Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

SSM - Qualitative Research in Health 2 (2022) 100095

Contents lists available at ScienceDirect

SSM - Qualitative Research in Health

journal homepage: www.journals.elsevier.com/ssm-qualitative-research-in-health

Pregnant under quarantine: Women's agency and access to medical care under Wuhan's COVID-19 lockdown

Amy Hanser *, Yue Qian

Department of Sociology, The University of British Columbia, 6303 NW Marine Drive, Vancouver, BC V6T1Z1, Canada

1. Introduction

Western, feminist research on pregnant women's subjection to medical authority, along with scholarship emphasizing the biopolitical aspects of maternal health care and its disciplinary effects upon pregnant women, offer potent critiques of women's encounters with medical knowledge and authority while pregnant (Brubaker & Dillaway, 2009; Lupton, 2012; Oakley, 1984). Scholarship on China similarly reveals how women there navigate an increasingly medicalized understanding of "risky" pregnancy (Li, 2021; Qiu, 2019). All these accounts stress how women's agency and control over their bodies are curtailed by medical frameworks that represent pregnancy as requiring expert oversight and intervention. But how do we make sense of the experiences of women who work very hard to maintain medical oversight of their pregnancies?

We argue here that the dramatic disruptions to usual maternal care during the COVID-19 pandemic provide an unusual context in which women's presumed passivity as medical patients was transformed into an active stance. We show how under extreme, uncertain conditions—as was the case in Wuhan, China during its 76-day COVID-19 lockdown—pregnant women worked hard to maintain access to medical monitoring and care. These women exercised considerable agency, self-advocacy, and courage in orchestrating their access to medical oversight. At times, they found themselves thrust into the position of making decisions about their own and their babies' care that they had never anticipated and did not welcome. While their pregnancies were often a source of anxiety given fears of infection from COVID-19 as well as uncertain access to health care, transportation, and even daily necessities, women also experienced caring for themselves during pregnancy, and especially their access to medical advice and monitoring, as a point of stable focus during a tumultuous time.

Our goal in this paper is two-fold. First, we document the experiences of pregnant women under the unprecedented COVID-19-related lockdown in Wuhan, describing the challenges they faced and how they sought to surmount them. A second, more theoretically-minded objective is to wrestle with the question of how women's agency has and can be understood in the context of medicalized pregnancy and childbirth. In the case of the latter objective, we raise questions about a dominant scholarly frame that casts "compliance" with medical authority as subjection, and rejection of it as agency (Moore, 2011; Rothman, 2016). Drawing inspiration from scholarship on the complex intersection of technology, medical authority, and women's embodied agency (Shaw, 2021; Thompson, 2005), we recognize the complexity of women's encounters with medical care and offer more nuanced understandings of women's agency and their childbearing experiences. Our research therefore underscores the importance of anchoring theoretical and scholarly assertions in women's actions and intentions without simply viewing these women as "subjected" to medical authority.

2. Background

2.1. Medicalized pregnancy, Women's agency

There is a substantial body of Western scholarship that interrogates women's experiences of medical authority, especially in the context of reproductive health. Feminist scholars have critiqued women's loss of control and subjection to medical authority during pregnancy and childbirth (Brubaker & Dillaway, 2009; Fox & Worts, 1999; Oakley, 1984). More recently, scholars working in the Foucauldian tradition have argued that reproductive technologies and the forces of medicalization have transformed women's experiences with childbearing from "the domain of chance, fate or the divine" into "scientifically calculable and technologically avoidable" risk (Fordyce & Maraësa, 2012:1; Lupton, 2012). This scholarship emphasizes the biopolitical aspects of state efforts to manage maternal and infant health and the disciplinary effects upon pregnant women, whose individual bodies and behaviors are monitored and self-monitored for compliance with new norms of reproductive health (Armstrong, 2003; Lupton, 2011, 2012; MacKendrick, 2014; Thomas & Lupton, 2016; Waggoner, 2017).

* Corresponding author.
E-mail addresses: hanser@mail.ubc.ca (A. Hanser), yue.qian@ubc.ca (Y. Qian).

https://doi.org/10.1016/j.ssmqr.2022.100095
Received 9 November 2021; Received in revised form 21 March 2022; Accepted 5 May 2022
Available online 17 May 2022

Recent scholarship on contemporary Chinese society likewise reveals how pregnant women in China, especially educated women, navigate an increasingly medicalized understanding of pregnancy, childbirth, and infant health (Gottschang, 2018). Medicalized childbearing involves women's adoption of a "risk management" orientation towards their own bodies and pregnancies (Higgins, 2015). Both Li (2021) and Qiu (2019) describe women's exposure to discourses about pregnancy risks and the need to ensure fetal health. These pregnancy-related concerns are increasingly served by a market that offers pregnant women monitoring technology, such as maternal serum and fetal testing, and protective items, like radiation-shielding maternity clothes (Higgins, 2015; Li, 2019, 2021; Qiu, 2019).

Some women embrace the risk framing (Qiu, 2019) while some express ambivalence (Li, 2021; Zhu, 2013), but these women cannot escape a larger Chinese social context which portrays the contemporary period as one of "reproductive crisis" marked by high rates of infertility, miscarriage and potential genetic abnormality (Li, 2021; Zhu, 2013). Concerns about reproductive risks are amplified in China by state discourses around childbearing and population "quality" that emphasize *yousheng youyu* (literally, "superior birth and superior childrearing"; Greenhalgh & Winckler, 2005; Zhu, 2013). Such state discourses further encourage women to regard their pregnancies as objects requiring close and often-constant scrutiny and medical monitoring (Higgins, 2015; Shih, 2018; Zhu, 2013). Together, these forces have been characterized as constituting a system of "maternal governance" that imposes state power, medicalized authority, and commodified solutions upon pregnant women in China (Gottschang, 2018). This larger context is important when we consider pregnant women's relationship to medical care in China, as it generates a moral environment in which women's pursuit of healthy pregnancies is entangled with state and societal expectations (Shih, 2018).

While women are not considered lacking agency in these analyses of pregnancy and childbirth, that agency is nevertheless often conceptualized as women resisting medicalized representations of their bodies and their pregnancies (Chadwick & Foster, 2014; Fordyce & Maraësa, 2012; Rothman, 2016; Simonds, 2002). When pregnant women do adopt a "risk management" perspective that prioritizes medical authority, this orientation is often portrayed as a form of subjection (literally, adopting the required subjectivity) to governmental discourses associated with health, pregnancy, and motherhood (Cao, 2014; Li, 2011; Song et al., 2012). There is ample research that describes how the Internet and social media have become important tools through which pregnant women gather information, receive advice, and assert agency (Drentea and Moren--Cross, 2005; Gui et al., 2017; Holland, 2019), though often as a counterweight to the authority of medical professionals (Cohen & Raymond, 2011).

