Birth Weight and Prematurity in Copenhagen 1927. Health at Birth Explored in Midwife Records From Home Births and Births at the Royal Maternity Hospital

By Bárbara A. Revuelta-Eugercios and Anne Løkke

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Birth Weight and Prematurity in Copenhagen 1927

Health at Birth Explored in Midwife Records From Home Births and Births at the Royal Maternity Hospital

Bárbara A. Revuelta-Eugercios
Danish National Archives

Anne Løkke
SAXO Institute, Department of History, University of Copenhagen

ABSTRACT

This study examines two key indicators on perinatal health — birth weight and prematurity — based on 1,151 home births in Copenhagen in 1927, attended by trained, examined, authorized midwives, who had to call in a physician to assist in cases of complicated births. This is a 17% sample of all home births in the city, which comprises two thirds of all births in Copenhagen for that year. To compare, we also examine 398 hospital births, equal to a 10% sample of all births at the Royal Maternity Hospital for the same year. The findings reveal significant differences between home and hospital births in infant health at birth, attributable to the selective nature of hospital admissions. Hospital births revealed an average birth weight of 300 grams lower than home births and a preterm rate of more than four times as high (33% vs. 7%). The study is based on midwife birth registers in which Danish midwives registered details of every birth they attended. A nearly complete collection of these birth registers 1861–1978 is preserved at the Danish National Archives. This is a pilot study meant to explore the possibilities for further studies in this extensive source for individual birth information, of which our sample constitutes only a tiny part. But already we can see not only differences between hospital and home births but also different individual profiles in the clientele and the practices of the midwives. This shows the need for careful analysis before interpreting differentials in historical health data registered in different settings.

Keywords: Birth weight, Prematurity, Home birth, Midwives, Birth attendance, Perinatal health, Early 20th century, Denmark

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1 INTRODUCTION

Internationally, comprehensive collections of historical birth weight information for home births are rare. Much rarer than recordings of birth weights from lying-in hospitals. Many hospitals began systematically collecting data on birth outcomes in the late 18th century and started to include birth weight in the mid-19th century. Therefore, historical studies on birth weight have often had to rely on records from lying-in hospitals. However, until the mid-20th century, such institutions only catered for a minority of women giving birth, most often vulnerable sub-populations, such as unwed women, married women living in severe poverty and women with a history of very complicated births. This represents a selection bias which makes information about birth weight for more average parts of the population very much in demand for studying historical perinatal health for whole populations.

Denmark offers a unique case of study as the Danish National Archives holds a large, population wide collection of midwife-birth-registers for home births 1861 to 1978. Maturity information is systematically included since 1861 and birth weight information since the 1920s.

This article is a pilot study focusing on birth weight and prematurity information from a sample of midwife-birth-registers for home births and births at the Royal Maternity Hospital in Copenhagen in 1927. The aim is twofold: 1) to explore whether birth weight and prematurity among home births in Copenhagen differs from births taking place at the Royal Maternity Hospital; 2) to gain domain expertise about the Danish midwife-birth-registers as a source for historical perinatal health by identifying and addressing methodological challenges in studying health from these records. We will focus on differentials in the clientele of the individual midwives and challenges in assessing the accuracy of the weighing both according to the individual midwives and the weighing technology of the time.

2 FORMER STUDIES OF HISTORICAL BIRTH WEIGHT

Birth weight and prematurity are often used as key measures of newborn infants' health, reflecting the interplay of maternal health, environmental influences and socio-demographic factors, and thereby offering insights into patterns of health and well-being in populations. Since Barker et al. (1993, 1997) published their now classic studies on later-life health effects of birth weight, there has been an increasing interest in life course epidemiology, prompting an international demand for trustworthy information about historical birth weight. Most of these studies have been based on lying-in hospital records. For instance, Koupil (2007) and Schneider (2017) provide comprehensive presentations of a range of such studies and the selections bias of the women who gave birth at hospitals, before the large-scale shift in birth place from home to hospital during the mid-20th century in the western world.

