deaths by sepsis for an RMM by sepsis of 54.42 x 100 000 RNV, occupying the second position for MMOD with 41.38 %.

Between 13-02-1959 and 13-03-1964, there were 205 MM with 166 221 RNV and an RMM of 123.32. There were 71 deaths by sepsis, for an RMM x sepsis of 42.71 by 100 000 RNV, occupying the first position for MMOD with 45.51 %.

During the period from 13-03-1964 to 13-03-1969 ,236 MM were presented with 194 360 RNV and an RMM of 121.42. There were65deaths by sepsis, for an RMM x sepsis of 33.44by 100 000 RNV, occupying the first position of MMOD with 40.63 %.

In the period11-03-1969 to 11-03-1974, where the opposition party assumes the government, 335 MM were presented with 227 135 RNV and an RMM of 147.48. 106 death by sepsis occurred, for an RMM x sepsis of 46.66 x 100 000 RNV, occupying the first position of MMOD with 41.57 %. Is in this period where the biggest quantity of births occurs in the history of the

MCP that was at that moment of national and international reference.

Continuing with the democratic alternation starts the period from 12-03-1974 to 12-03-1979 where 258 MM were presented with 159 496 RNV and an RMM of 161.75. 140 deaths by sepsis were presented for an RMM by sepsis of 87.78 x 100 000 RNV, occupying the first position of MMOD with 68.29 %.

In the new administrative lapse from 12-03-1979 to 02-02-1984296 MM were registered with148 905 RNV and an RMM of 198.78. 132 deaths by sepsis occurred for an RMM by sepsis of 84.65x 100 000 RNV, occupying the first position of MMOD with 57.89 %.

During the period from 02-02-1984 to 02-02-1989, 187 MM were presented with123 887 RNV and an RMM of 150.94. 67 deaths by sepsis were presented for an RMM by sepsis of 54.08 x 100 000 RNV, occupying the first position of MMOD with 47.86 %.

In the lapse from 02-02-1989 to 21-05-1993, 177 MM occurred with102 651 RNV and an RMM of 17.42. 73 deaths by sepsis were presented for an RMM by sepsis of 71.11 x 100 000 RNV, occupying the first position of MMOD with 52, 52 %.

During the period from 21-05-1993 to 02-02-1994, 26 MM were presented with 15 791 RNV and an RMM of 164.65. 14 deaths by sepsis were presented for an RMM by sepsis of 88, 66 x 100 000 RNV, occupying the first position of MMOD with 66.67 %.

In the administrative period from 02-02-1994 to 02-02-1999, 92 MM occurred with 90 964 RNV and an RMM of 101.13. Of those, there were 38 deaths by sepsis for an RMM by sepsis of 41.77 x 100 000 RNV, occupying the first position of MMOD with 51.35 %. The decrease in MM can be attributed to the decision of converting the MCP in Autonomous Service as a Public Policy of decentralization and on its institutional policy, there was the goal of decreasing the MM. An important event from the medical point of view that also influenced the end of the period was the development of misoprostol that provoked an enormous decrease in MM because of the practice of abortions under unsafe conditions.

During the first lapse of the "V Republic", (02-02-1999 to 30-07-2001), 29 MM were presented with 35 653 RNV and an RMM of 81.33. There were 17 deaths by sepsis for an RMM by sepsis of 47, 68 x 100 000 RNV, occupying the first position of MMOD with 73.91 %.

In the second period from 30-07-2001 to 11-04-2002, 148 MM were presented with 85 597 RNV and an RMM of 172.90. 35 deaths by sepsis were presented for an RMM by sepsis of 40.88 x 100 000 RNV, occupying the second position of MMOD with 28 %.

In the periods from 11-04-2002 to 05-03-2013, 52 MM were presented with 56 954 RNV and an RMM of 91.30. There were8deaths by sepsis for an RMM by sepsis of 14.04 x 100 000 RNV, occupying the third position of MMOD with 22.22 %.

During the lapse from 09-01-2013 to 11-04-2019, 69 MM were presented with 50 320 RNV and an RMM of 137.12. 14 deaths by sepsis were presented for an RMM by sepsis of 27.82 x 100 000 RNV, occupying the second position of MMOD with 31.82 %.

From 2019 until the moment of performing this study there is a political event not previously seen, with no registry of national medical information and there are two forms of government, one of fact and an interim one, in this period there has been 59 MM, barely 5 578 RNV, for an RMM of 107,56.

