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Title: Development and Feasibility Study of
Educational Program for Midwives,
Nurses, and Public Health Nurses Providing
Preconception Care:
A Pilot Randomized Controlled Trial

(和文)：プレコンセプションケアを提供する助産師・
看護師・保健師に対する教育的介入教材の開発と
実行可能性の検討：パイロット無作為化比較研究

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要旨

目的

本パイロット研究の目的は、看護職者を対象としたプレコンセプションケアに関する導入的な教育プログラムによる介入について、今後の確定的な無作為化比較試験の実行可能性と手順を評価することである。

方法

本パイロット研究は、事前、事後、および 1 ヶ月後の追跡調査を用いた並行二群間無作為化比較試験である。本研究は、プレコンセプションケアに関心のある日本の助産師、看護師、保健師を対象とし、2023 年 7 月から 2023 年 10 月にかけて実施された。主要評価項目は、二群間におけるプレコンセプションケアに関する知識テストの合計得点の差であり、副次的評価項目は、プレコンセプションケアのためのヘルスリテラシー尺度（知識尺度）の合計得点と、態度および技能に関する質問の平均点の二群間における差であった。得点の二群間比較はウィルコクソン順位和検定を用いて分析した。また、二群間の 2 時点における閾値以上の割合の差は、McNemar 検定を用いて比較した。両群で観察された交互作用を調整するために、difference in difference の手法を用いて回帰モデルを構築した。実行可能性に関しては、5 段階のリッカート尺度および自由記述による理由を用いて評価した。

結果

全体で 41 名の看護職者が登録され、無作為に介入群（ $n = 21$ ）または対照群（ $n = 20$ ）のいずれかに割り付けされた。最終的に 39 名（95.1%）が分析対象となった。知識テストでは、介入群（中央値：9.00 [IQR：9.00-10.00]）と対照群（中央値：8.00 [IQR：7.00-9.00]）の間で、1 ヶ月後の追跡調査時に有意差が認められた（ $p = .014$ ）。また、介入群では態度（中央値：2.90 [IQR：2.70-3.05], $p = .012$ ）と技能（中央値：1.80 [IQR：1.25-2.15], $p = .003$ ）において、統計的に有意な改善が認められた。さらには、介入群のうち 15 名（78.9%）が、プログラム参加後にプレコンセプションケアに関連した新たな行動を起こしたと回答した。

結論

e ラーニングとオンラインセミナーを受講した介入群は、対照群と比較して知識、態度、技能において有意な改善を示し、本介入プログラムの潜在的な効果が示された。このパイロット研究により、実現可能で十分受け入れられた介入は、将来確定的な無作為化比較試験が行われるべきであることが確認された。

Abstract

Aims

The purpose of this pilot study was to assess the feasibility of acceptability and research procedures for future randomized controlled trials of an introductory educational program intervention on preconception care for nursing professionals.

Methods

The present study was a parallel pilot randomized controlled trial with two groups and pre-, post-, and one month follow-up questionnaires. Participants were Japanese midwives, nurses, and public health nurses with an interest in preconception care from July 2023 to October 2023. The primary outcome was the total score on the preconception care knowledge test. Secondary outcomes were total scores on the Health Literacy Scale for Preconception Care (knowledge) and average scores on the modified Sexual Health in Primary Care Questionnaire - Attitude and Skills questions. Comparisons between the two groups were analyzed using the Wilcoxon rank sum test. Differences in the percentage above the threshold at the two time points in the two groups were compared using the McNemar test. To adjust for the common effects observed in both groups, regression models were constructed using a difference-in-differences framework. Feasibility was assessed using a five-point Likert scale and reasons in free-text.

Results

Enrolled were 41 nursing professionals and were randomized to either the intervention group ($n = 21$) or the control group ($n = 20$). A total of 39 participants (95.1%) were finally analyzed. The knowledge test was significantly different between the intervention group (median: 9.00 [IQR: 9.00-10.00]) and the control group (median: 8.00 [IQR: 7.00-9.00]) at the follow-up test ($p = .014$). The results showed statistically significant improvements in attitudes (median: 2.90 [IQR: 2.70-3.05], $p = .012$) and skills (median: 1.80 [IQR: 1.25-2.15], $p = .003$) in the intervention group. Total of 15 (78.9%) indicated that they had undertaken one or more new preconception care-related actions after the program.

Conclusion

The intervention group who attended the e-learning and online seminar showed significant improvements in knowledge, attitudes and skills compared to the control group, indicating the potential positive effects of this program. This pilot study confirmed that feasible and accepted intervention should be used for future definitive randomized controlled trials.

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Chapter 1 Introduction

Background

In recent years, the preparation of young people for a healthy pregnancy through healthcare before pregnancy—referred to as preconception care—has gained priority in academia and policy, primarily due to the limited effects of food intake, supplementation, and lifestyle interventions after conception on pregnancy outcomes and chronic disease prevention (Shawe et al., 2020). Preconception health is strongly linked to pregnancy outcomes, and life course studies emphasize the importance of the pre-pregnancy period as a determinant of health across generations. Malnutrition and obesity are prevalent among women of reproductive age globally, regardless of income level, and the general diet has been found to be well below nutritional recommendations in both settings, particularly among young people (Stephenson, 2018).

Furthermore, preconception care is not only important for improving the health and quality of life of those planning pregnancy but also for young people who may not choose to become pregnant. Preconception care aims to improve short- and long-term health and well-being outcomes for people of reproductive age and future generations through preconception interventions (Hall, 2023). Preconception health encompasses maintaining overall health throughout an individual's life (CDC, 2022).

Recent studies in Japan have identified low health literacy as a risk factor for health problems among young people. Nakayama (2022) suggests that a factor contributing to low health literacy is the absence of a family doctor system in Japan. Primary care has been defined by the National Academy of Sciences as “accessible, comprehensive, coordinated, and continual care delivered by accountable providers of personal health services.” It also points out that difficulties in understanding the information provided by doctors may be due to insufficient education on effective communication as a family doctor, which is a fundamental aspect of primary care. Empowering individuals with clear and sufficient explanations to make informed

choices about their health care is crucial for improving health literacy and enhancing the quality of life.

Simultaneously, as women in Japan become more educated and enter the workforce, they are marrying and giving birth later in life, leading to an increased risk of pregnancy and perinatal outcomes. Increased stress and irregular lifestyles have also led to an increase in assisted reproductive technologies (ART), lifestyle-related diseases, and pregnancy complications associated with delayed first childbirth in the field of perinatal medicine. In this context, preconception care, which addresses personal health among young people before conception, is becoming even more important.

However, there has been a lack of research conducted in Japan on educational programs for care providers who deliver preconception care. Preconception care is health care for a wide range of issues surrounding young people, and care providers need to be fully competent to address them. As an introduction to capacity building, this study aimed to develop a prototype educational program aimed at enabling care providers to deliver basic counseling. Further promotion of preconception care requires the adequate training of care providers, and this study makes valuable contributions toward the development of this field.

Study aim

- i. To develop and assess the needs and effect of educational programs for midwives, nurses, and public health nurses who have the potential to provide preconception care.
- ii. To assess the feasibility and acceptability of a trial protocol design to inform the design of future definitive randomized controlled trials.

Hypothesis

A systematically developed preconception care educational program for care

providers tend to improve their knowledge, skills, and attitudes about preconception care, compared to no intervention group.

Significance of the study

To the best of our knowledge, this is the first study to develop an educational program for Japanese midwives, nurses, and public health nurses who have the potential to provide preconception care. This educational program aims to enhance their capacity in terms of knowledge, skills, and attitudes necessary for providing health counseling related to basic preconception care. In addition, encouraging networking among participants is expected to enable them to learn from each other in a sustainable manner.

Definition of terms

Preconception

The period of time before the fertilization of an ovum (Shawe et al., 2020).

Pre-pregnancy

This is a term that is sometimes used in place of preconception as it is considered to be easier for the general public to understand. It refers to the period of time before a person becomes pregnant (Shawe et al., 2020).