We have only been able to identify three studies that had access to birth weight data for the majority of historical births taking place at home. Andersson et al. (2000) is based on both home and hospital deliveries in Gothenburg: full-term singleton, female births with known gestational age, born into five birth cohorts (1908, 1914, 1918, 1922 and 1930). They found that infants born at home had a higher birth weight across the cohorts (p. 270). Schneider (2017) used records from maternity hospitals, but included records from the Boston Lying-In Hospital's outpatient clinic, which consisted of home births. He finds the average birth weight was 150 grams higher at the outpatient clinic than at the Hospital (Table B1). The Uppsala Longitudinal Study of Adult Men (ULSAM) is an ongoing study which includes both hospital and home births of males born 1920 to 1924. To that we can add Quaranta et al. (2022), who use Swedish hospital-birth weight data from the 1930s and 1940s. In Sweden, however, the majority of births had already moved to hospitals by then, so the selection bias should be less.

3 BIRTH ATTENDANCE AND PLACE OF DELIVERY IN DENMARK

The Danish birth care system has been midwife-based for centuries. What is different to many other countries is that physicians never competed with midwives to attend normal births, although midwives were obliged to call in a physician in case of a complicated birth. Midwives were included in the Danish authorized healthcare personnel in 1672, which was the first occasion such a category became

meaningful. Since 1714 midwives have had to be formally examined and sworn in. In 1787 the National School of Midwifery opened at the Royal Lying-In Hospital in Copenhagen and the Midwifery Law (1810) decreed that every provincial town and rural parish was to have a district midwife trained at the school. A district midwife had to build up a private practice and charge patient fees, but she also received a basic wage, including a free house with a garden, firewood and fodder for a cow, paid for by taxes. In return, she had to attend free of charge births of destitute women. All midwifes trained at the School of Midwifery were free to compete with the district midwives as private practising midwives without the basal financial support. This way, thinly populated areas were provided with professional birth attendance, while districts with many births could attract more midwives without increasing public expenses. Since 1830, virtually all Danish births have been attended by professionally trained, examined, authorized midwives (Løkke, 1997, 2002, 2007, 2012). In the early 20th century, about three quarters of the midwives outside Copenhagen were subsidized district midwives (Nellemose, 1935).

In the city of Copenhagen, subsidized district midwives were never introduced. Instead, the authorities determined how many privately practising midwives to authorize, to make sure all of them could earn a decent livelihood. In the late 1920s, the number of midwives was officially fixed at 108 for the administrative unit of Copenhagen and at 136 for the greater Copenhagen area including Frederiksberg and Gentofte (Nellemose, 1935). Professional birth attendance for all was guaranteed in Copenhagen by the Poor Relief Board, who paid the midwives' fees on behalf of patients too poor to pay themselves (The Midwifery Law, 1914).

Until the early 20th century, nearly all births in Denmark were home births. The one and only lying-in hospital was the Royal Maternity Hospital, which had been founded in 1762. The primary aim of the Royal Maternity Hospital was to provide free and anonymous professional birth attendance for unwed expecting mothers, who might otherwise have given birth unattended and killed the infant afterwards (Løkke, 2013). In 1910, the Royal Maternity Hospital was integrated into the newly-built *Rigshospitalet* (The National Hospital) and expanded into two wards, A and B. In 1927, wards A and B admitted primarily unwed women (two thirds). The other third were married women who were either living in such poor conditions that home birth was deemed dangerous or they were expecting severe birth complications. Ward C was established in 1924 because of an acute housing shortage in Copenhagen. The ward was paid for by the poor relief authorities (*Københavns fattigvæsen*) and catered for married women living in Copenhagen expecting a normal birth, but living in housing conditions so bad, that home birth was considered unsafe for mother and child. Of the married women in wards A and B, approximately 10% lived outside the Copenhagen area and were admitted because of complicated births. As the majority of unwed mothers were admitted anonymously, it is not known how many of them were living in Copenhagen. The hospital estimated that at least half of the unwed in-patients were living outside the Copenhagen area in 1927 and in this way, their numbers have contributed to the inflation of both the number of births and the illegitimate rate in Copenhagen (Beretning om Rigshospitalet, 1928). Thus, the population giving birth at the Maternity Hospital in 1927 was a vulnerable subpopulation admitted precisely because of their marital, social or medical vulnerabilities.

