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## Japanese entrepreneur's baby monitor puts prenatal care online

Businesswoman's belt device lets doctors check patients from afar amid rural obstetrician shortage

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Japan prides itself on having the world's lowest birth mortality rates for women and infants, but a decline in facilities staffed with obstetricians and gynecologists, as well as the advancing age of first-time mothers here, has raised growing doubts about the future of that claim.

These concerns sparked entrepreneur Yhuko Ogata of Kagawa Prefecture, who commercialized Japan's first electronic medical record software for obstetricians and gynecologists, to seek ways to address this growing uncertainty through remote pregnancy monitoring.

Last year, Ogata commercialized Fetal Monitor iCTG, a platform that allows doctors to remotely check the condition of both mother and fetus via wireless devices that can be easily attached to the abdomen.

The heart-shaped internet-connected devices monitor the baby's heart rate and the woman's contractions, and send the data back to the doctor's computer. The system lets doctors recognize problems in the fetal autonomic nervous system or oxygen supply.

"With this device, women can have their blood pressure and other variables that doctors normally verify at prenatal visits checked at home," Ogata said in a recent interview in Tokyo.

The shortage of obstetricians and gynecologists in Japan, especially in rural areas, was the driving force behind her idea.

According to the health ministry, the number of obstetricians and gynecologists in Japan has been basically stable in the past decade. But between 2006 and 2018, 368 hospitals and 504 clinics closed their obstetrics and gynecology departments because they were short of the specialists, according to the Japan Association of Obstetricians and Gynecologists.

Since the 2000s, Ogata has worked with Kazuhiro Hara, a gynecologist and the director of medical informatics at Kagawa University Hospital, and Yasuhito Takeuchi, a visiting professor at the school's research center who in the 1970s invented cardiotocography, one of the primary biophysical methods of fetal monitoring.

Ogata launched iMelody International Ltd. in 2015 and introduced Fetal Monitor iCTG to the market in 2019. She also commercialized Japan's first medical record software for the OB-GYN industry.

The device has been particularly useful in Kagawa, the smallest of the 47 prefectures and one heavily affected by Japan's rapidly graying population.

According to the Japan Society of Obstetrics and Gynecology, there are a dozen prefectures that have been categorized as severely affected by the shortage.

"Amid this shortage, regular prenatal checks at clinics have become a burden for doctors, who struggle with monitoring all their patients," Ogata explained.

Despite the shortage, Japan remains the safest place to give birth by international standards.

According to World Bank data, the neonatal mortality rate in 2018 stood at around 1 per 1,000 live births in Japan, compared with rates about 23 times higher in countries like India, Myanmar and Laos.

In 2017, 3,308 babies died in Japan during labor or delivery.

But Ogata said lifestyle changes in Japan are increasing the risk of complications during labor and delivery. She pointed out that amid the government's efforts to enhance the role of women in the workforce, women more often choose to juggle work with home life and give birth at a more advanced age.

In fact, the ratio of first pregnancies among women 35 or older rose from 11.8 percent in 2005 to around 28.5 percent in 2015, according to the health ministry.

Health organizations point to amniotic fluid embolism — a serious event in which the fluid surrounding a baby in the uterus enters the mother's bloodstream — as one of the main causes of infant or parent death during delivery. Other complications include early placenta detachment and uterine rupture.

But these deaths are mostly preventable, health organizations say.

"If women can monitor the condition of the fetus at home, the odds are high that they will be able to get help at the right moment if any complications develop," Ogata said.

Complications caused by doctor error in the last weeks of pregnancy are on the rise, with parents suing health care providers for malpractice, she added.

One such case occurred in 2013 when a woman from Tokushima Prefecture who was into her 31st week of pregnancy was hospitalized for symptoms of premature delivery. After the baby was lost during birth, the Tokushima District Court ordered her clinic to pay her family ¥14.09 million in damages in July 2018 for negligence resulting in the baby's death.

According to a report by the daily Asahi Shimbun at the time, the Tokushima court ruled that the doctor in charge had failed to detect abnormalities in the fetus. When her placenta detached from the wall of the uterus, she was transported to another hospital to undergo an emergency cesarean section but it was too late. The court said that a thorough examination and monitoring of the fetus' heartbeat could have prevented the death.

Ogata hopes her device can reduce these needless accidents.

The iMelody platform has received several accolades, including winner of BabyTech Award Japan, a competition honoring outstanding technology for child development, and a venture award from the health ministry.

Ogata believes the device can help address the problem of infant mortality outside Japan as well.

Last year, her company equipped all public hospitals in Chiang Mai, Thailand, with the device in cooperation with the Japan International Cooperation Agency and Kagawa University.

The firm is also running a similar project in South Africa and plans to expand the initiative to other countries in Southeast Asia, including Myanmar, Laos, Indonesia and India. It hopes to eventually launch the product in Europe and the United States as well.

"I'm hoping that one day all expectant women will have one such set at home," she said.

Ogata also hopes that if used at home, the device will bring about a change in thinking in Japan, where she says pregnancies are viewed as "a woman's issue."

“I just hope that if men listen to the child’s heartbeat (through this device), they will develop a greater sense of caring toward women,” she said.