Preconception health

Preconception health refers to the health of people during their reproductive years, or the years they can have a child. It focuses on taking steps now to protect the health of a baby they might have some time in the future. All people can benefit from the principles of preconception health, whether or not they plan to have a baby one day. Preconception health is about people getting and staying healthy overall, across their lifespan (CDC, 2022).

Preconception care

The provision of biomedical, behavioral, and social health interventions to women and couples before conception occurs, aimed at improving their health status and reducing behaviors and individual and environmental factors that could contribute to poor maternal and child health outcomes (WHO, 2013).

Preconception health care is the medical care a person receives from their doctor or other health professionals that focuses on the parts of health that have been shown to increase the chance of having a healthy baby (CDC, 2022).

Preconception care in Japan is intended to improve pregnancy, childbirth, and child outcomes for reproductive women and a wide range of health care for reproductive-age men and women not considering pregnancy, as defined by the National Centre for Child Health and Development as follows.

Preconception care is care for preserving and promoting all young people's physical, psychological, and social health from pre-adolescence to reproductive age (National Center for Child Health and Development, 2019a).

Reproductive health

Reproductive health refers to the diseases, disorders, and conditions that affect the functioning of the male and female reproductive systems during childbearing age. Good sexual and reproductive health is a state of complete physical, mental and social well-being in all matters relating to the reproductive system. It implies that people are able to have a satisfying and safe sex life, the capability to reproduce and the freedom to decide if, when, and how often to do so (United Nation Population Fund, 2022).

Nutrition

Nutrition is the science of interpreting nutrients and other substances in food in

relation to the maintenance, growth, reproduction, health, and disease of living organisms. In this study, the terms food intake, supplementation, and weight control were used instead of nutrition for clearer explanations. However, when it is difficult to separate them, nutrition was used in their combined meaning.

Nutritional status

Nutritional status is the condition of the body resulting from the nutrient content of the food about the nutritional needs and from the ability of bodies to digest, absorb and use those nutrients.

Chapter 2 Literature Review

Concept and positioning of preconception care and associated terminology

Preconception care

Preconception care was first articulated as a need in 1979 in a U.S. federal position paper. Until then, the focus had been on the need for ongoing health care for the child, however, this position paper also included the concept of preconception care. “Preconception” refers to the health status and risks of a woman prior to her first pregnancy, as well as her health status immediately prior to conception. In the 1990s, the U.S. National Goals were stated that, “the purpose of preconception care and counseling is to ensure that couples are healthy and ready to fulfill their parental responsibilities before conception, thereby reduce the risk of poor pregnancy outcomes,” and the goal was to increase the number of primary care providers offering age-appropriate preconception care and counseling to women of reproductive age (Freda et al., 2006).

In the current decade, the definition of preconception care has expanded to include care for all men and women, not just with respect to pregnancy preparation and pregnancy outcomes. The major guidelines such as Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and Public Health Agency of Canada emphasizes that preconception care is important for all women, not just those planning to conceive. Barker et al. (2018) categorized the preconception period, which refers to women of reproductive age, into four stages: (a) child and adolescent, (b) adult with no intention to become pregnant immediately, (c) adult with the intention to become pregnant, and (d) adult with the intention to become pregnant again. The final stage, care for “adults with the intention to conceive again,” refers to “Interconception care,” which is discussed in the section 1.3; however, is included within the concept of preconception care.

Prepregnancy care

Seshadri (2012) et al. described prepregnancy care as “pregnancy care aims to recognize and modify medical and social risks to lifestyle, women’s health, and pregnancy outcomes, with the ultimate goal of reducing maternal and perinatal mortality and morbidity (p. 1).” The literature referenced here is the CDC’s literature on “preconception care.” The American College of Obstetrics and Gynecologists (ACOG) states, “The purpose of prepregnancy care is to work with women to optimize their health, address modifiable risk factors, and provide education about a healthy pregnancy (p. e79).” The term “pregnancy care” is used synonymously with “preconception care,” a term that generally describes the condition before conception.

Interconception care

WHO (2013) defines interconception care as “any intervention provided to women of reproductive age between pregnancies to improve the health status of women, newborns, and children.” This includes interventions that modify current risk factors to promote healthy outcomes in the next pregnancy. As mentioned above, it is used separately from interventions provided before the first pregnancy, however, is considered within the concept of preconception care.

Concept and positioning of preconception care in Japan

In Japan, Arata (2016) defined preconception care as “care defined as providing women and couples with health care for future pregnancies, improving the health status of women and couples before pregnancy, and promoting the short-term and long-term health of future women, couples, and children.” As in other countries, Japan has revised the definition of preconception care to “preservation and promotion of the physical, psychological and social health of all people from pre-adolescence to reproductive age” on the grounds that preconception care is necessary not only for those who wish to

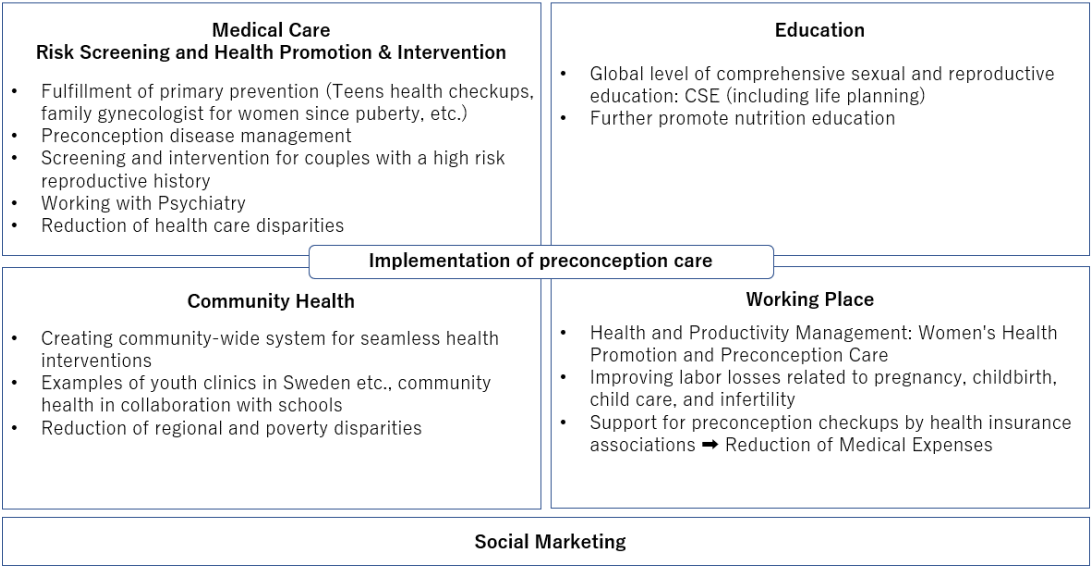
become pregnant but also for those who are not contemplating pregnancy.

The definitions of “preconception (*ninshin-mae*) care” or “preconception (*ninshin-mae*) management (*kanri*)” are not listed in the Glossary of Obstetrics and Gynecology defined by the Japanese Society of Obstetrics and Gynecology (Japanese Society of Obstetrics and Gynecology, 2018a). However, preconception care will be included in the Guideline for Obstetrical Practice in Japan 2023 (Japanese Society of Obstetrics and Gynecology, 2022).

The International Confederation of Midwives (ICM) specifies the following as essential competencies of midwives in the care of preconception women, such as assessing nutritional status, immunization, and health behaviors, and providing counseling on necessary supplements, dietary intake, exercise, and modification of risk behaviors (ICM, 2019). On the other hand, “2020 Evidence-Based Guidelines for Midwifery Care Guidelines Committee of the Japan Academy of Midwifery” does not mention care for women before pregnancy. In 2021, preconception care was specified as a core competency for midwifery practice on the Japan Midwives Association website as follows; Core Competency 3: Women’s Health Care Competency; 3.9: Provide preconception care that promotes the health of women and their partners (Japan Midwives Association, 2021).