Like in most of Western Europe, the place of birth in Denmark shifted from home to hospital in the mid-20th century. However, while Sweden was among the first to do so, Denmark was among the last (Vallgårda, 1996). In 1927, more than 80% of all births in Denmark still took place at home. However, in the administrative unit of Copenhagen, two thirds of all births were home births this year. The total number births (including stillbirths) was 9,950. Of these, 3,101 took place at the Royal Maternity Hospital, while 321 births took place at newly-established, small private maternity clinics (Statistisk Aarbog for København, 1928, Table 19 and 37).

4 MIDWIFE-BIRTH-REGISTERS

The collection of midwife-birth-registers (*fødselsprotokoller*) for all of Denmark for the years 1861 to 1978, held at the Danish National Archives (*Rigsarkivet*), represents a real treasure trove of information about the individual women giving birth, the birth itself and the new-born infants.

The midwives recorded details of every birth they attended in a bound volume of pre-printed forms provided by the health authorities. When a midwife had completed a register, she submitted it for approval and then obtained a new one from the health authorities. Right from the start in 1861,

the midwife-birth-registers recorded a wide range of information about the woman giving birth, the progress of the birth, if the infant was born prematurely or at full term and whether the mother and infant survived the birth. Some midwives voluntarily included birth weight during the late 19th century; however, the Midwifery Law of 1914 and the Midwifery Instruction of 1920 made the recording of information about a newborn infant's weight and length mandatory. Whenever a midwife obtained a new preprinted birth-register after she had completed her old one, she was obliged to fill out the now included new columns for length and weight.

By examining the midwife-birth-registers from Copenhagen, we found that 1927 was the first year when all midwives, who had records for the full year (97 midwives), had also all systematically registered birth weight. That is why we choose 1927 for this study. The midwife-home-birth-registers for Copenhagen consist of 469 archival boxes and are archived are archived under the *arkivskaber* (archival creator) *Stadslægeembedet i København*. The older ones are on-line readable (Stadslægeembedet i København, 1862–1977).

The midwife-birth-registers (*journalprotokoller*) from the Royal Maternity Hospital are also kept at the National Archives. The oldest date from 1763, but not all years are preserved. In 1927, the midwives who attended births at the Royal Maternity Hospital recorded them using the same pre-printed forms in bound volumes as the privately-practising midwifes used for the home births.

5 OUR SAMPLE OF COPENHAGEN BIRTH RECORDS FOR 1927

This study is based on midwife-birth-records from 1,549 deliveries resulting in 1,508 live births in Copenhagen in 1927. Of these, 1,151 deliveries (1,133 live births) were home births and 398 deliveries (375 live births) took place at the Royal Maternity Hospital. This represents approximately 17% of all home births in Copenhagen and 10% of all births at the Maternity Hospital in 1927 (Statistisk Aarbog for København, 1928, Table 19 and 37). We designed the sample as follows:

For the home births, we identified 111 bound volumes of personal midwives-birth-registers from Copenhagen which included records for the year 1927. Ninety-seven midwives had records for the full year and systematically registered birth weight. We reviewed each of these 97 bound volumes to collect information about their general birth-recording. Of the 97 volumes, we fully transcribed all records for 1927 from 13 midwives. We chose 13 midwives from those who had attended a minimum of 50 births in 1927, and who systematically used the metric system, and we ensured geographic spread across city districts. The area of Frederiksberg is not included, as it is an independent administrative unit.

For the hospital births, we fully transcribed every tenth midwife-birth-record for 1927 from the three maternity wards A, B and C.

Birth weight in our sample was registered in kilos (e.g. 4, 3½, 3¼) or in grams (e.g. 2,500, 4,000, 3,780). Prematurity was reported as yes/no answers in two columns headers: *skønnes fuldbaarent* (estimated full term) and *skønnes ufuldbaaren* (estimated premature).