In this paper, we suggest that women's demands for medical care and oversight during pregnancy, while clearly shaped by medicalized risk management approaches to women's and infants' health, can nonetheless be expressions of women's own agency and control. Scholarship that seeks to highlight the diversity of women's expectations for levels of medical oversight during pregnancy and childbirth has demonstrated how women's expectations emerge from specific social, cultural and institutional contexts, shaping how they navigate medical institutions and experience medical authority (Namey & Lyerly, 2010; Shih, 2018; Teman, 2003). As Rapp (1999) argues in her study of fetal testing technology, critiques of the medicalization of pregnancy can easily slip into a universalizing representation of what women "want." Brubaker and Dillaway (2009) note, for example, that scholarly representations of "natural" childbirth may diverge considerably from how pregnant women themselves interpret the concept. This can lead to a very narrow frame for identifying women's agency, whereby a rejection of a hospital birth might be perceived as "reclaiming" control (Moore, 2011) but other women's reported satisfaction with "technocratic" (Davis-Floyd 1992) hospital births is a "paradox" demanding explanation (Fox & Worts, 1999:328).

Rapp (1999) argues that it can be challenging to balance a critique of the power of medical authority while also recognizing both the diversity of women's perspectives as well as the complex role that women have played historically, in the United States at least, in fighting for access to reproductive technologies. An individual woman's desire for greater control over her pregnancy can easily be offset by the institutionalized power to monitor and direct medical care that doctors and other medical professionals wield, in a cultural context in which medical perspectives are largely hegemonic (Davis- Floyd, 1992; Brubaker & Dillaway, 2009).

In addition to the scholarship that acknowledges pregnant women's diverse perspectives and expectations in relation to medical care, other research offers a more complex picture of women's agency as medical patients. In her study of infertility clinics, Thompson (2005) argues that while women might experience objectification and disciplining under the techno-medical gaze, they may actively do so in pursuit of their own desired ends. In such a context, objectification is actually a precondition for agency. Similarly, Shaw (2021) details the active role that women receiving fertility treatments in Colombia play in their care, as they use encounters with doctors and with technology to develop new, subjective understandings of their bodies and their infertility. At times, these women called for forms of medical care in order to "redistribute…responsibility for treatment success" and actively used demands for care as opportunities to transform fear and anxiety into "pragmatic action" (67). Seeking out medical interventions, or acting in compliance with medical routines, does not, in these accounts, equate to a loss of agency for pregnant women, even if women's relationship to medical authority is not free of objectifying or disciplining forces.

2.2. Pregnancy and childbirth during the COVID-19 pandemic

Scholars have already generated a significant amount of research on women's experiences of pregnancy and childbirth during the COVID-19 pandemic. This research, conducted in locations around the world, identifies a number of consistent patterns, all of which involve an amplification of pregnant women's fears and anxieties (Davis- Floyd & Gutschow, 2021). Pregnant women have experienced fears of infection, especially at hospitals (Davis-Floyd et al., 2020; Goyal et al., 2021), and anxiety about potential difficulties accessing medical care (Overbeck et al., 2020). Many women have experienced some curtailment of in-person care appointments (Altman et al., 2021; Blankstein Breman et al., 2021; Brislane et al., 2021; Goyal et al., 2021) and changes to the frequency of checkups (Montagnoli et al., 2021; Rudrum, 2021). Many women have reported anxieties about changeable hospital policies that restricted the presence of support persons during delivery and enforced isolation during labor and after birth (Blankstein Breman et al., 2021; Brislane et al., 2021; Davis-Floyd et al., 2020; DeYoung & Mangum, 2021; Gutschow & Davis-Floyd, 2021; Rudrum, 2021). Women also experienced fears about potential separation of mother from baby should the mother test positive for COVID-19 (Gutschow & Davis-Floyd, 2021. DeYoung & Mangum, 2021).

As detailed below, we found all these patterns in our own data on pregnant women's experiences in Wuhan in 2020, although our interview subjects experienced such stressors under very acute, more crisis-like conditions, with little understanding of the disease itself, and under far stricter public health lockdown measures than found in any of the studies we cite above. In addition, whereas most of the studies above tend to narrowly evaluate how standard maternal care (e.g. women's medical appointments, hospital conditions during labor) was disrupted by the pandemic, in our interviews we explicitly asked pregnant women how they accessed everything they needed—from care to information to food to infant products—during the lockdown period. Our interviews allowed Chinese women to not only describe challenges and curtailments of care, but also the many actions they took to ensure adequate care for themselves and their babies. This approach enables us to see women's very active role in (re)constructing care under intense, lockdown conditions, while also documenting their experiences with pregnancy and childbirth during the COVID-19 pandemic.

3. Context

3.1. Maternal health care in China

Maternal health care in China is regulated under a risk assessment and management framework. All pregnant women are assessed according to a standardized pregnancy risk screening form at their initial prenatal medical visit and such assessments classify women's medical records into green (low risk), yellow (moderate risk), orange (high risk), red (highest risk), and purple (infectious disease) for tailored management (Liu et al., 2020). The Ministry of Health (2011) requires at least five prenatal medical visits during women's pregnancy (once in the first trimester and two times each in the second and third trimesters) and outlines both mandatory and recommended medical checkups and screening tests for each visit. Pregnant women with signs of abnormalities are advised to increase the number of medical visits and high-risk pregnant women (orange, red and purple) are sent for case-by-case management (Liu et al., 2020). Typically, even women without high-risk pregnancies exceed the minimum requirement and have more frequent prenatal medical visits (about 12) Prenatal Examination Schedule, 2020.

Unlike many other countries that accommodate out-of-hospital births (Davis- Floyd & Gutschow, 2021), home deliveries are unsupported by the Chinese health care system (Raven et al., 2015). Since around the year 2000, home births have been deemed illegal in nearly all provinces (Gao et al., 2010). Hospitals are perceived by Chinese women as a safe place for childbirth because health care professionals are available if emergencies arise (Raven et al., 2015). Statistics indicate that in 2019, almost all pregnant women gave birth in hospitals (Chen et al., 2021). Therefore, while women in other countries may opt to give birth at home attended by registered midwives to avoid risk of COVID-19 infection in hospitals, Chinese women have no such option. From our interviews, it was common for pregnant women to have family members assist them in the hospital but not necessarily to attend the birth.

3.2. The Wuhan COVID-19 lockdown

The capital of China's Hubei Province, Wuhan is where the very first COVID-19 case was identified, and the city of 11 million people was the epicenter of China's subsequent outbreak (State Council Information Office, 2020). In response, on January 23, 2020, city residents were put under extremely strict lockdown conditions that culminated in residents not being allowed to leave their residential compounds without authorization. The lockdown was announced, at 2 am on January 23, to be in effect from 10 am on the same day (Zanin et al., 2020). Later changes to the specific lockdown measures, such as tightening up resident movement, suspending public transportation, and banning use of private cars, were also announced one day or even just a few hours before the actual implementation.

During the lockdown period, movement across the city was extremely limited: Essential workers and others needing to travel through the city were required to have special permits, and access to transportation was usually organized by the most local level of city government, the neighborhood committee or *shequ*. People could not leave their residential compound to shop, and purchases of food and other necessities were conducted through digital platforms such as WeChat, including locally-organized forms of group purchasing (Qian & Hanser, 2021)). Many city residents did not leave their homes for this entire lockdown period, sending only one household member out to pick up online purchases at designated times and places within their residential compound. It was not until April 8, 2020 that the 76-day lockdown was lifted (Zanin et al., 2020).