A meeting on preconception care led by the National Center for Child Health and Development in 2019 proposed the framework shown in the **Figure 1** (National Center for Child Health and Development, 2019a). It is important to implement preconception care with a focus on a healthy lifestyle that supports optimal mother and child outcomes in the school, the workplace and in other settings. Although specific screening and interventions often occur in primary care settings, a collaborative approach inclusive of family, community, the school system, and all health care professionals, can broaden the reach of preconception care (Public Health Agency of Canada, 2017). In particular, nursing professionals are involved in all settings, for

example, hospital and community midwives and nurses, school nurses, occupational health nurses, and public health nurses.



(from: National Center for Child Health and Development, 2019a)

Figure 1
Implementation of Preconception Care in Japan

Current status of preconception care

Current situation in other countries

Preconception care

In the US, infant health check-ups known as ‘Bright Futures’ are conducted, which vary significantly from those in Japan. These check-ups, also known as ‘well-child’ or ‘well-visit’, cover the period from prenatal to 21 years of age and are typically conducted by a pediatrician or family physician chosen by the parents. Beginning from the onset of menstruation, the child may also have a gynecological family doctor. Adolescence visits between 11 and 21 years of age are screened for the following eight key areas: cervical dysplasia, depression, dyslipidemia, hearing, hepatitis C virus (HCV) infection, human immunodeficiency virus (HIV), tobacco, alcohol, or drug use,

and vision. In addition, selective screening may include tests for anemia, oral health, sexually transmitted infections (such as chlamydia, gonorrhea, and syphilis), and tuberculosis (American Academy of Pediatrics, 2019).

In Nordic countries such as Norway and Sweden, youth clinics of Swedish origin are conducted. Youth clinics are comprehensive facilities where adolescents can receive medical advice and psychological counseling, and are generally located in each municipality. Different types of consultation services are offered at each location, however, they address a wide range of adolescent problems and may also offer medical treatment, such as tests for sexually transmitted diseases, pregnancy tests, and contraceptives. The primary age range for availing the services of these clinics is approximately 12-20 years, although it may extend up to 24 years or even 30 years. Care providers at these clinics vary from place to place, however, they typically include doctors, nurses, certified counselors, and midwives. It is common for preconception care to be discussed with clients when they seek information on contraception (Ishii, 2022).

In Finland, since 1970, sexuality education in schools has included measures to prevent unexpected pregnancies and sexually transmitted diseases. School nurses in secondary schools, high schools, university doctors, and public health nurses in 'Neuvola' play an important role in preventing unexpected pregnancies among young people. 'Neuvola' is a Finnish word combining 'neuvo' (advice, information) and 'la' (a word meaning place), which translates as 'place of advice'. Mothers' Neuvola and Children's Neuvola are consultation places for children and families, and are facilities that support the health of the child and family from early pregnancy before birth to pre-school age. School nurses provide students with health and medical advice, including information on contraception and sexually transmitted diseases, and in some municipalities, they also provide contraceptive pills. Young people who do not have access to the services of school nurses are provided counseling and medical services

related to menstruation, contraception, sexually transmitted diseases, abortion, and other issues by the ‘Youth Neuvola’ and ‘Family Planning Neuvola’ (Gender Equality Bureau Cabinet Office, 2018).

In the UK, the National Health Service (NHS) provides guidance on contraceptive methods, unexpected pregnancy testing, and treatment of sexually transmitted diseases in general family physician (GP) practices, youth clinics, and contraceptive clinics. These services are, in principle, provided free of charge to all UK residents. NHS doctors and nurses are obliged to maintain confidentiality, even if the client is underage. However, some young people may avoid seeking advice for fear of information being shared with their teachers or parents. The NHS clearly communicates to patients that the content of consultations and treatments will not be disclosed to family members or teachers, except in cases of legitimate physical safety concerns (Gender Equality Bureau Cabinet Office, 2018).

Current situation of preconception care in Japan

In Japan, the Japan Family Planning Association (JFPA) established adolescent outpatient clinics in 1984, which were modeled and generalized throughout the country. These clinics aimed to address the unique healthcare needs of adolescents, who are prone to confusion about physical changes with the onset of secondary sexual characteristics, mental health problems, sports-related issues, and problem behaviors such as smoking, alcohol consumption, and drug use. Adolescent outpatient clinics are typically established in psychosomatic medicine departments (Takeya, 2014).

With the establishment of the Preconception Care Centre at the National Centre for Child Health and Development in 2006, the importance of comprehensive healthcare centered on reproductive health for all young people of reproductive age, not just adolescents, was recognized. As a result, the number of preconception care outpatient clinics attached to obstetrics and gynecology departments has been increasing. Although

the content of preconception care may vary from facility to facility, it generally includes assessment of chronic diseases, screening for gynecology-specific cancers, assessment and vaccination for infectious diseases, and lifestyle counseling on topics including food intake, exercise, smoking cessation, and alcohol consumption.

In 2022, the Ministry of Health, Labor, and Welfare launched the ‘Sexual and Health Consultation Center Project’ with the aim of setting up consultation centers in local municipalities where individuals can seek the advice of doctors, public health nurses, and midwives regarding menstruation, pregnancy, sexuality, and other such topics (MoHLW, 2022).

Challenges in preconception care

Challenges in preconception care in Japan

Nutritional challenges

The prevalence of low BMI is 20.8% and obesity is 9.3% among Japanese women in their 20s in 2019 (MoHLW, 2019). Although there has been no remarkable increase or decrease in the percentage of low BMI women in their 20s over the past 10 years, the percentage of those women has exceeded the target of 20% set by Health Japan 21 (the second term) and has not yet achieved the target. The percentage of women in their 20s and 30s who consume 350 grams or more of vegetables, the target of Health Japan 21 (the second term), is low at 14.8%. In addition, the unbalanced diet caused by the desire to lose weight and other diet-related factors has resulted in a lack of necessary micronutrients (MoHLW, 2019). Furthermore, only 8.3% of women have adequate folic acid intake prior to pregnancy (Ishikawa, 2020), indicating challenges related to food intake and supplementation. The high rates of low birthweight infants in Japan are attributed to women’s low BMI (Liu et al., 2019). However, the number of obese women is also increasing, making polarization an issue. Furthermore, the percentage of women with adequate folic acid intake before pregnancy is extremely

low. Therefore, interventions related to adequate body weight, and appropriate food intake including supplementation during preconception are crucial.

Improving literacy regarding sexual reproductive health and rights

Sexuality education

Emerging evidence suggests that school-based sexuality education programs for children and young people can have far-reaching societal benefits, such as promoting gender equality, human rights, and well-being and safety. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), sexuality education should adopt a comprehensive approach, including cognitive, emotional, physical, and social aspects, as well as topics such as sexual and reproductive health (including sexually transmitted diseases and youth pregnancy), relationships, sexual orientation, and gender roles, which should be integrated into a curriculum-based learning process (UNESCO, 2018). UNESCO further identifies eight key concepts that comprehensive sex education should cover in age-appropriate content: relationships, values, human rights, culture, and sexuality, gender understanding, violence and safety, skills for health and well-being, the human body and development, sexuality and sexual behavior, and sexual and reproductive health.

There is international consensus that sexuality education has a positive impact on the sexual health of young people. Evidence gathered through randomized controlled trials has demonstrated that sexuality education programs can lead to positive behaviors such as delayed initiation of sexual intercourse, increased contraception and condom use, and reduced number of sexual partners (UNESCO, 2018). In addition to influencing behaviors, research suggests that school-based sexuality education programs improve health-related knowledge and attitudes of students, such as understanding the importance of contraception.

The WHO and other international organizations have established goals and

standards for sexuality education, requiring Member States to meet them. However, as education is the competence of each Member State, there are considerable differences in terms of content, delivery, and organization of sexuality education. In the European Union (EU), sexuality education has become mandatory in the school curriculum in recent decades, particularly for secondary school children. As of 2019, 19 EU Member States require schools to provide some form of mandatory sexuality education, while in eight other Member States, it remains optional. The age at which children start receiving sexuality education also varies considerably, ranging from 5 to 14 years (European Commission, 2021).