DISCUSSION

According to the Objectives of the Millennium (ODM, 2000-2015), Venezuela should have reduced the RMM from 53.10 to 13.3 x 100 000 RNV and reduce the infant mortality from 25.80 to 8.78 deaths by 1 000 registered RNV (15,16). Unfortunately, this reduction instead of being achieved, the RMM was increased in comparison with the figures of the period from02-02-1994 to 02-02-1999 with those reported during the period from 02-02-1999 to 31-12-2018. The sepsis occupies in the MCP the second position as MMOD cause after hypertensive disorders of pregnancy (THE) (5,6,8), being the first global cause of MM in the 1936-2018 period assessed

in this study, even though THE occupies the first position of MMOD in the periods as from 1999.

During the XX century, the MM by sepsis in the MCP only occupied the first position in the period's from 17-02-1948 to 14-11-1958. Therefore, it is appropriate to highlight that one of the causal factors of those deaths was the abortion under unsafe conditions, considering that such procedure generates the infectious process that triggers maternal death. It is to notice that in the first half of the XX century the only antibiotic that was used was sulfa, as the antibiotic therapy resources were scarce and the effectiveness to fight the infection accurately had a low probability (17). On the other hand, it is indispensable to mention that also in this period, a great number of pregnant women were attended by midwives that had scarce knowledge about obstetric attention as they performed it in an empiric mode (5,6).

That is why the home attention for pregnant women was implemented by qualified physicians as a measure to identify complications in pregnant women and transport them into the health center in a rapid manner, as time is crucial to stop the infectious process and to preserve the life of the woman, considering the delays in obtaining timely diagnosis and treatment as decisive factors in the dramatic outcome of the MM, as time is crucial to stop or decrease an infectious process that can trigger the death of the pregnant woman (5,6,18).

Even though the commercialization of penicillin and other antibiotics from the second half of the XX century markedly improved the therapeutic arsenal for the health professionals in the obstetric area, the high figures of the septic cases until the government of Betancourt Bello were related to infectious processes in surgical wounds and the high prevalence of unsafe abortions, with the important role of the use of soapy washes and the use of plants as parsley, without taking into consideration untold by patients events or those not registered in the clinical files.

The sub-registry of those events in a society that disapprove the pregnancy of single women and the religious stigma, makes these data not completely reliable regarding the morbidity and mortality by this cause. However, it is important to indicate that the use of antibiotics in that period managed to slightly decrease the deaths of pregnant women with infectious processes, being one of the most important turning points in the mortality by infectious processes in the XX century. The antibiotics constitute the cornerstone in the treatment of infectious diseases that have caused great suffering and deaths to humanity for centuries, in addition to fluid therapy, the use of vasopressors, and the removal or draining of the specific focus if applies (1-6).

Sánchez, Aurrecoechea, and Torres (17) establish common factors that with no doubt explain the influence of maternal life loss and the little success obtained from the sepsis treatment. Amongst those constraints, we found in the first place, "Sanitary helplessness" regarding the mothers whom homes were difficult to visit to warrant the obstetric surveillance in Infant Maternal Centers and were transferred to the MCP from the interior of the country.

In the second place, there is the "sanitary lack of culture" explained by the great lack of attendance of the pregnant woman to the prenatal visit. The author expresses that 71.15 % of the patients who died did not attend prenatal control, or if they did, it was on very few occasions. In third place, there is the "social helplessness" regarding the lack of marital unions that implied economic incapacity, difficulties for attending medical visits, or even have a hospitalization. Fourth, there is the "Influence of the empiric midwife", the help of another woman was requested to accompany the labor without proper medical assistance.

In fifth place, they refer to the "condition of the patients at the admission" as a high percentage of the patients that were referred had severe complications. According to its rules, the MCP received all pregnant women, regardless of where they came from and of the admission condition; so many patients were admitted in very bad conditions by MME, which has an incidence over the RMM by sepsis.

The political, economic, and social deterioration of the country-influenced the high RMM by sepsis in the MCP (national reference center) from the final of the first period of 1974-1979 that decreased the quality of life of the population and, in this case, that of the pregnant women that belonged to the most vulnerable population, with

scarce economic resources to satisfy their main need such as quality alimentation, education, medicaments, and medical care.