Wuhan's extended lockdown created unique challenges for pregnant women in the city. Gender scholars who work in the area of disaster research note that gender is rarely taken into account in disaster planning (Enarson, 2012)—disaster planning and management plans often do not consider that there will be women with reproductive needs (childbirth, prenatal and postnatal care, but also access to birth control). At the same time, there is a medical literature on the negative effects of experiencing a disaster on pregnancy outcomes (Zotti, Williams, Robertson, Horney, & Hsia, 2013), leading to lower birth weights and more pre-term births in the wake of floods and hurricanes (Antipova & Curtis, 2015), for example.

In Wuhan, the citywide lockdown, coupled with the surging medical demand for treating COVID-19 patients, had serious implications for pregnant women's access to care. In the early weeks of the lockdown, access to in-person maternity care was extremely limited and in flux, and pregnant women faced an uncertain and highly changeable health care environment. Our interviews revealed that many hospitals that had provided maternity care prior to the outbreak became restricted to COVID-19 patients without prior warning. Hospitals that continued to offer pregnancy and birth-related medical services adopted an evolving set of protocols that placed limits on who could enter hospitals, imposed restrictions on how many people could accompany a woman giving birth into the hospital, and eventually instituted COVID-19 testing requirements prior to hospital admission.

It is important to keep in mind that despite the enormous scope of the later global pandemic, Wuhan's residents were the very first people to experience the new virus and efforts to contain its spread. Not only did city residents have little sense of how the unprecedented lockdown would unfold, but the pathogen itself was also largely unknown—how infectious it might be, how it spread, who was most vulnerable, and how to protect oneself and others from falling ill. It was in this environment of intense uncertainty, anxiety and fear that women had to not only navigate the profound uncertainties associated with COVID-19 and related public health measures, but also navigate their progressing pregnancies and, for some, the immediate needs of childbirth and caring for a newborn baby. Below, we detail how women charted a course through these uncertain waters, a course that was trained on accessing the information, care, and resources they deemed necessary to manage the needs and risks of pregnancy and childbirth.

4. Methodology

Between April 1 and August 14 of 2020, two research assistants conducted semi-structured interviews with 15 women who experienced pregnancy, childbirth, or postnatal care during Wuhan's lockdown period. The number of our interviews conducted is considered an effective sample size for reaching saturation in qualitative research (Hennink & Kaiser, 2022). This study stems from a larger project that investigates the experiences of residents of Wuhan during its very strict, pandemic-related lockdown in the spring of 2020. Interviews centered on how people met their own and their family members' needs during this time, with special focus on groups who might have difficulty accessing services, including pregnant women. As project investigators and also authors of the current paper, we supervised the research assistants and oversaw data collection. We are able to speak, read, and write in Chinese (one of us is a native Chinese speaker).

Interviewees were recruited through personal connections, social media, and snowball sampling. Due to COVID-19 travel restrictions, we conducted all the interviews online through Zoom. All interviews followed standard consent and confidentiality protocols, as approved by the research ethics board at the authors' institution. In the interviews, we asked open-ended questions about these women's experiences, challenges, and coping strategies during the outbreak. Interviews lasted from 1 h to over 3 h (mean = 115 min). All the interviews were conducted in Mandarin, audio-recorded, and later transcribed verbatim. We checked all the transcripts against audio recordings for accuracy before analyzing them. When writing this paper, we translated selected examples and quotes into English, and through cross-examination, we made sure that our translation accurately presented our participants' experiences and views.

Women's ages ranged from 25 to 37 years (mean = 32 years), and education ranged from an associate's degree to a master's degree. All of them were married, as nonmarital births are extremely rare in China (Raymo et al., 2015). These women's pregnancy stage varied during Wuhan's lockdown, with two giving birth shortly before Wuhan's lockdown, three giving birth in the chaotic period right after the lockdown was imposed, and another six women giving birth between February and before Wuhan's lockdown was lifted. Four other women had due dates after Wuhan's lockdown was lifted (ranging from late April to October of 2020). Among these fifteen women, one was stranded in Henan Province and gave birth there in early April, although she was fully prepared to give birth in Wuhan. Another woman was first stuck in the city of Shenzhen with her family, and returned to Wuhan in late March. We included these two women, both of whom lived in Wuhan and spent unexpected time outside Wuhan during pregnancy, because their experiences were strongly shaped by Wuhan's lockdown and the COVID-19 outbreak there. To ensure anonymity, we use pseudonyms to refer to our participants.

5. Findings

Below, we describe how our interview subjects handled their pregnancies and, for a subset, childbirth, during Wuhan's strict lockdown period. We note their intense efforts at securing or maintaining medical oversight and care; at the same time, we demonstrate that this was an extremely active process, and women found themselves making difficult and unanticipated decisions about what care they might need as well as when and how to access it. We detail as follows women's initial reactions to the lockdown, their efforts to subsequently reconstruct acceptable levels and forms of medical oversight, and the material and emotional work that accompanied those efforts.

5.1. First, retreat (for those who could)

Many women's initial reaction to the COVID-19 lockdown was to retreat from in-person medical care, given the extreme uncertainties associated with the disease. Depending upon their stage of pregnancy, most women we interviewed initially responded to lockdown uncertainties with a kind of non-action: They delayed accessing in-person care for as long as possible. For those requiring immediate care (for childbirth, for example), they tried to limit in-hospital care as much as possible. Women who gave birth in the early days of the lockdown experienced anxiety about being able to access sufficient care—especially making hospital arrangements—which caused sleeplessness for some women. But once at hospital, they were confronted with the threat of infection, so they sought to limit how long they remained in hospital and avoid any suspicion of COVID-19 infection. For example, Zhao Jiaqi, who gave birth not long after the lockdown was imposed, made every effort not to cough during her labor, fearing she would be sent straight for a C-section delivery in a designated COVID-19 hospital. Ren Yijun had been admitted to hospital just prior to the lockdown after a suspected placental leak. The doctor gave her the option to remain in hospital or return home, given the uncertainties of COVID-19. She returned home ("Of course, I chose to return home," she said) though she worried about losing direct medical care. Liu Ting, who also gave birth shortly after the lockdown was imposed, left the hospital early with her C-section stitches still in because the new mother she had been sharing a room with developed a fever and was quarantined elsewhere in the hospital as a suspected COVID-19 case. "We didn't dare stay there," she explained. Mei Dimin, who gave birth by C-section in mid-March, switched hospitals twice before her surgery in an effort to avoid hospitals caring for COVID-19 patients.

Women delayed both prenatal and postnatal care, especially at the beginning of the lockdown period. For example, Ren Yijun was in her 32nd–33rd week of pregnancy, and at that stage, she was "supposed to go to the hospital every week for fetal heart monitoring." Nevertheless, she delayed her prenatal checkups through January, and it was only when she was a month away from her due date, in February, that she decided "to risk going out" for an in-person checkup. Fang Xixi, who was also in her third trimester when the lockdown began, went two months without a prenatal checkup. She explained: "I couldn't go, [actually I] should say I didn't dare go." Jiang Lixin, on bed rest due to concerns that her old C-section incision might rupture, was in the later stages of pregnancy and delayed checkups until her worries about her incision overcame her fears of COVID-19. Later, when she went for care with a specialist in her 38th week, she was hospitalized immediately because of the risk of her old incision reopening. In the case of Wang Li, who was outside Wuhan when the lockdown was imposed and therefore unable to return, she only learned that she was pregnant just as the lockdown began. She delayed returning to the city because she feared that she would be unable to access early prenatal care in Wuhan. Although her parents longed to return, her family debated for a long time and finally made a collective decision that they would go back to Wuhan only after she had her nuchal translucency (NT) scan. She explained that the scan could only be performed within a certain time window (her 11th week of pregnancy). Chen Hong was in the middle of her pregnancy and, following her doctor's advice, skipped nonessential "regular" prenatal checkups until her 32nd week of pregnancy. As she explained, "if I still didn't have a checkup [at that point], I would feel worried."