Meanwhile, the provision of sexuality education in Japanese schools falls far short of international standards. The Curriculum Guideline, which outlines curriculum standards, prohibits the teaching of the process leading to human fertilization in the fifth grade of primary school. Additionally, the process leading to pregnancy is not covered in the third grade of junior high school, which poses an impediment to promoting comprehensive sex education in schools (Asai, 2018). Despite the challenges of providing sexuality education in schools, midwives and other health care professionals are often asked by schools or local authorities to provide sexuality education as part of ‘life skills education’. However, adequate sexuality education is not uniformly available to all young people in Japan, as it is not integrated into the school curriculum and there are significant regional and school-based disparities.

Contraceptive use

Contraceptive methods such as the contraceptive pill and intrauterine devices (IUDs) are proactive choices made by women and have low failure rates. Although male condoms are more effective in preventing sexually transmitted infections, they are often not used correctly, resulting in relatively high failure rates for contraception. Therefore, the double method of combining the contraceptive pill or IUDs with male condoms is

recommended. However, the utilization of the contraceptive pill and IUDs in Japan is significantly lower compared to other developed countries, at only 2.9% and 0.4%, respectively, while male condom use is the highest at 34.9%, indicating a heavy reliance on a single choice of male condoms (**Table 1**) (UN, 2019).

Table 1 *Estimated Prevalence of Contraceptive Use Among Women of Reproductive Age (15-49 years) in 2019*

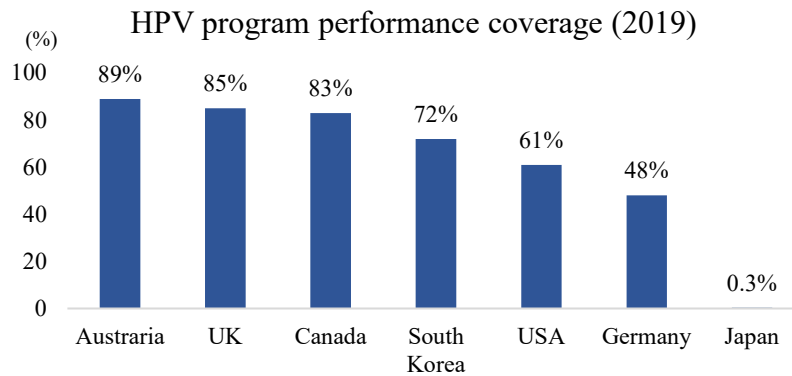
	Worldwide	Japan	USA	UK	Germany	Finland
Any method	48.5%	46.5%	61.4%	71.7%	58.1%	78.0%
Male condom	10.0%	34.9%	9.3%	10.4%	10.0%	27.6%
Withdrawal	2.5%	4.5%	4.3%	3.9%	0.2%	4.1%
IUD	8.4%	0.4%	8.3%	7.6%	6.8%	9.0%
Pill	8.0%	2.9%	13.7%	26.1%	31.7%	32.1%

(from: United Nations, 2019)

HPV vaccination

The immunization rate for human papillomavirus (HPV) in Japan was only 0.3% in 2019 (**Figure 2**) (Bruni et al., 2021). In Japan, the HPV vaccine program was started in 2010 and reached a vaccination rate of nearly 70%. However, due to repeated media reports of diverse symptoms, the government withheld proactive recommendations, resulting in a precipitous drop in the vaccination rate to less than 1% (Nakagawa et al., 2020). Although sufficient data are not available, the rate of abnormal cytology among women born in 2000, when the vaccine was withheld, was found to be higher than that of the vaccine generation born between 1994 and 1999. Moreover, a higher rate of HPV-16/18 infection and cervical cancer is predicted in the vaccine-suspension generation (Yagi et al., 2021). WHO has published a global strategy to eradicate cervical cancer. It states that by 2030, 90% of girls up to the age of 15 should

be vaccinated against HPV, yet Japan is lagging far behind (Friends of WHO Japan, 2020)



(from: Bruni et al., 2021)

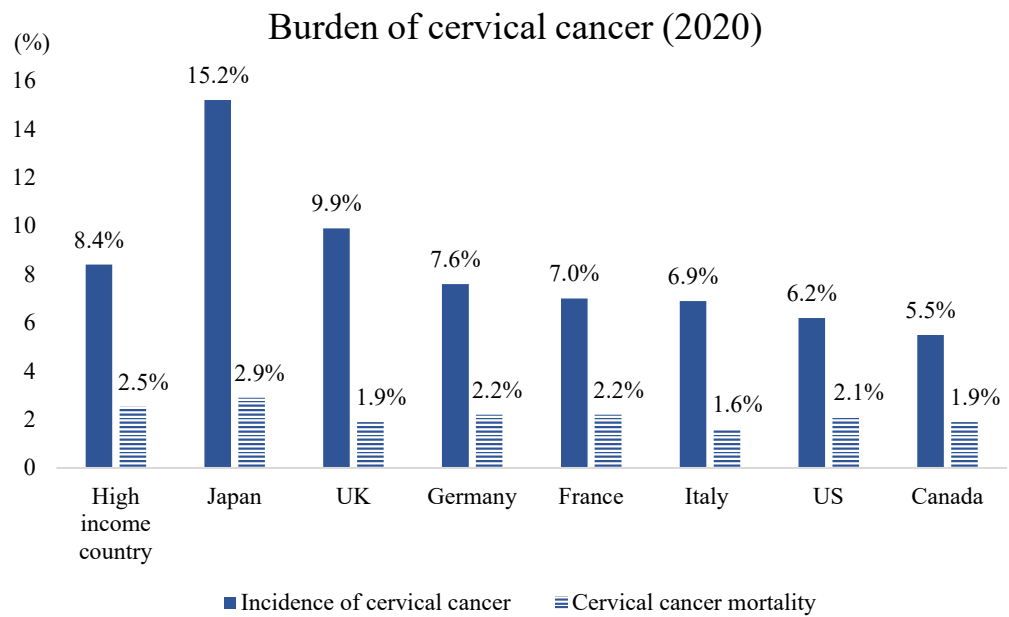
Figure 2

HPV Program Performance Coverage

Cervical cancer screening rate

Cervical cancer is caused by human papillomavirus (HPV) infection, which progresses from dysplasia to intraepithelial carcinoma and eventually invasive cancer. Data from the National Cancer Center (2019) indicates that the incidence of cervical cancer increases rapidly in the late 20s (5.3%), peaks in the 30s (16.2% in early 30s and 26.7% in late 30s) and remains high in the 40s (27.8%). In addition, compared to other G7 countries, Japan has the highest rates of both cervical cancer incidence and mortality from cervical cancer (**Figure 3**). To prevent cervical cancer, it is important to vaccinate against HPV before the onset of sexual activity in late teenage years and to conduct regular screening for cervical cancer starting from the late teenage years so that it can be detected in the dysplasia or intraepithelial cancerous states. However, the cervical cancer screening rate among Japanese women is low, according to the National Comprehensive Survey of Living Conditions in 2013, 2016, and 2019. Although the

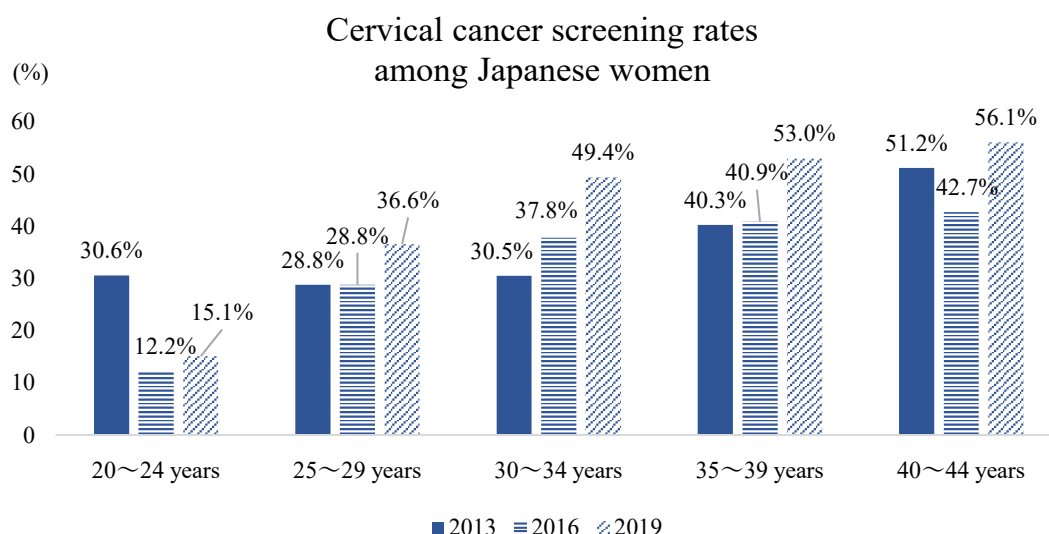
overall cervical cancer screening rate increased between 2013 and 2019, it remains very low at 15.1% among women in their early 20s and 36.6% among women in their late 20s (MoHLW, 2019) (**Figure 4**).



