Original Article

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Midwives' awareness of maternal health checkup guidance and background factors in Makassar City, Republic of Indonesia —Interviews and Steps for Coding and Theorization (SCAT)

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Abstract

The principal aim of the present study was to elucidate the awareness of midwives who provide post-birth guidance during maternal health checkups in Makassar City, Republic of Indonesia, and related factors. Semi-structured interviews were administered to midwives at a public health center and perinatal hospital regarding the details of guidance conducted for factors related to maternal mortality (e.g., hypertension, anemia, and hemorrhage) , and qualitative analysis was performed using Steps for Coding and Theorization (SCAT) . With regard to hemorrhage, which is the most common cause of maternal mortality, midwives in both public health centers and perinatal hospitals have high expectations for new governmental policies, such as utility of the online system or coverage by the health insurance system in hemorrhage management. There is a double burden of nutritional problems pertaining to both low nutrition and overnutrition of pregnant women, which is a characteristic of developing countries, and it is a major task for midwives to properly manage weight due to the differences in functioning of health centers and perinatal hospitals; few midwives at the public health center were aware of hypertension and hypotension in pregnant women. These findings suggest that the content of teaching in health centers is inadequate compared with that of perinatal hospitals.

KEY WORDS

Republic of Indonesia, awareness of midwives, maternal health checkup, MMR, SCAT

Introduction

According to the World Health Organization (WHO) , the estimated global maternal mortality ratio (MMR) in 2015 was 216 persons for every 100,000 births, which shows that 830 women die every day due to complications of pregnancy and childbirth[1)] . It was indicated that these deaths could be prevented if proper care was provided for the most common causes (i.e., hemorrhage, hypertension, sepsis) [2)] . The United Nations Millennium Development Goals (MDGs) are the eight goals set by the 189 UN member states in September 2000 and agreed to be achieved by the year 2015. MDGs5 are goals for maternal health. Target of MDGs5 is to promote maternal health and achieving to reduce by three-quarters, between1990 and 2015, the MMR[3)] . The countries with high MMR are concentrated in developing areas such as Africa and Southeast Asia, and as part of the Millennium Development Goals (MDGs) set from 2000 to 2015, the United Nations (UN) had proposed reducing MMR to one fourth of its current ratio[4)] , but the decrease in MMR during the 25-year period from 1990 to 2015 was only 45%, and the target MDGs5 was not achieved[5)] . The UN subsequently published the "2030 Agenda" and declared that it would establish 17 sustainable development goals (SDGs) and 169 targets, declared to continue and strengthen what could not be achieved with the MDGs, and concretely showed that MMR should be reduced to less than 70 persons per 100,000 births in the target 3-1 of

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the good health and well- being[6] .

The Republic of Indonesia, which has the fourth largest population in the world, is an emerging Asian country that has achieved remarkable economic growth and development in recent years. However, compared with other member states of the Association of South-East Asian Nations (ASEAN) , Indonesia faced the highest rate of MMR in 2015 (126 per 100,000 births in Indonesia; Thailand, 20; Vietnam, 54; Philippines, 114) [7] . In comparison with the Indonesian MMR of 430 persons in 1990, the figure was 126 persons in 2015, which did not reach the target of 108 persons; as a result, from 2016, the SDG was set to target 70 persons. It is said that approximately 70% to 80% of maternal deaths in developing countries occur during pregnancy and shortly after childbirth; in Indonesia also, the three leading causes of death are hemorrhage, eclampsia, and infection as mentioned above, but the remaining 20% to 30% are indicated to be due to indirect causes such as anemia, hepatitis, and infectious diseases such as tuberculosis and malaria, and related factors including giving birth at a young age, pregnant women in rural areas and poor households who are unlikely to receive medical services, and low level of education[8] . Maternal health checkup (hereinafter maternal checkup) are important for identifying high-risk pregnant women; WHO and the Indonesian government advised pregnant women to undergo maternal checkup once during the first half of pregnancy, once during the mid-term, and twice during the second half. According to an announcement by the Bureau of Statistics of Indonesia in 2013[9] , checkups were performed four times or more in 88% of the cases, indicating an increase of 6%; in comparison with the rate of 93% in urban areas, the lower rural health checkup rate was also a problem.

As part of health policy in Indonesia, with the establishment of the Decentralization Act in 2001, the transition of implementation of public health services from the centralized system to provincial governments, and the global spread of primary health care (PHC) facilities, healthcare workers are aiming to solve the major health problems in local regions, and there has been a strengthening in the movement to promote health activities by the participation of residents on their own initiative[10] . Nurses have the highest expectations of all medical professionals, and in many developing countries, human resources from the nursing field are needed in regional areas. However, in order to reduce MMR through the MDGs5 from 1989 in Indonesia without public health nurses, instead of traditional midwifery or traditional birth attendants (TBAs) , skilled professionals such as physicians and nurses were trained as skilled birth attendants (SBAs) and placing such professionals in villages without health and medical institutions was proposed[11] . Ten years later, in addition to the 54,000 nurses trained in almost all villages, a large number of midwifery specialists with midwifery skills were trained, and many were placed in public health centers and villages.

