Transforming childbirth practices
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Chapter 5 Effects of new style midwifery: two case studies

In 1948, Ms Deng Yinghua, a well-trained and licensed new style midwife, published a short article reviewing her midwifery career that spanned from the prewar years to the late 1940s. She recalled in the article that after graduating from the First National Midwifery School, she had been working as a midwife successively in her alma mater, in a district health station, and in the department of obstetrics of a hospital in Beijing. When the Sino-Japanese War broke out in 1937, she moved with her family to Qingdao in Shandong province, and she suspended her work for a while. In 1940, Ms Deng settled down in Jinan, the capital of Shandong, and opened a private midwifery clinic in her own home. Living in a community midway between the city center and the countryside, Ms Deng was surrounded by lower-middle class households which shared similar living conditions and habits with their rural neighbors.

Initially Ms Deng had a hard time working in Jinan. On the one hand, she was rarely called because she was not known by many local families. On the other hand, she encountered malicious attacks from native traditional midwives who excluded her from the midwifery network of the neighborhood. Things started to get better as the news of her service was circulated to more residents by her clients’ families, who were grateful to her attendance. Her fame in the community grew as she kept the delivery fee affordable, and she even rendered free services to the very poor from time to time. By 1941 she was delivering an average of fifteen babies monthly, and in two years’ time she not only had an average of twenty delivery invitations per month, but also embarked on cooperating with a private midwifery school, from which she hired interns and assistants. She summarized that throughout those years, she carefully practised what she had learned at school: prenatal checkups, postnatal visits, and hygienic delivery, and that she often treated infants and mothers for free. She ended the article by claiming proudly that her midwifery career was rather successful because of all her efforts. 383

Ms Deng’s experience reveals how the professional track of a trained midwife was influenced by war and social attitudes, and particularly how new style midwifery was introduced, ignored, resisted, and gradually accepted by a community where trained midwifery was originally absent. Her case is not unique. Ms Deng’s experiences match many others’ in different parts of China from the 1920s to the 1940s.

However, Ms Deng’s confidence in her success is not backed by any evidence of the survival chance of her client mothers and infants, since she never mentioned the mortality outcomes of her deliveries. This chapter attempts to evaluate the effects of new style midwifery provided by trained birth attendants like Ms Deng, from the perspectives of neonatal, infant and maternal mortality rates. Particularly, through case studies of Beijing (1926-1937) and Sichuan (1938-1949), this chapter will question whether new style

midwifery was effective in reducing childbirth-related deaths, how new style midwifery benefited infant and maternal health, and how the accessibility of qualified midwifery differed in the urban and rural areas researched.

5.1 Case study: Beijing, 1926-1937

This case study aims to understand the process and effects of implementing new style midwifery in prewar China. Focusing on an urban district inside Beijing city and a rural district nearby, it showcases how midwifery services and childbirth-related mortality rates diverged between urban and rural environments in the Beijing region from 1926 to 1937, during which relatively reliable data were recorded. However, due to the limitations of the data, the quantitative analysis of this case study will mainly concentrate on the urban district.

5.1.1 The communities and data

This case study is based on data of an urban community, the first health district in central Beijing, and of an rural community, Qinghe district to the northwest of the city center of Beijing (Map 5.1).

Located at the southeastern corner to the Forbidden City, the first health district was founded as an experimental zone in 1925 under a pilot project to promote public health. This project followed the idea of “community-based health service” advocated by medical professor John B. Grant, and was supported by both the local government and the Rockefeller Foundation. In 1928, the district was reorganized into a larger one, with the population rising from 50,000 to around 100,000. Owing to its advantageous location, it had been rather urbanized by the 20th century, attracting numbers of people and materials

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384 This case study is based on Minghui Li, “Childbirth transformation and new style midwifery in Beijing, 1926-1937,” The History of the Family (2019), https://doi.org/10.1080/1081602X.2019.1686710. It has been slightly adapted for the present dissertation. It now includes new sources found in the later stage of the PhD project.

385 During the Republican era the name of the city changed several times due to administrative reorganization and political upheavals. Before 1928 it was officially named “Beijing”, also known as “Peking” and “Jingshi”, the latter of which meant the “national capital”. The name was changed to “Beijing” in 1928 when the national capital moved to Nanjing. It was changed back to “Beijing” upon Japanese capture in 1937 and again to “Beijing” after the Sino-Japanese War ended in 1945. The name reverted to “Beijing” in 1949, as it has been to date. These changes are reflected by the Romanization of the Chinese titles of the primary sources quoted in the study. In this dissertation the city is consistently referred to as “Beijing” to avoid confusion.


from surrounding areas and other regions of the country. Western medical institutions, including maternity hospitals and clinics, emerged in this district from the late 19th century, coexisting with traditional Chinese pharmacies. After 1900, the diffusion and use of Western medicine in this district grew rapidly, with more hospitals and medical colleges being set up. Between 1926 and 1937, the average crude birth rate (CBR) of this urban district was 20.8‰, while the average mortality rate (CMR) was 16.4‰ (Appendix 3).

Map 5. 1. Map of Beijing’s first health district and Qinghe district, 1936.
Based on Beipingshi zhengfu mishuchu diyike tongjigu [Division of statistics of the secretariat of Beijing metropolitan government], Beipingshi tongji lanyao [Overview of statistics in Beiping] (Beiping, 1936), 18.

Qinghe district was the rural region constituted of the central Qinghe town and forty villages circling the town. Instead of being a single administrative unit, this district covered three administrative territories, part of which overlapped with suburban Beijing. Located sixteen kilometers northwest to the first health district, this region was selected for a rural health project organized by the department of Sociology of Yenching University in 1931, in cooperation with the fist health district station and PUMC Hospital in the city of Beijing. In addition to the funding from the university, the project received donations from local elites
as well.\textsuperscript{388} There were around 28,000 inhabitants in this district and most of them worked in agriculture, but there was a higher proportion of non-agricultural residents in the town than in the villages.\textsuperscript{389} However, health services were scarce. It was reported that no medical institution had existed in the region before 1930. Even though there were four private doctors in the town, they were hardly available to villagers nearby.\textsuperscript{390} Information on birth and death rates of the villages is absent, but a survey shows that the CBR was 35.5\textperthousand and the CMR 39.3\textperthousand in the town in 1931.\textsuperscript{391}

The demographic data are primarily drawn from reports published by different health stations and social surveys conducted by academic professionals. The data were interpreted and presented in tabulated forms in the sources, but the original copies of birth and death certificates from which these tables derived are unavailable.

Vital statistics of Beijing’s first health district are retrieved from the district health station’s annual reports from 1926 to 1937,\textsuperscript{392} during which the registration of birth and death had been improving. These reports encompass information on birth, and infant and maternal mortality. Meanwhile the data for births and neonatal deaths in certain years can be linked to the delivery attendants (see Appendices 3 and 5). Additionally, cause-of-death statistics concerning neonates became available in the reports after 1932, but the causes of maternal deaths were not specified until 1937.

The collection of vital statistics in the first health district was conducted under great efforts in the period researched. Birth statistics were chiefly obtained through home-to-home visits by specialist sanitary inspectors, supplemented by birth notifications from the police and reports by public health nurses who performed medical checkups at patients’ homes.\textsuperscript{393} It was legislated that births should be reported to the police by the child’s parents or custodians within five days after delivery,\textsuperscript{394} but this was not enforced and many births were actually not notified. Being aware of this problem from the beginning, the first health

\textsuperscript{389} Wang Hechen, “Yanda zai Qinghe de xiangjian shiyan gongzuo [The rural experimental work of Yenching University in Qinghe],” \textit{Shehuixuejie} [Sociology], no. 9 (1936): 348.
\textsuperscript{390} Beipingshi gong’anju diyi weishengqu shiwusuo [Beiping metropolitan police bureau first health district station], \textit{Beipingshi gong’anju diyi weishengqu shiwusuo diqinian nianbao} [The 7\textsuperscript{th} annual report of Beijing metropolitan police bureau first health district station] (Beiping, 1932), 103.
\textsuperscript{391} Beipingshi gong’anju diyi weishengqu shiwusuo, \textit{Beipingshi gong’anju diyi weishengqu shiwusuo diqinian nianbao} (Beijing, 1932), 109.
\textsuperscript{392} The report of 1936 has not been found, but statistics concerning this year were partly recorded in the report of 1937.
\textsuperscript{393} Peking Health Demonstration Station, \textit{Peking health demonstration station, preliminary and annual reports, 1927} (Beijing, 1927), 14. Folder 2735, Box 219, Series 3, RG 5, International Health Board/Division records, FA115, Rockefeller Foundation records, Rockefeller Archive Center. Beijingshi weishengju diyi weishengqu shiwusuo [Beijing metropolitan health bureau first health district station], \textit{Beijingshi weishengju diyi weishengqu shiwusuo dishisannian nianbao} [The 13\textsuperscript{th} annual report of Beijing metropolitan health bureau first health district station] (Beijing, 1938), 7.
station appointed sanitary inspectors to gather birth statistics via home visit. These sanitary inspectors were also sent daily to hospitals and midwives to inquire birth information, and in this way the proportion of omitted birth notifications decreased over time. Death statistics of adults were thought reliable, as corpses were only allowed to be carried out of the city for burial after the police had been notified. However, infant deaths were sometimes left out, because infants were so small that it was easy to bury them without drawing others’ attention. To resolve this problem, several additional sanitary inspectors were hired to investigate illegal infant burials, which helped complete the overall mortality data. However, it was still inevitable that some infant and maternal deaths were not registered due to the emigration of families. It was estimated that between 1932 and 1936, nearly 5.5% of the parturient women living in the first health district moved away not long after delivery, making the follow-up visits impossible.

In the early years of the Republican era, causes of death in Beijing were usually registered by police officers as given by relatives or a yinyangsheng, a fengshui man regarded as expert in confirming the end of one’s life and in performing funeral rituals in this region. As most of them were not trained in medicine, the reported causes were often meaningless from a medical perspective. In 1926, the recording of causes of death in the first health district was consigned to a medical statistician, who, by questioning family members and by viewing the corpse, determined the cause in accordance with the *International List of Causes of Death*. The first year’s work provided experience to the leading health workers of the station, who soon proposed the *Tentative Classification of Causes of Death* after reconciling the *International List* with lay terms in assigning the causes. The tentative list was believed to be suitable for citywide use in Beijing, and was later recommended to be used nationwide. In 1928, the investigation of death in the district was handed over to several sanitary inspectors, who were trained by a physician of the health station. It was believed that by 1930, these inspectors had made significant

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396 Beipingshi gong’anju diyi weishengqu shiwusuo, Beipingshi gong’anju diyi weishengqu shiwusuo dibianian nianbao [The 8th annual report of Beijing metropolitan police bureau first health district station] (Beiping, 1933), 61. Beipingshi weishengju diyi weishengqu shiwusuo, Beipingshi weishengju diyi weishengqu shiwusuo dishiniannian nianbao [The 10th annual report of Beijing metropolitan health bureau first health district station] (Beiping, 1935), 63. Beijingshi weishengju diyi weishengqu shiwusuo, Beijingshi weishengju diyi weishengqu shiwusuo dishisannian nianbao, 51
397 Yang, ‘‘Lan’an shengmoshi’ yu minguo chunian Beijing shengsi kongzhi kongjian de zhuanhuan,’’ 98-113.
398 Peking Health Demonstration Station, *Peking Health Demonstration Station, Annual Report, 1927* (Beijing, 1927), 13. RAC.
399 Peking Health Demonstration Station, *Peking Health Demonstration Station, Annual Report, 1928* (Beijing, 1928), 19. Folder 2736, Box 219, Series 3, RG 5, International Health Board/Division records, FA115, RAC.
400 Peiping Health Demonstration Station, *Peiping Health Demonstration Station, Annual Report, 1929* (Beijing, 1929), 4. Folder 2737, Box 219, Series 3, RG 5, International Health Board/Division records, FA115, RAC.
progress and become proficient in death investigation. Although it was probable that the causes of some infant and maternal deaths were misreported, it can be inferred that the sanitary inspectors had become progressively capable as they gained more work experience.