(from: ICO/IARC Information Centre on HPV and Cancer, 2023)

Figure 3

Burden of Cervical Cancer in G7 Countries (2020)



(from: MoHLW, 2013; 2016; 2019)

Figure 4

Cervical Cancer Screening Rates Among Japanese Women

Education related to sexuality and reproduction in Japan has not yet reached international standards. Moreover, the lack of awareness of one's reproductive health is a concern. Hence, more interventions are needed to provide young people with appropriate knowledge and skills to protect their health and proactively engage in healthy behaviors.

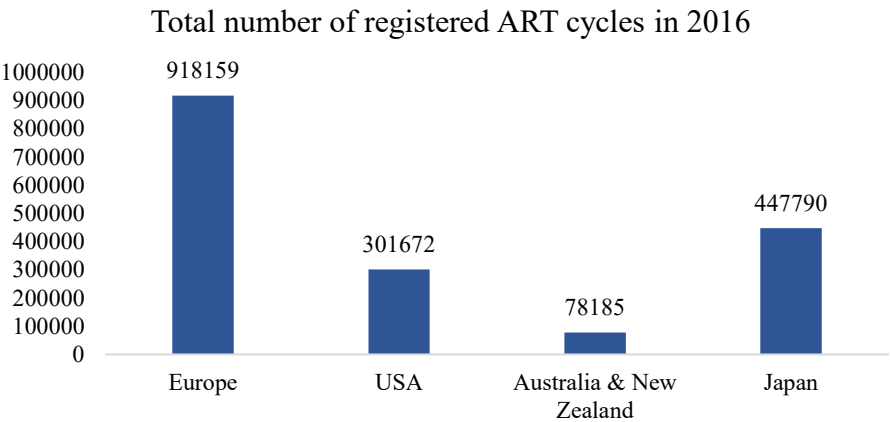
Social issues

The average age of first childbirth has remained stable in Japan since 2015. However, the average age increased to 30.9 years in 2021, the highest recorded age in history. Many factors have contributed to the increase in the average age of first childbirth (MoHLW, 2021).

One critical factor is that women are delaying marriage and childbearing as they gain higher education and pursue professional careers. In addition, advancements in modern medical technology and the availability of fertility treatments, as well as the

ability to give birth safely even at a later age are factors that have accelerated the trend toward late childbearing.

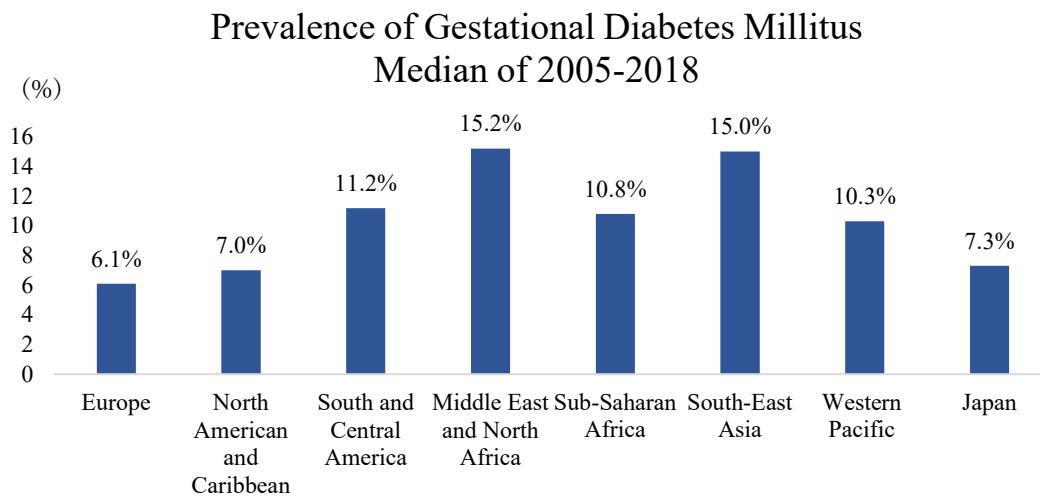
However, as the childbearing age increases, the risks associated with infertility, pregnancy, and childbirth also increase. The total number of registered assisted reproductive technology (ART) cycles in Japan was 447,790 cycles in 2016, which was higher than that in other countries in the region (**Figure 5**) (De Geyter et al., 2020; Japan Society of Obstetrics and Gynecology, 2020). In addition, the incidence of gestational diabetes mellitus (GDM) increased to 7.3% in 2018 (Japan Society of Obstetrics and Gynecology, 2018b). Although the percentage of GDM is not as large as in other regions such as Middle East and North Africa and South-East Asia, it is gradually increasing (**Figure 6**) (McIntyre et al., 2019).



(from: De Geyter et al., 2020; Japan Society of Obstetrics and Gynecology, 2020)

Figure 5

Total Number of Registered ART Cycles in 2016



(from: McIntyre et al., 2019; Japan Society of Obstetrics and Gynecology, 2018b)

Figure 6

Prevalence of Gestational Diabetes Miletus, Median of 2005-2018

In response to the challenges associated with advanced-age births, the following policies have been implemented in Japan, including (1) expansion of subsidies to help reduce the costs associated with childbirth and childcare, (2) provision of subsidies/insurance for infertility treatment, and starting from April 2022, infertility treatment for women up to 43 years of age at the time of first treatment has been covered by health insurance, (3) improved work-life balance by creating an environment in which women can work and raise children more easily. This includes expanding childcare leave options for both men and women and implementing shorter working hour systems.

Despite the implementation of these policies, fertility rates in Japan continue to decline. The challenges of balancing a professional career and family life have led many women to postpone childbearing, thereby increasing the risk of infertility and pregnancy complications. Moreover, the challenges of Japan's gender gap significantly affect women's social status, as well as their personal choices and attitudes toward pregnancy

and health (Dalton, 2022). These challenges are not individual problems and require a comprehensive societal approach to address them.

Preconception care providers

Preconception care providers

In the United States, Obstetricians and Gynecologists, Family Medicine Specialists, Pediatricians, Nurse Midwives, and Nurses (Nurse Practitioners, Women's Health, Obstetric and Neonatal Nurses, Pediatric Nurse Practitioners) are listed as health professionals who provide preconception care, and are specified in the guidelines of their professional associations (Freda et al., 2006). In Netherland, community midwives, general practitioners, obstetricians and other medical specialists are enumerated as preconception care providers (M'hamdi et al., 2017).

Under the Japanese healthcare system, there is no system of primary health care physicians or family physicians, thereby nursing professionals such as hospital nurses and midwives, community midwives and public health nurses, school nurses, and occupational health nurses involved in the various settings where preconception care is provided, as shown in **Figure 1**, are expected to be the main providers of that care. Simultaneously, it is essential to create a system to promote preconception care in cooperation with doctors, nutritionists, teachers, and other professionals, without limiting it to nurses alone.