An Indonesian feature is that health centers are responsible for both medical treatment and prevention activities; as a result, midwives engage in activities including outpatient clinical practice, infant health examinations, prenatal checkups, immunizations, midwifery tasks, and family planning guidance. According to the guidelines of the Ministry of Health[12] , other tasks include providing guidance to TBAs and health volunteers called "kaders," home visits for family health management, school health management, health care for nursery school children, and disease treatment. Maternal checkup became institutionalized and were initiated nationwide in 2011; maternal checkup based on the Indonesian version of the Maternal and Child Health Book (Buku Kesehatan Ibu Dan Anak [hereinafter KIA]) , which was created with reference to the Japanese maternal and child health notebook introduced in the 1990s, has also progressed to a certain degree[13] . In the survey of the authors, midwives are mainly responsible for maternal checkup and are responsible for the general flow of the checkups, such as general physical assessment and measurements, abdominal examination, and fetal heart sound listening based on interviews with the pregnant women; it was revealed that only when there was an abnormality, they performed treatments such as simple administration of medications and referrals to physicians, and insufficient time was provided for individual guidance to pregnant women[14] . Guidance at the time of maternal health checkup is crucial in order to prevent hemorrhage, hypertension, and infection, which are the major causes of maternal mortality and abnormalities at time of delivery; it can be said that based on midwives' awareness, the kind of guidance to be given about the maternal checkup results

and whether it is necessary to make a report or introduce a physician is decided. Therefore, the principal aims of the present study were to conduct interviews with midwives who are involved in maternal checkup and especially to survey the awareness of midwives who are involved in the after guidance about amelioration of factors related to MMR such as hypertension, anemia, and hemorrhage as well as clarify the related factors from the details of the interviews.

Research Methods

1. Subjects

We conducted semi-structured interviews with five midwives (A–E) engaged in maternal checkup at a public health center X, located in the center of Makassar City and at perinatal hospital Y, also located in the city center (three midwives from health center X [A, B, and C] and two midwives [D and E] from perinatal hospital Y). The selection criterion was "a midwife who is mainly responsible for maternal checkup and has five or more years of experience administering maternal checkup." We also targeted midwives at two different facilities (i.e., public health centers [including one midwife sent from a public health center to a health branch center] and perinatal hospital) because it is predicted that guidance may also be affected by the flow and method of health examinations and policies of each facility.

2. Investigation Period

July 27 – July 29, 2015

3. Research Methods

The interviews were semi-structured interviews; an interview guide was prepared, and interviews were conducted for 30 to 40 minutes (with an Indonesian interpreter) for each person. The subjects were asked to freely talk about the following items, before proceeding to the next item. Regarding the unclear points in the contents of the stories, we asked for explanations through an interpreter each time, while allowing the subjects to speak as freely as possible.

(Interview guide included the following topics)

1) Weight management
2) Blood pressure management
3) Anemia management
4) Hemorrhage management
5) Others (any other points concerning maternal checkup guidance)

4. Explanation of Terms Related to Medical Institutions[15)]

1) Public health centers

These play a central role in initial medical care and conduct prevention activities, health education, treatment, delivery, and so on, for residents. Health centers vary in size depending on the facilities and may or may not have beds; staff including physicians, midwives, nurses, nutritionists, pharmacists, and hygiene personnel are stationed in the centers, but midwives play a central role with regard to maternal and child health examination.

2) Health branch centers

These refer to health centers operated by the community in postal insurance facility or its activities. Activities are conducted once a month, with health services related to maternal and child health, family planning, nutritional development, vaccinations, and diarrhea control as five issues with a high priority. Midwives dispatched from public health centers mainly conduct maternal checkups, and "kaders," who are health volunteer, mainly perform health branch activities, conduct public relations activities, and visit pregnant women and mothers.

3) Hospitals

Hospitals were classified as general hospitals or specialty hospitals; all hospitals were national public hospitals. The majority of specialty hospitals were perinatal specialty hospitals, and the rest included specialty centers for cardiovascular medicine or cancer, obstetric hospitals, and psychiatric hospitals. Hospital Y is a national public perinatal hospital. Hospitals are classified into class A–D according to the number of beds and medical equipment installed. With the introduction of national health insurance from 2014, hospitals that belonged to class D or above, which are responsible for primary medical care, C and D classes that are responsible for secondary medical care, and hospitals of D class or higher among A class hospitals, which are responsible for tertiary medicine cannot receive consultations without introductions. Although the Y hospital belongs to the C class, it was also responsible for maternity checkup when the survey was administered.

5. Analytical Methods

Steps for Coding and Theorization (SCAT) was used for qualitative analysis[16)]. Otani utilized 4-step coding by considering the codes in the order of (1) notable phrases in the text, (2) paraphrased words in the text, (3) concepts

outside the text that explain them (left in the table), and (4) topics/constructs (taking into account the total passage and the context), and utilized a method to describe the theory from the story line using the topic/composition concept of (4). In addition, the theory mentioned here is not universal, but rather refers to a generally accepted principle that "can be inferred from the data." This concrete method, which can be performed individually in diverse situations, is not overly general or universal; it can help in describing relatively small quantities of data and is associated with other concepts and backgrounds describing data. Because it can summarize what can be said from the data at the time of the survey, we determined that it was suitable for clarifying the midwives' awareness and background factors of maternal checkup guidance, which is the principal aim of the present study. We carefully described the reasons for the analysis and conducted the study so that it would not be merely subjective content.