In spite of the problem of under-registered births and deaths, the quality of vital statistics of the district improved over time. As the working relationship between the health station and the police improved, and as both the sanitary inspectors and urban residents became increasingly familiar with the work of vital statistics, information on births and deaths was collected more efficiently. Thus, it is reasonable to say that statistics of mortality and causes of death became rather reliable especially after 1930. In fact, data of Beijing’s first health district are considered high in quality compared with contemporary records of other areas in China.

Although public health work in Qinghe district shared similar routines with its urban counterpart, vital statistics in this rural region was hardly collected. Useful data include infant mortality rates of Qinghe town from 1931 to 1933, which are acquired from demographic surveys. The staff of the rural health station perceived that infant mortality data of the town were rather accurate, as it was manageable to trace births and deaths among 3,100 town dwellers. Though scarce, the IMR data may to some extent present the state of infant health in the rural areas near urban Beijing, and hence offer an opportunity for an urban-rural comparison.

From 1934, reports of all urban and suburban districts of Beijing were submitted to the municipal health bureau annually, and health yearbooks of the city were produced accordingly. The reports list information about population, birth, mortality, and the percentage of the participation of different attendants in deliveries. However, only the statistics of 1934, 1935 and 1938 have been found, and these data are less reliable than those of the urban and rural communities under discussion. Yet these data can still reflect the probable state of infant and maternal health of the city, and can be referred to in the urban-rural comparison.

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401 Beipingshi gong’anju diyi weishengqu shiwusuo, Beipingshi gong’anju diyi weishengqu shiwusuo diliunian nianbao [The 6th annual report of Beijing metropolitan police bureau first health district station] (Beiping, 1931), 11.


404 Li Ting’an, Zhongguo xiangcun weisheng wenti [The problem of rural health in China] (Shanghai: Shangwu yinshuguan, 1935), 23.
Chapter 5

5.1.2 New style midwifery in Beijing

5.1.2.1 Midwifery services in the urban and rural communities

After the first health district was established as an experimental zone in 1925, the district’s health station worked hard to ensure access to standardized midwifery services in the community. To encourage prenatal care, the health station not only propagated for women having prenatal checkups in the station or in other hospitals, but also sent staff to offer care at home. In 1934, the health station issued a new rule that only women who took prenatal checkups could be assisted in labor by physicians or new style midwives of the station, which to some extent promoted the proportion of prenatal care in the community.405

When the day of delivery came, usually a midwife, either a traditional or a new style one, would be called to home. A trained midwife (new style midwife or trained traditional midwife) was requested to carry a kit with a range of pharmaceuticals, bandages, and instruments, which were used for sterilization procedures.406 If complications occurred, the midwife should call a physician or transfer the woman to a hospital, depending on how urgent the situation was. If the delivery was successful, the mother would be encouraged to attend postnatal examinations either in the health station or in a hospital in the following six weeks. In some cases, the health station also gave postnatal care at women’s homes.407

During the postnatal care, midwives or nurses paid special attention to the health of mothers and newborns, instructing mothers on individual hygiene, breastfeeding, infant bathing, navel care and diaper changing to prevent postnatal diseases.408

In 1931 a health station was set up in Qinghe town, and in the next year the station began to offer new style midwifery services. Although initially only one new style midwife worked in the town health station, this midwife took the lead in popularizing infant and maternal care among rural women and native midwives, through visiting local families and giving short lectures in public.409 Due to a lack of assistants, home care turned out to be impracticable, and thus prenatal and postnatal services were only provided in the station. However, pregnant women of the villages were reluctant to go to the town, due to the poor

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405 Beipingshi weishengju diyi weishengqu shiwusuo, Beipingshi weishengju diyi weishengqu shiwusuo dishinian nianbao, 40.
406 Beipingshi weishengju di’er weishengqu shiwusuo [Beijing metropolitan health bureau second health district station], Beipingshi weishengju di’er weishengqu shiwusuo di’ernian nianbao [The 2nd annual report of Beijing metropolitan health bureau second health district station] (Beiping, 1935), 106-108.
409 Nongcun fuxing weiyuanhui [Rural Revival Committee], “Yinianlai fuxing nongcun zhengce zhi shishi zhuangkuang, disi jie [The implementation of rural revival policies in the past year, section four],” Nongcun Fuxing Weiyuanhui Huibao [Report of the Rural Revival Committee] 2, no. 3 (1934): 296.
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road conditions and their sense of shame to expose their swelled bellies in public. Despite this, women of this district gradually invited midwives from the station for home delivery. If it happened to be a complicated case, the midwife would call a physician from the town, or send the woman to a hospital in the city.

In addition, both the health stations mentioned above offered subsidies to poor families in their communities, trying to make new style midwifery affordable to as many women as possible. However, the midwifery work of both districts was hugely interrupted when the Sino-Japanese War broke out in 1937, though the first health district still tried to maintain its health services.

5.1.2.2 Educating new style midwives
By 1932 there were totally nine medical institutions in Beijing that offered midwifery education to young women. Among these institutions, the First National Midwifery School stood out for having the most authoritative teaching staff of midwifery in the country, and for being the first midwifery school supported by the central government. It is hardly known how other institutions organized their midwifery education, but reports of the First National Midwifery School offer important clues. Founded in 1929, this school designed four programs to meet the demands of students with different knowledge and experience backgrounds. The most important training track provided two-year courses to female students who at least had completed secondary education. Students were obliged to take advanced courses in anatomical physiology, pharmacology, gynecology and infant nursing. After the theoretical study, students were sent to different maternity institutions for internship. The home addresses of students listed in the reports of the school indicate that most were from cities, and only a small number of them originated from rural areas. In this light, it makes sense that most graduates chose to serve in urban areas after completing their education.

Compared with urban Beijing, midwifery education in Qinghe started later and maintained a lower standard. Soon after 1932, the rural health station launched a plan to educate local new style midwives. Nonetheless, as female education in rural areas was limited, rural women hardly had sufficient knowledge for advanced midwifery study. Eventually, only one woman with a primary school degree was qualified for the education plan. The only admitted student did accomplish the professional study and became an

412 Diyi zhuchan xuexiao [The first national midwifery school], Diyi zhuchan xuexiao niankan, duiyuan [Annual of the first national midwifery school, volume 1] (Beijing, 1931), 7.
413 Diyi zhuchan xuexiao, Diyi zhuchan xuexiao niankan, di eryuan [Annual of the first national midwifery school, volume 2] (Beijing, 1931), 12&24.
independent trained midwife after one year.\textsuperscript{414} However, this was far from enough. In 1935, a new six-month project was started to train maternal assistants. The health station selected ten women aged twenty to thirty from local villages, each of whom was expected to serve four to six villages near her home. Considering the limited literacy of these women, the first three months were spent teaching them simple reading and math, and the latter three months were used for specialized midwifery courses. On finishing the theoretical study, all students had to independently deliver five babies under the surveillance of the health station’s staff. It is unclear how qualified these maternal assistants were, but the town health station’s staff seemed satisfied with the assistants after the training project ended.\textsuperscript{415}

5.1.2.3 Retraining traditional midwives
Immediately following the midwife legislations in 1928, a specialized center in charge of retraining traditional midwives was founded in Beijing. From 1928 to 1930, 252 traditional midwives in Beijing had taken part in the training, yet only 152 of them passed exams and received certificates. In 1930, the center was renamed “Infant Health Station” and continued to train untrained midwives. The training lasted for two months, offering theoretical and practical instructions on the mechanism of childbirth, sterilization, and treatments to several postnatal diseases.\textsuperscript{416} As explained in chapter 4, whether successfully trained or not, all midwives were supervised by physicians and new style midwives of the health station of their districts.\textsuperscript{417} If a trained traditional midwife was found to violate rules of hygiene, her certificate would be revoked. Although traditional midwives were not trained to perform prenatal or postnatal checkups, they helped disseminate related information in their neighborhoods. In particular, the trained traditional midwives were required to inform their clients about the advantages of prenatal and postnatal care, and to persuade women to go to health stations for checkups.\textsuperscript{418} This mechanism was especially approved by Yang Chongrui, who recognized that trained traditional midwives were “an excellent measure of publicity, influencing the mass of the people by their talk and demonstrations”.\textsuperscript{419}

Retraining traditional midwives in Qinghe, as in other rural areas in China, was more problematic. Given the shortage of medical facilities and health personnel, the training program in Qinghe was compressed into two weeks, with the basics of midwifery

\textsuperscript{415} Wang, “Yanda zai Qinghe de xiangjian shiyan gongzuo,” 360.
\textsuperscript{416} Diyi zhuchan xuexiao, Diyi zhuchan xuexiao niankan, disanjuan [Annual of the first national midwifery school, volume 3] (Beijing, 1932), 96.
\textsuperscript{417} Diyi zhuchan xuexiao, Diyi zhuchan xuexiao niankan, di’erjuan, 158.
\textsuperscript{418} Beipingshi weishengju di’er weishengqu shiwusuo di’ernian nianbao, 6.
explained in simple terms. In the beginning, traditional midwives were unwilling to attend the training and only gathered in the classes following orders from local officials. But later, the health staff’s active interaction with the midwives motivated the latter to join the training on their own initiative. Nonetheless, the training results seemed unsatisfactory. According to the staff of Qinghe’s health station, though all the fifty village midwives had attended training courses by 1934, many of them continued to cling to their old ways.

The reskilling of traditional midwives was disrupted in both Beijing and Qinghe in 1937. The Infant Health Station was shut down, and the medical staff of Qinghe health station either returned to Beijing or moved elsewhere.

5.1.3 Changing patterns of birth attendance

What were the outcomes of implementing new style midwifery in Beijing’s first health district and Qinghe district from 1926 to 1937? Did the participation of different birth attendants change over time? Due to the dearth of sources of Qinghe, the following analysis will concentrate on the first health district, but a concise discussion on the urban-rural gap will be given afterwards.

Birth attendants recorded in the health reports of Beijing were generally categorized into three groups: physicians and new style midwives, traditional midwives, and others. Physicians and new style midwives were certainly different from each other in both delivery duties and their ability to manage obstetric complications, yet they were listed under the same category in the health reports. This may be because that the health station considered both physicians and new style midwives as educated personnel with sufficient knowledge of hygiene and medical science, which distinguished them from other uneducated attendants. From 1932, traditional midwives were further classified into trained and untrained ones in the first health district, and this classification was also applied to reports of other districts of Beijing by the mid-1930s. As for “others”, they referred to female relatives, neighbors, and the parturient women themselves, who did not have any professional training. Nevertheless, the reports did not indicate the socioeconomic background of the mothers delivered by different attendants.

Figure 5.1 shows a remarkable change in the proportions of infants delivered by different types of attendants between 1926 and 1937 in the first health district. In the span of twelve years, the percentage of traditional midwives’ participation fell from 55% to around 35%, whereas that of physicians and new style midwives’ increased nearly twofold from below 20% to around 40%. The changing pattern implies that the midwifery regulations, the expanding supply of physicians and new style midwives, and the promotion of infant and maternal care guided people’s option for professional midwifery services.

422 Cui, “Yige zhuchanshi de zishu,” 51.
Meanwhile, it suggests that the acceptance of new style midwifery in the community was rising, not only due to the improving quality of midwifery services, but also to the financial support that enabled poor families to have qualified services at a low price.

Figure 5.1 Percentage of infants delivered by different birth attendants in Beijing’s first health district, 1926-1937.
Source: Appendix 5.

