

Ultrasonography Helps Form Maternal Consciousness in Early Pregnancy : Based on Interviews Conducted in Pregnant Women in The Tohoku Region of Japan

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Abstract:

This study had object to investigate how ultrasonography helps form and develop maternal consciousness in early pregnancy. In Japan, ultrasonography is commonly used to monitor fetal development in health examination for pregnant women. Semi-structured interviews were conducted in women in early pregnancy residing in prefecture -Z in the Tohoku region of Japan who gave their consent to participate in this study. In the interview, we collected information regarding their experience of ultrasonography. The collected data were analyzed inductively using the continuous comparison method to characterize maternal consciousness in early pregnancy and elucidate how maternal consciousness develops. A total of 200 (average: 12 ± 4) responses, including how they felt or what they thought about fetal sonograms and about being a mother, were obtained from 17 women in early pregnancy (gestation period: 5 to 16 weeks). Both context and literality were reviewed and analyzed. The results indicated that seeing the fetal sonograms and obtaining information from medical professionals help women in early pregnancy attain maternal consciousness and increase the sense of having an internal locus of control, while they imagine the assumed course of pregnancy before the actual progress of gestation and share the pregnancy experience with their family, supporters, etc. Ultrasonography was an important trigger for the formation and development of maternal consciousness in women in early pregnancy. This result suggested that the use of ultrasonography in health examination for pregnant women is helpful in monitoring health during pregnancy and in providing psychosocial support for women in early pregnancy to build a sense of maternal consciousness.

Keywords: Ultrasonography, women in early pregnancy, maternal consciousness, inductive analysis, health locus of control

Introduction

The definition of motherhood varies. In the narrow sense, motherhood is the physiological process of childbirth followed by child rearing¹⁾. At the same time, motherhood is the sense of being a mother. Maternal consciousness represents the cognitive side of motherhood, involving behavior and values placed on pregnancy/childbirth/rearing by women²⁾³⁾. These behaviors and values begin to form at the time when a woman first realizes she is about to become or is a mother. In Japan, chil-

dren are often regarded as a sacred gift, and child rearing is traditionally the role of the mother⁴⁾. However, high expectations on women to be an ideal mother sometimes cause mothers to lose self-confidence and can lead to postpartum anxiety about child rearing, which can result in child abuse. This is regarded as a social problem. Women who become pregnant need psychosocial support to form maternal consciousness so that they can take an active role in their pregnancy/childbirth/child rearing⁵⁾⁶⁾. However, most previous studies were

conducted in postpartum/parenting women, and women in early pregnancy have rarely been studied^{7~9}).

In prefecture-A where this study was conducted, there are not enough perinatal care providers available. Thus, regardless of the existence of any medical problems, most pregnant women receive uniform pregnancy care^{10~13}). This often makes pregnant women more reliant on medical care. In particular, ultrasonography is widely used in general health examinations, and pregnant women are eligible to receive ultrasonography for free in health examination for pregnant women¹⁴). Because ultrasonography allows women to see the fetal heart rate, fetal movement, and gestational sac, ultrasonography is regarded as an enjoyable medical examination for the pregnant woman and her family¹⁵). However, the effect ultrasonography has on the formation of maternal consciousness in women in early pregnancy remains unknown.

This study was conducted to contribute to a psychosocial support program in health examination for pregnant women. In this study, the characteristics and the formation/development of maternal consciousness were studied based on the ultrasonography-related responses obtained through interviews conducted in women in early pregnancy living in the Tohoku region of Japan.

Methods

1. Study design

This was a qualitative study conducted to clarify the characteristics, formation, and development of maternal consciousness by inductive analysis of data from ultrasonography experiences in early pregnancy^{16~18}). Moreover, the results of this study were used to develop a psychosocial support model, which can be used by medical professionals who provide support to pregnant women and their families at the time of health examination for pregnant women.

2. Research period

The study was conducted from May 2008 to August 2008.

