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# Birthing life and death: women's reproductive health in early twentieth- century Rio de Janeiro

*Vida e morte no parto:  
saúde reprodutiva das  
mulheres no Rio de Janeiro  
do início do século XX*

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## Abstract

This article explores women's reproductive health in early twentieth-century Rio de Janeiro, showing that elevated and sustained stillbirth and maternal mortality rates marked women's reproductive years. Syphilis and obstetric complications during childbirth were the main causes of stillbirths, while puerperal fever led maternal death rates. Utilizing traditional sources such as medical dissertations and lesser-used sources including criminal investigations, this article argues that despite official efforts to medicalize childbirth and increase access to clinical healthcare, no real improvements were made to women's reproductive health in the first half of the twentieth century. This, of course, did not make pregnancy and childbirth any easier for the women who embodied these statistics in their reproductive lives.

Keywords: childbirth; reproductive health; stillbirth; maternal mortality; Rio de Janeiro.

## Resumo

O artigo aborda a saúde reprodutiva das mulheres no Rio de Janeiro do início do século XX, mostrando que taxas elevadas de mortalidade materna e de contínua natimortalidade marcavam os anos reprodutivos das mulheres. As principais causas de natimortalidade eram sífilis e complicações obstétricas, enquanto febre puerperal encabeçava as taxas de morte materna. Utilizando fontes tradicionais como teses doutorais e fontes como investigações criminais, o artigo discute que, apesar dos esforços oficiais para medicalizar o parto e aumentar o acesso aos serviços de saúde, nenhuma melhoria real foi feita na saúde reprodutiva das mulheres na primeira metade do século XX. Isso, certamente, não facilitou a gravidez e o parto das mulheres que compunham as estatísticas em suas vidas reprodutivas.

Palavras-chave: parto; saúde reprodutiva; natimortalidade; mortalidade materna; Rio de Janeiro.



One November day in 1907, Alice Maria da Conceição was at home when her first labor pains began (Inquérito..., 23 Nov. 1907). By the time Conceição called her older female neighbor, Camilla, for assistance, she was already in the late stages of delivery. The infant was breech (pelvis first): its legs and trunk were outside of the vaginal canal, but “the neck and head were stuck.”<sup>1</sup> With Camilla’s help, Conceição eventually delivered a stillborn infant, which most likely died during the dystocic delivery. Conceição’s experience was just one of many instances of negative reproductive outcomes for women of modest means in early twentieth-century Rio de Janeiro, Brazil’s capital city at that time. This article explores poor and working women’s reproductive health during the First Republic (1889-1930) and the early Vargas era (1930-1937). Sustained high rates of stillbirths and maternal mortality marked the reproductive lives of all women, but particularly those of the impoverished classes. Syphilis and obstetric complications during childbirth were the two main causes of stillbirths, while puerperal fever was the main driver of maternal death rates. Physicians could have reduced stillbirth rates to a limited extent by providing a health infrastructure that adequately addressed difficult labors, although syphilis could not be fully cured until the arrival of penicillin (Carrara, 1996). But Brazilian physicians, like their counterparts across Europe and North America, waged a losing battle against the *Streptococcus* bacteria that caused most cases of puerperal fever and the majority of maternal deaths before the widespread use of sulpha drugs in the mid-1930s and the isolation of penicillin in 1944 (Loudon, 1992).

The historiography on women’s health in Brazil has expanded over the last several decades. Scholars have provided new insights into the ideologies surrounding maternal-infant healthcare, particularly the idea of “scientific motherhood,” which posited that women required guidance from the medical profession to properly raise their children (Freire, 2008, 2009; Maes, 2011; Martins, 2005, 2008; Mott, 2001; Otovo, 2016; Rohden, 2009; Wadsworth, 1999). In a similar vein, historians have demonstrated how obstetricians and philanthropists made concerted efforts to expand maternal-infant health services by constructing public maternity hospitals and including women’s health in Rio de Janeiro’s growing public health infrastructure during the First Republic (Barreto, 2011, 2015; Barreto, Oliveira, 2016; Freire, Leony, 2011; Martins, 2004; Mott, 2002; Sanglard, Ferreira, 2010). Under Vargas (1930-1945) these efforts expanded, centralized, and federalized, as the patchwork of maternal-infant public health initiatives in various states and municipalities became an integral platform of the federal government, with Rio de Janeiro setting the standard for policy and its implementation (Fonseca, 1993, 2007; Marko, 2006; Mott, 2001). Additionally, studies have looked at how the state’s expansion of maternal-infant healthcare services resulted in increased judicial vigilance over women’s fertility control practices like contraception, abortion, and infanticide (Rohden, 2003; Roth, 2017a; Santos, 2012). This article builds upon this research by focusing on both quantitative reproductive health data and qualitative examples of women’s experiences of pregnancy and birth. It argues that despite the ideological and institutional efforts to both medicalize childbirth and increase access to clinical healthcare, no real improvements were seen in women’s reproductive health during the first four decades of the twentieth century.

To do so, the article relies on both medical and legal sources. Historians of medicine have often relied on traditional sources like medical journals and dissertations; in contrast, scholars studying contraception, abortion, and infanticide utilize judicial sources including criminal investigations. This article compares these two sets of sources to understand how medical trends, clinical practice, and women's experiences intersected in the realm of reproductive health. In Rio de Janeiro, early twentieth-century judicial surveillance of women's supposed fertility control dovetailed with the state's inability to improve maternal-infant health. The result was police vigilance of all negative reproductive outcomes – whether criminal abortion or spontaneous miscarriage – and the resulting legal documents often describe all aspects of women's reproductive lives (Roth, 2017b). When read in relation to medical publications, criminal sources provide new insights into women's experiences of pregnancy and childbirth.

The article first analyzes data on both stillbirth and maternal mortality before exploring how women experienced the death of a newborn or the prospect of their own death during childbirth. It concludes by situating Rio de Janeiro's reproductive health statistics within a global framework. Physicians in this city were not alone in their inability to improve reproductive health – sustained declines in high stillbirth and maternal mortality rates worldwide only came in the 1940s. This, of course, did not make it any easier for the women who embodied these statistics in their reproductive lives.