However, it is not clear why the percentage regarding others did not change much. One possible explanation concerns the costs. Though it is not known how much untrained attendants charged for a delivery, it is presumed that new style and trained traditional midwives asked higher fees than the untrained people as the former used specific pharmaceuticals and instruments that cost more. Also, the non-midwife attendants might charge even less as they did not consider delivering babies to be the primary source of income. Hence, it is plausible that the lower cost of asking a lay attendant was attractive enough to ensure that a certain proportion of births, especially natural births without complications, were delivered by others. Another possible explanation is that in this community a group of women might have firm social networks on which they could rely in delivery, and therefore they did not have to invite attendants they were unfamiliar with. Cases of insisting on asking birth attendants in close proximity can be found in history in other regions where the dramatic replacement of uncertified birth attendants was taking
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It is noteworthy that the percentages of infants delivered by traditional midwives and others climbed again in 1937, while that by physicians and new style midwives decreased. This was partly because as the war broke out in the summer in 1937, many private medical practitioners fled the city, and physicians and new style midwives affiliated to the health station had to decline nocturnal delivery calls under the threat of attacks.\(^{424}\)

Table 5.1 demonstrates the percentages of infants delivered by different birth attendants in Beijing’s first health district (1932-1937) and the city of Beijing (1934). Note that the statistics for Beijing included both urban and suburban districts, the latter of which shared common characteristics with the surrounding rural regions. Apparently, the first health district was a forerunner in the practice of new style midwifery in the city. From 1932 to 1937, the average percentage of infants delivered by trained attendants, which included physicians, new style midwives and trained traditional midwives, amounted to more than two thirds of the total in the district. Meanwhile, deliveries by untrained traditional midwives occupied less than 8% and that by others around one fifth. In contrast,


in the whole city of Beijing untrained attendants delivered more than half of all infants in 1934, while around 37% of births were attended by the trained. Particularly, physicians and new style midwives delivered 11.2% of all births, and trained traditional midwives were responsible for a quarter, both playing a weaker role than their colleagues in the first health district. Thus, it can be concluded that in the suburban districts of Beijing and other rural neighborhoods, the use of new style midwifery lagged behind and the non-skilled birth attendance was still the norm.

This discrepancy surely points to the unequal distribution of medical resources and financial investments in different districts, but also hints that women in rural areas were less willing to have help from outside their network. Indeed, rural women tended to be assisted by relatives or neighbors, or to deliver babies by themselves in childbirth. This was partly to save money, and partly based on the common belief that physicians and midwives were only needed in emergency.\textsuperscript{425}

5.1.4 Birth outcomes

5.1.4.1 Neonatal mortality rate
Table 5.2 shows the NMR of infants delivered by different kinds of birth attendants in the first health district from 1932 to 1935 plus 1937.\textsuperscript{426} According to the average rates associated with each type of birth attendants based on the five-year records, it seems that physicians and new style midwives achieved a slightly better outcome than trained traditional midwives, followed by others, and the untrained traditional midwives scored the worst. However, it is peculiar that in 1937 the record of neonatal deaths associated with “others” was completely absent, while the NMR of infants delivered by untrained traditional midwives was unusually much higher than in previous years. The report of 1937 did not explain the absence of “others” in the table, but in its subsequent analysis still attributed the majority of neonatal deaths from convulsions and tetanus to the mishandling by both untrained midwives and other lay helpers.\textsuperscript{427} In this regard, it was highly likely that errors were made when tabulating the mortality figures, and some of the sixty-six neonatal deaths associated with untrained traditional midwives were actually related to “others”.


\textsuperscript{426} The report of 1936 is not found and the statistics for neonatal mortality of this year are unknown.

\textsuperscript{427} Beijingshi weishengju diyi weishengqu shiwusuo, Beijingshi weishengju diyi weishengqu shiwusuo dishisannian nianbao, 16-17.
### Table 5.2: Neonatal mortality rate and birth attendants in Beijing’s first health district, 1932, 1933, 1934, 1935, and 1937 (categorized in four groups).

<table>
<thead>
<tr>
<th>Year</th>
<th>Physicians and new style midwives</th>
<th>Traditional midwives (trained)</th>
<th>Traditional midwives (untrained)</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of births</td>
<td>Number of neonatal mortality</td>
<td>NMR ‰</td>
<td>Number of births</td>
</tr>
<tr>
<td>1932</td>
<td>833</td>
<td>33</td>
<td>39.6</td>
<td>708</td>
</tr>
<tr>
<td>1933</td>
<td>934</td>
<td>24</td>
<td>25.7</td>
<td>1,042</td>
</tr>
<tr>
<td>1934</td>
<td>1,228</td>
<td>76</td>
<td>61.9</td>
<td>947</td>
</tr>
<tr>
<td>1935</td>
<td>1,288</td>
<td>50</td>
<td>38.8</td>
<td>896</td>
</tr>
<tr>
<td>1937</td>
<td>1,101</td>
<td>43</td>
<td>39.1</td>
<td>748</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td>42.0</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. Sources: *Beipingshi gong’anju diyi weishengqu shiwusuo dibanian nianbao* [The 8th annual report of Beijing metropolitan police bureau first health district station] (Beiping, 1933); *Beipingshi weishengchu diyi weishengqu shiwusuo djiqunian nianbao* [The 9th annual report of Beijing metropolitan health department first health district station] (Beiping, 1934); *Beipingshi weishengju diyi weishengqu shiwusuo dixinian nianbao* [The 10th annual report of Beijing metropolitan health bureau first health district station] (Beiping, 1935); *Beipingshi weishengju diyi weishengqu shiwusuo dixiyinian nianbao* [The 11th annual report of Beijing metropolitan health bureau first health district station] (Beiping, 1936); *Beijingshi weishengju diyi weishengqu shiwusuo dishisannian nianbao* [The 13th annual report of Beijing metropolitan health bureau first health district station] (Beijing, 1938).
2. The data of neonatal mortality for 1936 are missing, and therefore the year 1936 is not included in the table.
3. Information on neonatal mortality in the column of “others” for 1937 is absent.
Chapter 5

Table 5.3. Neonatal mortality rate and birth attendants in Beijing’s first health district, 1932, 1933, 1934, 1935 and 1937 (categorized in two groups).

<table>
<thead>
<tr>
<th>Year</th>
<th>Trained attendants</th>
<th>Untrained attendants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of births</td>
<td>Number of neonatal mortality</td>
</tr>
<tr>
<td>1932</td>
<td>1,541</td>
<td>71</td>
</tr>
<tr>
<td>1933</td>
<td>1,976</td>
<td>73</td>
</tr>
<tr>
<td>1934</td>
<td>2,175</td>
<td>104</td>
</tr>
<tr>
<td>1935</td>
<td>2,184</td>
<td>86</td>
</tr>
<tr>
<td>1937</td>
<td>1,849</td>
<td>80</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Adjusted from Table 5.2.

Table 5.4. Neonatal mortality rate and birth attendants in Beijing’s first health district, 1932-1935 (categorized by causes of death).

<table>
<thead>
<tr>
<th>Causes of death</th>
<th>Physicians and new style midwives</th>
<th>Traditional midwives (trained)</th>
<th>Traditional midwives (untrained)</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of deaths</td>
<td>NMR ‰</td>
<td>Number of deaths</td>
<td>NMR ‰</td>
</tr>
<tr>
<td>Premature birth and debility</td>
<td>129</td>
<td>30.1</td>
<td>94</td>
<td>26.1</td>
</tr>
<tr>
<td>Neonatal convulsions and tetanus</td>
<td>26</td>
<td>6.1</td>
<td>37</td>
<td>10.3</td>
</tr>
<tr>
<td>Respiratory diseases</td>
<td>13</td>
<td>3</td>
<td>11</td>
<td>3.1</td>
</tr>
<tr>
<td>Other infectious diseases</td>
<td>4</td>
<td>0.9</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>3</td>
<td>0.7</td>
<td>4</td>
<td>1.1</td>
</tr>
<tr>
<td>Other causes</td>
<td>8</td>
<td>1.9</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Total number of births</td>
<td>4,283</td>
<td>3,593</td>
<td>841</td>
<td>2,300</td>
</tr>
</tbody>
</table>

Sources: Beipingshi gong'anju diyi weishengqu shiwusu dibanian nianbao; Beipingshi weishengchu diyi weishengqu shiwusu dijumian nianbao; Beipingshi weishengju diyi weishengqu shiwusu dishinian nianbao; Beipingshi weishengju diyi weishengqu shiwusu dishiyinian nianbao.
For this reason, birth attendants are reclassified in Table 5.3 into two groups: trained attendants (physicians, new style midwives and trained traditional midwives) and untrained attendants (untrained traditional midwives and others). This table shows that the trained attendants performed significantly better than the untrained. In this light, compared with attendants without any professional training, the trained attendants in general were more capable of saving neonates from death.

An examination of the causes of death may help explain the variances in the capability of the four types of attendants. Table 5.4 shows the NMR and the related causes in the first health district, categorized by birth attendants. The rates displayed in each column are calculated from the total number of births and neonatal deaths connected with the four types of attendants respectively from 1932 to 1935, during which specified causes were recorded. It is evident that the primary causes of neonatal mortality, regardless of who took charge of the delivery, were premature birth and debility. Premature birth and debility are interlinked and are influenced by a variety of factors, such as the economic condition of the family, the location of residence, mother’s health and lifestyle, gene, and the provision of prenatal care. In the case of the first health district, there were no marked differences in the chances of neonates surviving prematurity or debility after being delivered by any of the four types of attendants. This suggests that in addition to other socioeconomic variables, the prenatal care and early medical assistance rendered to most pregnant women were inadequate in this period.

Convulsions and tetanus were the second most important causes of neonatal death in the district. While neonatal tetanus predominantly results from exposure to infections that are associated with unhygienic methods of delivery and poor umbilical-cord care, neonatal convulsions are affected by a wider range of factors, including obstetric complications during labor, congenital cerebral malformations, and metabolic disorders. It is not known to what extent the midwifery-related factors led to convulsions, but the reports of the first health district emphasize that untrained midwives’ ignorance of hygiene chiefly accounted for neonatal death from convulsions. Overall, the figures give a general insight into how childbirth hygiene and infections were managed by different types of attendants.

428 The result of the Independent Sample T-test shows that based on the five-year data, the NMR of infants delivered by trained attendants (M=0.0427, SE=0.0020) was significantly (p<0.05) lower than that by untrained attendants (M=0.0631, SE=0.0057).
432 Beipingshi weishengju diyi weishengqu shiwusuo, Beipingshi weishengju diyi weishengqu shiwusuo dishinian nianbao; 17.
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Apparently, physicians and new style midwives obtained the best outcomes in preventing neonatal convulsions and tetanus, but the results of trained traditional midwives were also positive. Compared with infants delivered by trained traditional midwives, the risk of neonates dying from convulsions or tetanus was 8‰ higher if the neonates were delivered by others, and 30‰ higher if delivered by untrained traditional midwives. Experiences in Western countries have shown that before the 1940s, doctors in hospitals were more likely to transmit infections to women than the trained midwives did in home deliveries, but it is difficult to deduce from the mortality figures in Table 5.4 whether this was also the case in Beijing. Since statistics of births attended by physicians and new style midwives in the first health district were not separated, it was probable that problems brought about by physicians were offset by the performance of new style midwives. Also, although the number of hospital births was ascending in this period, most births took place at home, which restricted the chance of physicians carrying infections between maternity wards. Overall, these reports leave the impression that childbirth hygiene had already become common practice among most of the educated medical practitioners during the 1920s and 1930s, and therefore both physicians and trained midwives must have been well aware of the importance of antisepsis.