Education of preconception care

Education for Nurses

In recent nursing education in Japan, the concept of women's health throughout their entire life course is taught under the subject of 'maternal nursing.' The life cycle of women is categorized into distinct life stages, including childhood, adolescence, adulthood (sexual maturity), menopause, and older adulthood, each with its own unique health concerns. It is necessary to provide comprehensive support for women's physical,

mental, and social health not only during pregnancy, childbirth, and postpartum periods but also throughout their lifetime.

Women's health issues extend beyond pregnancy, childbirth, and gynecological disorders, and the life course approach aims to address this by linking illness prevention and risk management from fetal and childhood stages to adulthood (sexual maturity), menopause, and older adulthood. This approach emphasizes promoting lifelong health and passing it on to the next generation, including priority areas such as preventing metabolic syndrome and screening for uterine and breast cancers (Arimori, 2020).

Education for Midwives

Interestingly, sexual counseling is specifically addressed in midwifery education in Japan. Sexual counseling for adolescents includes topics that provide guidance on acceptance of secondary sexual characteristics, engaging in heterosexual relationships, the timing for initiating sexual intercourse, contraceptive methods during puberty, and counseling on the HPV vaccine and prevention of sexually transmitted diseases. Sexual counseling for early adulthood covers information on planned pregnancy and childbirth, promotion of fertility education, and sexual counseling after childbirth. Regarding sexuality education, emphasis is placed on promoting reproductive health/rights, communicating the sanctity of life, highlighting the importance of lifelong self-care, embracing a gender education perspective, and collaborating with multiple professions (Yoshizawa, 2021).

In addition, the Japan Society Midwifery Education (2020) includes four learning items as part of 'preconception care' in the core curriculum for midwifery education, which include the concept of preconception care, physical and psychological changes in women before pregnancy, the reality of preconception care, and supporting women in making decisions about their safe sexual behavior.

Education for Public Health Nursing

Public health nurses do not typically receive specialized education on the healthcare needs of healthy women of reproductive age without specific health risks. Their training focuses mostly on a population-based approach, as they are involved in public health initiatives that have a broader scope.

Need for competence to provide youth-friendly health services

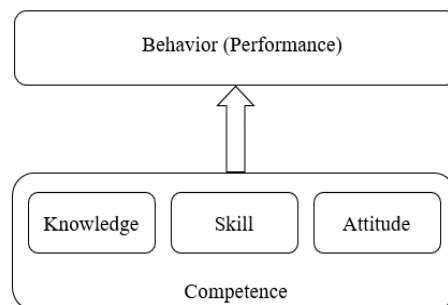
Young people require a youth-friendly primary care model that addresses both epidemiological and developmental considerations. Several studies have been conducted on examining the barriers faced by young people when accessing healthcare services. The WHO has developed a set of requirements for youth-friendly health services, which have been translated into Japanese by the Nippon Foundation. Accordingly, these services are required to be accessible, acceptable, equitable, appropriate, and effective, as part of the ‘quality of care framework’, which aims to support young people in improving their self-management skills (WHO, 2012).

Youth-friendly services, also known as youth-centered care, align with the concept of people-centered care (PCC) as ‘an approach to care that consciously incorporates the perspectives of individuals, carers, families, and communities.’ The PCC approach is defined as ‘partnering with health care professionals to address health issues for themselves or the community in which they live’ (World Health Organization [WHO], 2018; St. Luke’s International University Research Centre PCC Practice Development Research Department, 2022). This approach is critical in healthcare consultations as it helps young people develop their self-management skills and lead healthier lives in the long run, and may even reduce healthcare costs (WHO, 2007).

Education program

Bloom's Taxonomy

In recent years, there has been a shift in professional training from traditional content-based learning to competency-based learning. This shift indicates moving away from traditional learning methods that focus on learning acquired content (knowledge) to competency-based learning, which emphasizes understanding and competence in skills using a range of materials. This concept of competency is organized into three domains: knowledge, skills, and attitudes (KSA), which align with Bloom's taxonomy that categorizes educational goals into the cognitive, psychomotor, and affective domains. These three domains are applied to the three domains of knowledge, skills, and attitudes, respectively, using the KSA framework (Anderson et al., 2000; Usami, 2019) (**Figure 7**).



(from: Usami, 2019)

Figure 7

Relationship Between Knowledge, Skills, Attitudes and Behavior


Bloom's Taxonomy of Educational Objectives provides different levels of learning objectives, divided by complexity (Bloom, 1956). Only after a student has mastered one level of learning objectives through learning can they progress to the next level (**Figure 8**).

The cognitive domain, the prototype of taxonomy, is the first and most common hierarchy of learning objectives and refers to knowledge (Bloom, 1956).

Recall: Recall of information or knowledge is the basis of the pyramid and the prerequisite for all future levels. **Interpretation:** Information is not merely known as knowledge but is understood to be meaningful and reasoned. **Problem-solving:** Higher level of intellectual behavior where knowledge can be decomposed, relationships explored and applied, and multiple data analyzed and integrated to solve new problems.

The affective domain, an extension of Bloom's original work, refers to attitudes and habits (Krathwohl et al., 1964). **Reception:** Fundamental perception. Level of sensitivity to a particular phenomenon, situation, or problem. **Response:** Emphasizes active participation and reaction to stimuli—spontaneously working and performing the necessary actions in response to a particular phenomenon. **Internalization:** The level at which various behaviors are carried out with beliefs and desirable attitudes with consistency and stability.

The last area is the psychomotor domain, which refers to Skills. These psychomotor skills range from simple tasks like washing a car to more complex tasks, such as operating complex technical equipment (Dave, 1970). Speed, accuracy, and distance indicate mastery of these specific skills. **Imitation:** Pupils learn by watching and copying—level of observation or acting out and watching while recalling knowledge. **Control:** Actions are performed by memorizing or following instructions (Can be done alone with accuracy, harmony, and alertness). **Automatic:** Can be performed by combining multiple skills in harmony. High levels of performance are recorded, and the behavior becomes natural.



Cognitive domain	Affective domain	Psychomotor domain
knowledge	Attitude	Skill
Recall	Reception	Imitation
Interpretation	Response	Control
Problem-solving	Internalization	Automatism

(from: Institute for the Advancement of Higher Education, 2015)

Figure 8

Three Domains of Bloom's Taxonomy

The flipped classroom model is a learner-centered educational approach that reverses the traditional roles of classroom time and self-study activities (Moravec et al., 2010). This approach enables learners to use the study materials such as video lectures and quizzes to achieve the low-level learning objectives of Bloom's Taxonomy prior to participating in an online workshop (Anderson et al., 2000). The online workshop then becomes an opportunity for learners to apply, analyze, and evaluate newly learned content (higher-level learning objectives of Bloom's Taxonomy) through collaboration with mentors and peers. As such, the flipped classroom approach promotes active learning and differentiated instruction effectively optimizes the use of online workshops (Shikino, 2022).

E-learning

Most definitions of e-learning emphasize the use of Information and Communication Technologies (ICT) to enhance the efficiency and effectiveness of education and learning. In particular, asynchronous e-learning is a form of e-learning in which educational materials are delivered via the Internet, sometimes referred to as on-demand e-learning, allowing learners to study at a time and place convenient to them.

The three purposes of using e-learning are (1) to deepen understanding of knowledge, (2) to acquire skills, and (3) to use as a problem-solving tool (Tominaga et al., 2014).

Furthermore, Hatakeda (2007) states that the advantages of e-learning are manifold, including the ability to provide homogeneous education to many people in a short period of time, the flexibility of learners to study at their own convenience from any location as long as they are connected to the server, efficient self-paced learning, and effective learning process management through a learning management system that tracks access logs and progress.

However, e-learning also comes with some disadvantages, such as the lack of urgency arising from the lack of compulsion to learn, potential loss of motivation for individual learners if they are dissatisfied with the learning situation or content, and limitations in learning that requires hands-on experience.

Instructional design plays an important role in an e-learning infrastructure, as it provides attractive content and keeps learners motivated. An example of a typical theory of instructional design is Gagne's classification of the nine events of instruction, which includes gaining the attention of students, informing students of the objectives, stimulating recall of prior learning, presenting content, providing learning guidance, eliciting performance through practice, providing feedback, assessing performance, and enhancing retention and transfer (Khadjooi, 2011).