### **Miscarriage and stillbirth**

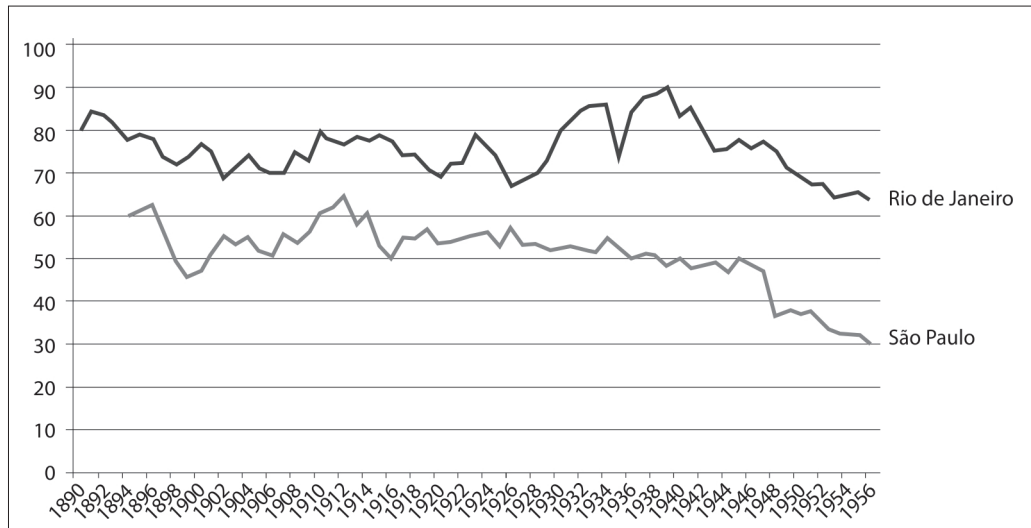
Efforts by obstetricians to improve the city's maternal-infant health services by constructing hospitals and medicalizing childbirth came partly in response to the city's high and sustained miscarriage and stillbirth rates. Despite physicians' obsession with these numbers, public health entities in early twentieth-century Brazil (as in many western countries) neither clearly defined nor accurately recorded miscarriage and stillbirth causes and rates. The World Health Organization (WHO) currently defines a miscarriage as the death of a nonviable fetus occurring in the first twenty-one weeks of pregnancy (Froen et al., 2011). Early twentieth-century Brazilian statisticians were less clear in their definitions, a fact which obscures actual rates (Enout, 1917). Despite the lack of accurate statistics, obstetricians argued that miscarriages were common among women of reproductive age in the city, especially those of the lower classes (Campos, 1911; Enout, 1917; Mattos, 1923; Pimentel, 1916). In 1921, Miguel Couto (1921, p.149), president of the Academia Nacional de Medicina (ANM), told his colleagues that he kept fastidious statistics of the women under his care who had miscarried: "Well, I can guarantee to my colleagues that in my statistics there are more than 80% of cases of stillbirths. I know few ladies who have not had a miscarriage!"

As with miscarriage, stillbirth definitions remained unclear for much of the early twentieth century. Today, stillbirth is defined as the birth of a viable fetus five hundred grams or more, twenty-two or more complete weeks of gestation, or a fetus with a body length of at least twenty-five centimeters, which died before or during labor and birth. Current medical and public health research also distinguishes between antepartum

(before birth) and intrapartum (during delivery) stillbirths (Froen et al., 2011; Lawn et al., 2011). In Brazil, republican public health officials first defined stillbirth as “a child that did not exhibit signs of life at birth, or which died during labor,” later amended to read “a dead fetus or one dying in the moments before birth” (Freitas Filho, 1945, p.100). But the statistics did not differentiate between stillbirths that occurred *in utero* and before the onset of labor (antepartum) and those that transpired during birth (intrapartum). In an effort to improve the data, republican health officials suggested the definition of three categories: (1) *in utero* fetal demise (antepartum); (2) death during delivery (intrapartum); and (3) death immediately after birth (early neonatal death). The first two would be categorized as stillbirths, and the third as a live birth and subsequent infant death (Machado, 1911). This was based on the then-applicable International List of Causes of Death (now the International Causes of Disease, ICD), the League of Nations’ public health guideline. But public health departments across the country refused to adopt a uniform definition, and by the late 1920s, Brazilian obstetricians and pediatricians were still pushing for systematic reporting in line with subsequent modifications from the League of Nations (Figueira, 1927; IIS, 1930). It was not until 1940 that Brazil’s official definition for all parts of the country was the same as the ICD designation: “Fetal death (stillbirth) is the death of a viable fetus after at least 28 weeks of gestation, in which pulmonary function is not established, and death may occur before, during, or after birth, but prior to fetal respiration” (Freitas Filho, 1945, p.100; IIS, 1940, p.75; Scorzelli Jr., Freitas Filho, 1945, p.23, 128).

Frustrated efforts by physicians to improve the definition and registration of stillbirths demonstrate that the data relating to these events were neither well-defined nor reliably collected. Historians have shown that underreporting of births and deaths was common during the first three decades of the twentieth century in Rio de Janeiro, a fact also noted by contemporary officials (Adamo, 1983; Figueira, 1927; Freitas Filho, 1945). As such, stillbirth statistics were not accurate, and rates before 1930 were probably higher than recorded (Carvalho, 1924; Ribeiro, 1923). After Getúlio Vargas came to power in 1930, he began improving the accuracy of government statistics (Cunha, 1995). Post-1930 rates may reflect a registration effect, exhibiting increases due to more accurate reporting (Loudon, 1992). What the limited numbers show is a relatively stable stillbirth rate (SBR) of between 70 to 90 stillbirths per 1,000 total births from 1890 to 1940, or a mean of 77 stillbirths per thousand total births per year, as demonstrated in Chart 1. In other words, in the early twentieth century, roughly one out of every eight births resulted in a stillbirth in the city of Rio de Janeiro, and only in the mid-1940s did rates begin to decrease. The medical profession did not ignore these numbers. As leading obstetric reformer Clóvis Corrêa da Costa wrote in 1930 (p.146), stillbirth rates were one of the city’s great social problems; “Rio de Janeiro in this aspect shoulders a great responsibility, since as the country’s most cultured and civilized city (and the capital) it stands as a standard and a model for all other large and small cities in Brazil.” The city’s high stillbirth rate was shameful: “It is frankly shameful what is seen in Rio de Janeiro with regard to maternity care! ... We are ashamed, humiliated, when foreign colleagues visit us” (Costa, 1930, p.185).