6. Ethical Considerations

We obtained permission for this survey from the municipal health office, which is the branch office of the Ministry of Health of Indonesia in Makassar City. Moreover, through interpreters in Indonesia, we explained the purpose and method of the research orally and in writing to the heads of the institutions participating in this study, and received consent from each of them. Subjects were informed that participating in interviews was optional and the interviews could be stopped at any time. In addition, we orally explained that individuals in the data could not be identified personally, that the data would be used only for research purposes, and response to the interview questions would be regarded as consent to participate in the present study. The present study was approved by the Institutional Review Board of Niigata University of Health and Welfare (Approval No. 17377-121213, approval date: December 13, 2012).

Research Results

The attributes of the subjects are shown in Table 1, and the dates and number of sentences/characters of the interviews are shown in Table 2. We performed a four-step coding using the verbatim records of five midwives' interviews, and described the storylines by item and facility, and analyzed the data. Table 3 shows "hemorrhage management" as an example of the analysis using SCAT for each item. Table 4, 5, 6, 7, 8 shows the Storyline and theoretical by each item/facility.

Table 1. Attributes of Subjects

Subjects	Age	Nursing experience	Affiliated facility
Local midwife A	27	6	Health Center X
Local midwife B	30	8	
Local midwife C	49	23	
Local midwife D	46	16	Perinatal hospital Y
Local midwife E	58	32	

Excerpt from SCAT analysis (hemorrhage management) in Table 3 explains the analytical process. From the text of the upper row 1 "Midwife A," first, the notable phrases (1) with proper nouns excluded were sectioned by semantic content and the data were entered. Next, the paraphrase of words in the text of (2) was used to shorten the text, for example, "in the case of hemorrhage occurring at delivery, the patient is transferred to a nearby hospital by ambulance" was changed to "emergency transport in case of hemorrhage occurring at delivery." For concepts other than texts as explained on the left of (3), texts were codified based on their meaning (e.g., "patients from provinces are often transferred for emergency treatment due to hemorrhage" as "current emergent situation," "patients brought in from other provinces have an unknown status regarding history of health checkups and health conditions" as cause, "increase in MMR" as "result," and "first aid and hospital referral" as "response"), and in the topics/concept of (4) (in consideration of the total text and context), we reorganized the composition concepts, reconsidering the context, and summarized the contents as "because many patients are transferred from other areas, the medical examination status and health condition of the patients are unknown, leading to maternal death, and consequently, the increase in MMR." Analyses from (1) to (4) was similarly performed for Midwife B in Health Center in row 2, perinatal hospital Midwife D in row 3, and perinatal hospital Midwife E in row 4; it was found that regarding the storylines of (4) of the health center in each row, "many patients are transferred from other areas, and MMR increases as a result of unknown health status and medical condition in previous medical checkups. However, with the introduction of online system, hospital delivery has been accelerated, and remarkable progress has been made in realizing improvements in the delivery of pregnant women." As

Table 2. Excerpt from SCAT analysis (hemorrhage management)