Koch (19) refers that education is fundamental in the reduction of MM and maintains that the public health policies intended to improve the education of the woman and promote the wanted, planned, and safe pregnancy achieve the reduction of the MM without the paradox of the legalization of the induced abortion. The reduction of illiteracy in the pregnant woman, along with the promotion of safe pregnancies that include early prenatal control, professional care at labor, and high-risk obstetric care, are key factors to decrease the MM by sepsis, for it is intrinsically linked to the social aspects.

The global RMM in the MCP for the period (2013-2018), was 137.12 x 100 000 RNV, with RMM by sepsis of 27.82 x 100 000 RNV, the second lowest in the history of the center. It is also worth recalling that the MM by sepsis in the MCP occupies the second position for MMOD with 31.82 %, while in the United States of America it represents only10 % of the MMOD with a global RMM of 23.8 x 100 000 RNV (20, 21). If we compare the data with those of Colombia, the study of Velasquez et al. (22) reported an RMM by sepsis of 6.21 x 100 000 RNV.

Cabrera (6), proposed six theoretical premises for the analysis of the MM which is pertinent for the analysis of the MM by sepsis contextualizing with the results obtained during this study:

1. The maternal death term is the best definition than maternal mortality for the tragedy of a pregnant woman expecting a happy event that concludes with her death is the syndrome of failure; fails a family on its structure, fails the education as many of them die because of the lack of information in sexual and reproductive health, fails the society for being petty in accepting and making the decisions regarding abortions in unsafe conditions and complications related to infectious processes that derive in MME by sepsis, fails the performance of the physician whom has not defined and perform political incidences to improve the pregnant, in labor and post-partum women care conditions who suffer life-threatening infectious processes.

The State fails been too weak when proposing and establishing appropriate public politics, as those are only based on the decrease of the RMM by sepsis indicator when the most important is taking actions so none of them occur. What is happening is that the risk is dismissed and the possible pregnant women in conditions of poverty are economically encouraged with presumed protection with some depreciated currency to get pregnant, as well as promoting the adolescent's pregnancies.

2. Proper family planning significantly impacts maternal death. Without doubt, along with the appropriate sexual and reproductive education and the proper access to the diversity of birth control methods, we shall decrease the maternal death of adolescents and those of the mothers that consider completed their progeny, that regrettably resort to abortions under unsafe conditions as a method for familiar planning, several times giving up their lives or having important mental and physical health lesions, because of sepsis following the abortion under unsafe conditions, without pretending to be in favor of the abortion.
3. No woman shall die for not knowing that she is in a risk situation. Theorizing the first delay of Thadeus modified by Maine (18,22), it is explained that the time that takes the pregnant woman is taking notice that she has something that is not right and puts her life at risk influences maternal death. Education, along with early and appropriate prenatal control is an important element for this delay, a well – informed patient during her sexual and reproductive education, and carefully oriented in her prenatal control, should very well know her risks of suffering infectious processes during her pregnancy
4. The pregnant woman should be next to health centers with obstetric care and have the possibility of transport before any risk event, for the proper care. Another of the factors that influence maternal death is poverty, and along with it, far away or highly dangerous homes due to the violence, where the pregnant woman has the dilemma of risking her life when going out before a society that does not control the overflowing crime or the risk of waiting for morning hours when a safe transport can be

found.

It is undeniable the social inequity regarding the possibility of transportation to the third level of attention care centers as the MCP, losing valuable time for the diagnosis and proper treatment of sepsis and septic shock, which makes the extended second delay of Thadeus and Maine (18), as very few pregnant women have warranted the possibility of going to a near and appropriate health center safely. This is a direct determinant of morbi – mortality in an entity as sepsis where it has been shown that the mortality is directly related to a delay in attention, as well as the proper escalation in the required quality of attention (1-4,23).

5. The emergency obstetric assistance of the pregnant woman shall be performed on time. Once the pregnant woman is in a suspected risk situation of MM by sepsis and the procedure demands a diagnostic that must be verified and a timely treatment received must be received, there is the risk that the site is not able to provide the proper care due to reasons from the lack of supplies to the absence of trained staff that can provide the right attention, not taking into account the back and forthing "ruleteo" or multiple references that imbricate with the second delay, that implies the visit to the proper site where there also exists all the conditions to be attended.