Chart 1 – Stillbirth rate per 1,000 total births, Rio de Janeiro and São Paulo, 1890-1956



Source: Brasil, 1927, 1944; Costa, 1930; Machado, 1911; Scorzelli Jr., 1943; Seade, n.d.<sup>2</sup>

The differences between Brazil's two largest cities, São Paulo and Rio de Janeiro, merit attention. Even despite under- or misreporting, the numbers show a consistently higher SBR in Rio de Janeiro than in São Paulo. One possible reason is that the latter was the target of successful public health campaigns in the early twentieth century; these reforms reduced the prevalence of infectious disease and improved sanitation. Nevertheless, syphilis and obstetric complications were the two main causes of stillbirths, and São Paulo's health campaigns did not target these problems (Anderson, 1986; Hochman, 2013). This comparison merits an in-depth study of how changing public health infrastructure impacted stillbirth rates in two growing Brazilian cities.

In the early 1940s, Rio de Janeiro's SBR began a slow decline that continued throughout the decade and into the mid-1950s. This decrease is not unique to Rio de Janeiro – or to Brazil. In Europe and the USA, significant drops in SBR also began in the 1940s. What caused this decline? Many factors influence fetal health, including biogenetic factors, maternal health, and delivery conditions, which include both the actual physical surroundings as well as the skill of the birth attendant. Consequently, both social factors (such as poor nutrition and inadequate medical training) and genetic factors (which cause the majority of fetal deaths) influence miscarriages and stillbirths. Yet genetic factors remain relatively constant over time, and as a result downward trends stem from social causes (Woods, 2009). Effective disease treatment or improved nutrition will lower antepartum rates, for example. Intrapartum stillbirths are tied to obstetric care measures, with better access to proper medical assistance during birth leading to a lower rate. After Second World War, Robert Woods (2009) hypothesizes that three main factors caused the sustained decline of stillbirths in the West. The discovery and implementation of new drug and medical technologies like antibiotics and prenatal syphilis screening reduced antepartum stillbirths. The skill and quality of birth attendants also improved, reducing

intrapartum stillbirths. Finally, demographic changes (including lower fertility rates) affected both antepartum and intrapartum SBR rates (2009). In this sense, physicians often frustrated efforts to improve stillbirth rates in Rio de Janeiro were not unique to the city but rather were part of the larger and longer trajectory of improvements in western obstetric medicine.

How did physicians in Rio understand the causes of stillbirths? Physicians generally comprehended many of the pathological causes of fetal death. By the 1920s, they correctly linked diseases associated with poverty like syphilis and tuberculosis to miscarriage and antepartum stillbirth (Ladeira, 1919; Machado, 1911; Ribeiro, 1923). Physicians believed that obstetric factors such as breech births and placenta previa were the leading cause of intrapartum stillbirths, followed by delivery conditions (André, 1924; Carvalho, 1924; Costa, 1930; Elias, 1926; Figueira, 1927; Fontenelle, n.d.; Lago, 1921; Paranhos, 1923; Penteado, 1924; Tatsch, 1922). They also emphasized urban poverty as an underlying problem, without identifying specific causal patterns (Baptista, 1900; Machado, 1911). Fernando Magalhães, in a lecture at the Rio de Janeiro School of Medicine on the different causes of antepartum and intrapartum stillbirths in the 1930s, emphasized that the latter were preventable with better institutionalized healthcare services. Employing data from his residencies at the Pró-Matre and the Laranjeiras maternity wards, Magalhães cited both physician-caused deaths from forceps and birth complications such as obstructed labor, placenta previa, eclampsia, and cord prolapse. But instead of taking the institutionalized healthcare services to task for their use of invasive techniques, Magalhães (1933, p.90) condemned unlicensed midwives: “It is common there [in the maternity wards] to find laboring women seeking urgent care after giving up hope on ignorant laypersons; there one can see long waits that kill the fetus during labor, or from incorrect maneuvering, and excesses of drugs to speed labor.”

Magalhães was somewhat correct in identifying untrained midwives as a cause of obstetric-related intrapartum stillbirths. In 1936, for example, Conceição de Oliveira, a 40-year-old “black lay midwife” attended the home delivery of Antonia Pinto (Inquérito..., 14 Jan. 1936). The child presented in a breech position, and while the first part of the delivery went without problems, several hours later the child remained “stuck at the neck.” Only then did Pinto and her husband call the public ambulance service, which took her to the emergency ward. The physician on duty at the hospital performed the Mariceau maneuver to externally rotate the infant out of the breech position, but the child was already dead (Paul, 2017). On the surface, this case affirms Magalhães’s assertion: an “ignorant” midwife (here a woman of color) did not know how to address an obstetric complication and caused an unnecessary fetal death by waiting to call an ambulance. But a more careful reading of the case provides a different understanding of events. The midwife told the police that when she arrived at Pinto’s home, she saw that the laboring woman was experiencing a dystocic labor and advised her to call an ambulance. But Pinto waited until her husband arrived to call – nearly two hours after the infant became stuck. Pinto’s sister corroborated this story; she told the police that while Oliveira insisted on calling an ambulance early, the family only did so once Pinto’s husband came home from work. Here, gendered understandings of who could interact with the authorities

(only a man could call an ambulance), and not the midwife's actions, probably proved the deciding factor in Pinto's difficult delivery.