Why the NMR of infants delivered by others was lower than those by untrained midwives is unclear. It is plausible that women seeking no help from midwives or physicians were in better health, which promoted the survival chance of the newborn. However, it is also possible that deaths of neonates delivered by others were under-reported, as it was harder to trace midwifery practices of lay attendants.

The investigation of the causes of neonatal death reveals that the discrepancy among the attendants lied in their capability to prevent infections in childbed. Particularly, while physicians, new style midwives and trained traditional midwives could well manage infections, untrained midwives and others were less conscious of keeping delivery procedures clean. More notably, the results imply that once a traditional midwife was equipped with basic knowledge and skills of hygiene and obstetrics, her performance improved tremendously. Therefore, it is reasonable to say that trained attendants had better birth outcomes than the untrained ones because the former could use hygienic methods in delivery effectively.

5.1.4.2 Infant mortality rate

Figure 5.2 shows a declining trend of the IMR in Beijing’s first health district from 1926 to 1937. The IMR dropped to a lower point in 1930, but in 1931 rose again to the previous level. The rise in 1931 was partly due to the more complete information resulting from the improved collection of vital statistics, and partly due to a widespread epidemic in the region.

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in this year.\textsuperscript{434} The IMR went steadily downwards from 1931 to 1935, but climbed upwards again in 1936. Generally speaking, the falling trend of the IMR seemed related to the growing participation of trained birth attendants. Aside from the increasing use of hygienic methods in delivery, health workers also offered infant care, medical assistance, and instructions on motherhood in the postnatal period, which helped enhance the survival chance of infants in the first year of their lives. Nevertheless, it cannot be denied that the progress of public health, such as improvements in vaccination, drinking water and sanitary conditions in the urban district played a role as well.\textsuperscript{435}

![Figure 5.2: IMR of Beijing's first health district, Qinghe town and Beijing (all districts), 1926-1938.](image)

Source: Appendices 3 and 4.

The IMR of Qinghe town varied from 185‰ to 258‰ between 1931 and 1933. In addition to the epidemic that struck the region in 1931 and the worse sanitary environment in rural areas,\textsuperscript{436} the high level of infant mortality in the town was also related to the fact that the midwifery reform was still in its infancy: facilities and personnel for infant and maternal healthcare were much less available here than in the city, and rural women were less convinced by new methods of childbearing. Without additional information, it is impossible to predict either the IMR of other villages near the town, or how the IMR of

\textsuperscript{434} Beipingshi gong’anju diyi weishengqu shiwusuo, \textit{Beipingshi gong’anju diyi weishengqu shiwusuo diqinian nianbao}, 13 & 19.

\textsuperscript{435} Beipingshi weishengju diyi weishengqu shiwusuo, \textit{Beipingshi weishengju diyi weishengqu shiwusuo dishinian nianbao}, 128.

\textsuperscript{436} Nongcun fuxing weiyuanhui, “Yinianlai fuxing nongcun zhengce zhi shishi zhuangkuang,” 295.
Qinghe town developed after 1933. However, it is certain that there was an urban-rural divergence in infant health in this region. The IMRs of the whole of Beijing in 1934, 1935 and 1938 were 170‰, 133‰ and 184‰ respectively. Considering the fact that medical and sanitary facilities in rural areas were inferior to those in urban areas, it is highly likely that the IMR of Qinghe district maintained higher than the average level of Beijing from the mid to the late 1930s.

5.1.4.3 Maternal mortality rate

Figure 5.3 shows that the MMR of the first health district fell from 12‰ in 1926 to 4‰ in 1937. By and large, this decline went hand in hand with the growing proportion of infants delivered by physicians, new style midwives and trained traditional midwives, as can be seen in Appendix 5. However, the rather low MMR in 1937 seems incompatible with the decreased percentage of births attended by trained personnel in this year. This is partly because that as numbers of families left the city after the war broke out, the follow-up tracking of maternal mortality was interrupted to a larger extent. It was estimated that 5.5% of women moved out of the district not long after delivery from 1932 to 1936 per year, but this percentage rose to 12% in 1937. Nevertheless, even if the emigrant mothers are taken into account, the MMR of 1937 would not be much higher.

Figure 5.3. MMR of Beijing’s first health district and Beijing (all districts), 1926-1938.
Source: Appendices 3 and 4.

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437 Beijingshi weishengju diyi weishengqu shiwusuo, Beijingshi weishengju diyi weishengqu shiwusuo dishisannian nianbao, 51.
Effects of new style midwifery: two case studies

It has been widely recognized that the use of sulphonamides after 1935 in some Western countries contributed greatly to the reduction of puerperal sepsis and to the subsequent drop in maternal mortality.\textsuperscript{438} However, there is no evidence of clinical use or mass production of sulphonamides in Beijing before 1939. In this regard, the decreased MMR in the first health district should be mainly attributed to the growing use of skillful birth attendants, and to the enhanced efficiency of referring women to more specialized assistance when complications happened. As the qualified midwifery care became accessible to a larger female population, and as the obstetric skills of trained personnel progressed year after year, the protection of women against infections during and after labor became more effective and influential than ever before. Moreover, when complications or accidents occurred, timely medical aid was secured by calling a physician or sending the parturient woman to a hospital, which helped relieve emergencies efficaciously. This was also in line with experiences in Western countries in the 19\textsuperscript{th} and 20\textsuperscript{th} centuries that the mounting access to skilled midwifery services and the efficient referral of women to hospitals benefited the reduction of maternal mortality.\textsuperscript{439}

The maternal mortality in Qinghe district is not clearly known, but the data for Beijing as a whole provide some clues about the MMR level in suburban and rural areas. The MMRs of Beijing were 17‰, 10.8‰ and 9.5‰ in 1934, 1935 and 1938 respectively, seemingly higher than those of the first health district. With data of only three years, it is hard to assess whether the overall maternal mortality of Beijing continuously declined from 1934 to 1938. Yet these figures indicate that the MMR was higher and midwifery services were less developed in the peripheral districts than in the urban ones. This contrast again confirms the urban-rural gap in the childbirth transformation.

5.1.5 Discussion
This case study has investigated the transformation of childbirth practices and its subsequent outcomes in the region of Beijing from 1926 to 1937. It unveils the positive impacts of the growing provision of qualified midwifery services on the infant and maternal mortality, and reveals the urban-rural divide in maternal care.

In the period under discussion, both the IMR and MMR of Beijing’s first health district show declining trends, which were related to various initiatives concerning midwifery training and infant and maternal healthcare. It is risky to draw a conclusion from


a dataset covering a period of only twelve years, but it can be safely inferred that the dramatic changes in midwifery practices took effect in an era when antisepsis was routinely practised and when there were favorable political and financial support. As discussed above, the local government made great efforts to lower infant and maternal mortality by strengthening its control of both midwifery services and birth attendants. At the same time, various regulations were issued, educational and training programs were intensified, and propaganda was launched. These measures imparted the knowledge of biomedicine and hygiene to the public, transformed the practices of infant and maternal care, and expanded the supply of qualified birth attendants in the market, leading to a rising use of new style midwifery. Although midwifery skills varied individually, the growing access to trained and skilled midwifery services on the whole contributed to the reduction of the IMR and MMR. Nonetheless, despite this progress, the IMR and MMR of Beijing in the 1930s were generally higher than in many Western European countries in the same period, where the IMR ranged from 50-100‰ and the MMR from 2.5 to 5‰.\(^{440}\)

Trained midwifery played an important role in delivering positive birth outcomes, and especially in protecting neonatal health. From the perspective of causes of death, the trained attendants achieved better results than the untrained ones in preventing deaths caused by neonatal convulsions and tetanus, though both trained and untrained personnel had difficulties in saving neonates from prematurity and debility. This means that the trained were more capable of using hygienic methods and preventing infections than the untrained. More noticeably, the skills of trained traditional midwives were very distinct from that of the untrained traditional ones, as infants delivered by the former had one-fourth of chances to die from neonatal convulsions and tetanus compared with infants delivered by the latter. This agrees with Robert Woods’s findings that trained midwifery care was beneficial to protecting late-fetal and early neonatal health.\(^{441}\)

Nevertheless, the urban-rural discrepancy was marked in terms of midwifery services and infant and maternal healthcare. In the absence of adequate quantitative data, it is difficult to compare the demographic effects in Qinghe with those in Beijing’s first health district. However, from the limited IMR data of Qinghe town, and the IMR and MMR of all districts of Beijing, it can be seen that there was a gap in the overall infant and maternal healthcare in urban and rural areas. Such a gap arose from variations of economic development, educational levels, medical resources, financial support and cultural norms in city and villages, as discussed above. In particular, it was more difficult to educate new style midwives, to retrain traditional midwives, and to convince women of using new style midwifery in rural areas than in the city.

\(^{440}\) Loudon, *Death in childbirth*, 497.
The situation of implementing new style midwifery after the Sino-Japanese War started is unclear, for reliable demographic data of Beijing after 1937 are scarce. Other contemporary sources disclose that urban health stations in Beijing did not completely stop functioning in the wartime. As explained in chapter 4, even though budgets were tight and the number of facilities, staff and clients shrank, some medical practitioners remained active, and health stations continued to receive patients.\textsuperscript{442}

Table 5. Percentage of infants delivered by different birth attendants in Beijing’s first health district and Beijing’s all districts (1930s and 1948).

<table>
<thead>
<tr>
<th></th>
<th>Trained birth attendants</th>
<th>Untrained birth attendants</th>
<th>Unknown</th>
<th>Number of births</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1930s</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beijing's first health district (1932-1937)</td>
<td>70.7%</td>
<td>29.3%</td>
<td>0</td>
<td>16,737</td>
</tr>
<tr>
<td>Beijing's all districts (1934)</td>
<td>36.9%</td>
<td>55.5%</td>
<td>7.6%</td>
<td>22,184</td>
</tr>
<tr>
<td><strong>1948</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beijing’s first health district (January – September, 1948)</td>
<td>73.04%</td>
<td>26.92%</td>
<td>0.04%</td>
<td>2,812</td>
</tr>
<tr>
<td>Beijing’s all districts (January – September, 1948)</td>
<td>53.84%</td>
<td>46.13%</td>
<td>0.03%</td>
<td>19,683</td>
</tr>
</tbody>
</table>

Source: Figures for the 1930s come from Table 5.1. Figures for 1948 come from \textit{Beipingshi chusheng yinghai an jiesheng renyuan fenlei tongji\textsuperscript{b}iao} [Statistical table of infants delivered by different birth attendants in Beiping] (1948), The Second Archives of China, 12- 3409- 1.

Table 5.5 compares the percentage of births assisted by different types of attendants in 1948 (only nine months’ data are available) with that presented in Table 5.1. Although the proportion of infants delivered by physicians and new style midwives in the first health district increased slightly, such a proportion of that in the whole of Beijing grew remarkably from 37% in 1934 to 54% in 1948. This indicates that though infant and maternal healthcare in Beijing had been disturbed by the Sino-Japanese War and Civil War successively, the groundwork of facilities and personnel for new style midwifery in Beijing had been firmly laid, and the seed of people’s preference for trained birth attendants had been sowed during the 1920s and 1930s. In addition, while the first health district was still leading in implementing new style midwifery, other districts were catching up by the mid-
20th century. In fact, the relatively broad coverage of new style midwifery services in Beijing in 1948 surpassed most other regions in China in the same period.

5.2 Case study: Sichuan, 1938-1949

This case study of Sichuan province aims to examine the demographic effects of implementing new style midwifery from 1938 to 1949 in southwestern China. Limited by the sources, the quantitative analysis will focus on the late 1940s, yet the qualitative description will cover a longer time frame. Specifically, drawing on a survey of the fertility of married women in a village of Sichuan, as well as on delivery records of a group of new style midwives practising in different urban places in the same province, this case study will compare the distribution of new style midwifery and the outcomes of birth attendants in urban and rural Sichuan.