Since information is interpreted and becomes living knowledge, the learner's previous experience has a significant impact on the effectiveness of learning. For learners who already have some experience and basic knowledge, online learning will be effective. Furthermore, in continuing nursing education, the use of the Internet, which is not location-specific, can solve problems caused by special work systems, such as nighttime work systems, in an e-learning environment (Yamaguchi, 2013). Another positive aspect is the ability to transmit and receive medical and nursing knowledge that is constantly advancing in a timely manner. Depending on the content required for

work, it may be effective to grant certification to those who have taken the course and completed it with a certain level of performance, in order to assure the quality of nursing care and to motivate nurses to learn (Mashima, 2005).

Learning support methods in e-learning can be captured by three elements: information presentation, interaction, and external resource links. Types of interaction on the Web include (1) exploratory activities, (2) quizzes, (3) online tests, (4) tutorials, (5) case studies, (6) homework, and (7) discussion. Online tests consist of a large number of questions in objective and descriptive formats; therefore, it is suitable when grading is required and can lead to accreditation of a certain level of education (Suzuki, 2005).

Counseling methods

As previously mentioned, while specific health counseling methods for preconception care have not yet been fully established, research has been conducted on preconception care from various perspectives. What is consistent in health counseling for people of reproductive age (15-45 years) is a people-centered care approach in primary care, which is presented as a youth-friendly primary care model targeting the younger generation. Implementing a youth-friendly health services care framework is pertinent for improving young people's self-management skills (WHO, 2012).

Promoting preconception care as part of primary care is not limited to women who wish to become pregnant. Allen et al. (2017) indicates the significance of identifying the needs of the target group by first identifying their desire to become pregnant (pp. 387-392). Morse et al. (2018) also indicate the importance of conducting reproductive life planning before proceeding with counseling in order to establish a strong foundation for the counseling process (pp. 439-444).

Kirkpatrick's Four-level Evaluation Model

Kirkpatrick's four-level evaluation model is a well-known framework for evaluating and measuring the effectiveness of training and education, emphasizing that clinical outcomes are the highest level of impact that educational interventions can achieve (Kirkpatrick, 1998). Kirkpatrick's model, as a type of outcome data evaluation, focuses on capturing training outcomes such as satisfaction with the trainer, knowledge and skills gained, changes in attitude and performance, and improved organizational benefits. These outcomes are categorized into four levels, depending on the time required to achieve them. Level 1 is the reactive level, which relates to the learner's satisfaction with the instructor and curriculum. Level 2, the learning level, which relates to the learner's acquisition of specialized knowledge and skills. Level 3 is the behavioral level and relates to changes in the learner's behavior and performance. Level 4 is the results level, which is the increase in organizational efficiency contributed by the trainee as a result of the continuing education program (Kirkpatrick, 1998) (**Table 2**).

Table 2

Levels of Kirkpatrick's Four-level Evaluation Model by Outline and Evaluation

Level	Outline	How to evaluate
Level 1 Reaction	Trainee's satisfaction	Questionnaires to participants, etc.
Level 2 Learning	Trainee's learning knowledge or skill	Knowledge test, practical test, etc.
Level 3 Behavior	Trainee's behavior or performance	Follow-up surveys, questionnaires to trainee's superiors, etc.
Level 4 Results	Improved efficiency of the organization contributed by the trainee	Cost benefit performance (ROI), patient satisfaction surveys, etc.

Chapter 3 Preliminary Studies

Preliminary Study 1

Title: A Scoping Review on Health Behavior Changes in Women Toward Preconception Care

Background

While women continue to advance in society, there is an increase in stress and inadequate lifestyles, and in the field of perinatal care, assisted reproduction, adult-onset complications, and pregnancy complications are increasing due to the advanced age of mother (National Center for Child Health and Development, 2019b; Nishioka, 2020). Under these circumstances, interventions in women's food intake including supplementation and lifestyle after pregnancy have limited effects on pregnancy outcomes (Shawe et al., 2020), making "preconception care," which intervenes before pregnancy and enables comprehensive health support for modern women, all the more important. Therefore, education for nursing professionals, who are the primary care providers and are professionals in the nursing, midwifery, and health fields, is essential.

Study aim

The purpose of this research was to review intervention studies on preconception care for women in order to clarify the effectiveness of interventions and outcome measures, and thereby open doors to further investigations that could contribute to the advancement of research in the field of preconception care for care providers.

Methods

In the present study, we conducted a scoping review, a method that aims to map the main concepts and evidence underlying a research area (Arksey et al., 2005) and report it according to the JBI Manual for Evidence Synthesis (Peters et al., 2020). We

searched PubMed, Cochrane Library/ CENTRAL, EMBASE, and the NPO Japan Medical Abstracts Society database (Ichushi-Web) in October 2020 to gather relevant studies in order to outline the main concepts and evidence underlying health behavior changes of preconception care in women.

Inclusion criteria

The inclusion criteria are shown in **Table 3**. In the present review, the search was limited to words for which “preconception care” was searched in order to identify the effects and outcome measures of preconception care, which is a relatively new concept. As exclusion criteria, commentaries, conference proceedings, and observational studies were excluded. A flowchart for literature selection was created based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2009).

Table 3

Inclusion Criteria

Population	Preconception women between the ages of 15 and 49 (reproductive age)
Concept	<p>• Ichushi-web: The following terms were used; プレコンセプションケア, プレコンセプションナルケア, インターコンセプションケア, インターコンセプションナルケア, 不妊予防, 妊娠前管理, [preconception care, preconceptional care, preconception, preconceptional, interconception care, interconceptional care, interconception, and interconceptional]</p> <p>• PubMed/Cochrane Library/ CENTRAL/ EMBASE: The following terms were used; preconception, interconception, preconceptional, and interconceptual</p>
Context	<p>• Written in Japanese or English</p> <p>• All years and settings were included</p> <p>• Randomized controlled trials (RCTs), including cluster RCTs, quasi-RCTs, follow-up studies of RCT</p>

Results

Out of the 920 overseas studies and 442 Japanese studies, 38 overseas studies and three Japanese studies were screened according to the inclusion criteria and selected (**Figure 9**). **Table 4** and **5** show summaries of the selected overseas literature, and **Table 6** shows summaries of the selected Japanese studies.

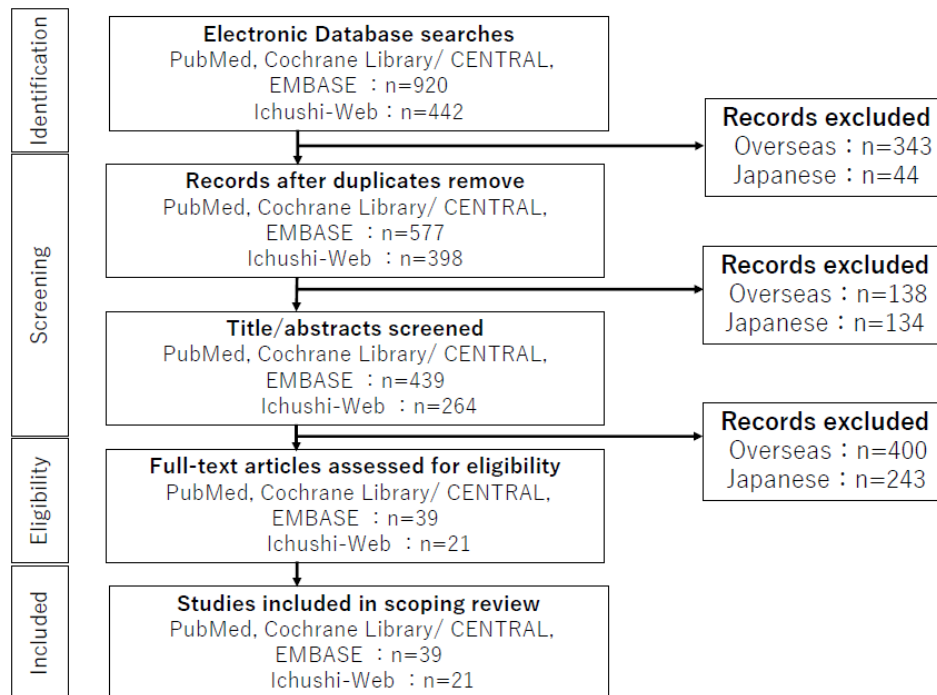


Figure 9

Flowchart for Literature Selection

Intervention studies on preconception care overseas

Intervention methods

Thirty of the 38 included studies were RCTs, five studies were post-intervention follow-up studies, one study was a secondary analysis using pre- and post-intervention data, one study was an RCT/cohort study, and one study was a quasi-experimental study. Preconception care health education intervention methods included 12 “health education program sessions,” 10 using “preconception health education tools” such as web-based modules, DVDs, and booklets, seven using “preconception counseling,” and “preconception care motivational interviewing” in two studies, “preconception outpatient visits” in one study, and “group work” in one study (**Table 4**).