3. Interviewees

Pregnant women who were recipients of health examination for pregnant women including ultrasonography in medical institutions for perinatal medical care in prefecture-A in the Tohoku region of Japan.

4. Ethical considerations

Responsible persons at participating medical institutions and the interviewees were provided with an explanation of the study in an oral presentation

or in writing. They were informed that participation in this study was voluntary, that interview data were analyzed statistically, and that their confidentiality would be protected. In addition, they were informed that data would be used only for this study and would be destroyed promptly after completion of study. This study was conducted after obtaining informed consent from them and approval from the Ethics Committee of Hirosaki University Graduate School of Medicine (serial number: 2008-038).

Study methods

1. Preliminary study

First, the cultural and social backgrounds of the interviewees were investigated by attending the mothers' classes and health guidance courses held at the medical institutions that made these classes and courses available to the interviewees. As a preliminary study, semi-structured interviews were conducted in 3 women with different baseline characteristics for about 30 minutes each. Based on the advice and opinions of researchers (nurses and doctors), and medical staff (maternity nurses and public health nurses) at the participating medical institutions, the interview items, interview methods, and the method of recording were revised.

2. Methods of data collection

Interviewees: Pregnant women who were referred by the medical staff (maternity nurses and public health nurses) at the participating medical institutions that consented to participate in the study and agreed to help recruit the interviewees.

3. Interview items

1) Baseline characteristics: Age, history of pregnancy/delivery, occupational status, presence/absence of family living together, presence/absence of children, classification of the present pregnancy (intended/unintended), method of conception, course of pregnancy, and subjective evaluation on the present health status (good/bad)

2) Interview guide: The following items were used in all interviews: "How did you feel when you saw the sonograms of your baby?" "How do you feel about being a mother," and "Do you have any concerns?"

3) Field notes: With regard to the interview data, the course of pregnancy was mapped using graph paper so that the relationship between the objective course of pregnancy and the pregnant women's interpretation/maternal consciousness could be analyzed in two dimensions.

4) Interview method: The interview was conducted in the medical institutions. The interview

Table 1 Examination method and results

item	result
Investigation area	Aomori, Japan
Consultation period	From May to August 2008
Participant	Number of subjects (17): Multipara (5) /Primipara (12) 5 to 19-week pregnant women who came for medical exam.
Interview data	Total interview time 640 (Average: 35 ± 10) min. Total episodes: 200 episodes (Average: 12 ± 4) episodes
Data analysis	Interview data analyzed by continuation comparison to extract a category. We used the QDA analysis software MAXqda 2007 for data editing.

Table 2 List of research subjects

No	Occupation	Family makeup*	The start of pregnancy	Current course of pregnancy
1	Nursery staff	H/C	Intended	Threatened miscarriage in the previous pregnancy
2	Homemaker	H/P	Intended	Stillbirth last time
3	Homemaker	H/P/C	Intended	
4	Clerk	H	Intended	Second external fertilization.
5	Nurse	H	Intended	Treatment for 2 years, and artificial insemination
6	Homemaker	C	Intended	10 years of treatment for infertility
7	Homemaker	H	Intended	Planned pregnancy
8	Clerk	H	Unplanned	Stillbirth at Week 39 last time
9	Farmer	H/P	Unplanned	
10	Medical clerk	H	Unplanned	5 years of treatment for infertility
11	Homemaker	H	Intended	
12	Clerk	H	Intended	
13	Technician	H	Intended	
14	Clerk	H	Unplanned	Under treatment for miscarriage
15	Clerk	H	Unplanned	Under treatment for hyperemesis gravidarum
16	Clerk	H/C	Unplanned	Miscarriage last time. Under treatment for threatened miscarriage
17	Clerk	H	Unplanned	Pregnancy after long treatment for infertility

* Family makeup : husband as H, /child as C/ parents as P

Table 3 Outline of narratives of fetal images and maternal experience triggered by ultrasonography