	Midwife A
Text	In the case of hemorrhage during delivery, the patient is transported to a nearby hospital (Labuang Baji; 1000 beds) by ambulance that is fully equipped along with a midwife so that emergency situations can be immediately handled. The nearest hospital to PKM is often selected as the referred hospital, but pregnant women may choose the hospital by themselves in some cases. The closest hospitals from PKM K are RS L and RS F. There are many patients transported from other areas. There are no pregnant woman referred to hospitals from here, but the reason why the maternal mortality rate is high is probably because pregnant women from other provinces came to Makassar for delivery and died here. Because the patients come from outside, in many cases they do not know the details concerning their health condition and what sort of guidance that they have received. Oxytocin or tampons are used for treatment of genital hemorrhage. A referral to a hospital is subsequently made if the condition continues.
* (1)	In the case of hemorrhage during delivery, the patient is transported to a nearby hospital by ambulance that is fully equipped along with a midwife so that emergency situations can be immediately handled; the nearest hospital is often selected as the referred hospital, but pregnant women may choose the hospital by themselves in some cases; there are many persons transported from other areas, but the mortality rate of pregnant women is high for some reason. Because the patients come from various places, in many cases the midwives do not know the details concerning their health condition and what sort of guidance they have received; oxytocin or tampons are used for treatment of genital hemorrhage, and if hemorrhage continues, a referral to a hospital is made.
** (2)	In the case of hemorrhage during delivery, a midwife accompanies the patient during emergency transportation by ambulance to immediately handle any situation that occurs. Transferring patients from other provinces leads to an increased MMR. Because the details of medical status and history of medical guidance are often unknown, treatment for genital hemorrhage and hospital referral are conducted.
*** (3)	There are many cases of emergency transport of patients with hemorrhage who are from other provinces (current situation); the health status and history of previous medical examinations of patients from other provinces are unknown (cause); this is implicated in the increase in MMR (result), and as a result emergency treatment and hospital referrals are performed (treatment).
**** (4)	Many patients are transferred from other areas. MMR is increasing as a result of patients from other regions whose health status and history of medical checkups are often unknown, which leads to maternal deaths.
	Midwife B
Text	There are many referrals to hospitals. First aid such as intravenous drip is performed. I have been responsible for cases of heavy hemorrhage and have accompanied patients transported to the hospital. It is now possible to quickly check the availability of beds by using an online system to cope with the transfer of pregnant women.
* (1)	They give referrals to the hospital, perform first-aid measures such as intravenous infusion, accompany patients with severe hemorrhage to the hospital, utilize an online system, confirm empty beds, and perform prompt responses to transfer pregnant women.
** (2)	They refer pregnant women to a hospital following the first-aid such as intravenous drip in cases of hemorrhage, are in charge of transfer of women with severe hemorrhage to the hospital, and rapidly respond by confirming if there is space at the hospital using the current online system.
*** (3)	An online system can be used for emergency transfers to hospitals (reason), and it has become possible to quickly confirm the availability of vacant beds, and other facilities (result). The transfer of pregnant women has remarkably improved as compared the past (reason), and as a result, the midwives feel that they can respond quickly (result).
**** (4)	The introduction of online system has made hospital transfer faster, and has drastically improved; the midwives felt that the transfer of pregnant women has improved.
	Midwife D
Text	There are various causes of hemorrhage and so we deal with each case on a case-by-case basis. They ask the pregnant woman if she had any problem deciding what medicine to take when hemorrhage occurs and if it is due to sexual intercourse with her husband; thus, they carefully listen to the woman to determine the cause and appropriately handle the situation. They suggest that pregnant women who are at high risk of hemorrhage should rest. As the cost of ultrasonic tests is covered by insurance, it must be performed 2 to 3 times. The insurance covers treatment of all abnormalities including problems with the size of the child.
* (1)	There are a variety of causes of hemorrhage. Midwives individually cope with each situation, decide what kind of medicine to take when hemorrhage occurs, confirm if hemorrhage is due to sexual intercourse by listening to the cause, and instruct patients to take rest. Ultrasonography is covered by medical insurance.
** (2)	Hemorrhage is handled on a case by case basis. Midwives engage in the selection of hemostatic agent, confirmation of cause such as sexual intercourse, recommendation for rest, application of insurance for ultrasonic examination.
*** (3)	They confirm the cause of bleeding, recommend rest, and cope with cases on a case-by-case basis (treatment). Due to insurance coverage (cause), ultrasonic examination was performed (result).
**** (4)	They confirm the cause of hemorrhage, recommend rest, and respond to patients on a case-by-case basis. Due to insurance coverage, the use of ultrasonic inspection has expanded and has contributed to the discovery of abnormalities.
	Midwife E
Text	There are cases in which the delivery had no problems, but hemorrhage during surgery did not stop and hysterectomy was performed as a result.
* (1)	Case in which hemorrhage did not stop at the time of surgery and hysterectomy was performed
** (2)	Introduction of the case of hysterectomy due to hemorrhage during surgery
*** (3)	There was a case of hysterectomy due to hemorrhage that did not stop during surgery
**** (4)	There was a case of hysterectomy due to hemorrhage that did not stop during surgery

*(1) notable phrases in the text **(2) paraphrased words in the text ***(3) concepts outside the text that explain the text ****(4) topics/concept (in consideration of the total text and context)

Table 3. Storyline and theoretical description by item (hemorrhage management)/facility

Health center	Storyline	Because many patients are transferred from other areas, their health examination status and history of medical examination are unclear, which often leads to maternal death, resulting in an increase in MMR. However, with the introduction of the online system, hospital transfers have been accelerated and have made remarkable progress in transfers of pregnant women.
	Theoretical description	・Transferring patients from other areas is likely to lead to an increase in MMR. ・Acceleration of hospital transfers by introducing online system ・Midwives who realize that the transfer of pregnant women has improved
Perinatal hospital	Storyline	They confirm the cause of hemorrhage on a case-by-case basis and recommend rest. Due to insurance coverage, the use of ultrasonography has expanded and it contributes to the detection of abnormalities. There were cases in which hemorrhage did not stop during surgery and the patient underwent a hysterectomy.
	Theoretical description	・Elucidation of cause of hemorrhage and recommending rest as prevention ・Effects due to expanded use of ultrasonography as a result of insurance coverage

further theoretical descriptions, three items were listed: "patients transferred from other areas are likely to lead to an increase in MMR," "expediting hospital transportation through the introduction of an online system," and "midwives who realize that transportation for pregnant women has improved." Similarly, in perinatal hospitals, the two items of "investigation of cause of hemorrhage and recommendation of rest for prevention" and "effects due to expanded use of ultrasonic inspection as a result of being covered by insurance" were discussed.

Following this similar analysis process in other items, the storylines and theoretical descriptions by facility for each final item are shown from Table4 to 8.