5.2.1 Demographic background

The territory of Sichuan in the Republican era was different from that of today. Located in the western part of China at a relatively high altitude, the boundaries of the province were adapted several times in the first half of the 20th century. From 1935 to 1949, Sichuan province referred to the area including the Sichuan Basin and part of the mountainous areas surrounding it. Thus, the area under study was mainly plain, with some hills and mountains. At the same time, the population density of cities and counties varied, with the plains densely populated and the peripheral hilly counties less so.

As to the sources for the researched area, a special note should be given to the city of Chongqing. Chongqing had long been part of Sichuan province before 1939. During the warlord period, Sichuan was controlled by various military fractions that practised different policies. In 1928 when the Nationalist government seized the central power, Chengdu was set as the provincial capital of Sichuan. Chongqing, the other important city in the east of Sichuan, was administratively separated from the province and became the national capital in 1939 after the Nationalist government moved westwards. When the Nationalist government moved back to Nanjing in 1945, Chongqing remained independent from the province. In 1949, there were two cities and 141 counties in Sichuan province, Chongqing not included. When discussing the childbirth-related mortality in Sichuan,
Chongqing will be excluded from the quantitative analysis because of a lack of relevant and comparable data. However, Chongqing will be mentioned in the qualitative narrative, as it had long been an integral part of the Sichuan region geographically, economically and culturally. Map 5.2 shows the territory of Sichuan and Chongqing in the mid-1930s. All places discussed in this case study are marked in the map.

Map 5.2. Map of Sichuan (including Chongqing), 1934.
Based on Hong Maoxi ed., Zuixin Zhonghua xingshi yilantu (yi ce) [The lastest atlas of the general situation and topography of China (volume one)] (Shanghai: Dongfang yudi xueshe, 1934).

Table 5.6 shows the population development in Sichuan and Chongqing from 1939 to 1948. Clearly, the population in Chongqing grew tremendously from 1939 to 1947,
which was primarily due to the expansion of the urban districts and the large-scale immigration from all parts of China. The population increase in Sichuan seems more modest, partly because of the high mortality rates in this province and of an underreporting of young men who tried to avoid military service by circumventing vital statistics.\textsuperscript{448}

Table 5.6. Population of Sichuan province and Chongqing, 1939-1948.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sichuan province</th>
<th>Chongqing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1939</td>
<td>46,402,706</td>
<td>415,208</td>
<td>46,817,914</td>
</tr>
<tr>
<td>1940</td>
<td>46,701,847</td>
<td>417,379</td>
<td>47,119,226</td>
</tr>
<tr>
<td>1941</td>
<td>46,438,490</td>
<td>702,387</td>
<td>47,140,877</td>
</tr>
<tr>
<td>1942</td>
<td>45,922,844</td>
<td>781,779</td>
<td>46,704,623</td>
</tr>
<tr>
<td>1943</td>
<td>46,178,899</td>
<td>923,403</td>
<td>47,102,302</td>
</tr>
<tr>
<td>1944</td>
<td>47,500,587</td>
<td>1,037,630</td>
<td>48,538,217</td>
</tr>
<tr>
<td>1946</td>
<td>47,088,591</td>
<td>1,061,769</td>
<td>48,150,360</td>
</tr>
<tr>
<td>1947</td>
<td>47,107,720</td>
<td>1,000,101</td>
<td>48,107,821</td>
</tr>
<tr>
<td>1948</td>
<td>47,437,387</td>
<td>985,673</td>
<td>48,423,060</td>
</tr>
</tbody>
</table>


The composition of the population in Sichuan was in line with that in the whole country, namely, the majority of people belonged to farming families. A survey of 1946, which excluded the young and the elderly who were unable to work, shows that 68% of the population in Sichuan worked in agriculture, 29% in mining, industry and business, and the rest in other sectors.\textsuperscript{449}

In addition, the literacy level of this province was relatively low. According to a statistical survey of 1946 concerning fifty-eight counties, 74% of the population were

\textsuperscript{448} Hou, Zhongguo renkoushi diliujuan, 202-204.
\textsuperscript{449} Li et al, Sichuansheng tongji nianjian, diyice, 53-55.
illiterate. If those under five years old were ruled out, 60% were illiterate. Moreover, the majority of the literate inhabitants were men living in urban areas.

Owing to a lack of systematic vital statistics, information on birth or death rates at the provincial level is scarce. However, an estimate can be made from the county-level health reports. According to a health report of Bishan county near Chongqing, the birth rate of the township was 25.4‰ and the death rate 12.3‰ between 1945 and 1946, while the birth rate was 36.9‰ and the death rate 30.5‰ in the villages. Given that the large majority of people in Sichuan lived in rural households, it is assumed here that the birth and death rates at the provincial level were around 35‰ and 30‰ respectively during the 1940s.

Furthermore, the health report of Bishan county shows that neonatal tetanus accounted for around 33.8% of all infant deaths. This observation convinced contemporary health experts at Bishan of the need to scale up programs to facilitate midwives with skills in compliance with hygienic standards.

5.2.2 Medicine and midwifery services

Western medicine was first brought to Sichuan in the 1870s by a priest of the China Inland Mission, who travelled upstream the Yangtze river and established a missionary clinic in Chongqing. The priest was followed by other medical missionaries, who initiated hospitals, clinics, pharmacies and medical schools, and introduced medical textbooks and instruments to the province during the late 19th century.

From the early 20th century, non-Christian hospitals appeared in Sichuan as well. For example, military hospitals were set up for officers and soldiers during the warlord years. Apart from that, private hospitals were established in the 1920s and 1930s, though many of them were described to be poorly facilitated and to provide low-quality medical treatments.

Western midwifery became accessible to local women little by little in the first four decades of the 20th century. In 1902, the first women’s hospital was opened by American missionaries in Chongqing, but it was not until 1927 that the city welcomed its first maternity hospital. In 1912 another women’s hospital was founded in Chengdu by

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451 Both the birth and death rates of the township were extraordinarily lower than those in Qinghe town (see case study Beijing). They were closer to the levels in cities rather than in towns in the same period. In addition to the problem of under-reporting, these low figures can be explained by the rapid expansion of the scale of industries and private business, and the size of the township during the war, which caused an influx of educated migrants and young male workers. This in turn influenced the town’s demographic pattern. See Tang Xiqing, “Bishan de shangye [Commerce in Bishan],” *Sichuan jingji tongxun [Economic Newsletter of Sichuan]*, no. 4 (1944): 8.

452 Yu Wei, *Bishanxian weisheng wunian shiyan baogao, 1940-1945* [Five-year health report of Bishan county, 1940-1945] (Bishan, 1945), Sichuan Provincial Archives: 113-01-0694.

453 Yu, *Bishanxian weisheng wunian shiyan baogao*.


Canadian missionaries, but it was unfortunately burnt down in 1938. Besides, departments of gynecology and obstetrics were seen in some private hospitals, adding strength to the practice of Western obstetrics and midwifery in the province.\textsuperscript{456} Nonetheless, only a small number of physicians attended childbirth in Sichuan in this period, and they chiefly resided in cities such as Chengdu and Chongqing.\textsuperscript{457}

Compared with the eastern coastal regions of the country, the service of medicine and infant and maternal healthcare in Sichuan had made little progress in the early 20\textsuperscript{th} century. The health expert Ch’en Chih-ch’ien commented that even in Chengdu, the provincial capital, mission hospitals were the main places where people could seek help of Western medicine before 1940. Although the mission hospitals were running for charitable purposes, their influence was too limited to reach the majority of people.\textsuperscript{458}

After 1937, Sichuan became important as it received numbers of officials, experts, institutions and facilities that moved from the occupied areas of China. Realizing the inadequate health provision and the expanding population, the central and provincial governments undertook to cooperate in building public health facilities in Sichuan.\textsuperscript{459} These measures were aimed for coping with epidemics and choleras, and particularly for protecting the health of people from which soldiers were recruited.\textsuperscript{460} In 1939, the provincial health experimental bureau was founded to help establish health stations in cities, counties and towns. This bureau also helped train health personnel, who were to serve in local health institutions afterwards. Up until 1944, there were governmental health stations in 100 out of Sichuan’s 141 counties, and in 1947 this number grew to 125.\textsuperscript{461} Yet the number of county health stations shrank to 109 in 1949, due to unsatisfactory management and insufficient financial support in some counties, and to the disordered staffing caused by the Civil War.\textsuperscript{462}

Several infant and maternal healthcare programs were drawn up right after public health initiatives were launched. From 1939 to 1941, three specialized infant clinics were set up in Chengdu to render qualified medical services to women and infants in this region. Accordingly, the number of deliveries associated with these clinics increased from 1939 to

\textsuperscript{456} Sichuansheng difangzhi bianzuan weiyuanhui, \textit{Sichuan shengzi, yiyao weishengzhi}, 327.
\textsuperscript{457} Shen Qixi, “Chengdushi fuying weisheng jinkuang [The recent state of maternal and infant health in Chengdu],” \textit{Shehui weisheng [Social Health]} 1, no. 2 (1944): 44.
\textsuperscript{459} Sichuansheng difangzhi bianzuan weiyuanhui, \textit{Sichuan shengzi, yiyao weishengzhi}, 327.
\textsuperscript{460} Sichuansheng weishengchu, \textit{Sichuansheng sanshisan niandu ni chongshi ji sheli zhi weisheng jigou yijianshu [Proposal to substantiate and establish health institutions in Sichuan province for 1944]} (Chengdu, 1943), Sichuan Provincial Archives: 113-01-0452.
\textsuperscript{461} Sichuansheng weishengchu, \textit{Sichuansheng sanshisan niandu ni chongshi ji sheli zhi weisheng jigou yijianshu}. Li Jingqing et al, \textit{Sichuansheng tongji nianjian, diwuce [Statistical yearbook of Sichuan province, volume 5]} (Sichuan, 1947), 19.
\textsuperscript{462} Sichuansheng difangzhi bianzuan weiyuanhui, \textit{Sichuan shengzi, yiyao weishengzhi}, 248. Sichuansheng weishengchu, \textit{Sichuansheng sanshisan niandu ni chongshi ji sheli zhi weisheng jigou yijianshu}.\textsuperscript{120}
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1944.\textsuperscript{463} By 1943, these three clinics were handling nearly 30% of all deliveries in the city.\textsuperscript{464} In 1945, following appeals from Yang Chongrui and other experts, a new provincial hospital for infants and mothers was established in Chengdu, offering midwifery services to more women.\textsuperscript{465}

The education and training of new style midwives was enthusiastically organized by officials and medical professionals. In 1938, the Provincial Medical Vocational School started a midwifery program, recruiting middle school graduates, teaching students new style midwifery, and having them assist childbirth in the maternity hospital affiliated with the school. After graduation, most of these students were sent to work in county health stations.\textsuperscript{466} Additionally, the National Central Midwifery School, originally based in Nanjing, moved to Chongqing in 1938. In the next seven years, this school enrolled and trained nearly a hundred female students, some of whom worked as midwives in Sichuan in the 1940s.\textsuperscript{467} Moreover, training courses for traditional midwives were organized in different counties as well, usually in cooperation with local health stations, medical colleges or midwifery schools.\textsuperscript{468}

Considering the deterioration of financial means of many citizens in the war years, some organizations also offered midwifery services at reduced prices or free of charge. For instance in Chengdu, the maternity hospital affiliated with the Medical Vocational School provided midwifery care to poor women at a very low price, drawing twice as many women as expected.\textsuperscript{469} In Chongqing, the municipal health bureau required that district health stations and governmental clinics offer free services of prenatal checkups, delivery and postnatal care to female citizens.\textsuperscript{470} In 1943, a new maternity hospital was set up in Chongqing to render free services to women whose family members worked in the civil service, education and the military.\textsuperscript{471} Similar benefits were provided to the poor in counties as well, encouraging the common people to turn to new style midwives.\textsuperscript{472}