In relation to the current increased RMM by sepsis, it is important to notice that previously there were hundreds of physicians wishing to be trained in this specialty there were hundreds of physicians aiming to be trained in the specialty that after the appropriate selection could study and perform it "the best ones", nowadays to perform the postgraduate studies, there is an assignation and not selection process as few physicians apply, and therefore not precisely the best prepared are those in charge of the pregnant women health in the MCP.

This, in an environment in which even with the timely and appropriate diagnosis of sepsis and septic shock, up to 73 % of the pregnant women with sepsis do not receive the required broad-spectrum antibiotic therapy scheme, makes necessary the proper training and education of the health staff in fetal-maternal medicine and critic obstetrics according to the current clinical guidelines based in the evidence to improve prognosis, decreasing the RMM by sepsis when improving the quality of the medical intervention of the septic pregnant women (1-4, 24).

The deficit in the education in the critical obstetric area might contribute to the maintaining of unacceptable figures of MM by sepsis in the MCP, despite the creation of the Fetal Maternal Medicine Specialty (5,6). Amongst the modifiable factors with proper education of the staff are the delays when identifying the syndrome, when starting the therapy with antibiotics, assuming the management in levels with low-resolution capacity, inadequate treatment of septic shock, and lack of modification of therapeutic behavior before the deterioration of the patients (22,24).

6. It is indispensable to issue public politics of sexual and reproductive health properly and effectively. There is a big delay in the State public policies to decrease the MM, and specifically, in the MM by sepsis, for what Cabrera (6) proposed as the fifth delay, in addition to the classic model of three delays of Thadeus and Maine (18), as well as the fourth delay proposed by Karolinski et al. (7), a curve that decreases with the creation and opening of the MCP when there were public policies that contributed to the reduction of the figures of MM by sepsis that was maintained through the years in numerically acceptable values with an asymptotic behavior. The epistemological and axiological makes us aware that we have even signed agreements and declaration that have not been taken into account for defining concrete actions to enforce them Faneite (25), when analyzing the MM, recommends guidelines of care services activities that, in correspondence with the analysis by theoretical premises of Cabrera (6) are beneficial for changing the current figures of RMM by sepsis, acknowledging that most of the MM are avoidable with viable and economic interventions. Among those activities there are:

1. Organization of institutionalized by the State perinatal care service programs, with attack strategies against sepsis, the second cause of MM in the MCP.
2. To establish perinatal care service programs prioritized by risk level, with an emphasis at

the primary level, which would increase the coverage and improve the systems of reference between the levels of care service in patients with sepsis and septic shock, with proper supplies by complexity levels.

3. To improve the functioning and supplies of the risk pregnant visits at the hospital, with the proper supplies, surveillance, and stimulation of the service that provide, with priority for the patients suffering the detected local MME pathologies as sepsis.
4. To routinely establish the identification of a prediction system for risk pregnancies, in an early manner.
5. The multidisciplinary integration of the health professionals in the attention of the septic pregnant women.
6. To equip the hospital labor rooms and at the primary level with the instrumental, sutures, antiseptics, oxytocic, antibiotics, solutions, etc., and strengthen the critical obstetric units of the hospitals.
7. To demand routinely the autopsy studies for the cases of MM by sepsis.
8. To reaffirm the surveillance committees for MM.
9. To improve the hospital registry and statistic systems, according to the national and international terms and recommendations.

Faneite et al. (26), propose the need of elevating the quality of the medical performance in patients with MME for pathologies of MMOD as sepsis, far from the cloud of distrust and safety that currently covers it, along with the disappearance of supplies, medical material, and medicaments, that afflicts the sanitary system. Furthermore, even though sepsis is much less frequent as a cause of MME concerning THE and hemorrhages as evidenced by the findings of Amato et al. (27), representing less than 10 % of the total, the MM by sepsis is highly preventable and treatable, improving the quality of the attention by complexity levels with the timely and proper diagnosis and treatment, and modifying the social determinant factors of the MM, as reflected by the data of the MM in the Bolivarian region of Latin America of the Faneite (28) study.

The investigation of the MME by sepsis performing a relation of the prenatal hospitalizations, its evolution, morbi – mortality predictors, and risk factors is an investigation guideline that provides academic – professor and care service support improving the perinatal results, as postulated by Faneite et al. (29), increasing the efficiency and efficacy in the emergency obstetric care by sepsis and septic shock, changing the lack of sanitary response that leads the lack of compliance of ODM (16), as part of the constructivist rationale of Faneite regarding the strategies to be followed (30,31).