No	Outline of narratives*
1	It is my child. I feel reassured by hyperemesis gravidarum because it is a sign of continued pregnancy.
2	I feel reassured and can confirm my pregnancy on seeing the image.
3	The image, even though it is merely a black hole, <u>makes me realize the presence of the fetus.</u>
4	I felt as if it was someone else's problem at first. The image made me realize it as my own issue.
5	It is not about my body, but just information.
6	The image enables me and my husband to be <u>involved in the growth of the child.</u>
7	We can see our <u>collaborative work.</u>
8	<u>The image makes me feel as if the child was born.</u> I have prepared myself as I saw the image.
9	I have just been surprised by the first pregnancy in 13 years. I find it difficult to behave as a pregnant woman.
10	The image reassures me. <u>It is a journey to nurture hopes and ties.</u>
11	It is merely a black dot. I am still worried even when being told it is a child.
12	I received the photo but cannot explain it to my family.
13	It was just a dot without anything else. I do not feel the baby is there.
14	I wanted to see the baby soon, but the image looked just like a sack.
15	I still find it unrealistic even after explained. I am worried about the hyperemesis gravidarum.
16	I will keep worrying until my belly becomes big enough.
17	My husband is also puzzled with my pregnancy. It is just information separate from my own feelings.

*Outline of narratives of fetal images and maternal experience which were expressed **positively** and **negatively**.

was audio recorded after obtaining consent from the interviewee. After the interview, the data extracted from the audio record were verified by the interviewee. The data were then stored in a PC specifically prepared for this study, and the PC was locked in a cabinet.

4. Method of analysis

The interview data were encoded in accordance with Rubin's method, and inductively analyzed using the continuous comparison method described in the grounded theory approach, and labeled based on the properties and dimensions of individual data¹⁹⁾.

Next, the data were grouped into subcategories based on the terms used by the interviewees. Lastly, major concepts involved in the formation and development of maternal consciousness were presented as core concepts in the model. The quality data analysis software MAXQDA 2007 was used to edit the data in order to secure objectivity and effectiveness as material for supplementary examinations. The method of analysis was developed taking the advice and opinions of nursing science researchers into account (Table 1).

Results

1. Description of the interviewees and outline of the experiences narrated by the interviewees

The interviewees were recruited at 6 medical institutions: a city hospital in city-B in prefecture-A, a university hospital in city-B, a general hospital in city-B, a clinic that provides assisted reproduction services and in-hospital care in city-C, and a clinic without an in-hospital care facility. The study included a total of 17 women in gestation periods of 5 to 16 weeks, with a mean age of 26 ± 8 years. The total length of all interviews was 640 minutes (30 to 40 minutes per interviewee), and a total of 200 responses were narrated by the interviewees (average: 12 ± 4 responses per interviewee). In

these responses, both positive and negative expressions were used to narrate experiences related to the diagnosis of pregnancy, existence and development of the fetus, receiving information from medical professionals, support received from other people, and changes over time in their interpretation/impression of being pregnant²⁰⁾ (Table 2,3).

The interview data were decontextualized, and 35 labels and 10 subcategories that represent the characteristics and dimensions of the data were extracted. Moreover, the following 3 Conceptual categories integrated the maternal consciousness in early pregnancy (hereinafter, expressions used by interviewees are indicated with quotation marks “ ”) (Table 4, Fig1).

2. Realization of the presence of the fetus

Ultrasonography makes pregnant women realize that the visualized fetus is really theirs, as expressed as **“so, it's really my baby,”** and this realization comes before they become fully aware of being pregnant. In the beginning, expressions used by the interviewees included **“a black hole,” “that,”** and **“belly.”** After realizing and accepting the pregnancy, interviewees used such expressions as **“baby,” “child,”** and **“dear (baby's name).”** These expressions were used by the interviewees regardless of differences in their age, history of pregnancy/delivery, intended/unintended pregnancy, and method of conception (e.g. in vitro fertilization).