Magalhães's vilification of unlicensed midwives also glossed over his own data of physician-caused stillbirths from the overuse of forceps. Costa, however, was more willing to implicate his colleagues. He argued that high rates of obstetric intervention, particularly the use of forceps, was another cause of stillbirth, and called for more "natural births" (Costa, 1924). In his 1930 report on stillbirth rates in the city, for example, Costa found that the use of forceps by physicians was the second leading cause of fetal death. He cautioned his colleagues against "violent interventions:" "do not leverage your feet against the bars of the hospital bed during forceps maneuvers, nor allow the fetus to hang by the neck during difficult extractions: use more skill and less force" (Costa, 1930, p.188). Costa's guidance would have been useful for the young physician Pedro Ernesto (later, mayor of Rio de Janeiro under the Vargas administration and champion of maternal-infant health). During a difficult delivery in 1912, Ernesto used forceps to extract an infant, causing "compression of the brain due to dislocation of the cranial bones during labor" (Inquérito..., 15 May 1912). The infant died.

As a result, while physicians could provide key medical care during obstructed labors, they were not always successful in their surgical attempts. In 1923, for example, one medical student described the case of 20-year-old A.M., a patient who arrived at the Laranjeiras maternity hospital after being in labor for four days (Pinto Filho, 1923). The fetus, which had already died, was extracted via basiotripsy, a procedure in which the physician inserted a long, sharp surgical instrument into the uterus and punctured the head of the dead infant, subsequently evacuating the brain tissue from the woman's vagina, reducing the size of the head, and removing the body in pieces (Rollindo, 1920). A.M. suffered a vesico-vaginal fistula (a tear spanning from the bladder to the vagina) two fingers wide as well as a perineal laceration from the surgery. After a month of medical care and surgery, she survived.

In addition to inadequate medical care, physicians also believed that the city's impoverished population lacked morals, which resulted in illegitimacy, syphilis, and alcoholism, and higher rates of miscarriages and stillbirths (Machado, 1911; Ribeiro, 1923). Other physicians faulted women and even feminism. One medical student argued in 1911 that women miscarried due to the heightened emotional activity he associated with feminism: "Feminism causes miscarriage, because it entails an agitated life; an agitated life is a life full of emotion, and [there is] nothing like repeated emotions to encourage the interruption of pregnancy" (Barbosa, 1911, p.70). But how did physicians explain miscarriage and stillbirth rates in the middle and upper classes? The problem was greed, as consanguineous marriages to preserve inheritances resulted in unhealthy fetuses (Machado, 1911; Ribeiro, 1923).

As physicians worked to combat miscarriage and stillbirth rates, these experiences remained commonplace among Rio de Janeiro's poor women. In 1904, for example, 26-year-old Julieta Joaquina Dias had had three pregnancies with her partner: the first was born full-term and survived, the second resulted in a miscarriage, and the third was born full-term but died at two months of age (Inquérito..., 26 Dec. 1904). Dias's sister had



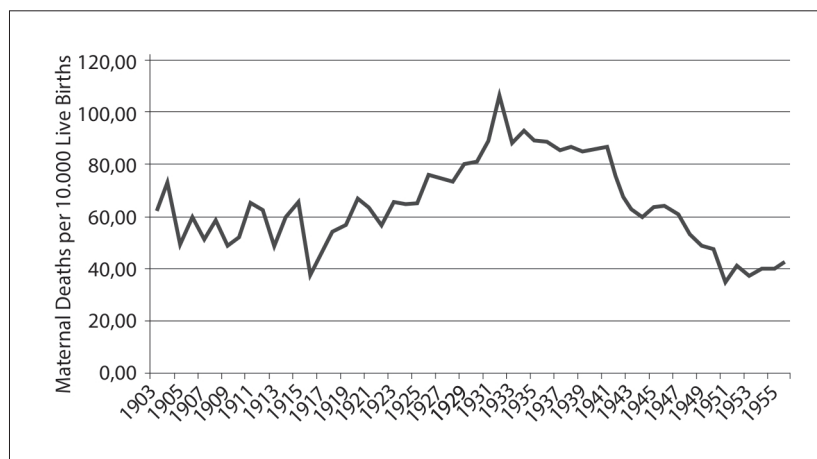
helped during her first and third deliveries at home; the second miscarriage occurred when she was alone. Dias's housemate also had a son who had died at eighteen months of age. Olympia de Faria's 1908 reproductive history is similar (Inquérito..., 18 Apr. 1908). The family had used the same midwife for Faria's four pregnancies, three of which she carried to term (one she miscarried early in the pregnancy). Faria's first full-term pregnancy ended in the premature delivery of a stillborn infant after seven months' gestation. The second child, a girl, was born at term, alive and well. The last pregnancy ended in a stillbirth. The autopsy on the infant verified antepartum fetal death and maceration, probably due to maternal syphilis.<sup>3</sup> Women's reproductive histories throughout the 1920s and 1930s demonstrate the continuation of high common miscarriage and stillbirth rates. In 1926, Clara Elisa do Nascimento had had three children with her husband of five years, one of which died (although it was unclear how or when) (Inquérito..., 10 Jan. 1926). In 1935, Nimpha de Figueiredo had been married for four years and had been pregnant three times during this period (Inquérito..., 25 Dec. 1936). The first pregnancy ended in a miscarriage, while the second two pregnancies resulted in live children – both delivered in a hospital.

### Maternal mortality

The brutal surgical interventions physicians employed to reduce stillbirth rates beg the question of how safe childbearing was for women in the early twentieth century. Maternal mortality is the measurement of the risk that a woman will die during pregnancy, labor, or the puerperium (postnatal period) (Loudon, 1992). The WHO currently defines the maternal mortality ratio (MMR) as the number of total maternal deaths per 100,000 live births. Historians, however, have found it easier to use 10,000 "total" births in their calculations because of higher death rates and subpar reporting (Loudon, 1992; Magalhães, 1933; WHO, 2006). This article's calculation of MMR for Rio de Janeiro follows this historical practice, but because the data for the city are calculated for live births, it uses the number of maternal deaths per 10,000 "live" births. In Rio de Janeiro, the MMR increased in the early decades of the twentieth century before spiking in 1932. It then decreased sharply and remained relatively steady throughout the 1930s. In 1942, it again fell abruptly, with another large drop in the late 1940s. The increase and subsequent large spike in the MMR around 1930 was most likely a registration effect rather than a meaningful change. However, the drop in the late 1930s and again in the mid-1940s probably represents two factors: first, a decline in the virulence of *Streptococcus*, and then the isolation of penicillin, which greatly reduced maternal deaths from infection. Chart 2 shows the MMR for the city of Rio de Janeiro from 1903 to 1956.