Nevertheless, the standards of midwifery care of different institutions and staff were by no means at the same level. For example, it was reported that prenatal checkups and

\begin{itemize}
  \item Li et al, Sichuansheng tongji nianjian, diwuce, 21.
  \item Sichuansheng difangzhi bianzuan weiyuanhui, Sichuan shengzhi, yiyao weishengzhi, 327. Sichuansheng weishengchu, Sichuanshengsanshisan niandu ni chongshi ji sheli zhi weisheng jiguoyi jianshu.
  \item Shen, “Chengdushi fuying weisheng jinkuang,” 44.
  \item Sichuansheng difangzhi bianzuan weiyuanhui, Sichuan shengzhi, yiyao weishengzhi, 325.
  \item Chongqingshi weishengju gongzuobao [Work report of Chongqing municipal health bureau] (Chongqing, 1940), 11, Chongqing Municipal Archives: 0064000100534000000100000001000.
  \item Sichuansheng gexianshi xunlian jieshengpo zanxing shidian [Temporary experimental spots for training traditional midwives in different cities and counties in Sichuan], Sichuan Provincial Archives: 113-01-0049.
  \item Zhonghua zhuchanshi xiehui [The Chinese Association of New Style Midwives], Guanyu bozhu chuangshe pingmin fuchanke zhensuo jingfei de chengxunling [Ordinance on the allotment of funds for a maternity clinic for common women] (Chongqing, 1943), Chongqing Municipal Archives, 0053-0019-01921-0000-001-000.
  \item Sichuansheng weishengchu, Sichuansheng gexian weishengyuan guikuang baogao [Report on the general state of different county health stations in Sichuan province] (1943-1944), Sichuan Provincial Archives: 113-01-0455.
\end{itemize}
postnatal visits were skipped by health station staff in some counties. In other county health stations and private hospitals, the capability of physicians was limited to simple operations such as turning malpositioned fetuses and craniotomy.\footnote{Sichuansheng difangzhi bianzuan weiyuanhui, \textit{Sichuan shengzhi, yiyao weishengzhi}, 325-327.}

Additionally, although new style midwifery was actively encouraged and implemented in Sichuan from the late 1930s to the late 1940s, it remained on the one hand limited to a small proportion of women, and on the other hand mainly available in cities and towns, leaving the villages far behind. A survey on the staffing of health stations shows that the distribution of medical personnel was very uneven. In the late 1940s, while nearly 40\% of all Sichuan’s medical staff worked in Chengdu, the number of registered staff in each county ranged constantly from one to four.\footnote{Sichuansheng weishengchu [Sichuan provincial health office], \textit{Sichuansheng shixian minguo nianliu zhi sasannian gongsili yiyuan ji zhensuo diaochabiao} [Survey tables of public and private hospitals and clinics in different cities and counties in Sichuan province, 1937-1944] (1944), Sichuan Provincial Archives: 113-01-313.} This means that even after several years of concentrated work to promote infant and maternal healthcare in the province, the majority of women living far away from the provincial capital or county townships still had quite limited access to trained childbirth assistance.

Table 5. 7. Birth attendants of deliveries in two urban districts of Chongqing and Dingjia village of Bishan County, 1945.

<table>
<thead>
<tr>
<th>Birth attendants</th>
<th>Two urban districts of Chongqing</th>
<th>Dingjia village of Bishan county</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of births</td>
<td>%</td>
</tr>
<tr>
<td>Physicians and new style midwives</td>
<td>278</td>
<td>27.8</td>
</tr>
<tr>
<td>Traditional midwives</td>
<td>79</td>
<td>7.9</td>
</tr>
<tr>
<td>Other helpers</td>
<td>598</td>
<td>59.9</td>
</tr>
<tr>
<td>Unknown</td>
<td>44</td>
<td>4.4</td>
</tr>
<tr>
<td>Total</td>
<td>999</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: It is not known how many deliveries were attended by trained traditional midwives and untrained traditional midwives separately.

A comparison of the percentages of the trained midwifery service in urban and rural areas can further explain the gap. In 1945, the department of vital statistics of Chongqing reported on delivery services in its two urban districts. According to the report, among the 999 registered births in these two districts in that year, approximately 28\% were attended by physicians and new style midwives, 8\% by traditional midwives, and 60\% by other
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unprofessional helpers. In the same year, a survey investigated 120 infants born in Dingjia village in Bishan county. It unveils that the vast majority of infants were delivered without assistance by any physician or midwife, more than a dozen infants were delivered by new style midwives, and two infants by traditional midwives (Table 5.7). These figures may be flawed by the under-reporting, but the stark difference highlights the uneven provision of trained childbirth assistance in urban and rural Sichuan. Yet if taking into consideration of other peripheral counties where physicians and trained midwives were less available, the average ratio of births attended by new style midwifery in the province should be lower than Table 5.7 suggests.

What might be the ratio of infants delivered by trained birth attendants in the whole province of Sichuan in this period? As explained above, assuming a provincial birth rate of 35‰ in the 1940s, the annual number of births in 1946 would be around 1,648,000. According to Sichuan Statistical Yearbook of 1946, there were in total 18,435 infants delivered by trained personnel associated with governmental hospitals and health stations in the province this year. It can hence be deduced that about 1.1% of births in the province were delivered by staff of governmental health institutions in 1946. However, it should be noted that the birth numbers from the statistical yearbook were obtained from 115 out of 143 cities and counties, meaning that situations in the other thirty counties are unknown. Moreover, nothing is known about the number of infants delivered by physicians and new style midwives who ran private clinics, or that of infants delivered by trained traditional midwives. In this light, it is safe to assume that more than 1.1% but probably less than 2% of all births in Sichuan province were delivered by trained birth attendants in the late 1940s.

5.2.3 Birth outcomes

Because of the lack of systematic vital statistics, birth outcomes of the whole of Sichuan are not clear. Yet the data collected from different sources offer a possibility to explore and compare the effects of trained and untrained birth attendants in some parts of the province, though these data can not paint a complete and accurate picture. This section will specifically analyze the connection between midwifery and birth outcomes in terms of neonatal and maternal mortality, based on a village survey and delivery records of a group of urban new style midwives. It may be expected that the village data will reveal a pattern of birth attendance and neonatal infant health in rural areas, and that the midwifery records will shed light on the impact of the transforming birthing methods on the 2% of infants in the province, especially those born in urban areas.

475 Chongqing shengming tongji lianhe banshichu [Chongqing municipal vital statistics joint office], Chongqing shengming tongji jianbian [Brief compilation of vital statistics of Chongqing municipality] (1945), Table 4.
5.2.3.1 Huangjue village

From January to September 1949, the National Association of the Mass Education Movement conducted a series of surveys in fourteen counties and one special administrative district in Sichuan, in order to research economic, demographic and health developments in local communities.\(^477\) Although many original copies of the questionnaires can not be found in the archives, the preserved copies show important aspects of demographic and health conditions in those communities in the mid-20th century.

Among these preserved copies, those of a fertility survey of married women in Huangjue village stand out. Huangjue village was located in Beibei district, around thirty-six kilometers to the northwest of the city center of Chongqing. It was recorded that the survey investigators visited 2,947 households of the village, but only 152 copies have been found in the archives.\(^478\) The survey list various questions that are relevant for this research. In specific, women were asked about their marital status, the number of deliveries they experienced, the occupation of their husbands,\(^479\) the age of every deceased and living child in the year when the survey was conducted, the type of delivery attendant, the instrument to cut umbilical cords, the way the placenta was disposed of, the length and method of breastfeeding, the number of deceased children, and the age of deceased children when they died.\(^480\) While the survey paid much attention to live births, stillborn babies were ignored.

Although the causes of children’s death are incompletely and vaguely recorded in the survey forms, the reported age of these deceased children may give useful information on this problem. For example, children who died from the fourth to seventh day after birth were frequently mentioned by these surveyed women, which strongly indicates neonatal tetanus as the cause. On the one hand, it reflects that many (experienced) rural women were able to recognize tetanus since it has typical symptoms. On the other hand, it implies that neonatal tetanus was too common to be ignored in this region.

The quality of the survey is not without problems. Firstly, these village women may have forgotten or hidden some details of their reproductive history, and mistakenly or

\(^{477}\) Huang Youqiao, *Zhonghua pingmin jiaoyu cujinhui huaxi shiyuanqu shehui diaochashi gongzuo jianbao* [Brief report of the social survey office of the western experimental zone of the National Association of the Mass Education Movement] (1949), 4, Bishan County Archives: 0009-0001-00060-29.

\(^{478}\) I am unable to find information on the total number of households of Huangjue village. However, the average number of households in the nearby villages was 2,000, and it is hence possible that all households in Huangjue are covered in the survey. See *Zhonghua pingmin jiaoyu cujinhui huaxi shiyuanqu Beibei Huangjuxiang shexuequ hukou, jingji, weisheng diaocha biaoge* [Survey of the registered households, economy and health of Huangjue village, Beibei district of the western experimental zone of the National Association of the Mass Education Movement] (1949). The survey questionnaires are preserved in Bishan County Archives: 0009-0001-00244(1)-1; 0009-0001-00252(1)-1; 0009-0001-00253(1)-1; 0009-0001-00253(2)-1; 0009-0001-00257(1)-1; 0009-0001-00257(2)-1; 0009-0001-00265(1)-1; 0009-0001-00265(2)-1; 0009-0001-00268-1; 0009-0001-00269(1)-1; 0009-0001-00269(2)-1.

\(^{479}\) The occupations of several women were also listed in the questionnaires.

\(^{480}\) The investigators were instructed to ask women about the causes of their children’s deaths, but it was not expected that every woman was aware of the causes. See in *Yihun funü diaocha biaoge shuoming ji tianfa* [Explanation of filling the form of the survey for married women] (1949), Bishan County Archives, 0009-0001-00143(1)-3.
deliberately misreported the age or the cause of death of their children. Secondly, the writing on a few copies of the questionnaires is no longer distinguishable, which complicates the identification of the number of births and infant deaths. Therefore, information derived from these questionnaires must be used with prudence.

The occupations of the women’s husbands (Table 5.8) suggest that this village in 1949 was probably no longer a place dominated by farmers, for a growing number of young men and even women went to work in factories in nearby cities and towns. Specifically, almost one third of the women reported that their husbands worked as laborers, and most of these laborer husbands were low-paid factory workers and boatmen. Indeed, from the late 1930s, many factories from other parts of the country moved to Chongqing and Sichuan, while new factories were set up simultaneously. They attracted many young men, women and also child laborers to work in the factories. Additionally, a third of the women’s husbands worked on their own farms or as farmhands. Nearly one fifth of the women’s husbands were in business, mostly running small shops or being vendors. Two husbands were reportedly physicians, two were civil servants, one was a fortune teller and one a beggar. However, 12% of the women provided no information on the occupation of their husbands.

Table 5.8. Occupation of the husbands of women surveyed in Huangjue village, 1949.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborer</td>
<td>51</td>
<td>33.6</td>
</tr>
<tr>
<td>Farmers/farmhands</td>
<td>49</td>
<td>32.2</td>
</tr>
<tr>
<td>Businessmen</td>
<td>28</td>
<td>18.4</td>
</tr>
<tr>
<td>Physicians</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Civil servants</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Unknown</td>
<td>18</td>
<td>11.9</td>
</tr>
<tr>
<td>Total</td>
<td>152</td>
<td>100</td>
</tr>
</tbody>
</table>

Among the 152 respondents, 146 reported to have given birth before. For these 146 women, there were altogether 616 deliveries recorded, meaning that the average number of deliveries per married woman in this village was 4.2. Of the 616 children delivered, 307 were still alive in 1949, making the average number of surviving children per married

woman 2.1. This number was close to those of two neighboring villages, where the average numbers of surviving children per married woman were 2.5 and 1.9 respectively.\(^\text{482}\)

However, it should be noted that some of these respondents were already past the childbearing age while others had just started their reproductive period.