Discussion

1. Concerning Weight Management

Concerning "weight management," with regard to meal guidance, Indonesia also showed a nutritional change accompanying changes in lifestyle due to economic growth as in other developing countries. The health center cited a challenge with providing "guidance on the contradictory task of increasing the quantity of food to be eaten while controlling the quantity so that it is not excessive," whereas midwives in the perinatal hospital cited the challenge in providing "conflicting dietary guidance to pregnant women with low nutrition or over nutrition." Moreover, in middle-income countries such as Indonesia, as the population increases in urban areas, over nutrition also increases; by contrast, in rural areas, many persons with malnutrition or micronutrient deficiencies are observed. As a result, the double burden of nutrition problem is occurring in which low nutrition and over nutrition exist simultaneously in one community[17]. In the present study also, a similar situation occurred at all facilities, and a balanced weight management was a major task of the midwives. In addition, low nutrition was evaluated by mid-upper arm circumference (MUAC); this method is mainly used for pregnant women, although it is used as a simple method to detect malnutrition in children in developing countries[18]. If determined to be malnourished, the mother is provided with infant formula and micronutrients such as vitamins and iodine drugs free of charge by the government; in public health centers, health branch offices, and perinatal hospitals, midwives are generally responsible for the supply of these resources. For over nutrition, the health center included "blood glucose test and weight monitoring based on the awareness that pregnant women with over nutrition have a high risk of diabetes;" similarly, the maternal hospital also included "checking weight and edema for pregnant women with over nutrition and recommending maternal exercise." In addition, midwives in the public health center spoke of "consultations concerning continuous maternal checkups and emphasis on the necessity of comprehensive information gathering and physical assessments," but in the perinatal hospital, "following the teaching of the senior midwife mentor and teaching a universal theory," that is, traditional guidance from seniors continues. Considerable differences in mean age and years of experience of midwives of the public health center (mean age: 35.3 years; mean years of experience: 12.3 years) and perinatal hospital (52.0 years and 24.0 years respectively) were noted; it was natural that differences were noted in age and experience. Furthermore, because perinatal hospitals are also the destination of high risk pregnancy cases transferred from public health centers, it is also natural

Table 4. Storyline and theoretical description by item (Weight management) /facility

Health center	Storyline	Midwives perform tasks such as nutrition assessment in pregnant women with malnutrition and provide free milk formula in accordance with government instructions, provide simple dietary advice concerning balanced nutrition, and are aware that few women (20%) receive milk formula from the government due to malnutrition. They are conscious of the risk of diabetes in pregnant women with overnutrition and perform blood glucose tests and check weight. They instruct them to maintain their weight within the reference values prescribed by the public health center and make specific diet instructions that incorporate the calorie calculation in the maternity classes. They manage weight in the pregnant women with malnutrition in a controlled manner so as to not excessively increase their weight. They recognize that it is necessary to obtain comprehensive information including the necessity of monthly medical examination, living environment, husband's occupation and income, and education and perform physical assessments. They understand that there is a necessity to provide guidance on contradictory tasks in weight management, and to refer the patients in whom the risk of diabetes is not ameliorated to a hospital. They fulfill the role of consultant to provide government nutritional supplements as well as nutritional guidance for pregnant women with malnutrition, strongly believe that pregnant women should undergo medical examinations, and emphasize the necessity for pregnant women to receive visits and reports by kaders and guidance from nutritionists.
	Theoretical description	・Performance of duties (e.g. assessment of nutritional status, supply of food) by midwives in accordance with governmental instructions. ・Awareness that there are few infant formula recipients ・Conducting blood glucose test and weight monitoring based on the recognition that pregnant women with overnutrition are at high risk for diabetes ・Providing balanced nutrition guidance and concrete guidance in maternity classes ・Providing malnutrition instruction to increase the quantity of food while controlling it so as not to overly increase the quantity, and provide guidance on these contradictory tasks ・Emphasizing the need for continued prenatal checkups, comprehensive information collection, and physical assessments ・Understanding the necessity of referral to hospitals or nutritionist
Perinatal hospital	Storyline	Different guidance on malnutrition and overnutrition to pregnant women concerning dietary intake and meal contents is provided by midwives. Identification based on simple determination of mid-upper arm circumference is performed in health examinations. For pregnant women with overnutrition, in addition to checking weight and edema, prenatal exercise is recommended. Adequate rest and milk formula for pregnant women with malnutrition are provided. In addition to implementing the basic prenatal checkup, there are instructions for administering iodine and guidance regarding prenatal exercise. Guidance is provided in accordance with the criteria established by the hospital. The health centers and its branches provide information regarding the latest findings, whereas in hospitals, midwives follow the guidance of the senior midwives, who teach universal theory, emphasize the risks of complications, the importance of guidance focused rest and nutrition for pregnant women, and the necessity of cooperation of husbands.
	Theoretical description	・Provide differential dietary instruction concerning malnutrition and over nutrition ・Perform government-supported work for malnourished pregnant women and recommend rest ・Examination of body weight and edema for pregnant women with over nutrition and recommend prenatal exercise ・Follow the teachings of senior midwives who teach universal theory ・Emphasize the dangers of complications, provide guidance focused on rest and nutrition for pregnant women ・Highlight the necessity of husband's cooperation

Table 5. Storyline and theoretical description by item (Blood pressure management) /facility