While health officials recorded MMR, how did they define maternal mortality? The WHO (2006, p.16) now defines a maternal death as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes." In the 1930s, the Brazilian federal public health department designated maternal death as that caused by ectopic pregnancies, abortion (septic or otherwise), puerperal hemorrhage, infection and septicemia, puerperal tetanus,

Chart 2 – Maternal mortality rate per 10,000 live births, Rio de Janeiro, 1903-1956



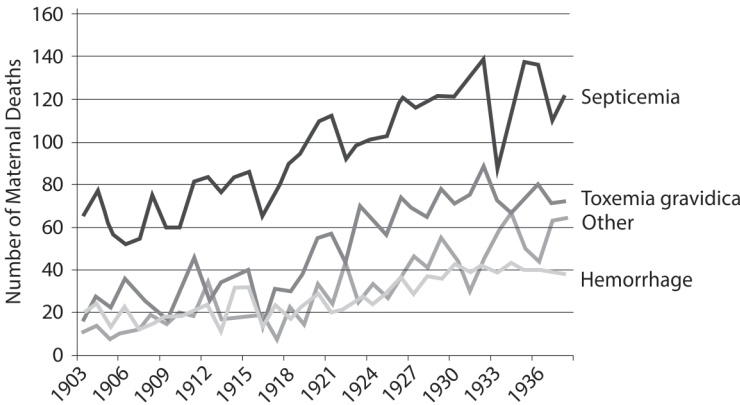
Source: Fontenelle, n.d.; Brasil, 1959

eclampsia and other toxemias, and accidents of birth and obstetric shock (Brasil, 1959; IIS, 1940; WHO, 1949).<sup>4</sup> While it is unclear when these guidelines were implemented, they followed the League of Nations' ICD (IIS, 1930); Brazil's subsequent redefinitions followed all ICD revisions. Despite the standardization of definitions in the 1930s, when considering the underreporting of births and deaths in general, the recording of maternal deaths was probably rife with irregularities, including non-reporting of maternal deaths due to septic abortions or ectopic pregnancies (occurring early in the pregnancy, and in the case of provoked abortions, shrouded in secrecy) or the reporting of indirect maternal deaths (associated deaths due to a disorder not directly related to pregnancy or delivery) as non-childbirth related (for example, citing a death from tuberculosis as only attributable to the disease rather than recording pregnancy as a secondary cause). This registration effect over the decades could explain the increased number of total maternal deaths per year in the 1920s, as deaths once reported as unrelated to pregnancy or the postpartum period were more likely to be correctly identified and recorded. In Sweden, for example, where more sophisticated and regulated reporting mechanisms were in place by the mid-nineteenth century, public health officials still probably underreported maternal mortality deaths by 30 percent (Högberg, Wall, 1986). But Irvine Loudon's analysis of maternal mortality across Europe, Australia, and North America demonstrates that irregularities in reporting, definition, and classification only resulted in slight distortions of the data, most of which can be estimated. He contends that published maternal mortality statistics are "broadly correct" (Loudon, 1992, p.38).

Across much of the western world, the three main causes of maternal mortality before the 1940s were puerperal fever (infection, often septicemia), toxemia (now known as preeclampsia or hypertensive disorders of pregnancy), and obstetric hemorrhage, respectively. Septic abortion also ranked as a significant cause, yet the exact numbers of its prevalence are difficult to determine since many septic abortion deaths were classified as puerperal fever or septicemia before the 1930s (Loudon, 1992). Maternal mortality statistics

in Rio de Janeiro follow this worldwide trend. Septicemia and other puerperal infections were the leading cause of maternal mortality, followed by toxemias and eclampsia, and then obstetric hemorrhage, as Table 1 and Chart 3 demonstrate.

Chart 3 – Maternal deaths per year according to cause, Rio de Janeiro, 1903-1938



Source: Fontenelle, n.d.

Table 1: Maternal deaths in Rio de Janeiro according to cause, 1903-1938

Cause of maternal death	Number of deaths	% of all maternal deaths
Septicemia (puerperal fever)	3,420	46.78
Toxemia	1,791	24.50
Hemorrhage	993	13.58
Other	1,107	15.14
Total	7,311	100

Source: Fontenelle, n.d.

Historians have described puerperal fever as the most common and “most terrifying” cause of global maternal mortality rates until the mid-twentieth century (Loudon, 1992, p.49). When the MMR began to fall across the globe in the early 1940s, the reduced incidence of deaths from puerperal sepsis was the main reason behind this rapid and sustained drop, even considering regional factors and variations. The introduction of penicillin and, to a lesser extent, a decline in *Streptococcus* virulence helped combat puerperal fever deaths (Loudon, 1992). Puerperal fever results from an infection of the uterus during or after the birthing process. While some cases are caused by intrauterine death of the fetus or premature tearing of the fetal membranes, most are the result of infection in the first two weeks of the puerperium. Before the discovery and implementation of asepsis and antiseptic principles in hospitals in the 1880s, puerperal fever occurred most often in hospital settings. After the 1880s, most cases resulted from home deliveries. Yet even after the onset of asepsis and antisepsis, puerperal fever continued to plague hospitals across Europe. The fever was a streptococcal disease, meaning it could be carried asymptotically, and early twentieth-

century standards of asepsis were not sufficient to combat asymptomatic carriers. Only when science recognized asymptomatic carriers and then discovered sulphonamides in 1937, followed by the isolation of penicillin in 1944, did maternal deaths from puerperal fever begin a sharp and sustained decline (Charles, Larsen, 1986; Ligon, 2004; Loudon, 1987, 1988, 1992; Seligman, 1991). Thus, Brazilian physicians were not alone in their inability to combat puerperal fever before the age of antibiotics. Yet even the most advanced obstetric minds like Fernando Magalhães did not comprehend the etiology of infection. In his 1933 obstetric textbook, he wrote, "I will continue to state that puerperal infection is benign and can be self-cured" (Magalhães, 1933, p.296).