New mothers often made similar calculations for their newborn babies, deciding to avoid or delay in-person medical care for as long as possible due to fears of infection with COVID-19. New mothers delayed not only regular checkups and vaccination for their newborn babies but also hospital visits in the face of their children's signs of illness. In particular, Zhao Jiaqi's experience illustrated how the COVID-19 outbreak affected their decisions. After noticing her newborn baby had severe diarrhea, she asked her friends and was told that this was normal for one- or two-month-old babies. So initially, she did not even consider going to hospital. She explained, "because the outbreak was very severe at that time, we thought that hospitals were the most dangerous place. If we didn't have to go, we should not go…If there were not the COVID-19 outbreak, I would have taken my child to the hospital shortly after seeing the diarrhea. But I waited until I saw loose stool with blood in it…I couldn't bear it anymore, and then I went to the hospital. It turned out my child had already developed severe allergies."

While women's decisions often involved declining in-person medical care, they viewed this as preferable or acceptable only because of the potentially greater, looming threat of contracting COVID-19. Doctors and medical staff appear to have been willing to leave a lot of decision-making up to pregnant women and their families, given that medical professionals, too, lacked a clear or certain means for evaluating competing risks.

The absence of regular medical visits could allow for concerns to fester (for parallels in Canada, see Rudrum, 2021). For example, Zhao Jiaqi was worried that her baby had developmental delays and Han Wenchen was concerned about her premature baby's eyesight. Fang Xixi put off getting a prenatal checkup until she could no longer tolerate the delay, explaining that she had reached what she described as a personal, psychological "limit" (*xinli jixian*). Women found the experience of being pushed to such limits—ones they had never contemplated before—extremely stressful and unsettling.

5.2. Then, reconstruct

In response to decisions to delay in-person care, or difficulty accessing such care, many women reported efforts to reconstruct the medical care apparatus. For the most part, these efforts largely involved virtual care and access to information and advice, and women pursued both formal and informal channels. For example, most of the women we interviewed described seeking online medical advice and consultations, sometimes through informal channels of friends and WeChat "mothers" groups. But especially, many women communicated directly with doctors and other

medical professionals, either formally through hospital-based platforms or more informally through WeChat connections with medical care providers (for parallels in Chile, see (Leiva et al., 2021). Some doctors set up their own WeChat groups for pregnant women, sometimes centered on specialized care, as in the case of Mu Xiuxue who belonged to an in vitro fertilization (IVF) clinic's WeChat group. Women consulted doctors about light bleeding during pregnancy, had doctors view test results remotely, and were often able to have their questions answered by medical professionals, on platforms that were actively monitored and moderated. Several mothers described consulting with doctors online about their newborn babies' health, accessing breastfeeding support, or getting advice on what medical appointments could be safely delayed and when to seek immediate care. Xiao Cailing, for example, sought out a doctor's advice online for her baby's eczema, allowing her to treat the condition without a trip to the hospital. Women found access to this advice and information very reassuring and used it to make decisions about their and their babies' need for care.

Informal channels were often used more for information about how to access care and for psychological and emotional support. Many of the mothers we interviewed joined "*Mama qun*" (WeChat mothers' groups), such as Han Wenchen, who joined a group for mothers of premature babies, and Fang Xixi, who got information from other women about hospital conditions and requirements, influencing her decisions about when and where to get a prenatal checkup. Jiang Lixin recalled receiving critical assistance from a WeChat mothers' group in order to locate a hospital for care after the one where she had been admitted was converted to COVID-19-only care and she was suddenly required to make her own arrangements to relocate. Pregnant women's reliance on WeChat reflects the social media platform's outsized importance for Wuhan residents during the lockdown in general (Qian & Hanser, 2021).

In some cases, women sought to replace in-person monitoring or care by medical professionals with self-monitoring, including renting or acquiring special equipment or engaging in careful observation of fetal movement or of one's own body (for similar strategies in Canada, see Rudrum, 2021). Mu Xiuxue, in the early stages of a pregnancy involving assisted reproduction, made great efforts to secure not only the drugs but also the regulated needles that she would need to perform her daily hormonal injections at home instead of at a local clinic. She and her husband received training remotely from volunteer nurses on how to perform the injections. Mei Dimin followed her doctor's advice and carefully monitored fetal movements using a fetal monitoring device when she delayed prenatal checkups. Xiao Cailing, whose newborn was jaundiced, monitored the condition at home by making tremendous efforts to rent special equipment that allowed her to measure the baby's bilirubin levels. She noted in the interview, "If my child showed any sign of discomfort, I felt so worried, because we couldn't go to the hospital." Ren Yijun, who was worried about the possibility of premature birth, monitored her baby's heart rate with a home device and counted the baby's movements. Fang Xixi said that "I was lucky because I had already completed [all the] major anomaly scans…there were online volunteer organizations or WeChat groups run by medical workers. I consulted doctors. The doctors told me that, because I had completed some major examinations, the rest were mainly regular checkups; if I didn't feel particularly uncomfortable, it would be okay for me to just count the baby's movements at home." In fact, women often worked in concert with doctors and other health care practitioners to navigate pregnancy during the lockdown and re-establish a satisfactory medical care regime within their own homes.

5.3. Precautions and preparations

When leaving home for care was no longer avoidable—due to the need for prenatal tests and checkups, childbirth, or vaccinations for newborns—women had to devote considerable time and energy to gathering information about, and then arranging and performing in-person care. Navigating an altered health care system meant learning how to book medical appointments and receive permission from neighborhood authorities to travel. Women and their families took many precautions to ensure that they would avoid exposure to COVID-19, including advocating for the use of private vehicles and careful preparation of protective gear and clothing.

In the interviews, women described efforts to cobble together personal protective equipment from either special online purchases or what they had on hand. Many women wore raincoats, shoe covers, gloves (including dishwashing gloves in one case), eye protection (safety glasses, even motorcycle goggles), and masks (sometimes multiple layers of them). Many women also reported routines like removing and immediately washing clothing after arriving home, and sometimes bathing as well. With their bodies so thoroughly covered, women experienced physical discomfort. Wu Hui reported that the atmosphere during prenatal care hospital visits was tense. As Han Wenchen commented on the adults at a vaccination clinic for newborns, "All you could see were the eyes." In one case, Fang Xixi described going to a relatively remote health care facility because it was further from the epicenter of Wuhan's outbreak. In most cases, new COVID-19-related protocols meant that women had to attend medical appointments alone or, when giving birth, with a single support person present, which were challenges widely reported in other parts of the world (e.g. Blankstein Breman et al., 2021; Gutschow & Davis-Floyd, 2021; Rudrum, 2021). Because of the difficulty and risks associated with accessing in-person care, women's determination to maintain access to it reflected the value they placed upon such care, as well as the reassurances they drew from medical oversight.