Worsening of health status (e.g. morning sickness) was accepted as a normal part of pregnancy. The interviewees used the following expressions to express their thoughts: **“this proves the good health of the baby,” “as a message from the baby,”** or **“I will get over it for the sake of my unborn baby.”** However, two of the interviewees who had severe morning sickness, intrauterine bleeding, or threatened miscarriage expressed their decreased interest in the fetus. In these wom-

Table 4 The conceptual categories about the maternal consciousness in early pregnancy

Conceptual categories	Subcategories (34Properties)	Labels (247)
Feeling of fetal existence	A fetus soaked in meaning (4)	27
	A role of UE (3)	73
	Outlook regarding one's own body (5)	31
	Understanding the meaning of becoming a mother (3)	25
Acceptance of pregnancy	An ambiguity (3)	3
	The interpretation of looked back on (3)	6
	Negative interaction (1)	3
Sharing information regarding the fetus with supporters	A joint ownership of the consultation experience (6)	39
	Sensitivity to the relation that aimed at support (3)	19
	Distance from medical care (3)	21

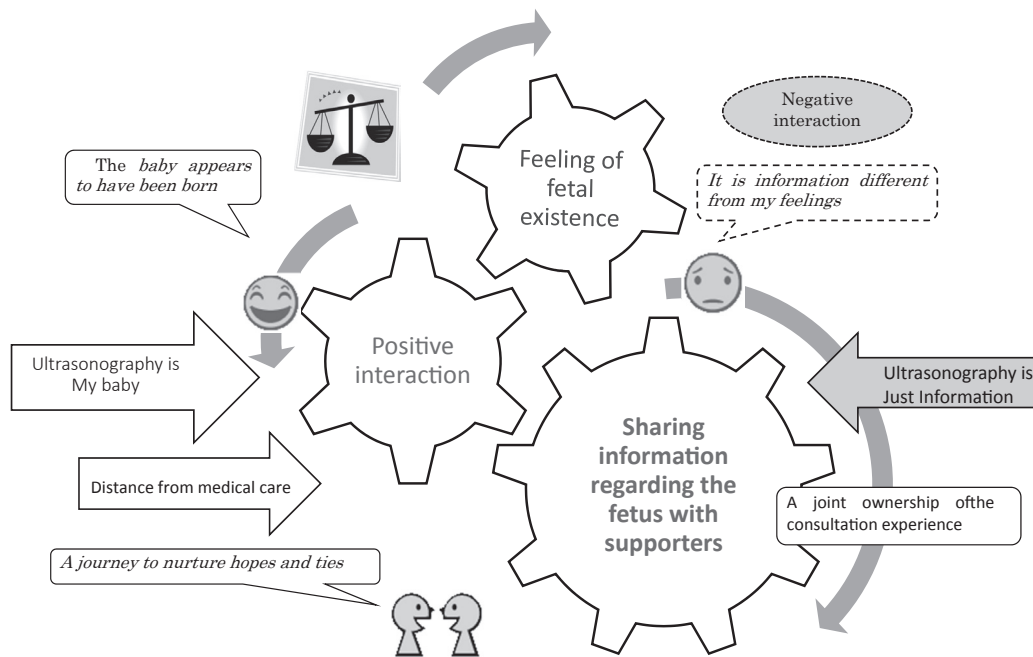


Figure 1 Process and concept of development material consciousness

en, the sonograms showing their fetus are merely the data showing the positive result for pregnancy. Thus, these women, having observed the visualized fetuses, did not refer to a baby in their speech, but rather used such expressions as *“pregnancy means nothing more than a positive test result,”* and *“this is only data.”*

3. Accepting the pregnancy

Ultrasound helped the pregnant women realize and accept their pregnancy. In 10 of the 17 interviewees, the pregnancy was considered a positive experience. These interviewees included 3 women who became pregnant unintentionally, a situation which was expressed as *“This is (actually) an unplanned pregnancy. I had thought it financially impossible,”* and *“I had not expected a baby.”* However, a positive change was observed in these 3 women, which could be inferred from their expressions such as *“The baby wants to be born,”* and *“That was merely a black dot. Since I was told that I was pregnant, I have to prepare myself for it.”*