In Rio de Janeiro, as was the case around the world, untrained midwives and healers could spread the *Streptococcus* bacteria that caused puerperal fever during homebirths. In 1918, for example, 32-year-old Maria Campos de Azevedo gave birth to an infant son, Djalma (Inquérito..., 15 Mar. 1918). While the lay midwife (known as a *curiosa* in Portuguese) Sylvana attended the birth, a folk healer or *curandeiro* helped with postpartum care. Azevedo delivered the child without any problem, but she remained weak and "burning with fever" after the delivery. Soon, Azevedo was in a "extremely grave state, with a severe fever," and died soon after. The *curiosa's* police statements do not reveal whether she performed a vaginal exam on Azevedo, perhaps transmitting *Streptococcus*. The investigating police officer argued that if Azevedo had gone to a public hospital after the delivery, she would have survived. While Azevedo might have delivered in a sterile environment at the hospital (unlike the septic environment of the midwife and healer) and consequently not contracted the *Streptococcus* that killed her, there was no effective remedy for puerperal fever at the time of her death. The police chief's words were more reminiscent of a witch hunt against the unlicensed midwife than a true understanding of the medical situation. And midwives who delivered at home often followed standard medical practice. After Olympia Octavia de Faria delivered a stillborn infant in her home, the midwife washed Faria's genital area with an antiseptic solution (Inquérito..., 18 Apr. 1908; see also Processo..., 9 Sep. 1938).

While the official health statistics do not clarify whether post-abortion sepsis was included in the category of puerperal septicemia, this was a cause of maternal death for women in Rio. In December of 1937, for example, 24-year-old Maria Luiza Bessa, a bank teller, sought out an illegal abortion (Inquérito..., 1 Nov. 1938; see also Inquérito..., 19 Apr. 1932, 21 Nov. 1938; Processo..., 8 Nov. 1930). The unlicensed midwife who performed the curettage procedure, in which a scalpel-like object is used to scrape the uterine walls, perforated Bessa's uterus and small intestine (Campos, 1911). Bessa had familial support and a network of friends, and she received immediate and safe medical treatment at a reputable small clinic after she fell ill. But despite a surgical intervention, in which the physicians sutured the perforations and drained the abdominal cavity, Bessa died a day later from "rupture of the uterus and small intestine [and] consecutive fibrinopurulent peritonitis." Bessa's death is probably just one of many illegal abortions that ended in infection and death in the early twentieth century.

The abortion procedure that Bessa underwent merits attention. In the early twentieth-century, both medical (or pharmacological) and mechanical (or surgical) abortion methods

were common. *Curiosas* and *curandeiros* prescribed medicine or herbs; alternatively, women themselves accessed folk remedies through female solidarity networks. Medical methods included both direct and indirect agents. Indirect agents comprised purgatives (such as potassium iodide), sudorifics (to cause excessive sweating), and toxic substances such as arsenic (Inquérito..., 16 Aug. 1902). These caused a woman to become ill, and if she aborted, this was the result of her overall poor health, not any direct action against the uterus. Direct agents were emmenagogues, which caused contractions (Netland, Martinez, 2000). Physicians commonly stated (and judicial documents confirm) that women used juniper, rye ergot, *Pulsatilla* (a type of buttercup), rue, wormwood, and yew. Less active and consequently less effective emmenagogues included lemon grass, chamomile, and cinnamon, as well as the Brazilian plants *apiol* and *jalapa* (Antunes, 1906; Câmara, 1898; Campos, 1911; Costa Jr., 1911; Mattos, 1923; Pimentel, 1916; Rizzo, 1926; Santos, 1927; Inquérito..., 16 May 1925, 25 Aug. 1930, 16 Jun. 1931, 15 Aug. 1935; Processo..., 4 May 1915, 1 Mar. 1921, 10 Feb. 1930, 9 Jun. 1937, 9 Sep. 1938, 2 Ago. 1939). In 1935, for example, Nimpha de Figueiredo became pregnant for a fourth time and told her husband that she did not want to have another child (Inquérito..., 25 Dec. 1936). Although her husband opposed the abortion, Figueiredo went to a midwife who gave her “a purgative of German spirits or Viennese water” and “five capsules of quinine chloralhydrate totaling one and a half grams.” Sometime after taking the medication, Figueiredo began bleeding and eventually died from hemorrhage and pulmonary edema (excess fluid in the lungs, perhaps caused by blood loss and subsequent changes to the circulatory system or because of the medication itself) (Dennis, Solnordal, 2012).

Licensed physicians, licensed midwives, and unlicensed midwives performed mechanical (or surgical) procedures, which were grouped into three categories. Dilation involved dilating the cervix with an instrument, which ranged from a rubber catheter to a tightly-rolled bundle of vegetables such as collard greens, to cause contractions and miscarriage (Inquérito..., 10 Jan. 1926, 27 Feb. 1929, 19 Apr. 1932, 9 Dec. 1938, 25 Dec. 1936; Processo..., 24 Mar. 1914, 10 Feb. 1930, 28 Sep. 1935, 2 Aug. 1939). A second, more dangerous method involved using a sharp object to puncture the fetal tissue and cause miscarriage. At times women performed this procedure on themselves by inserting crochet needles, whale bones (from corsets), or metal hairpins, potentially scarring or puncturing the uterus (Inquérito..., 1 Nov. 1938; Processo..., 10 Feb. 1930). For instance, when Clara do Nascimento became pregnant for a fourth time, she decided to abort by inserting a catheter into her cervix, which caused an infection and her subsequent death (Inquérito..., 10 Jan. 1926).