143 of the 146 women surveyed gave useful information on their reproductive history, which allows for an estimate of their age. In specific, the 143 women reported the ages of all their children (alive and dead) to 1949, and from these ages the years of their first childbirth could be inferred. In general, most respondents had given birth from the 1920s to 1948, and only a few had their first child before 1920. The earliest childbirth recorded took place in 1905, reported by a woman who had already had ten deliveries by then but unfortunately only two of her children survived to 1949. Considering that in the 1930s and 1940s the average age of rural primiparous women was eighteen,\(^\text{483}\) it is estimated that the age of these 143 women ranged from 18 to 65.

<table>
<thead>
<tr>
<th>Birth attendants</th>
<th>The number of women who were delivered by the attendants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>2</td>
</tr>
<tr>
<td>New style midwives</td>
<td>6</td>
</tr>
<tr>
<td>Traditional midwives</td>
<td>3</td>
</tr>
<tr>
<td>Family members</td>
<td>11</td>
</tr>
<tr>
<td>Self</td>
<td>125</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
</tr>
</tbody>
</table>

Note: Not every woman relied on one single type of attendant in her life. A few women consulted different types of attendants in different deliveries. However, limited by the source, it is impossible to link the birth attendant to each delivery.

Regarding the birth attendants, Table 5.9 illustrates that self-delivery was beyond doubt dominant, yet asking a physician or a new style midwife for help was also seen in the village. However, not even one hospital-birth was reported by these women. Of the two women who had ever called physicians, one was married to a boatman, and the other to a laborer. It signals that some lower-class families did turn to physicians for help, probably at

\(^{482}\) Beibei guanliju Jingangxiang yunfu shengchan diaochabiao [Survey of the reproduction of pregnant women of Jingang village, Beibei district] (1947), Chongqing Municipal Archives, 0081-0004-0567-7000-0001-000. Beibei guanliju Wensxingxiang yunfu shengchan diaochabiao [Survey of the reproduction of pregnant women of Wenxing village, Beibei district] (1947), Chongqing Municipal Archives, 0081-0004-0567-7000-0016-000.

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the moment when the delivery went out of control. As for the six women who ever invited new style midwives for birth assistance, it is clear that none of them asked new style midwives for every delivery in their reproduction history. Besides, these women were relatively young, as five of them had their first childbirth later than 1940, and all six had only given birth to two to four babies by 1949. This suggests that new style midwifery became accessible in the village after 1940 and was becoming a feasible option primarily for younger mothers towards 1949. Moreover, four of these six women were married to farmers, and the other two to a tailor and a barber respectively. This hints that new style midwifery was not restricted to a particular type of families in the village. Nevertheless, it cannot be denied that most of the rural women in the 1940s did not choose to have any birth assistance in the first place.

Furthermore, this survey confirms the knowledge that breastfeeding was widely practised in Chinese society. All these women breastfed their children, except for fourteen women who either hired wet nurses or combined breastfeeding with rice and flour porridge.

Table 5.10 presents the high risk of neonatal and infant mortality in Huangjue village during the first half of the 20th century. Although a few women started to consult new style midwives after 1940, the tradition of having lay assistance or no assistance at all in childbirth was deeply entrenched. In the half-century birth history of these surveyed women, more than 28% of their reported children died before turning one year old, implying a higher ratio of infant death than the national level (250‰) estimated by Yang Chongrui. But it should be noted that this dreadful situation in Huangjue was not only due to the lack of skilled midwifery services, but probably also to the poor sanitation, unsatisfactory water quality, and female infanticide in this area.484

Table 5. 10. Neonatal and infant mortality of the 616 deliveries in Huangjue village.

<table>
<thead>
<tr>
<th></th>
<th>Number of deaths</th>
<th>Mortality rate</th>
<th>Mortality as a percentage of infant mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant mortality</td>
<td>174</td>
<td>282.5‰</td>
<td>100%</td>
</tr>
<tr>
<td>Neonatal mortality</td>
<td>101</td>
<td>164.0‰</td>
<td>58.0%</td>
</tr>
<tr>
<td>Neonatal mortality in 10 days after delivery</td>
<td>87</td>
<td>141.2‰</td>
<td>50%</td>
</tr>
</tbody>
</table>

The high risk of (early) neonatal mortality hints a prevalence of unhygienic birthing methods in the village. As explained previously, neonatal mortality, especially early

484 According to the survey, many post-neonatal deaths resulted from typhoid, diarrhea and measles, which were related to the quality of water, food and sanitary environment. Infanticide is not clearly reflected in this survey, but a report on nearby Shizi village attests to the wide practice of female infanticide in this region. See in Huaxi shiyuanqu guanyu Shizixiang diaocha chubu baogao [Elementary report of the survey of Shizi village in the western experimental zone] (1949), Bishan County Archives: 0009-0001-00205-1.
neonatal mortality is closely linked to the midwifery skills of birth attendants and hygiene during delivery. According to this survey, 82% of the infants dying within ten days were reported to decease between the fourth and eighth day, strongly indicating the role of tetanus associated with the lack of hygiene in delivery. Although it is not known whether birth attendants carefully washed their hands before delivery, it is clear that umbilical cords were often cut with unsterilized scissors, shards of glasses or porcelain, which increased the possibility of bacterial infections. The use of unsterilized scissors in childbirth was also common in Shizi village nearby, where many infants also died in the first week following birth.\textsuperscript{485}

Since no questions on mothers’ death were included in this survey, it is impossible to further estimate the maternal mortality in Huangjue village. However, this survey has offered new insights to how midwifery services and neonatal and infant health were interrelated in an area where the traditions of childbirth were little affected by new health policies or personnel. To a large extent, the figures above also apply to many other rural villages in the province.

5.2.3.2 New style midwives in cities and towns

The work efficiency of new style midwives in cities and towns can be examined via the official monthly delivery records submitted by midwives.

From 1928 all registered midwives, both the new style and traditional ones, were required to submit delivery forms every month to the health stations to which they were affiliated. At the outset, the form was aimed for managing the birth registration, and midwives needed to fill in information including the name, age and address of the infant’s parents, the place and date of birth, and the sex and birth order of the infant.\textsuperscript{486} In 1939, an amended version of the legislations of midwives required additional information on whether the birth was a live or stillborn one, and whether the delivery concerned twins or multiple births.\textsuperscript{487} In 1943, a further updated regulation of new style midwives added that midwives should also report on their delivery procedures.\textsuperscript{488} In the 1940s, the submission of delivery records by midwives in Sichuan followed the national routine. Registered midwives submitted their record forms monthly to their city or county health stations, who later forwarded the forms to the provincial health bureau.

\textsuperscript{485} Huaxi shiyanchu guanyu Shizixiang diaocha chubu baogao.
\textsuperscript{487} “Guanli jieshengpo guize (fu jiesheng renshu yuebaobiao) [Legislation of administering traditional midwives, with a sample form of the monthly delivery record],” Shizheng gongbao [Bulletin of Municipal Administration], no. 61 (1939): 8.
\textsuperscript{488} This requirement is listed in the text of the legislation, but the sample form is missing. See in “Xiuzheng zhuchanshi zanxing tiaoli [Amendment of the temporary legislation of new style midwives],” Guomin zhengfu gongbao [National Government Bulletin], no. 575 (1943): 3.
It seems that a large amount of original copies of these delivery records are lost, and the number preserved to date in archives is small. Despite this, the preserved records are valuable in decoding the effects of some trained midwives in the period under examination. Especially, the forms contain useful information on the health situation of infants and mothers within ten days after delivery, which can be used to calculate and estimate neonatal and maternal mortality rates.

The archival copies include seventy-nine monthly records of twenty-seven new style midwives, handed in between 1947 and 1948. All these midwives were health personnel affiliated with governmental health stations of one city and nine county towns in Sichuan. The records show that these midwives attended 453 births and delivered 442 live infants. It means that on average each midwife attended five or six deliveries per month, but the monthly workloads varied widely from two to thirteen for different persons (Table 5.1).

These records have some flaws. Firstly, the number of 442 live births is very small. It only accounts for around 2.4% of the infants delivered by governmental health personnel and 0.3‰ of all births annually in the province. Yet these records present the basic work routine each trained midwife was required to follow at the time, and hence can represent the essential situation of new style midwives handling home delivery and postnatal visit. Secondly, although maternal mortality was clearly counted in the records, information on neonatal death was more ambiguous. In the records the midwives specified the health problems of the neonates during the first ten days after delivery, but they did not clarify whether these neonates recovered or died in this time period, which makes it difficult to estimate neonatal mortality. However, as the health of all other alive infants surviving beyond the tenth day after delivery were reported as “fine”, it is highly likely that the infants with reported health problems failed to survive. Besides, if newborns with reported health problems were ignored, there would be no neonatal mortality in these records, This seems impossible because the (early) neonatal mortality always represented the largest share of infant mortality in China at the time. In this regard, in order to estimate a probable NMR, it is assumed here that the neonates noted with health problems in these records died in ten days following childbirth.

Table 5.11. Records of twenty-seven midwives from one city and nine counties of Sichuan, 1947-1948.

<table>
<thead>
<tr>
<th>Location</th>
<th>Name of the midwife</th>
<th>Number of months of records</th>
<th>Number of deliveries per month</th>
<th>Number of deliveries</th>
<th>Number of maternal deaths in 10 days after delivery</th>
<th>Number of neonatal deaths in 10 days after delivery</th>
<th>MMR (in 10 days)</th>
<th>NMR (in 10 days)</th>
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</table>
Effects of new style midwifery: two case studies

Notwithstanding these problems, these records are relatively trustworthy in the sense that they were submitted by new style midwives who were affiliated with governmental health institutions, and who had been well trained and instructed to practise midwifery in accordance with governmental regulations.

Among the 442 live births, there reported eleven neonatal deaths and one maternal death within ten days after delivery. In other words, the early neonatal and maternal mortality rates were 24.9‰ and 2.3‰ respectively. As explained previously, nearly 65% of all neonatal deaths and 70% of maternal deaths in Republican China occurred in ten days after delivery. Therefore, it can be estimated that the NMR and MMR related to these urban midwives were 38.3‰ and 3.2‰ respectively, the former being much lower than that in Huangjue village as mentioned above.

Table 5.12. NMR and MMR from different sources of Sichuan province, 1943-1948.

<table>
<thead>
<tr>
<th>Source Description</th>
<th>Number of live births</th>
<th>Number of maternal deaths in 10 days after delivery</th>
<th>Estimated MMR in 6 weeks after delivery</th>
<th>Number of neonatal deaths in 10 days after delivery</th>
<th>Estimated NMR in one month after delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town health station and maternity clinic of Bishan County, 1943-1945</td>
<td>1,634</td>
<td>3</td>
<td>2.6‰</td>
<td>46</td>
<td>43.3‰</td>
</tr>
<tr>
<td>27 urban new style midwives, 1947-1948</td>
<td>442</td>
<td>1</td>
<td>3.2‰</td>
<td>11</td>
<td>38.3‰</td>
</tr>
</tbody>
</table>

Sources: Figures for Bishan come from Yu Wei, *Bishanxian weisheng wunian shiyan baogao, 1940-1945* [Five-year health report of Bishan county, 1940-1945] (Bishan, 1945), Sichuan Provincial Archives: 113-01-0694. Figures for the twenty-seven urban midwives are summarized from Table 5.11.