Given their desire to maintain access to medical care, despite or perhaps especially because of the uncertainties during Wuhan's lockdown period, the women we interviewed displayed high levels of agency vis-à-vis their medical care. They used that agency to ensure continued care and advocate for themselves, especially when interacting with local officials. Local officials had to be contacted in advance of medical appointments and in preparation for birth, in order to ensure permissions to travel through the city and access transportation. In a number of cases, women advocated for the use of their private automobiles as the safest option, both in terms of availability and potential exposure to COVID-19. Chen Hong, pregnant with twins, pushed hard for the use of her private car to access medical appointments in case of a medical emergency. This involved Chen Hong's strategic leverage of the risk assessment and management framework in China's maternal health care system: Her reason for requesting to use her private car was that her twin pregnancy was "high-risk." This involved a lot of persistence with *shequ* officials, and she was successful.

Sometimes the work of organizing access to medical care was shared with family members, who took on some of the burden of contacting officials and arranging logistics. For example, Xia Shanshan described how teamwork with her husband ensured she was able to receive a prenatal checkup: he helped make arrangements for travel to the prenatal checkup, accompanied her (though he was not allowed inside the hospital), and arranged their lunch while they waited for test results. Given all the challenges, she felt their collective determination was important in making the prenatal checkup happen. Wu Hui relied on her mother, who was a hospital worker, for transportation and protective equipment when getting a prenatal checkup. In this way, women's agency and self-advocacy were often enacted not just individually but through the family, though usually it was the woman who made decisions about what was needed. Family members functioned as part of the social "infrastructure" (Hu et al., 2022) that enabled women to reconstruct and access medical care under highly disruptive circumstances.

5.4. Confronting challenges: Women's lockdown emotions

As we have shown, women in Wuhan were active in accessing and sometimes even constructing channels for information, making decisions based on this information about what their essential care needs were, and then doing the logistical and material work of getting that care. At the

same time, these women also engaged in substantial amounts of emotional labor, managing their fears and anxieties and adjusting to unpredictable and disappointing circumstances as they made decisions about medical care that they had never anticipated making. This emotional labor was a key aspect of their subjective experiences and represents another element of women's active response to lockdown conditions and their pragmatic efforts to ensure adequate medical care.

For the women interviewed, the emotional experience of Wuhan's lockdown was specific to their experiences of pregnancy, often in ways linked to medical care and oversight. For example, women reported having to navigate the emotional experience of adjusting their expectations regarding care, especially related to childbirth (for parallels in the United States, see DeYoung & Mangum, 2021). This often meant having to settle for less than expected, be it in terms of access to a private room for recovering from birth, to desired foods during pregnancy and postpartum recovery, or to postpartum care arrangements. Ren Yijun described the discomfort of having to wear a face mask during labor and while sleeping in the hospital. Fang Xixi described going to a different hospital than her preferred one for childbirth because people told her that her preferred hospital had the most cases of doctors and nurses infected with COVID-19, and she also thought it was extremely inconvenient to have only one support person (her mother) accompany her. Wang Li, upon just learning she was pregnant while stranded in the southern city of Shenzhen at the beginning of the lockdown, reported that she felt overwhelmed by the news: She felt vulnerable, weak and unable to help others. Not only did she feel nervous about going to the hospital for medical examinations during the COVID-19 outbreak, but she also felt that she became a burden for her family. If not for her pregnancy, her parents would have made every effort to return to Wuhan.

All these women had to manage their negative feelings while navigating what they viewed as essential elements of their care. Strain on Wuhan's health care system meant that maternal health services were crowded. Wu Hui arrived at the hospital at 8:30 am for a prenatal checkup, only to learn that she was already #125. Jiang Lixin was forced to move hospitals after she had already completed all COVID-19 testing requirements, checked into a hospital, and was waiting to have her C-section surgery the next day. Once in the new hospital specifically dedicated to maternal and child care services, Jiang Lixin was told the timing of her C-section was uncertain because the hospital was so crowded. The uncertainty of the surgery timing forced her to go a long period without food. Returning home after her surgery, she had a very painful walk from the entrance of her residential compound to her building, because cars were not allowed inside the compound. Overall, she observed that the experience was quite different from what she had anticipated: "Originally, I thought with my second child…after birth I would get to really rest…I never expected…to encounter a sudden epidemic, but I feel that having survived [that time], it wasn't a small thing."

Lockdown emotions were not uniformly negative. If pregnancy and childbirth exposed these women to high levels of stress and anxiety under lockdown and epidemic circumstances, for some women their developing identities and roles as new mothers provided an alternative focus that enhanced their mental state and could even give them a feeling of strength in the face of adversity. For example, Chen Hong described how she focused on herself and her growing baby as a respite from all the terrible news about the unfolding epidemic in the city. She explained that maintaining a kind of emotional equilibrium was important for the safety of her baby: "As a pregnant woman, I am different from other people. Others may not have something to focus on, but I monitored the movements in my belly every day. For example, was my baby rolling around in my womb? It helped divert my attention." Similarly, Xia Shanshan emphasized that, for the sake of the developing baby, she needed to control her moods, and this justified focusing on her own well-being. She added that feeling responsible for another person gave her a sense of purpose and courage: "My baby has fetal movements, which seems to tell me that 'mom, don't be afraid.' I then feel that I need to be stronger, because I need to learn to protect another person. Although I'm not a mother yet, I have already felt that I'm so brave."

Assuming the responsibility for care of a new baby could likewise bring relief from an intense focus on the unfolding emergency in the city, as well as release from the need to access prenatal and childbirth care. For example, Jiang Lixin, who gave birth early in the lockdown period, described tremendous relief after giving birth. "After giving birth, I feel like my whole person just relaxed. I didn't have to fear or worry that there wouldn't be a hospital [where I could] have the baby." Like a number of other mothers, her new baby also meant relatively little attention was given to following the news or the COVID-19 situation outside the home.

Many women emerged from their quarantine pregnancy and birth experiences with powerful feelings of gratitude towards those who had aided them in various ways—local volunteers or officials, doctors, family and friends, neighbors, and other new mothers. It was, often, in their active efforts to access needed care that women developed this sense of gratitude and, for some, a recognition of human interdependence. As Wu Hui commented: "We all live in the same neighborhood…before, we didn't have the opportunity to interact, but because of the COVID-19 outbreak, suddenly, there were much more social capital, convenience for daily life, and help that others provided to you. Then, you will feel that you need to pay this forward. In other words, when you can help others, you should do it."

These women, too, recognized that they had experienced their pregnancies and childbirths under extraordinary circumstances that had demanded something extra of them. Jiang Lixin, who had had to switch hospitals unexpectedly before delivering her baby, recalled that she cried when Wuhan's lockdown was finally lifted, noting: "surviving [the lockdown] was really not easy." Mu Xiuxue, who overcame difficult medical logistics associated with the early stages of her IVF pregnancy as well as three cases of COVID-19 in her immediate family, reported that not only had her perspective on what matters in life (such as health) shifted, but she also described feeling like a survivor of great adversity (*jiehou yusheng*, literally "after hardship to continue life"). Similarly, Xia Shanshan spoke about coming away from her experiences—and her knowledge of others' experiences, who lost loved ones to COVID-19—with a stronger sense of the preciousness of life, of good health, and of the need to live life fully: "If we want to do something in life, [we should] go do it. Don't wait any longer. If you have done it, you are much less likely to feel regret."