Trained physicians first dilated the cervix, and then removed the embryo through curettage (Inquérito..., 9 dec. 1938). While this was a safer medical procedure – it was the established medical technique to treat an incomplete miscarriage – the death of Maria Luiza Bessa shows that in untrained hands, it could be fatal. Finally, providers also injected liquids into the uterine cavity to cause the fetal tissue to detach from the uterine lining; a cannula was inserted into the cervix and warm water or even caustic substances were introduced (Antunes, 1906; Câmara, 1898; Campos, 1911; Cavalcanti, 1925; Costa Jr., 1911; Pimentel 1916; Rezende, 1930; Rizzo, 1926; Inquérito..., 30 May 1914, 15 Aug. 1935; Processo..., 1 Mar. 1921, 10 Feb. 1930, 12 Jun. 1930, 18 Jul. 1931, 5 Sep. 1934).

While infections following childbirth or abortions were the leading cause of maternal mortality, toxemia (the historical term for what is today known as preeclampsia, eclampsia, or pregnancy-induced hypertension) was the second most frequent killer of pregnant and laboring women. This is a disease of the third trimester in which high blood pressure, followed by albuminuria (high levels of protein in the urine) and generalized edema (swelling), can eventually lead to seizures. Multiple pathways can lead to death, including end-organ damage causing kidney and liver failure, and intracranial hemorrhage leading to cognitive deficits or coma. Unlike puerperal fever, toxemia is a non-communicable disease and is therefore distributed more evenly throughout the population of childbearing women. Because the first sign of the disease is elevated blood pressure, physicians began to identify early-stage cases after the development of blood pressure measurement tools at the turn of the century. Consequently, toxemia was the only cause of maternal death that could have been partially combated by prenatal care before the mid-1930s (Loudon, 1992), although the only way to resolve toxemia is to deliver the child. Induction of labor was the most common technique until cesarean sections became safer in the mid-twentieth century (Bell, 2010).

Like others across the world, women in Rio de Janeiro died from toxemia. In 1931, Elvira Alves Lourenço was reaching the end of her fourth pregnancy (Inquérito..., 4 Aug. 1931). While the delivery of her first child had been difficult, her second and third births took place without any problem. As she neared her due date, Lourenço told her husband to call the neighborhood *curiosa*, Jovita. With the help of Lourenço's mother, Jovita bathed the laboring woman with hot water and massaged her stomach. Lourenço was active during labor, walking around the room, but by the early morning she had fainted several times and began to shake. Her husband called a doctor, but Lourenço died before the physician arrived. The forensic autopsy ruled out hemorrhage or infection, and due to witness testimony – that Lourenço had fainted, had a seizure, and eventually entered into a coma – the cause of her death was listed as toxemia gravidica. Because Lourenço most likely did not receive any prenatal care, her hypertension went undetected. If she had seen a physician throughout her third trimester, this professional would have noted her elevated blood pressure and probably would have induced labor. Yet preeclampsia often develops late in pregnancy or even during labor, and thus prenatal care does not detect all cases (López-Llera, 1992). Had Lourenço had developed high blood pressure during delivery, there was not much the medical profession could have done.

The last major cause of maternal mortality was obstetric hemorrhage. While hemorrhages can result from trauma to the cervix, most are due to bleeding from the placental site and can be divided into two categories: antepartum and postpartum. Antepartum hemorrhage includes accidental (placental abruption) and unavoidable (placenta previa). Placental abruption is when part of the placental detaches from the uterine wall during pregnancy; its cause is unknown, but this condition is most common in multiparous women. Placenta previa is a placental malposition in which the placenta either partially or fully covers the cervical opening (the os), resulting in hemorrhaging during delivery. Today, if the placenta fully covers the cervix late in pregnancy, a cesarean section is always indicated (Varney, Kriebs, Gregor, 2004). Antepartum hemorrhages were most often unavoidable, and

obstetric practice was not able to effectively respond to this condition until after Second World War, with the onset of blood transfusions and penicillin (Loudon, 1988, 1992).

Obstetric hemorrhage affected many women in Rio. When Luiza Leite Ferreira went into labor in 1908, several female neighbors assisted her until the arrival of the unlicensed midwife who had delivered Ferreira's other children (Inquérito..., 17 feb. 1908). Before the midwife arrived, however, Ferreira began to hemorrhage. Throughout labor, Ferreira felt tired, complaining she could not breathe and vomiting excessively. The midwife gave her orange petal water and coffee with cinnamon to help with her weak contractions. Ferreira delivered a stillborn infant, and after the birth, the midwife changed the bedclothes and washed the infant. But Ferreira's health did not improve; she continued to hemorrhage and died soon after. If it was true that Ferreira was already bleeding before the midwife arrived, she most likely was suffering from partial or total placenta previa, and the midwife's actions did not cause her death.

Physicians' clinical observations also highlight the common causes of maternal mortality-like placenta previa. In one medical student's description of an obstetric case at the Laranjeiras maternity hospital in 1923, the woman, M.C., had a case of placenta previa and arrived the hospital hemorrhaging "a lake of blood" (Pinto Filho, 1923, p.39-40). The on-call physician extracted the live infant with forceps, but the mother died shortly thereafter from blood loss. The observing medical student argued that if trained medical providers had attended her at home during the late stages of pregnancy, they could have prevented her death. But placenta previa was not really preventable through prenatal care, since it is currently diagnosed with an ultrasound; otherwise it is often undiagnosed until bleeding begins (Varney, Kriebs, Gregor, 2004).

The second category of obstetric hemorrhages, postpartum bleeding, often occurs during the third or placental stage of labor – after the infant is born but before the delivery of the placenta. The normal duration of this stage is five to ten minutes, although it can extend up to thirty minutes, after which the risk of postpartum hemorrhage increases (Varney, Kriebs, Gregor, 2004). Retained placenta, uterine atony (lack of uterine muscle contraction), laceration, and coagulopathy (when the blood's ability to clot is impaired) are the main causes (Oyelese, Ananth, 2010). Unskilled birth attendants caused postpartum hemorrhages when they hurried the delivery of the placenta, causing hemorrhage at the placental site (Loudon, 1992). When birth attendants had the knowledge and skills to manage the third stage, which often meant waiting for the natural expulsion of the placenta, postpartum hemorrhage caused by bleeding from the placental site was avoidable (Mello, 1923; Pinto, 1914; Silveira, 1916).