Health center	Storyline	Monitor blood pressure, albumin value, and edema in pregnant women as pre-eclamptic factors and refer to the hospital if there are abnormalities. Recognize that hypotension in pregnant women may be caused by low nutrition. Provide food instructions using food table. Midwives believe that there are few pregnant women with hypertension or hypotension; however, if hypertension continues, the risk of complications is high and the patient is referred to a hospital. Cases of hypotension may be connected with malnutrition, and so a dietician is consulted and a national nutrition program is implemented. Midwives have the awareness that hyperemesis gravidarum may cause malnutrition and believe that ingestion of water and early infusion are important for preventing dehydration. They provide governmental nutritional supplements to hypotensive pregnant women. Although the number of cases of hypertension in pregnant women is low, many elderly persons have high blood pressure and diabetes mellitus. Therefore, midwives have the awareness that inspection and investigation are necessary.
	Theoretical description	・Monitor blood pressure, albumin values, and edema in pregnant women for prevention of eclampsia ・Recognize that hypotension in pregnant women is due to malnutrition ・Few midwives in health centers are aware of hypertension and hypotension in pregnant women ・Make a referral to a hospital because hypertension has a high risk of complications ・Recognize that malnutrition may underlie hypotension ・Recognize that hyperemesis gravidarum causes malnutrition ・Provide governmental nutritional supplements for hypotensive pregnant women ・Recognize that there are few pregnant women with hypertension, but hypertension and diabetes are common in elderly persons
Perinatal hospital	Storyline	Because many pregnant women with hypertension receive referrals to hospitals from public health centers, they are provided concrete diet-related information, including cooking methods and importance of low salt intake. Pregnant women like fast food and meat dishes, and as a result, the number of cases of hypertension is increasing. They inform the pregnant women of the dangers of hypertension, pre-eclampsia, and Caesarean section delivery, thereby allowing pregnant women to become aware of the risks. They encourage them to receive prophylactic treatment and early examination. Moreover, the hospitals are prepared to receive emergency admissions. In the case of mild hypertension, it may be sufficient to simply take rest, so patients are asked to read KIA carefully, stop engaging in heavy labor, avoid excessive stress, and get enough rest.
	Theoretical description	・There are many pregnant women with hypertension in perinatal hospitals. ・Factors related to the increase in hypertension are the increased number of working pregnant women and the associated changes in their diet preferences. ・Midwives inform the pregnant woman about the risk of hypertension, the symptoms of eclampsia, and the risks of caesarean section delivery. ・Emergency systems are established in hospitals.

Table 6. Storyline and theoretical description by item (Anemia management) /facility

Health center	Storyline	The pregnant women receive guidance concerning a balanced diet including many vegetables. A 90-day supply of an oral iron preparation is provided to a pregnant woman from the government. The midwives use medicinal plants and local traditional dishes containing much iron in diet and recommend low cost and nutritious foods to poor patients. They have the awareness that there is a relationship between anemia, malnutrition, and poverty, and in particular, the association between checking hemoglobin levels before delivery and preventing hemorrhage during delivery in such women. According to the manual of the public health center, the midwife administers iron supplements as per the hemoglobin reference values, and provides meal instructions; a nutritionist subsequently provides guidance, and midwife also guides about miscarriage and risks to the baby. A factor underlying malnutrition is poverty; they not only provide nutritional supplements, but also guidance by nutrition experts as a countermeasure based on the recognition that lack of rest or roundworms are causes of anemia in pregnant women.
	Theoretical description	・Recommend a diet involving medicinal plants and traditional local dishes with many vegetables ・Recommend low cost and nutritious foods to poor persons ・Understand the relationship between anemia, malnutrition, and poverty ・Midwives discuss miscarriage and risks to baby ・Malnutrition is a factor related poverty, and factors of anemia are roundworms and lack of rest ・Guidance by nutritional specialist is necessary
Perinatal hospital	Storyline	Emphasis on the effects of spinach on blood pressure, especially red (or purple) spinach is recommended, as it ameliorates blood pressure and increases hemoglobin. Midwives talk about the necessity of nutrition and rest in providing nutritional guidance regarding anemia and teach how to properly cook using low cost Indonesian ingredients. Unbalanced nutritional statuses are becoming more common due to change in diet form and increased number of pregnant women who are employed and prioritize convenience and emphasize work efficiency. The hospital faithfully carries out the anemia control program established by the country in accordance with WHO standards, but the custom to avoid blood transfusion as much as possible for religious reasons has a strong influence in hospitals.
	Theoretical description	・Emphasize the effect of spinach on blood pressure ・Discuss the necessity of nutrition and rest in nutritional guidance regarding anemia ・Teach how to cook properly using low cost Indonesian ingredients ・Changes in meal patterns due to increased number of pregnant women who are working ・Unbalanced nutrition due to prioritizing work efficiency and convenience ・Faithful implementation of the national anemia control program ・Role of religion in avoiding blood transfusion