Ironically, sometimes this gratitude could obscure, to women themselves, the amount of courage and initiative they displayed during the lockdown period. In a context in which people felt mostly powerless to act on the larger situation, these pregnant women did not give up or stop trying to find solutions to the problems they encountered, especially with regards to accessing medical care, advice and oversight. Despite the disappointment of dashed plans and the stress of disrupted and difficult access to medical care, all the women we interviewed described their very active role in reconstructing a form of care and medical oversight that met their minimal expectations while also managing their fears of exposure to COVID-19. Ironically, many women talked about their experiences as ones of "no alternatives" (*mei banfa*), as situations out of their control, which was, of course, in many ways true. Despite their use of the term "*mei banfa*" and frequent references to good luck, they in fact displayed incredible agency and action.

One of the most striking examples is Mu Xiuxue, whose family faced incredible challenges during the lockdown: Her grandmother and both her parents fell ill with COVID-19, and securing a hospital bed first for her critically-ill grandmother and later for her parents required mobilizing the efforts of friends and family to seek information and visit hospitals in search of care. Ultimately, all three were successfully hospitalized, and Mu Xiuxue regularly described herself and her family as having "good luck." At one point, she referred to her parents' successful hospitalization as "good luck in the midst of adversity." And yet immediately following this comment, she acknowledged that her family had developed a careful division of labor to deal with their health crises, and

that they worked hard to ensure access to medical treatment: "With regard to my grandmother's and my parents' COVID-19 infections, our family basically wasted no time [trying to find a hospital bed]." Ironically, part of the emotional work that women performed during the lockdown—looking for bright spots in a dark time, celebrating small good fortunes—could obscure their own active role in navigating the crisis.

6. Discussion

The global COVID-19 pandemic has disrupted the normal delivery of health care to many populations around the world over the past two years, and pregnant and birthing women are prominent among those groups affected. Our data on the experiences of pregnant women in Wuhan, China during that city's initially chaotic, protracted and extremely strict lockdown period document how the very first group of women encountered these disruptions. Their experiences share much in common with pregnant women elsewhere in the world; at the same time, our findings highlight the active, pragmatic ways in which these women navigated an unprecedented situation in order to ensure adequate access to medical care.

Like pregnant women elsewhere (Davis- Floyd & Gutschow, 2021; Naghizadeh & Mirghafourvand, 2021, our respondents in Wuhan experienced an escalation of feelings of fear and anxiety. This includes fears of contracting COVID-19 in medical settings, which were perceived as very high-risk (Davis-Floyd et al., 2020; Goyal et al., 2021). These fears led to women deciding to reduce care in some cases, either leaving the hospital as quickly after birth as possible or forgoing some prenatal checkups. Importantly, because of the restrictions on out-of-hospital births in China, giving birth outside of the hospital setting was not a realistic option for all the women we interviewed, in contrast to places where community birth models operate (e.g. Davis-Floyd et al., 2020; Montagnoli et al., 2021). In addition, like women elsewhere (Overbeck et al., 2020), women in Wuhan experienced fears about their ability to access medical care when needed, especially for childbirth.

Also like women in other parts of the world (Blankstein Breman 2021; Brislane et al., 2021), efforts to contain the spread of COVID-19 meant that many pregnant women in Wuhan faced canceled care appointments or saw their care transition to online format. These women also navigated restrictions on the presence of support persons, both for in-person medical appointments (none allowed) and also during childbirth (only one allowed), similar to policies that were adopted in medical institutions in other countries (Benaglia & Canzini, 2021; Blankstein Breman 2021; Davis- Floyd & Gutschow, 2021). Pregnant women in Wuhan were also fearful that an unexpected COVID-19 diagnosis would lead to separation from their newborn or even quarantine in a centralized facility, the former a concern for women in other parts of the world as well (Blankstein Breman 2021; Gutschow & Davis-Floyd, 2021; Rudrum, 2021). These many changes and challenges meant that Wuhan women, like their counterparts in many other countries, confronted disappointments, dashed expectations, and disruptions to ordinary rituals associated with pregnancy and childbirth (Altman et al., 2021; Brislane et al., 2021; DeYoung & Mangum, 2021).

However, our interviews in Wuhan also demonstrate that pregnant women did not simply experience these challenges, they *responded* to them. As we explain above, women actively participated in the reconstruction of the medical care apparatus through both formal and informal means. They relied upon social media platforms to access medical expertise (something Leiva et al., 2021 describe in Chile) as well as peer emotional support. These peer networks were crucial in providing up-to-date information about the logistics of accessing care (how to book an appointment, what hospitals were open for delivery, etc.). Women engaged in various forms of self-monitoring, usually under doctors' supervision, and sometimes even acquired medical equipment to enable them to do so (Rudrum 2021 reports some cases of this in Canada). Indeed, unlike most other parts of the world, the city of Wuhan confronted a full-blown medical crisis very quickly, and hospitals could be commandeered for COVID-19-only purposes with no warning. The intensity of the city's lockdown measures also meant that private transportation was effectively banned. Under these extreme conditions, pregnant women planned ahead with local authorities to secure transport in case of potential medical emergencies. These women and their families also made great efforts to protect themselves from possible infection, especially when accessing in-person care, by tracking down medical PPE or cobbling together homemade versions, by adopting scrupulous hygiene practices, or by lobbying hard for private transportation to medical appointments. These kinds of agentic actions may well exist in contexts beyond Wuhan, but it is difficult to know how common they were because they received little attention in existing studies of pregnant women's experiences amid the pandemic.

Women's response to the COVID-19 lockdown was emotional as well, and they had to manage their fears and anxieties so that they were not overwhelmed by them. All these actions enabled women to ensure their needs were met. Much like Shaw's (2021) research on women undergoing infertility treatments, our interview data on women's experiences with pregnancy and childbirth during Wuhan's COVID-19 lockdown period brim with pragmatic action. These women made tremendous efforts to access medical oversight and care in an attempt to transform pregnancy-related fears and anxieties into a sense of greater certainty, assurance and stability, despite the crisis unfolding in Wuhan. Although these women's experiences were under exceptional circumstances, their active role in reconstructing a maternal care regimen exposed the active participation of women in their own care that, under more normal circumstances, appears passive or is invisible.

Our findings reveal the important role that women played in shaping their care during Wuhan's extraordinary pandemic lockdown circumstances, an observation largely overlooked in existing research on maternity care during COVID-19. The situation in Wuhan destabilized the ordinary organization of pregnancy, childbirth, and medical care. Under the circumstances, the replacement of pre-existing care routines and schedules with ones that they partially designed themselves was not experienced as empowering, and yet these women displayed so much self-directed *action*. Being pregnant under Wuhan's strict COVID-19 lockdown meant actively and thoughtfully working to re-assemble a disrupted apparatus of care. These efforts to reconstruct a kind of apparatus of medical oversight and care should be understood as an expression of agency.