6 THE MIDWIVES, THE MATERNITY WARDS AND THE MOTHERS

The socio-demographic profile of the mothers in our sample differs, as expected, very much between the home birth clientele of the midwives and those in the hospital wards (see Table 1). Those in wards A and B were younger, two thirds of them were unwed and a little more than 60% were primiparous women, experiencing their first delivery. Of the midwife patients, far fewer were under 26 years of age, the rate of primiparous women was lower and only a small minority were unwed (maximum was 10%). Ward C only admitted married women from poor housing conditions and these were on average younger and more often giving birth for the first time than the married women who gave birth at home.

Table 1 *Main socio-demographic characteristics of the mothers – all deliveries in the 1927 midwife and hospital samples*

						Birthing mothers		
Midwife/ward	**Deliveries (n)**	**Live Births (n)**	**Born without life (n)**	**District**	**% < 26 years**	**Mean age (years)**	**% Unwed**	**% First birth**
Astrid Brücker	96	95	1	Amager	31.3	**28.3**	**9.4**	29.2
Emilie B. Isaksen	63	62	1	Amager	20.6	30.0	3.2	**57.1**
Dagmar M. J. Løsecke	121	119	2	Amager	29.8	29.5	2.5	28.1
Julie C. Nielsen	138	138	0	Inner City	**42.3**	**27.7**	6.5	23.2
Betty Nielsen	154	152	2	Nørrebro	**37.9**	**27.9**	**9.7**	**57.8**
Clara B. Olesen	60	58	2	Nørrebro	**41.7**	28.7	**10.0**	**41.7**
Bertha Petersen	74	71	3	Nørrebro	**43.1**	**27.4**	**9.5**	33.8
Juliane M. Peitersen	121	119	2	Vanløse	24.8	29.3	3.3	24.0
Helga Emilie Sørensen	51	50	1	Vesterbro	25.5	29.0	3.9	31.4
Ane C. Petersen	86	85	1	Vesterbro	32.6	28.7	4.7	16.3
Caroline Chr. Boserup	53	51	2	Østerbro	17.0	29.9	1.9	37.7
Petra Holt	82	81	1	Østerbro	22.0	28.8	6.1	30.5
Petra Sørensen	52	52	0	Østerbro	11.5	30.6	1.9	**44.2**
Royal Hospital A	162	150	12	Hospital	**65.0**	**24.3**	**64.2**	**62.3**
Royal Hospital B	163	152	11	Hospital	**70.4**	**24.1**	**70.6**	**66.9**
Royal Hospital C	73	73	0	Hospital	**68.5**	**24.9**	0.0	**49.3**

Note: The bold numbers are those referred to in the text as signifiers for specific social-demographic profiles of the midwives' clientele.

Unexpected, however, are the rather marked differences between the demographic profiles of the mothers who had chosen the individual midwives, even within our relatively small sample. Four midwives had more than a third of their clientele being less than 26 years of age (Bertha Petersen, Julie Nielsen, Clara Olesen and Betty Nilsen). Three of these, living in the Nørrebro district, also had the highest rate of unwed mothers, although none in the ranges of the hospital. Two of the Nørrebro midwifes (Nielsen and Olesen) also had a high rate of primiparous women. However, a high primiparous rate was also found, as with Isaksen at Amager and Sørensen at Østerbro, who had very low unwed rates and a rather high mean age for their clientele.

Nørrebro and the inner city districts had many small, older apartments and a high share of working class in the population. Østerbro was a more affluent part of the city with a higher share of bigger apartments. However, the districts in Table 1 are where midwives lived, and the expecting mothers were free to choose any midwife in the city. The midwife-birth-registers do include addresses of the women giving birth, so in the future this can be explored, but we have not done that in this pilot study.