Table 7. Storyline and theoretical description by item (other) /facility

Health center	Storyline	Midwives recognize that hyperemesis gravidarum is the biggest problem facing pregnant women in Makassar City and those women with the condition need to be referred to a hospital as soon as possible. At the public health centers, they perform telephone consultations, make local visits, make a monthly report for the health city hall concerning pregnant women with abnormalities, and conduct home care thrice a month (visit care), and the department in-charge makes monthly reports of pregnant women with abnormalities. Apparent problems are the resentment of midwives towards pregnant women who do not to take care of themselves and do not undergo medical examination, forcing the midwives to perform visits and the difficulty in influencing pregnant women's beliefs. I feel that respect for the activities of kaders has improved more than before. There are problems of migrants from other areas, suggesting a link of hypertension with residence in a seaside area. Maternity classes and public health centers conduct many health checkups, and these maternity classes are also a place for midwifery education. Current issues are the need for health education for pregnant women who come from villages, the importance of the role of kaders in connecting with local residents, information of resident organizations, nonfunctioning sticker programs, and lack of places for midwives to work.
	Theoretical description	Recognition of morning sickness as the most common problem of the pregnant woman in Makassar City Telephone counseling and visiting guidance has expanded, and information is shared at the public health office and health city hall meetings Implementation of visiting health guidance thrice times a month by health center The midwife who is dispatched is angered by the low awareness of the pregnant woman about health Difficulty in increasing awareness among pregnant women Necessity of health education for pregnant women transferred from villages Midwives' resentment towards pregnant women who do not take care of themselves and do not undergo medical examinations Dissatisfaction with fact that midwives themselves must make visits and the difficulty of changing the beliefs of pregnant women
Perinatal hospital	Storyline	The midwives want women to receive postnatal examinations at a hospital or a public health center, make reports with the public health department once a month for medical checkups, and hold briefing sessions once a month at the health city office and public health centers to share information. They do not want to ever experience birthing assistance in remote areas in which ambulances cannot come and there are no other medical professionals other than the midwife. Enhancement of after-school guidance by free distribution of KIA, and stipulation of delivery methods after caesarean section are needed.
	Theoretical description	・Emphasize the importance of postpartum checkup ・Disseminate information through the monthly briefing session at health city hall and public health center ・Challenges of rural emergency medical clinics where ambulances do not come ・Free provision of KIA with the aim of enhancing guidance

that the "risk of complications" is particularly emphasized in these facilities. Not only the responsibilities of pregnant women, but also "the need for husband's cooperation" is emphasized; in KIA, which was revised in 2015, there are many notes that emphasize the need for the cooperation of the husband, such as urging husbands to help with housework and participate in maternity classes. Our results suggest that perinatal hospital midwives carefully read and fully utilize KIA to provide guidance.

2. Concerning Blood Pressure Management

Hypertension, the second most common cause of increased MMR, causes eclamptic attacks, and its prevention is the most important. However, there were major differences in awareness of midwives in the health center and perinatal hospital concerning blood pressure in pregnant women. The local midwives of public health center believed that there are a few pregnant women with hypertension or hypotension; this recognition lacks a sense of crisis that it is necessary to monitor blood pressure, albumin values, and edema as pre-eclampsia and refer the patient to a perinatal hospital if any abnormalities are present. Response to an eclamptic attack is not clear. However, it can be said that responsibility is major for midwives at public health centers, as they are allowed to decide at which time the women must be transferred. Three kinds of delays affecting maternal deaths have been indicated in developing countries: 1) delay before the decision to receive obstetric care, 2) delay from the decision to receive consultation after arrival at the obstetric care facility, and 3) delay in providing appropriate care at obstetrics facilities[19] . Tanno reported that the delay until the decision to consult comes from insufficient knowledge and information on normality/ abnormality. Moreover, there are problems related to access even if it is possible to receive a consultation; it was indicated that access to transportation means as well as distance and time to go to the facility are problematic. In the interviews of the present study, there was discussion concerning cases requiring urgent transportation from other areas in hemorrhage guidance and other items. It is difficult to offer equal information and provide sufficient response to all pregnant women who are brought from other regions. In patients with eclampsia presenting symptoms such as pregnancy-induced hypertension, other symptoms such as edema, proteinuria, and high blood pressure, and loss of consciousness and convulsions may suddenly occur. It is important to spread awareness among pregnant women concerning ophthalmic symptoms such as flickering of the eyes and narrowing of the field of vision, gastric symptoms such as nausea, vomiting, and stomach pain, and cranial nerve symptoms such as headache, dizziness, and tinnitus as precursors to an eclamptic attack. In 2012, Yenita et al. [20] conducted a survey on knowledge concerning pregnancy using a questionnaire survey with 145 pregnant women, and in response to the two items of "headache is a normal sign during pregnancy" and "hemorrhage during pregnancy is normal and it is not necessary to worry," 37.9% and 11.7%, respectively, responded "Yes," showing insufficient knowledge concerning complications. However, perinatal hospitals accept many pregnant women with hypertension from health centers, and have a high awareness of the risk of hypertension leading to maternal death. They urge premature consultation so that the pregnant women understand the risk for themselves and prevent them and take urgent measures such as preparing an eclampsia set and a bleeding set in advance in the hospital. Moreover, as mentioned above, the cause of the increasing trend of hypertension in working pregnant women is indicated to be the change in preference for foods such as meat and foods that can be easily prepared. By utilizing KIA, patients are instructed to take rest while avoiding excessive stress.

3. Concerning Anemia Management

In "anemia management," iron deficiency is the most common nutritional disorders in the world; it is said that 20% of cases of MMR improves if IDA（iron deficiency anemia）resolved[21] . The midwives in the health center are thinking about that they need not only provide nutritional supplements, but also guidance by nutrition experts. But in the present circumstances, the midwife doesn't have a strong collaboration with nutritionists in guidance for maternity women. Regarding extreme anemia, doctors and nutritionists are often involved, but cooperation of dieticians is also necessary for guidance for prevention of anemia. In perinatal hospitals, the midwife pointed out an increase in the number of pregnant women who were working and prioritized changes in diet and work efficiency leads to an imbalance in nutritional status. Furthermore inperinatal hospitals midwife talked about role of religion in avoiding blood transfusion. We are concerning that blood transfusion may not be performed

against extreme anemia. Differences in religion and culture can sometimes cause health hazards. We need the more research about differences in health view due to culture and religion in Indonesia.