As we have noted, our case raises questions about how critiques of medicalized pregnancy and childbirth often leave little room for conceptualizing an embrace of medicine as a genuine expression of women's interests and agency. Much like studies of women undergoing infertility treatment (Shaw 2021; Thompson 2005), the exceptional circumstances in Wuhan provide a very particular situation through which we might understand women's—this group of women's—expectations about the kind of medical care they desire and feel entitled to. Their experiences also suggest that, while perhaps largely invisible in ordinary times, medical authority clearly depends on a degree of collaboration and cooperation between medical professionals and pregnant women (and, to some degree, their families). In our research, the pregnant women in Wuhan, so easily cast as subordinated and objectified—to an authoritarian state's population policies and discourses, to patriarchal family norms, to an embrace of science and technology in a rapidly modernizing society—offered us accounts that brimmed with action and agency. Using Wuhan's COVID-19 lockdown as a compelling case study, we have demonstrated both the challenges pregnant women faced under pandemic conditions as well as the considerable efforts that women made to maintain the level of medical oversight they would expect during normal times.

Funding

The authors acknowledge funding support from the Canadian

Institutes of Health Research through the Operating Grant: Canadian 2019 Novel Coronavirus (COVID-19) Rapid Research Funding Opportunity [Funding #: OV7-170372].

Ethics approval statement:

Ethical approval was granted by the Behavioural Research Ethics Board of The University of British Columbia.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Altman, M. R., Gavin, A. R., Eagen-Torkko, M. K., Kantrowitz-Gordon, I., Khosa, R. M., & Mohammed, S. A. (2021). Where the system failed: the COVID-19 pandemic's impact on pregnancy and birth care. *Global Qualitative Nursing Research, 8*, 1–11.

Antipova, A., & Curtis, A. (2015). The post-disaster negative health legacy: pregnancy outcomes in Louisiana after Hurricane Andrew. *Disasters, 39*(4), 665–686. https://doi.org/10.1111/disa.12125.

Armstrong, E. M. (2003). *Conceiving risk, bearing responsibility: Fetal alcohol syndrome & the diagnosis of moral disorder*. Johns Hopkins University Press.

Benaglia, B., & Canzini, D. (2021). "They Would Have Stopped Births, if They Only Could have": Short-and Long-Term Impacts of the COVID-19 Pandemic—a Case Study From Bologna, Italy. *Frontiers in Sociology, 6*, 173–181. https://doi.org/10.3389/fsoc.2021.614271

Blankstein Breman, R., Neerland, C., Bradley, D., Burgess, A., Barr, E., & Burcher, P. (2021). Giving birth during the COVID-19 pandemic, perspectives from a sample of the United States birthing persons during the first wave: March-June 2020. *Birth, 48*(4), 524–533.

Brislane, Á., Larkin, F., Jones, H., & Davenport, M. H. (2021). Access to and quality of healthcare for pregnant and postpartum women during the COVID-19 pandemic. *Frontiers in Global Women's Health*, 2. https://doi.org/10.3389/fgwh.2021.628625

Brubaker, S. J., & Dillaway, H. E. (2009). Medicalization, natural childbirth and birthing experiences. *Sociology Compass, 3*(1), 31–48.

Cao, H. (2014). Becoming Mothers: Physical diagnoses of Urban Pregnant Women. *Collection of Chinese Women's Studies (Funü yanjiu luncong), 1*, 88–95.

Chadwick, R. J., & Foster, D. (2014). Negotiating risky bodies: childbirth and constructions of risk. *Health, risk & society, 16*(1), 68–83.

Chen, L., Feng, P., Shaver, L., & Wang, Z. (2021). Maternal mortality ratio in China from 1990 to 2019: trends, causes and correlations. *BMC Public Health, 21*(1), 1–8.

Cohen, J. H., & Raymond, J. M. (2011). How the internet is giving birth (to) a new social order. *Information, Communication & Society, 14*(6), 937–957.

Davis- Floyd, R. (1992). The Technocratic Body: American Childbirth as Cultural Expression. *Social Science & Medicine, 38*(3), 1125–1140.

Davis- Floyd, R., & Gutschow, K. (2021). The Global impacts of COVID-19 on Maternity Care Practices and Childbearing Experiences. *Frontiers in Sociology, 6*, 5–12. https://doi.org/10.3389/fsoc.2021.721782

Davis-Floyd, R., Gutschow, K., & Schwartz, D. A. (2020). Pregnancy, birth and the COVID-19 pandemic in the United States. *Medical Anthropology, 39*(5), 413–427.

DeYoung, S. E., & Mangum, M. (2021). Pregnancy, Birthing and Postpartum Experiences During COVID-19 in the United States. *Frontiers in Sociology, 6*, 77–89. https://doi.org/10.3389/fsoc.2021.611212

Drentea, P., & Moren-Cross, J. L. (2005). Social capital and social support on the web: the case of an Internet mother site. *Sociology of health & illness, 27*(7), 920–943.

Enarson, E. (2012). *Women Confronting Natural Disaster: From vulnerability to resilience*. Lynne Rienner Publishers.

Fordyce, L., & Maraësa, A. (Eds.). (2012). *Risk, reproduction, and narratives of experience*. Vanderbilt University Press.

Fox, B., & Worts, D. (1999). Revisiting the critique of medicalized childbirth: A contribution to the sociology of birth. *Gender & Society, 13*(3), 326–346.

Gao, Y., Barclay, L., Kildea, S., Hao, M., & Belton, S. (2010). Barriers to increasing hospital birth rates in rural Shanxi Province, China. *Reproductive Health Matters, 18*(36), 35–45.

Gottschang, S. (2018). *Formulas for Motherhood in a Chinese Hospital*. University of Michigan Press.

Goyal, M., Singh, P., Singh, K., Shekhar, S., Agrawal, N., & Misra, S. (2021). The effect of the COVID-19 pandemic on maternal health due to delay in seeking health care: experience from a tertiary center. *International Journal of Gynecology & Obstetrics, 152*(2), 231–235.

Greenhalgh, S., & Winckler, E. A. (2005). *Governing China's population: From Leninist to neoliberal biopolitics*. Stanford University Press.

Gui, X., Chen, Y., Kou, Y., Pine, K., & Chen, Y. (2017). Investigating support seeking from peers for pregnancy in online health communities. *Proceedings of the ACM on Human-Computer Interaction, 1*, 1–19. https://doi.org/10.1145/3134685

Gutschow, K., & Davis-Floyd, R. (2021). The impacts of COVID-19 on Maternity Care Practices: A followup Study. *Frontiers in Sociology, 6*, 101–118. https://doi.org/10.3389/fsoc.2021.655401

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine, 292*, Article 114523. https://doi.org/10.1016/j.socscimed.2021.114523

Higgins, A. M. (2015). *Labor of Care: Spectacular fetuses, Healthy, smart Babies, And cosmopolitan Pregnancy in Middle class Beijing*. Santa Cruz, PhD Disseration: University of California.

Holland, S. (2019). Pregnant with possibility: The importance of visual data in (re) presenting queer women's experiences of reproduction. *Methodological Innovations, 12*(1), 1–11.