However, the different profiles of the midwives' clientele do suggest that there were factors influencing the women's choice of midwife at the individual level. These may include availability, loyalty, cost, reputation and geographic proximity, as suggested by Reid (2012) and Curtis (2005). The selective nature of these midwife practices requires careful consideration when interpreting aggregated health outcomes from a small sample, as ours is. But it also suggests that the Danish midwife-birth-registers will be a tremendously rich source for studying factors influencing health at birth over time and in different settings, once the archives make them all accessible in transcribed formats for the whole of Denmark during the entire period 1861 to 1978.[1]

1 The midwife-birth-registers for 1926–1978 are under transcription and integration with other sources in the project *Historisk Medicinsk Fødselsregister* led by associate professor Jennifer Lyn Baker (Center for Clinical Research and Prevention, Copenhagen University Hospital — Bispebjerg and Frederiksberg) and chief advisor Jeppe Klok Due (Danish National Archives). The project was awarded by the Novo Nordisk Foundation in 2024.

7 BIRTH WEIGHT AND PREMATURITY — HOME BIRTHS AND HOSPITAL BIRTHS COMPARED

The average birth weight was higher in the live home birth sample (3,520 grams) than for the hospital wards A and B (3,160 grams). Ward C was in between these two (3,390 grams) (see Table 2). We round up the figures in the text so as not to indicate too high an accuracy in the original measurements.

The babies born in wards A and B, primarily to young, unwed women, many of whom were primiparous (see Table 1), were on average 360 grams lighter than those born at home, while babies born in ward C (to married women from poor housing conditions) were only 200 grams lighter.

Our home birth average weight is very close to the findings from Southern Sweden in the 1930s and 1940s, shown in a dataset designed to capture two full-coverage, locally-based populations. The birth weights for full-term singletons were 3,530 grams and 3,520 grams (Quaranta, 2022, Table 1). Schneider's (2017) dataset from Boston (1884–1900) found a slightly lower average in outpatient home births (3,480 grams). The average birth weight in our home birth sample is also very close to the average for singletons in contemporary Denmark which, in every year from 1997 to 2018, was in the range of 3,500 to 3,550 grams (Danmarks Statistik, 2025). This may support Schneider's suggestion of relative stability in average birth weights over the last century (Schneider, 2017).

However, the same average birth weight may mask very different combinations of full-term birth weights and preterm birth weights. Low Birth Weight (LBW; weights of less than 2,500 grams) occurs both in preterm and full-term births. When a full-term infant is born with low birth weight it is called "small for date" and is often caused by factors other than preterm birth. For infants born preterm, their birth weight is of course lower, the lower the gestational age of the fetus, but also preterm fetuses can be small for their gestational age. It is likely that, in historical populations, the relative impact of prematurity and full-term infants born "small for date" may vary over time and place. In this paper we have not explored all the possible combinations in our sample, but below we share some preliminary observations.

Quaranta (2022, p. 609) included only full-term, live born singletons in their two populations. They found a LBW of 1.1 % and 1.6%, so actually they have delineated small for date rates for a historical population. In Denmark in the period 1953–1955, LBW was 4.8% for boys and 5.4% for girls (among live births, including twins and preterm births) (Spædbørnsdødelighed og fødselsvægt, 1960, p. 206). During the period 1997 to 2018, the Danish LBW was between 3.4% and 3.5% for live singletons inclusive of preterm births (Danmarks Statistik, 2025).

Our Copenhagen home birth sample had a LBW rate of 2.9% and a preterm rate of 7% (see Table 2). Substantial differences emerge when we compare LBW rates in home and hospital births. The LBW rate at the wards A and B was three time as high as in the home birth sample (12.2% versus 2.9%) (see Table 2).