The evolution of the RMM by sepsis in the last 15 years in the MCP can differ in comparison with other third level centers as the Hospital "Dr. Adolfo Prince Lara", in Puerto Cabello, country model center, regarding the evaluation of the MM, was the calculated RMM by sepsis was 16.69 x 100 000 RNV, similar figures to those found in the current investigation for the same described period in the Faneite and Rivas report for the 2005-2009 period (32). The RMM by sepsis in that center was 8.64 x 100 000 RNV in the 2001-2004 period, calculated from the data registered by Faneite and García (33), far below the data in the MCP. The RMM by sepsis in that center was 15.42 x 100 000 RNV in the 1992-2000 period, calculated from the data registered by Faneite and Starnieri (34), figures that are far below those observed at the MCP in the same period.

In a retrospective investigation of the trends in a similar time interval 1969-2004 to that of the current study, Faneite (35), informed 115 maternal deaths with 126 669RNV, and a global RMM of 99.2 x 100 000 RNV with an average of 48.2 x 100 000 RNV in the last 10 years reviewed. When performing the comparison of the obtained results it is evident, as a historical national reference center, despite the grave current limitations of infrastructure, staff, and supplies, the attention of a high number of users, in addition to the previous discussion, is a somehow mitigating factor of the tabulated alarming figure of RMM by sepsis in the last decade.

CONCLUSIONS

The MM by sepsis in the MCP, as national reference center, has historically been the first global cause of MMOD, even though during the XXI century it has gone to a second level before THE, although with a highly elevated RMM by sepsis in relation with the Objectives of the Millennium and the comparison with what is observed in the emergency obstetric care services of national attention third level centers, constitute a failure that must be treated as a pending debt of the State with the society that needs an urgent reparation.

Among the keys to decreasing the MM by sepsis are the education and training of the health staff of fetal-maternal medicine and critic obstetric, following the clinical guidelines based on evidence that could counteract the delays in the identification of the syndrome, starting antibiotic treatment, assuming the management in levels with low-resolution capacity, escalation of attention, inadequate treatment of septic shock and lack of modification of therapeutic behaviors before the deterioration of the patients. The proper provision of the required infrastructure and supplies of the MCP for the treatment of patients with sepsis and septic shock is urgent.

The analysis by theoretical premises that allow the identification of social aspects of the MM by sepsis and the sanitary reality related to its management, and implementation of preventive public policies intended for decreasing the high RMM by sepsis, constitute an approach that goes beyond the conventional models that have addressed the problem of the delay for the access to the needed quality attention, modifying the social determinants and the quality of sanitary care by complexity levels that have an incidence on the morbi – mortality by sepsis, in association with poverty and social inequity. Family planning in addition to public policies in sexual and reproductive health in timely and proper management can support the education and the prevention in pregnant women at risk of MME and MM by sepsis.

The integration of the analysis by theoretical premises with care service guidelines that improve the operation and the multidisciplinary incorporation to the perinatal care service programs in the attention of the septic pregnant woman by complexity levels, including intensive care in critic obstetric, has a positive impact over the identification and proper care of the sepsis and shock septic cases, as well as the posterior review by the MM committees. The research and utilization of health statistics in the MME by sepsis performing a relation of antenatal hospitalization, its evolution, morbi – mortality predictor, and risk factors, provide an academic – professor support to the sanitary – care service action improving the perinatal results, in regard the national and international terms and recommendations.

RECOMMENDATIONS

Perform investigations in MME by sepsis in the MCP and other national attention third level centers in the emergency obstetric cares that support the academic – professor in the sanitary – care service action, in addition to the State public policies in sexual and reproductive health regarding sepsis and septic shock.

Incorporate the analysis by theoretical premises with care service guidelines in the programs of perinatal care service of MME and MM main causes, as well as in the protocols of prenatal care and emergency obstetric care, monitoring the impact of such actions over the perinatal health indicators, concerning the national and international terms and recommendations.

To train physicians in the fetal-maternal medicine area and critical obstetrics, to prevent and control the MM by sepsis in the proper manner.

DISCLOSURE

The authors deny the existence of conflicts of interest at the moment of performing this study.

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