After the pregnant women were treated as a *“mother”* from the time when they were first seen by a doctor, and received a range of information from medical professionals, they were able to grasp the meaning and purpose of *“nurturing the fetal baby shown in the image,”* and *“ultrasound made these women become involved in the growth of (the baby).”* Ultrasound helped these women develop an increased sense of an internal locus of control in relation to the growth of their child, which was expressed as *“I want to*

help my baby because it wants to be born,” and *“I don't know what will happen in the future, but I will take care of my baby (fetus).”*

4. Sharing the pregnancy experience with others

Because a fetal baby symbolizes *“family ties”* and *“collaboration with the husband,”* the interviewees actively transmitted information (e.g., showing and explaining the printed sonograms they obtained from the medical institution) about their fetus in order to share this information with their family/supporters. However, in some cases where the relationship between the interviewees and their family/supporters was somewhat negative, the interviewees expressed the present pregnancy as something *“unwanted,”* and sharing the information about the growth of the fetus was interpreted as something that caused the interviewees to feel *“constraint”* or *stress* 超音波断層診断法 to the possibility that sharing the information *“may cause their family/supporters concern.”*

In early pregnancy, the presence of the fetus cannot be felt, however, sonograms made the interviewees feel as if *“the baby is already born.”* The interviewees developed maternal consciousness through the *“journey to nurture hopes and ties”* with people close to them, while observing fetal growth and gaining knowledge about pregnancy.

With regard to the role of medical professionals, 16 of the interviewees evaluated the doctors/maternity nurses as information providers, stating *“I would like the doctor to consider and give me the diagnosis and information, and I have no particular information I would like to know,”*

or ***“I think I should not ask any question regarding the diagnosis in order to show my trust, but I want to know many things because I have a chance to receive such information.”***

Some interviewees stated ***“the doctor is a trustworthy advisor, and the maternity nurses are strict but give me advice and information that helps me visualize the fetus,”*** or ***“I appreciate and trust the medical care I am receiving.”*** However, none of the interviewees talked about the development of the relationship between the medical professionals and the pregnant women through the use of ultrasonography. This indicated that medical professionals were not recognized as important psychosocial supporters.

Discussion

Based on the study results, the psychosocial effects of ultrasonography in early pregnancy are discussed below.

1. Characteristics of maternal consciousness in early pregnancy

The formation of maternal consciousness in early pregnancy was triggered by the realization of the presence of the fetus, which was followed by the establishment of a relationship with the fetus, and development of maternal identity²¹⁾²²⁾. For those who accepted the pregnancy, undergoing ultrasonography is a ***“journey to nurture hopes and ties,”*** and seeing the fetus on sonograms was perceived ***“as if the baby is already born.”*** However, the clarity of maternal consciousness in the pregnant women varied in response to changes in their health and in accordance with their interpretation of the course of pregnancy. In this study, corrective narratives were often observed. According to Benner, corrective narratives are considered to be the practical rationalization required to accept the maternal role.

However, when any abnormality was found in the course of pregnancy or when worsening of the relationship with people close to pregnant women occurs, the pregnant women became hesitant to show the sonograms of their fetus as their children to others, and to explain the results of medical tests during pregnancy. Not being able to share the information about their fetus may hinder the development of maternal consciousness²³⁾²⁴⁾. At the time of ultrasonography, an interpretation model should be obtained to learn what the pregnant woman thinks about herself and the fetus and what she worries about^{25~27)}.

2. Suggested psychosocial support for women in early pregnancy

The WHO shows that an important role of medical professionals is to provide patient education in order to promote a self-reliant healthy life²⁸⁾²⁹⁾. However, the result of this study indicated that there is little interaction between the pregnant women and the medical professionals. It seemed that the medical professional one-sidedly provides image information about the sonograms even though, for pregnant mothers, seeing the sonograms of their fetus is the same as meeting with their own child. Psychosocially, ultrasonography provides important educational material. Psychosocial support can be provided at the time of ultrasonography by developing a mutual understanding with pregnant women and their families and sharing the visual image of the fetus.