Table 2 *Birth weight and births before term for live births Copenhagen — the 1927-sample (n = 1508) distributed after place of birth (home/Royal Maternity Hospital)*

	Home births	Ward A	Ward B	Ward C	All
Births live (n)	1,133	150	152	73	1,508
Birth weight					
Information missing (n)	6	9	7	0	22
Low birth weight* (n)	33	19	18	5	75
Low birth weight rate**	2.9	12.7	11.8	6.8	5.0
Average weight (grams)	3,516	3,139	3,184	3,318	3,438
Minimum weight (grams)	900	1,100	1,400	1,800	900
Maximum weight (grams)	6,000	4,700	4,900	4,700	6,000
Births before term					
Information missing	16	8	5	2	31
Before term (n)	79	50	49	8	186
Before term birth rate	7.0	33.3	32.2	11.0	12.3

*Notes: *Low birth weight < 2500 grams. ** Rate = number per 100 live births in the column.*

These differences in LBW are very likely primarily explained by differences in prematurity. However, we cannot calculate premature birth rates precisely as they are defined today, as the midwife-birth-registers from 1927 do not provide the precise information as to whether an infant is "born before the end of the 37th week of gestation", as it is defined today. However, the Hospital's wards recorded some information about how many weeks before term a birth occurred: most of their premature births were estimated to have been born two to four weeks before term. That means that the hospital counted an infant as preterm until the (estimated) end of the 38th week of gestation.

If we keep this definition in mind, it makes sense to calculate the percentage of records marked as "estimated premature". The proportion of estimated premature live births was 33% in wards A and B, more than four times higher than the 7% observed in the home births. These huge preterm rates heavily affect the average birth weight for all births on wards A and B. The differences in average birth weight between hospital and home deliveries for full-term births only, narrows to less than 100 grams (A and B — primarily young and unwed mothers) and 180 grams (C young, married women living in poor housing).

Our hospital sample is very small. However, we can control the representivity of the sample data from ward A, because this ward (and only this ward) reported in the Annual Report of the Hospital for 1927, that 9% of all their births (including stillbirths and miscarriages) had a birth weight of under 2,000 grams. We have done exactly the same calculations on our ward A sample and get a reassuring 9.3% births with a birth weight of less than 2,000 grams. Ward A's report on the preterm rate is also in line with our sample: the annual report shows that 1,001 out of 3,001 births occurred before term. This aligns perfectly with the 33.3% pre term rate in our ward A sample (see Table 2) (Beretning om Rigshospitalet, 1928).

The large differences between home and hospital births are most likely explained by the selective nature of hospital delivery. The demographic characteristic of the mothers of our hospital sample wards A and B (see Table 1) are known to be associated with high risk of LBW and prematurity (Morgen et al., 2017; Mortensen et al., 2009; Poulsen et al., 2015; Schneider, 2017).

8 SOME THOUGHTS ABOUT MEASUREMENT UNCERTAINTY AND MEASUREMENT ERRORS IN HISTORICAL BIRTH WEIGHT INFORMATION

How accurate are historical birth weight measurements? That is a question which needs to be addressed, but is impossible to adequately answer in this paper. The following are some initial thoughts about the scales used and the degree of heterogeneity of birth weights reported in our home birth sample.