The 1926 death of the 24-year-old mixed-race Sebastianna Rosa Franco demonstrates how some untrained midwives rushed the third stage of labor (Inquérito..., 17 May 1926). After Franco went into labor, 80-year-old Jacyntha Mello, a Portuguese immigrant without any formal medical training but known in the neighborhood as "a good midwife," delivered a healthy newborn. Mello had attended Franco's other delivery without complications, but this time Franco did not expel the placenta. Witness testimony does not describe what actions Mello took to further the third stage of labor, but soon after the delivery Franco began bleeding uncontrollably. From the listed cause of death, a uterus that was "inverted and inside out" and subsequent hemorrhage, it is likely that Mello pulled too hard on the

umbilical cord, detaching the placenta from the uterine wall and causing uterine inversion. Although Mello could attend to normal deliveries, she could not manage a retained placenta and probably caused Franco's death (Varney, Kriebs, Gregor, 2004).

The case of Franco's death does not mean that unschooled midwives caused all postpartum hemorrhages; physicians also caused unnecessary trauma. Obstetricians understood that aggressive actions during the third stage of labor, no matter the practitioner, were a main cause of uterine inversion and obstetric hemorrhage. They also correctly defined the time between delivery of the infant and expulsion of the placenta as around ten to 15 minutes, during which the practitioner should not rush the expulsion (Bivar, 1926; Cruz, 1911). Yet they did not always follow this advice. In 1911, one medical student discussed several cases of inverted uterus followed by obstetric hemorrhage at the Laranjeiras maternity hospital. M.P, a 23-year-old white woman, was admitted to the hospital with a chronic case of uterine inversion. A physician had delivered her first infant by forceps, while her second delivery occurred without any medical intervention. A *curiosa* attended her third delivery. According to the physician's notes, the midwife noted a retained placenta, and "to remove it... employed as much force as possible" (Cruz, 1911, p.63). After giving birth, the woman had not suffered obstetric hemorrhage, but several weeks later she noticed her uterus had prolapsed to the vulva and went to the maternity hospital. The medical student failed to discuss whether the first delivery, by forceps, was another cause of the chronic prolapse.

In another clinical write-up, the same student observed the case of M.C., a 26-year-old white woman who was in labor for five days before a physician delivered her infant with forceps. The placenta was not expelled, so the doctor performed a "digital curettage," using his fingers to extract the placenta. Immediately after the intervention, a severe obstetric hemorrhage occurred. A 1925 observation from the Laranjeiras hospital also indicates intrusive mechanical interventions; when 20-year-old Letícia Chaves went into labor, she was admitted to the maternity hospital (Bivar, 1926). After twenty-four hours of labor, and with her water still intact, a physician broke her amniotic sac and extracted the infant with forceps. During the extraction of the placenta, however, the uterus inverted and the patient entered into shock. Physicians stabilized her condition and halted the hemorrhage. Aggressive and unnecessary medical interventions occurred both at home and in the hospital. But in a hospital setting, medical students failed to question their colleagues' intrusive methods. It was clear, however, that if medical emergencies occurred in hospitals, physicians were better able to attend to women and prevent death. Yet it also appears physicians caused many of the medical emergencies they later treated.

The evidence from physicians and police reports in Rio de Janeiro indicates that most births were dangerous and that many women died in childbirth. Women died from pregnancy-related complications, childbirth, and abortions; however, the sources (particularly judicial ones) tend to document only difficult cases. They do not describe normal deliveries, making all labors appear dangerous, when in reality, over 95 percent of deliveries took place without significant problems for the mother or infant (Loudon, 1992). Nevertheless, both maternal and fetal death marked the reproductive lives of many women in early twentieth-century Rio de Janeiro, and physicians viewed stillbirth and maternal mortality as pressing health problems (Paranhos, 1923; Penteado, 1924;



Ribeiro, 1923). In general, physicians believed that a lack of free and widespread prenatal and birthing care were the underlying causes (Carvalho, 1924; Lago, 1921; Moura, 1917). While prenatal care would have reduced these numbers, physicians lacked the medical knowledge required to fully combat these events until the late 1930s and early 1940s.

## Final considerations

While obstetricians institutionalized an ideology of scientific motherhood in their teachings and writings and worked to expand reproductive healthcare services, their efforts did not change the reproductive lives of most women in Rio de Janeiro before 1940. Elevated and sustained stillbirth and maternal mortality rates remained constant. Syphilis caused most miscarriage or antepartum stillbirths, while obstetric complications during delivery caused intrapartum stillbirths. The three main causes of maternal mortality (puerperal fever, toxemia, and obstetric hemorrhage) also remained major health issues. Toxemia could have been combated through better prenatal care, and some instances of obstetric hemorrhage through better obstetric attendance during delivery. As for puerperal fever caused by infection, physicians employed aseptic and antiseptic practices, but truly combating puerperal infection was not achievable before penicillin. Moreover, aggressive interventions by physicians also caused unnecessarily fetal and maternal death. In the end, the reproductive lives – and deaths – of women in Rio de Janeiro in the early twentieth century demonstrate both the advantages and dangers of medical advancements.

## NOTES

<sup>1</sup> In this and other citations of texts from Portuguese, a free translation has been provided.

<sup>2</sup> I wish to thank Herbert Klein for sharing his data from São Paulo with me.

<sup>3</sup> Maceration indicates a spontaneous death *in utero* in which the tissue has degenerated (Bamber, Malcomson, 2015).

<sup>4</sup> Other causes included accidents of pregnancy, deep-vein thrombosis, embolism, and sudden death (Fontenelle, n.d.).

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