Hu, Y., Xu, C. L., & Tu, M. (2022). Family-mediated migration infrastructure: Chinese international students and parents navigating (im) mobilities during the COVID-19 pandemic. *Chinese Sociological Review, 54*(1), 62–87.

Li, X. (2011). Imagining the mother's duty: Urban women's physical and subjective experiences of prenatal examinations. *Society, 31*(5), 133–157 [In Chinese].

Li, Ji. (2019). *Mothering in a polluted, Developing China: Class, Risk perception, and Essentialist Motherhood in Urban China*. Chicago, PhD Dissertation: University of Illinois.

Leiva, G., Sadler, M., López, C., Quezada, S., Flores, V., Sierra, C., Figueroa, C., et al. (2021). Protecting Women's and Newborns' Rights in a Public Maternity Unit During the COVID-19 Outbreak: The Case of Dra. Eloísa Díaz-La Florida Hospital in Santiago, Chile. *Frontiers in Sociology, 6*, 160–172. https://doi.org/10.3389/fsoc.2021.614021

Li, J. (2021). Cloaking the pregnancy: Scientific uncertainty and gendered bamong middle-class mothers in Urban China. *Science, Technology, & Human Values, 46*(1), 3–28.

Liu, J., Song, L., Qiu, J., Jing, W., Wang, L., Dai, Y., … Liu, M. (2020). Reducing maternal mortality in China in the era of the two-child policy. *BMJ global health, 5*(2), Article e002157.

Lupton, D. (2011). The best thing for the baby": Mothers' concepts and experiences related to promoting their infants' health and development. *Health, risk & society, 13*(7-8), 637–651.

Lupton, D. (2012). Precious cargo": foetal subjects, risk and reproductive citizenship. *Critical public health, 22*(3), 329–340.

MacKendrick, N. (2014). More work for mother: Chemical body burdens as a maternal responsibility. *Gender & Society, 28*(5), 705–728.

Ministry of Health. (2011). *Notification Regarding Pregnancy Health Care regulations*. http://www.nhc.gov.cn/fys/s3581/201107/8d09ba60c19545e3b80fa65328183537.shtml. (Accessed 21 March 2021).

Montagnoli, C., Zanconato, G., Ruggeri, S., Cinelli, G., & Tozzi, A. E. (2021). Restructuring maternal services during the covid-19 pandemic: Early results of a scoping review for non-infected women. *Midwifery, 94*, Article 102916.

Moore, S. B. (2011). Reclaiming the body, birthing at home: knowledge, power, and control in childbirth. *Humanity & Society, 35*(4), 376–389.

Naghizadeh, S., & Mirghafourvand, M. (2021). Relationship of fear of COVID-19 and pregnancy-related quality of life during the COVID-19 pandemic. *Archives of Psychiatric Nursing, 35*(4), 364–368. https://doi.org/10.1016/j.apnu.2021.05.006.

Namey, E. E. (2010). The meaning of "control" for childbearing women in the US. *Social Science & Medicine, 71*(4), 769–776.

Oakley, A. (1984). *The captured Womb: A History of the Medical Care of Pregnant Women*. Oxford: Blackwell.

Overbeck, G., Graungaard, A. H., Rasmussen, I. S., Høgsgaard Andersen, J., Kragstrup, J., Wilson, P., & Ertmann, R. K. (2020). Pregnant women's concerns and antenatal care during Covid-19 lockdown of the Danish society. *Danish Medical Journal, 67*(12), Article A06200449.

Prenatal Examination Schedule. (2020). Expecting Mothers take Note: This is the Most complete Prenatal Examination Schedule. *The Paper* (Pengpai Xinwen)https://www.thepaper.cn/newsDetail_forward_8780012, 21 March 2020.

Qian, Y., & Hanser, A. (2021). How did Wuhan residents cope with a 76-day lockdown? *Chinese Sociological Review, 53*(1), 55–86. https://doi.org/10.1080/21620555.2020.1820319

Qiu, J. (2019). Buying reassurance: uptake of non-invasive prenatal testing among pregnant women of advanced maternal age in China. *Health, Risk & Society, 21*(3-4), 122–140.

Rapp, R. (1999). *Testing women, testing the fetus: The social impact of amniocentesis in America*. Routledge.

Raven, J., Van den Broek, N., Tao, F., Kun, H., & Tolhurst, R. (2015). The quality of childbirth care in China: women's voices: a qualitative study. *BMC pregnancy and childbirth, 15*(1), 1–8.

Raymo, J. M., Park, H., Xie, Y., & Yeung, W. J. (2015). Marriage and family in East Asia: Continuity and change. *Annual Review of Sociology, 41*, 471–492.

Rothman, B. K. (2016). *A bun in the Oven: How the Food and Birth Movements Resist industrialization*. New York University Press.

Rudrum, S. (2021). Pregnancy During the Global COVID-19 Pandemic: Canadian Experiences of Care. *Frontiers in Sociology, 6*, 119–128. https://doi.org/10.3389/fsoc.2021.611324

Shaw, M. K. (2021). Exploring the multiplicity of embodied agency in Colombian assisted reproduction. *Body & Society, 27*(4), 55–80.

Shih, L. W. (2018). Moral Bearing: The paradox of choice, anxiety and responsibility in Taiwan. In A. Wahlberg, & T. M. Gammeltoft (Eds.), *Selective Reproduction in the 21st Century* (pp. 97–122). Palgrave Macmillan.

Simonds, W. (2002). Watching the clock: keeping time during pregnancy, birth, and postpartum experiences. *Social Science & Medicine, 55*(4), 559–570.

Song, F. W., West, J. E., Lundy, L., & Dahmen, N. S. (2012). Women, pregnancy, and health information online: the making of informed patients and ideal mothers. *Gender & Society, 26*(5), 773–798.

State Council Information Office. (2020). Fighting COVID-19: China in action. http://en.nhc.gov.cn/2020-06/08/c_80724.htm. (Accessed 13 March 2022).

Teman, E. (2003). The medicalization of" nature" in the" artificial body": surrogate motherhood in Israel. *Medical Anthropology Quarterly, 17*(1), 78–98.
Thomas, G. M., & Lupton, D. (2016). Threats and thrills: pregnancy apps, risk and consumption. *Health, Risk & Society, 17*(7-8), 495–509.
Thompson, C. (2005). *Making Parents: The ontological choreography of Reproductive Technologies*. M.I.T. University Press.
Waggoner, M. R. (2017). *The zero trimester: Pre-pregnancy care and the politics of reproductive risk*. University of California Press.
Zanin, M., Xiao, C., Liang, T., Ling, S., Zhao, F., Huang, Z., … Wong, S. S. (2020). The public health response to the COVID-19 outbreak in mainland China: a narrative review. *Journal of thoracic disease, 12*(8), 4434–4449.
Zhu, J. (2013). Projecting potentiality: understanding maternal serum screening in contemporary China. *Current Anthropology, 54*(S7), S36–S44.
Zotti, M. E., Williams, A. M., Robertson, M., Horney, J., & Hsia, J. (2013). Post-disaster reproductive health outcomes. *Maternal and Child Health Journal, 17*(5), 783–796. https://doi.org/10.1007/s10995-012-1068-x.