

Objectives: We aimed to clarify the content of care provided by midwives working in hospitals and clinics in Japan and the unmet needs in midwifery are from mothers' perspectives. E-mail addresses: chibay@mase.mp.ac.jp (Y. Chiba), hayashii@kyomkango.ac.jp (R. Hayashi), mehakancloud.com (Y. Kita), takeshita.mai@best.kyoto-u.ac.jp (M. Takeshita) Present address: Department of Midwifery, Graduate School of Human Nursing, The University of Shiga Prefecture 2500, Hassaka-cho, Hikone, Shiga 522-8533 Japan [haju://doi.org/10.1016/j.heliyon.2022.18747](https://doi.org/10.1016/j.heliyon.2022.18747) Received 29 November 2022, Received in revised form 25 July 2023, Accepted 26 July 2023 Available online 27 July 2023

2405-84-40/0 2023 The Authors. Some were left alone with pain during labour, for example, "Until my husband came, I was crying and screaming alone, so I wanted (my midwife) to stay longer, but she was busy. She was unable to stay (with me) all the time. Well, until the cervix fully opened, I had to endure (the pain) all by myself! (CMI) To receive timely and appropriate treatment for unexpected progress of labour: Participants who had unexpected progress in labour wished they had received more timely and appropriate care from midwives. For example, one was surprised at the rapid progress in labour, whereas another was discouraged by the very slow progress. I wanted my midwife to hold my baby's head securely so that it didn't come out before I reached a birthing table! (GP1) I just assumed that the intense pain would come only before pushing out a baby. However, unexpectedly, my labour did not progress so easily, and my pain lasted for a long time. During the process, my midwife did not encourage me but just said to me. "Your pain will be more and more intense later!" were asked to recall their experiences with midwives, from pregnancy through the first post-

Results: Seven themes regarding the care provided by midwives were generated: confirmation of physical condition, maintenance and promotion of perinatal physiological process, support for better preparation for childbirth, assistance in labour and childbirth, support for a new life with a baby at home, support for the family, and care for comfort and confidence mother. Given the operational burden on obstetricians, midwives seek professional autonomy by setting up in-hospital midwife-led care (at labour and childbirth) [jimai-josan) and an in-hospital midwifery clinic (for antenatal and postnatal consultation) [josanshi-gairat) for low-risk women [18]. This is open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Y. Chiba et al Heliyon 9 (20:29) 18747 in the Tokyo metropolitan area for 10 years between 2005 and 2014, was 87 per 100,000 live births [3]. Because of the closure or scaling-down of maternity services in many facilities owing to the shortage and maldistribution of obstetricians, and declining birth rates [16], midwives can be allocated to other wards. I really wished my midwife had given me such information in advance! (CMI) "Hospital midwives encouraged us all to breastfeed. So, I thought I could breastfeed. However, after giving birth, I was unable to produce enough milk... I was bothered by the fact that my midwife did not tell me the merits of bottle feeding. (HP1) To receive information on places I can visit and ask questions in the community: This subtheme relates to mothers' requests to their hospital midwives to provide more information on the places they could visit, to interact with other mothers, and ask questions to midwives in the community. After leaving the hospital) I cannot visit a hospital just to ask a midwife something trivial. It would be nice if there was anyone I could easily ask anything, and it would be much better if this "someone were a midwife in my community. Introduction Perinatal outcomes in Japan are among the best worldwide, with

a maternal mortality ratio of five deaths per 100,000 live births in 2017, and one neonatal and two infant deaths per 1000 live births in 2020 (1). Ten subthemes, under the five themes of unmet needs, were integrated into free categories: midwives' responses, potential concerns, lack of continuity of care, and lack of personalised care. Key conclusions and implications for practice: Midwives in hospitals and clinics in Japan mainly provided care from pregnancy to one-month postpartum, in line with global care competencies. A survey by the Japanese Nursing Association (JNA) in 2020 reported that 67.8% of maternity wards receive a mixture of patients [17] to increase the turnover rate by filling empty beds. Improving working environments for midwives and collaborating with postpartum public health services are key to addressing these unmet needs of women, leading to women-centred care. Hence, the practice of midwives in hospitals and clinics, consisting of 85.4% of all midwives in practice [15], creates the common perception of the scope of midwives working in Japan. Midwives are more likely to assist obstetricians in consultation and treatment, conduct physical assessments for the normal process of labour, and support mothers with health education, breastfeeding, childcare, and mental care. Women's experiences from pregnancy to postpartum could strongly impact their subsequent well-being [6–5]. Globally, midwives are recognized for supporting women, new-borns, infants, and their families [9]. Outcomes that women's experiences with midwives in institutionalised and fragmented maternity care settings in Japan were often negative [10], and some women's voices were unheard or lost [11]. Although midwives are part of the global healthcare system, influential factors such as education and regulation vary by nation [12, 13]. Antenatal and postnatal check-ups are usually obstetrician-led, and all childbirths should be attended by them regardless of medical intervention. Four subthemes were identified as care provided by midwives, but the rest three were categorised as unmet needs in midwifery care. Approximately 11% of mothers experience postpartum depression within the first postnatal year [2], and the suicide rate among women from pregnancy to one year postpartum, for example Corresponding author. However, Doering et al. pointed out (HP3) 3.2.5.1.