Table 5.12 compares the birth outcomes of the twenty-seven midwives with those produced from a town health station and a maternity clinic in Bishan county from 1943 to 1945. It shows that the NMR and MMR associated with the twenty-seven new style midwives are not very different from those associated with the trained personnel of Bishan. This suggests a conformity of work results among trained staff of governmental health institutions.

The report did not clearly state the average time lapse between births and neonatal/maternal deaths. However, given that in the 1940s new style midwives affiliated with governmental health institutions had to complete their record forms in the same manner as the twenty-seven urban midwives discussed in this section did, it is safe to assume that the neonatal and maternal deaths reported by the governmental health institutions in Bishan occurred within ten days after delivery as well.
Chapter 5

What may explain the relatively low mortality rates of neonates and mothers attended by these trained urban midwives, compared with those in Huangjue village? Firstly, urban women were more likely to have access to sufficient food, clean birthing environment, and good midwifery care. According to the records by the midwives, most mothers lived in streets inside or near the city or town walls, meaning that they lived in or very close to urban areas. It is thus possible that they were economically better off and enjoyed a better nutrition intake than rural women. Also, whether they gave birth at home or in a health station, the birthing environment was supposed to be cleaner than rural houses where the floors were often covered with soils that could transmit tetanus bacteria. Moreover, although it is not indicated in the records, sources from other provinces show that urban women were better informed about prenatal checkups and more often enjoyed qualified postnatal care by trained midwives, which may have effectively reduced the risks of postnatal diseases.

Secondly, the birthing process may have been sufficiently hygienic to prevent infections, since no cases of puerperal fever, neonatal tetanus or convulsion were reported. In terms of the cause of maternal mortality, the only reported incident was a 34-year old woman diagnosed with anemia. She died from hemorrhage during the course of placenta removal. It is possible that her midwife was not skillful enough to handle the problematic placenta expulsion, or had not enough time to call a physician. Aside from this fatality, eight other mothers were diagnosed with problems such as poor uterine contraction, minor bleeding, anemia, weakness, placenta-related illness and getting a cold. But whether they recovered after the tenth day is not mentioned. Neonatal deaths were mainly attributed to premature birth and asphyxia. Specifically, asphyxia occurred to infants who were delivered from malpositions, or who swallowed an excess of amniotic fluid during the delivery process. Nevertheless, because of the very small sample size, it remains unclear whether the absent report of infections in infants and mothers was a mere coincidence or really owed to the quality of midwifery. Yet these samples undoubtedly indicate that these midwives had taken good care of cleanliness.

However, it is not clear to what extent antibiotics played a role in treating maternal and infant diseases in Sichuan and in China as a whole in the 1940s. During the Sino-Japanese War, the Central Epidemic Prevention Laboratory was established in Kunming in Yunnan province, and it successfully produced penicillin for military use. After the war, with the help of international organizations, there were increased volumes of antibiotics produced in China and abroad, but the use of penicillin was still very limited. On the one

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492 Xu Dingding, “Kangri zhanzheng shiqi zhongyang fangyichu de qingmeisu shizhi gongzuo [Experimental production of penicillin in the Central Epidemic Prevention Laboratory during the Sino-Japanese War],” in *Jishu* 132
hand, antibiotics were strictly regulated in China.\textsuperscript{493} Restricted quota of antibiotics were allotted to different health stations, and were mostly used in surgery or under the instruction of physicians.\textsuperscript{494} On the other hand, the price of antibiotics was so high that many people could not afford them.\textsuperscript{495} Therefore, it is possible that generally antibiotics played a minor role in treating childbirth-related diseases in this period in China, though its powerful effects were already manifest in some areas and institutions.\textsuperscript{496}

5.2.4 Discussion

The case of Sichuan is an example of how, after the outbreak of the war, the new birthing methods circulated in and impacted on communities where the influence of new science was originally small. It also shows that the implementation of new style midwifery continued to be promoted by governmental institutions, which laid a foundation for the infant and maternal healthcare reform in the post-1949 era.

This case has several implications. Firstly, the survey of Huangjue village shows that new style midwifery became available in rural Sichuan after the Sino-Japanese War broke out. Although Christian and private maternity hospitals had engaged in local childbirth care from the late 19\textsuperscript{th} century, most women, especially rural women, had little knowledge of or access to it. It was not until 1938 that infant and maternal healthcare became an important public issue in Sichuan, as the central government moved to Chongqing and brought in a huge number of professionals, technologies and institutions that introduced initiatives to transform childbirth practices. The growth of trained midwifery services in this province was geographically unbalanced, and urban women had better access to trained midwives than their rural counterparts. By the end of 1949, the least expensive and most common way for a parturient to give birth was still asking a female acquaintance for help, or cutting the umbilical cord herself. This is attested to by the

\begin{thebibliography}{99}
\bibitem{yin} Yin, “Shinianlai fuchanke zhi jinbu,” 125-135.
\end{thebibliography}
Chapter 5

estimate that no more than 2% of births in Sichuan were attended by trained personnel at the end of the 1940s. However, this inexpensive and widespread way was far from effective. The high possibility of infants dying in ten days after birth (141.2‰) in Huangjue, as well as the frequent incidents of neonatal tetanus and convulsions in the village, illustrate the pervasiveness of infections in childbed linked with poor childbirth hygiene. Although the survey of Huangjue village disclose nothing about maternal mortality, it is reasonable to infer that rural women also had a high risk of dying from puerperal fever in childbirth.

Secondly, new style midwifery seemed rather successful in limiting risks of neonatal and maternal diseases in Sichuan. The delivery records of the twenty-seven urban midwives and 442 live births describe the postnatal health of mothers and infants. Though not explicit enough, these records allow an elementary evaluation of the effects of trained midwifery on mortality. Apparently, these urban midwives were able to control infections during childbirth, thus avoiding unnecessary deaths related to bacteria. In comparison with Huangjue village, the NMR of infants delivered by the urban midwives was impressively lower, implying that the standardized midwifery contributed to reducing preventable deaths. However, neonatal, infant and maternal mortality related to other economic, social and medical restrictions seemed to be hardly coped with by these midwives.

Finally, the urban-rural gap in the supply, use and acceptance of new style midwifery was obvious. As nearly half of the trained medical staff were based in urban areas, mortality rates in cities and towns were correspondingly much lower. In addition to the supply of trained staff, this gap also resulted from the uneven distribution of midwifery facilities, and different preferences for birthing methods.

5.3 Conclusion

Through the cases of Beijing and Sichuan, this chapter reveals that new style midwifery had positive effects in lowering childbirth-related risks during the Republican era.

Firstly, new style midwifery was effective in lowering neonatal and maternal mortality, particularly by preventing avoidable diseases. The twelve-year data for Beijing’s first health district have shown that while the percentage of infants delivered by physicians, new style midwives and trained traditional midwives increased over time, the likelihood of infant and maternal mortality decreased. Besides, in both Beijing and Sichuan, when compared with the rural areas where trained midwifery services were scarce or absent, neonates and mothers attended by physicians and trained midwives in cities and towns had a lower chance of dying from childbirth-related problems. In Beijing’s first health district, physicians and trained midwives proved themselves significantly more capable of preventing neonatal tetanus than untrained midwives. In Sichuan province, the twenty-seven urban midwives achieved the impressive result that no mother or infant died from bacterial infections in the first ten days after birth, though other postnatal diseases were reported. These observations from Beijing and Sichuan imply that when birth attendants
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were properly trained to comply with hygienic procedures in delivery, they were able to restrain bacterial transmission from the environment or the attendants’ hands to mothers and neonates. The cases also suggest that the decline of neonatal and maternal mortality (if any) in the first half of the 20th century was largely related to the reduction of deaths from tetanus and puerperal fever via effective management of childbirth hygiene.

However, to what extent prenatal and postnatal care took effect is ambiguous from the two cases. Although contemporary medical professionals claimed that prenatal checkups were conducive to detecting problematic pregnancies and avoiding obstetric complications, the NMR data for Beijing’s first health district show that the likelihood of neonates dying from premature birth and debility associated with both trained and untrained birth attendants was not very different. This indicates that even though new style midwifery was increasingly used in cities, prenatal care was not yet sufficiently given to the majority of parturients in this period. It may be even more difficult to gauge the effects of postnatal care. Records provided by urban midwives in Sichuan show that mothers attended by them had a relatively small chance to die shortly after childbirth, yet these records also reflect that several mothers contracted other childbirth diseases in the early postnatal period. However, it is impossible to trace how these postnatal diseases influenced their health beyond the tenth day after delivery as well as their next childbirth.

Secondly, these two case studies address urban-rural and regional gaps in the distribution and use of trained birth attendants and new style midwifery in Republican China. According to the rough estimate shown in chapter 2, at least 2.5% of normal births in China enjoyed new style midwifery in the late 1930s and 4.7% in the late 1940s, but a closer look at the figures reveals an interregional gap. In Beijing, the percentage of infants delivered by trained attendants in all urban and suburban districts reached 37% in 1934 and climbed to 54% in 1948, with the first health district being the forerunner that 71% of all infants were delivered by trained personnel in the 1930s and 73% in 1948. In Sichuan, however, a tiny number of births were delivered by trained personnel before the Sino-Japanese War. The percentage of infants delivered by trained attendants increased modestly to 2% by the late 1940s, and most of these deliveries took place in urban areas.

As explained in chapters 3 and 4, there were sharp geographical divides in the medical influence of Christianity, and in governmental and private dedications to public health from the 19th to the early 20th century. These divides accompanied an unbalanced distribution of medical resources and midwifery services across China. Beijing was one of the leaders in public health before the 1940s. It had been absorbing enormous domestic and foreign resources for a long time, and had witnessed efficient midwifery regulations and public health initiatives during the 20th century. In Sichuan, as in other inland provinces, public health initiatives started after the Nationalist government moved to Chongqing in 1938, though the national policy concerning midwifery reform was launched as early as
1928. Indeed, the transformation of midwifery services in Sichuan was slow because of the late start, the insufficiency of staff and the relatively closed local culture.

Thirdly, observations from the two cases show little chronological advancement of new style midwifery’s effects in lowering infant and maternal mortality. In terms of neonatal mortality, the NMR in Beijing’s first health district between 1932 and 1937 was 49‰, while the NMR of infants delivered by trained personnel was around 43‰. From 1943 to 1945, the NMR of infants delivered by trained staff affiliated with governmental health institutions in Bishan county was estimated at 43‰, and between 1947 and 1948, that by the urban new style midwives of Sichuan was 38‰. The birth outcomes of trained birth attendants in Sichuan in the 1940s were not very different compared to that of their trained colleagues in Beijing before the war. Likewise, no significant reduction in MMR associated with trained health staff over time has been observed. Data for Beijing’s first health district exhibit that the MMR declined from around 12‰ to 4‰ in twelve years’ time, when the coverage of trained midwifery services increased to over 70% of births. In the 1940s, the MMR of mothers delivered by trained staff was 2.6‰ in Bishan (1943-1945) and 3.2‰ by the urban midwives (1947-1948), not significantly lower than that in Beijing’s first health district in 1937. Therefore, it is plausible that drugs like sulphonamides and antibiotics as well as new technologies like blood transfusion, which had tremendous effects in Western countries in the 1940s, were not widely used in childbirth in China in the same period. Nonetheless, one should not rush to conclusions about childbirth-related mortality rates in Republican China on the basis of only two cases. How the midwifery work elsewhere in China took effect in the researched period will be discussed in the next chapter.

In summary, these two case studies show that new style midwifery became increasingly common in China, indicating a growing acceptance of new birthing methods by women, especially by urban women and their families. New style midwifery was effective in the sense that it efficiently reduced chances of childbirth infections. Thus, the confidence of Ms Deng Yinghua, who was mentioned in the beginning of this chapter, should be based on the fact that midwifery services like hers notably prevented mothers and infants from contracting avoidable illnesses, and that her hygienic methods were increasingly relied on and resorted to by her community.