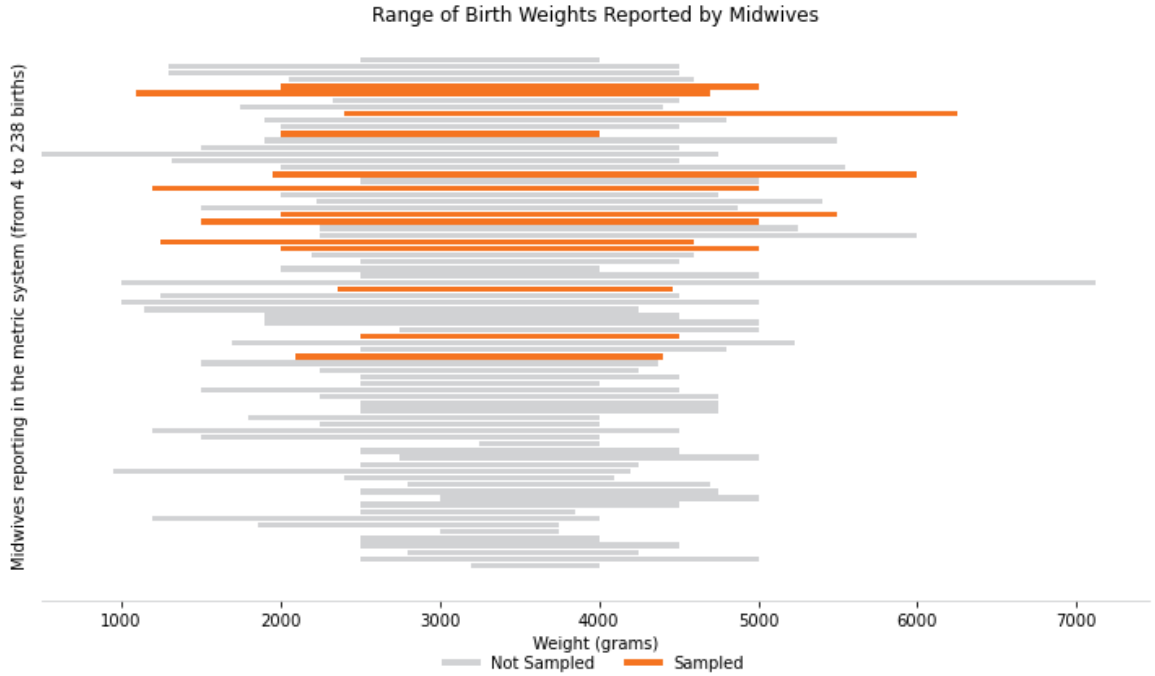
8.1 THE SCALES

The head midwife of the School of Midwifery and of ward B in 1927, Johanne Rødtness, wrote in her professional memoirs (Nellemose, 1935, p. 155), that the scale preferred by the practicing midwives was the spring scale (*fjedervægt*), because it was small and easy to carry. She writes that the chief obstetrician of ward B, head of the School of Midwifery, Prof. Erik Hauch, demonstrated the inaccuracy of spring scales by weighing a number of infants both with a spring scale used by a practising midwife for years and a *bismervægt* (Scandinavian steelyard balance). The spring scale showed about 500 grams more than the steelyard balance. She also explained that the weight and length of a newborn was used for assessing whether the infant was full-term or not.

8.2 THE REGISTRATION PRACTICES OF THE MIDWIVES

What can we deduce from the registered weight measurements themselves? First we compared our home births sample to all the midwives operating in the city, according to the maximum and minimum birth weights reported by the 77 midwives that both measured in either grams or kilos and also weighed preterm births (see Figure 1).

Figure 1 *Maximum and minimum reported birth weight (preterm infants included) for all midwives-birth-registers with records done in kilos or grams for the whole year 1927 in Copenhagen (77 birth registers)*



Our sample is reasonable within the maximum and minimum weight pattern of all midwives in Copenhagen in 1927. At least our sample is not so strikingly different. Thus we have no reason to think that the reporting behavior of our sample is a complete outlier. The sample seems just to be part of the overall heterogeneity (see Figure 1).

However some midwives, both in our sample and among the not sampled, have registered maximum weights of more than 5,000 grams. That is not impossible, but it does suggest that some of the scales these midwives used may have had measuring errors.

We then examined differences in how midwives recorded birth weight, within our home births sample (see Table 3). The last columns shows the share of a midwife's births, which were in the rather high range of 4,000 to 4,499 grams. Here we see that Ane Petersen is an outlier with 39.5 % heavy births, while three other midwives had more than 25% heavy births. That suggests that these four may have had scales showing values that were too high.

When examining the number of unique values registered as birth weight by the individual midwives (see Table 3), we see a large spread from very few unique weights up to 50. Løsecke recorded weights in only six distinct categories for her 119 births and Ane Petersen, who attended 86 births, only used nine. The average number of grams between any two measurements for these two midwives is around 500. This may indicate that they did not even use a scale, but just sized the infants by hand. That suggests that Ane Petersen may have generally estimated weight higher instead of lower.