3. Future research

This was a cross-sectional research study conducted in 17 women in early pregnancy. The data are limited, and the results cannot be generalized, theoretical saturation cannot be attained³⁰⁾. Further study needs to be conducted in a different regions or different population, and the data need to be analyzed using mixed methods of objective evaluation in order to compare these results with previous studies and support the results³¹⁾³³⁾.

Conclusion

The present study was conducted in women in early pregnancy residing in the Tohoku region of Japan. These pregnant women were interviewed, and information on ultrasonography experiences was collected to clarify the characteristics of maternal consciousness and how the pregnant women form and develop maternal consciousness. At the same time, a method of providing psychosocial support for pregnant women was proposed based on the study result.

1. As characteristics of maternal consciousness, the following common core concepts were extracted: ***“realizing the presence of the fetus,”*** ***“accepting the pregnancy,”*** and ***“sharing the information with others.”***

2. Seeing the sonograms of the fetus was ***“equivalent to experiencing childbirth.”*** The study results indicated that pregnant women form and develop maternal consciousness while sharing the presence and growth of the fetus with their families and people close to them, in a ***“journey to nurture hopes and ties”*** that precedes the reality.

3. Medical professionals should be aware of the educational influence of the information, including the sonograms of the fetus provided at the time of ultrasonography, on women in early pregnancy and

should provide both health care and psychosocial support to pregnant women.