4. Concerning Hemorrhage Management

In the public health center, it was said that "transporting patients from other areas is likely to lead to an increase in MMR as a result," but "expediting hospital transportation by on-line system" was planned, and from the data, it was shown that "midwives accepted with expectation the government's new health policy that was improved maternity delivery. "

Whereas, for the perinatal hospital, "investigation of cause of hemorrhage and recommendation of rest for prevention" are most important; "effects due to expanded use of ultrasonic inspection as a result of being covered by insurance" were also mentioned. In addition, the Indonesian national health insurance system (Jaminan Kesehatan Nasional: JKN) which has covered the whole nation from 2014, had started, and plans are under way to shift all the citizens to the new system over the five-year period until 2019[22] . From 2015, in Makassar City, the health city hall, public health centers, and perinatal hospitals are connected by an online system; the IDs of pregnant women are registered on the internet and it is also possible to check their medical record information and availability of vacant beds. Moreover, in favor of perinatal hospitals, it can be said that it is a great advancement that medical institutions prepared for eclampsia and hemorrhage in advance and a system was established so that treatment could be promptly performed. The local midwives of the public health center reported the utility of the online system in hemorrhage management. Local midwives from the perinatal hospital reported the utility of coverage by the health insurance system. Thus, our results suggest that local midwives are aware of and have expectation concerning the government's new health policy concerning hemorrhage, which is the most common factor of MMR.

5. Other

Midwives in the public health center talked about the spread of activities such as telephone counseling and visiting guidance and the fact that information was shared at the public health bureau/health city hall debriefing sessions. However, among the midwives dispatched from the public health center, "anger about low awareness among pregnant women regarding their health" was apparent, and the "difficulty of changing pregnant women's awareness" was reported. Some persons desired to receive postpartum checkup in perinatal hospitals, suggesting that dissemination of information is being planned. "The problem of emergency vehicles not coming to remote areas" and "free provision of KIA with the aim of enhancing guidance" were also mentioned in terms of providing guidance. The details of guidance from interviews in both the public health center and perinatal hospital were mostly consistent with the contents of KIA. Based on the results of the present study, it appeared that the use of KIA, which was revised greatly in 2015, has been promoted as the basis of prenatal checkup guidance as the number of pages has been increased and contents have been substantially edited.

Conclusion

1. The government's new health policy regarding hemorrhage, which is the most common cause of MMR, also considers services of midwives in both public health centers/perinatal hospitals facilities and has been received with great expectations.
2. The double burden of coping with nutritional problems related to both low nutrition and over nutrition in pregnant women is a characteristic of developing countries, and it is a major task for midwives to properly manage weight.
3. Based on the differences in facility functions between health centers and perinatal hospitals, it was found that few midwives at public health centers recognize that high blood pressure and hypotension in pregnant women is a problem, and as a result, guidance is also inadequate in comparison with that of perinatal hospitals.

Because the present study was limited to five midwives in one public health center and one maternity hospital, the number of subjects was limited. The study reflects the current awareness of five midwives concerning maternity checkup guidance. In addition, rapid reform of the health care system by the government is underway, and it can be said that at the time of the interviews, theoretical analysis was being performed.

Acknowledgments

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インドネシア共和国マカッサル市の妊婦健康診査指導に対する助産師の認識とその背景 ―インタビューと SCAT によるステップコーディングデータ分析手法を用いて―

松井由美子，津田　朗子 *，塚本　康子 **

要　　旨

本研究の目的は、インドネシア共和国マカッサル市で妊婦健康診査を実施する助産師の、妊婦指導に対する認識やその背景を明らかにすることである。方法は保健所および母子病院の助産師を対象に、妊産婦死亡の関連因子である高血圧や貧血、出血などの項目ごとに実施している指導内容について半構造的インタビューを実施し、SCAT（Steps for Coding and Theorization）による質的分析を行った。その結果、妊産婦死亡率（MMR：Maternal Mortality Ratio）の原因で最も多い出血に対して政府のあらたな保健政策が保健所・母子病院両施設の助産師にも意識化され、期待を持って受け止められていることや、妊婦の低栄養と過剰栄養の両方に対処する栄養問題の二重負担は途上国の特徴であり体重管理を適切に行うことは助産師の大きな役割となっていること、保健所と母子病院では施設機能の違いから保健所の助産師は妊婦の高血圧や低血圧は少ないと認識しておりそのため指導内容も母子病院に比べて不十分であることが示唆された。

ERRATUM

The following papers have typographical errors. Please correct as follows

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Midwives' awareness of maternal health checkup guidance and background factors in Makassar City, Republic of Indonesia —Interviews and Steps for Coding and Theorization (SCAT) pp13-24

P16, Research Results, bottom left side

・The attributes of the subjects are shown in Table 1, and the dates and number of sentences/characters of the interviews are shown in Table 2.

⇒ The attributes of the subjects are shown in Table 1. Please delete the following statement.

・Table 3 shows "hemorrhage management" as an ……

⇒ Table 2 shows "hemorrhage management" as an ……

P16, Research Results, upper right side

・Table 4, 5, 6, 7, 8 shows the Storyline ……

⇒ Table 3, 4, 5, 6, 7 shows the Storyline ……