At the other end of the precision scale are three midwives with a high number of unique measurements and smaller differences in average distance in grams between the unique measurements. Isaksen attended 63 births and recorded 45 unique weights, Julie Nielsen had the second highest number of unique weighs (50 for her 140 births) and Boserup had 30 measurements for 52 births. Between these two clearly distinguishable groups the rest of the midwives measured in grams but with average distances between measurements of around 100–200 grams.

These findings rely on a small number of cases and only for a year. However, they do underline the fact that there were substantial differences in how midwives measured and recorded the information, which needs to be taken into consideration during analysis, as these differences very likely have effects on the results, when the birth weight information is used.

Table 3 *Number of births (stillbirth and miscarriages inclusive) with birth weight registered, distributed after midwife — the 1927 midwife sample*

Midwife	Number of births weighted	Number of births not weighted	Measure	Unique values measured (n)	Average measurement distance	Mean grams	Min grams	Max grams	% Range 3000–3499	% Range 3500–3999	% Range 4000–4499
Dagmar M. J. Løsecke	119	2	kilos	6	500,0	3,399	2,000	4,500	42.0	26.9	25.2
Ane C. Petersen	86	0	kilos	9	437,5	3,747	2,000	5,500	19.8	17.4	39.5
Bertha Petersen	71	3	grams	10	333,3	3,596	2,000	5,000	15.5	32.4	26.8
Clara B. Olesen	59	1	kilos	14	189,7	3,402	2,200	4,666	28.8	25.4	22.0
Betty Nielsen	152	2	kilos	15	178,6	3,448	2,000	4,500	22.4	47.4	15.8
Petra Holt	82	0	grams	22	166,7	3,532	1,500	5,000	19.5	37.8	22.0
Juliane M. Peitersen	120	1	grams	26	154,0	3,660	2,400	6,250	26.7	32.5	26.7
Helga E. Sørensen	51	0	grams	27	136,5	3,436	1,950	5,500	29.4	35.3	11.8
Petra Sørensen	52	0	grams	27	196,2	3,453	900	6,000	21.2	38.5	13.5
Caroline Chr. Boserup	51	2	grams	30	79,3	3,549	2,100	4,400	19.6	51.0	17.6
Astrid Brücker	96	0	grams	32	122,6	3,511	1,200	5,000	19.8	31.2	17.7
Emilie B. Isaksen	63	0	grams	45	71,4	3,493	2,360	5,500	39.7	25.4	14.3
Julie C. Nielsen	138	0	grams	50	73,5	3,441	1,100	4,700	29.0	39.1	17.4

9 CONCLUSION

There is relatively little knowledge about the evolution of perinatal health. For birth weight and prematurity during the 19th and the first half of the 20th centuries, most of what we know is based on hospital births, due to the scarcity of historical records of home births. This article has contributed to the literature by providing a pilot study on midwife-birth-registers from Copenhagen for the year 1927, comparing home births with births at the Royal Maternity Hospital.

We found significant differences in birth weights and prematurity between home and hospital births, attributable to the selective nature of the hospital admissions. Hospital births at ward A and B showed an average birth weight of 360 grams less than in home births (3,160 grams versus 3,530 grams for home births). The Low Birth Weight Rate (LBR < 2,500 grams) at the wards A and B was three times as high as in the home birth sample (12.2% versus 2.9%) and the preterm rate was more than four times higher (33% versus 7%).

We also found huge differences in the socio-demographic characteristics between the mothers giving birth at home and at the Hospital (see Table 1). These differences were caused by the selective admittance to the Royal Maternity Hospital admitting mostly unwed, young, primiparous women to wards A and B, and very poor married women to ward C, while the home births included mostly married women throughout the fertile ages. These social demographic differences go a long way to explain the differences in birth output. Additionally, the existence of these differences shows that the Danish collection of midwife-home-birth- registers from 1861 to 1978 is a tremendously rich historical source well worth exploring further to understand historical health at birth for the majority of births taking place at home until the mid-20th century.

However, we have also found indications of substantial variations in the practices of birth weight measurement and reporting standards by the midwives, which complicates the use of historical birth weight information. This emphasizes the need for careful analysis before interpreting differentials in historical birth weight data registered in different settings.

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