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References

- 1) Deutsch, H. 1944 *The psychology of women: A psychoanalytic interpretation*. Vol. I. NY: Grune and Stratton. Translated by Kaketa-K and Hara-M, Nippon Kyobun-sha, 1964
- 2) Ohinata-M: Problems in maternal research. *The Annual report educational psychology in Japan*, 40, 146-156, 2001
- 3) Hanasawa-S: Bosei-Sinnrigaku (*Maternal psychology*). Igaku-shoin, 1992 (in Japanese).
- 4) Japan Family Planning Association. *3rd Report on Life and Attitudes of Men and Women. Knowledge of, attitudes towards, and behavior related to sex*. Tokyo. Japan Family Planning Association, 2007 (in Japanese).
- 5) Egawa T. A study on psychological well-being of adult women engaging in childrearing. *Public health, Japanese Association for Mental Health*, 2006
- 6) Shindo S, Wada S. *Psychosocial aspects of motherhood and nursing care*. Tokyo, Igaku-Shoin, 1990
- 7) Mitsubayashi M. The effects of health locus of control and social support on physical and mental health. *The Japanese Journal of Personality*. 9(1), 11-21, 2000
- 8) Japanese version of the Edinburgh Postnatal Depression Scale. *Psychiatric Diagnosis*, 525-533, 1996
- 9) Ui-M, Hori-H, Yamamoto-M: *Gender role and psychometric scale*. Saiensu-sha, 138-172, 2001
- 10) Matsuo I, Kagiya A, Nishino K, Chiba T, and Suzuki M. Analysis of perinatal care in Aomori Prefecture and suggestion of "Puremama Itsu-no-noto (handbook for mothers-to-be)" *Journal of the Aomori Society of Obstetricians and Gynecologists*, 23(1), 37-47, 2008 (in Japanese).
- 11) Matsuda T, Marugame T, and Japan Cancer Surveillance Research Group. Cancer incidence and incidence rates in Japan in 2006: based on data from 15 population-based cancer registries in the monitoring of cancer incidence in Japan (MCIJ) project. *Japanese Journal of Clinical Oncology*, 42(2), 139-147, 2012
- 12) Kurachi K. Evaluation of fetal development by real-time ultrasonic diagnosis, *Research Paper on Persons with Mental and Physical Disorders, Ministry of Health and Welfare*, 19-22, 1980
- 13) Nishimura M, Takemori K, Yamamoto H. Life events and lifestyle of women in their 20s and 30s: influence of marriage, pregnancy, giving birth, and child-care. *Japanese Journal of Public Health*, 55(8), 503-510, 2008
- 14) *Tamahiyo Books, Hajimete no Tamago Club*, Benesse Corporation, Tokyo, 64-72, 2008 (in Japanese).
- 15) Sato I. *Introduction of Practical Quality Data Analysis*, Shin-yo-sha, Tokyo, 2008 (in Japanese).
- 16) Reva R. *Maternal Identity and the Maternal Experience Beyond Normalizing: The Role of Narrative in teenage Mothers Transition to Mothering*, 1986
- 17) Benner. *Interpretive Phenomenology*, translation supervised by Sagara Rosenmeier, Ishiyaku Pub. Inc, Tokyo, 2006
- 18) Glaser BG and Strauss AL. *The Discovery of Grounded Theory*, translated by Takashi Goto, Setsuo Mizuno, and Harue Ode, Shinyo-sha, Tokyo, 1996
- 19) Rothman. *Women and Prenatal Diagnosis*, translation supervised by Seiko Horiuchi, Axel Springer Japan Publishing, Tokyo, 297-314, 1986
- 20) Mercer RT, Hackley KC, Bostrom AG. Relationship of psychosocial and perinatal variables to perception of childbirth. *Nursing Research*, 32(4), 202-207, 1983
- 21) Manabe A and Okada S. Psychological impact of fetal three-dimensional imaging on fetomaternal relationship, *Journal of Medical Ultrasonics*, 25(1), 3-9, 1998
- 22) Kanda A, et al. Usefulness of subjective health as a measure of health status. *Journal of Health and Welfare Statistics*, 47(5), 33-37, 2000
- 23) Nakagama H. Relationship between multi-generations and mental crisis, (edited by) Nihon Kazoku Shinri Gakkai (Japanese Association of Family Psychology). *Kazoku Shinri Gaku annual report 18*, Gender diseases, unnoticed family pathology, Kazoku Shinri Gaku annual report 18, 135-145, 2013
- 24) L. SmithBattle: *Beyond Normalizing: The Role of Narrative in understanding teenage Mothers' Transition to Mothering*, 1992

- 25) Waldenstrem. U: The childbirth experience: A study of 295 new mothers. *BIRTH* 23 (3) , 144-153, 1996
- 26) Sugano S. Recognition and announcement regarding fetus. *Reinterpretation of the Faltering Gender, Changing Medical Care and Sexuality, Health and Gender*, Chapter 4, Possibility of unknown, edited by Naomi Nemura, Akashi-shoten, Tokyo, 91-122, 2007
- 27) Green L and Johnson K. *Handbook of Health, Health Care and the Health Professions*, 745, 1983
- 28) WHO. Translated by Ritsuko Toda, 59 Rules of Childbirth, Guide to Practical Care for Childbirth. Rural Culture Association Japan, Tokyo, 1997
- 29) Yatsu H. *Expressions in the Art of Nursing-Based on the Care Practiced by Expert Obstetric Nurses*. Kazama-shobo, Tokyo, 2002
- 30) Katai M. Gender medicine and women's clinic. *Human Mind*, Nippon-Hyoron-Sha, 141, 55-60, 2008
- 31) Nora J. Pender. *Pender Health Promotion in Nursing Practice*, Tokyo, Japanese Nursing Association Publishing, 1997
- 32) Glanz K, Rimer BK, Viswanath, K. *Health Behavior and Health Education: Theory, Research, and Practice*. John Wiley & Sons New York, 23-38, 2008
- 33) Lefcourt HM, Davidson-Katz K. Locus of Control and Health. In C. R. Snyder & D. R. Forsyth (Ed) . *Handbook of social and clinical Psychology*. New York, Pergamon Press, 1991