Table 4*Study Design and Types of Interventions and Their Effects in the Included Studies*

Study (country, year)	Study design	Types of interventions	* Effects
<u>LIFEstyle</u> [‡] Mutsaerts et al. (Netherlands, 2016) van Elten et al. (Netherlands, 2018) Karsten et al. (Netherlands, 2019) van Elten et al. (Netherlands, 2019a) van Dammen et al. (Netherlands, 2019) van Dammen et al. (Netherlands, 2021)	Multicenter RCT Multicenter RCT Secondary analysis Follow up of RCT Follow up of RCT Follow up of RCT	Lifestyle education prior to infertility treatment Counseling and behavior modification plan Lifestyle Program Lifestyle Program Lifestyle Program Lifestyle Program	● ● - - - -
<u>LIFEstyle & RADIEL</u> [‡] Wekker et al. (Netherlands/Finland, 2019)	Follow up of RCT	Lifestyle Program	×
<u>RADIEL</u> [‡] Rönö et al. (Finland, 2018) Valkama et al. (Finland, 2018)	RCT RCT	Educational visits and counseling Individual and group counseling	× ×
<u>READY Girl</u> [‡] Charron-Prochownik et al. (USA, 2008) Fischl et al. (USA, 2010) Charron-Prochownik et al. (USA, 2013)	RCT RCT RCT	Self-learning CDs and books Self-learning CDs and books Self-learning CDs and books	● × ●
<u>Strong Healthy Women</u> [‡] Hillemeier et al. (USA, 2008) Weisman et al. (USA, 2011)	RCT Follow up of RCT	Health Education Session Health Education Session	● ×
<u>Gabby</u> [‡] Jack et al. (USA, 2015) Jack et al. (USA, 2020)	RCT RCT	Interacting with a Virtual Counselor Interacting with a Virtual Counselor	● ●
<u>CHOICES</u> [‡] Floyd et al. (USA, 2007) Velasquez et al. (USA, 2017) Hanson et al. (USA, 2017)	RCT RCT Follow up of RCT	Counseling, contraceptive counseling Health Education Session Health Education Session	● ● ●
<u>Parent to be</u> [‡] Elsinga et al. (Netherlands, 2008)	RCT + Cohort	Informational classes	●
<u>EARLY</u> [‡] Ingersoll et al. (USA, 2013)	RCT	Interviews and feedback	●
Jack et al. (USA, 1998)	RCT	Distribution of pamphlets	×
Watson et al. (Australia, 2001)	Community RCT	Distribution of informative printed materials	●
Cena et al. (USA, 2008)	RCT	Nutrition Education Lesson	●
Schwarz et al. (USA, 2008)	RCT	Computer-based counseling	●
Bastani et al. (Iran, 2010)	RCT	Health Education Program	●
Richards et al. (USA, 2012)	RCT	Health Education Session	●
Marzieh et al. (Iran, 2016)	RCT	Brochures and educational packages	●
Lin et al. (China, 2017)	Cluster RCT	Counseling	●
Batra et al. (USA, 2018)	Cluster RCT	Web-based health education module	●
Fazeli et al. (Iran, 2018)	Quasi-RCT	Health Education Session	●
Fooladi et al. (Iran, 2018)	RCT	Reproductive Life Plan tool	●
Hameed et al. (Iraq, 2018)	RCT	Health Education Classes and Brochures	●
Skogsdal et al. (Sweden, 2019)	RCT	Reproductive Life Plan counseling	●
van Elten et al. (Netherlands, 2019b)	Multicenter RCT	Health Education Program	●
Mirghafourvand et al. (Iran, 2020)	RCT	Group counseling	×
Nourizadeh et al. (Iran, 2020)	RCT	Motivational Interviewing	●

Note: Studies in which the preconception care intervention was effective in improving knowledge or changing behavior are indicated with ●; studies in which it was not effective are indicated with ×; ‡Name of study or intervention

Publication year

Of the 38 included studies, one study was reported in the 1990s, one study in the early 2000s, five studies in the late 2000s, six studies in the early 2010s, 19 studies in the late 2010s, and six studies in the 2020s (one year to the search year). The number of cases reported in the 2020s (only one year to the year of search) was six studies.

Scope of intervention/program effectiveness

The range of effectiveness of preconception health education interventions/programs was categorized into the following 10 areas. (**Table 5**)

(1) Food intake and weight control

Nine studies were related to food intake. The Food Frequency Questionnaire (FFQ), the 18-item version of the Revised Three Factor Eating Questionnaire (TFEQ-R18), and the Food Behavior Checklist (FBC) were used in the studies using survey instruments. Motivational interviewing with overweight and obese women had positive effects on changes in physical activity and eating behavior, significantly reducing daily energy intake and body weight (Nourizadeh et al., 2020; van Elten et al., 2019a). In addition, studies using virtual counselor interaction for African American women showed significant reductions in reproductive risks, including dietary choices, required supplement intake, and safe intake of supplements and chemicals (Bickmore et al., 2020; Jack et al., 2015). In addition, providing health education to low-income women of childbearing age increased self-efficacy, willingness to eat healthier foods and be more active, and frequency of reading food labels, and decreased the number of sugary drinks and snacks, with effects lasting up to 6 months later (Hillemeier et al. 2008). On the other hand, a study using self-learning CDs and books with adolescent women with type 1 diabetes revealed low intake of foods considered to be particularly good for the body, disordered eating habits, and although the intervention changed attitudes toward health behaviors, little actual behavioral change was observed (Fischl et al. 2010).

(2) Knowledge of fertility and health information (including sexually transmitted diseases)

Seven studies were related to knowledge of fertility and health information, and all studies showed a positive effect of the intervention. In the study that provided web-based health education modules to women of childbearing age, the intervention improved knowledge and led to greater awareness regarding the benefits of effective family planning, reproductive health issues, prevention of unplanned pregnancy, and the need for preconception support (Batra et al., 2018). For adolescent women with type 1 diabetes, an educational intervention using a self-learning DVD and book showed long-term sustained effects on preconception care knowledge, beliefs, and intentions to initiate discussions with health care providers to improve reproductive health behaviors and outcomes (Charron-Prochownik et al., 2013). Furthermore, providing reproductive life plan-based information to women with clear intentions to become pregnant increased their knowledge about fertility (Fooladi et al., 2018; Skogsdal., 2019). In addition, using the Health Belief Model for health education significantly increased the mean scores of knowledges and attitudes toward preconception care among women of childbearing age (Fazeli et al., 2018).

(3) Contraceptive methods

Five of the studies were related to knowledge of contraceptive methods. A study that provided web-based health education to women of childbearing age found no change in contraceptive methods; however, only interviews with obstetricians and gynecologists yielded significant change. This indicates a possible need for contraceptive care from a more specialized provider (Batra et al., 2018). For women of childbearing age at risk for alcohol-exposed pregnancy (hereafter Alcohol Exposure Pregnancy: AEP), sex education, including contraceptive methods, along with education about alcohol consumption, reduced the risk of AEP (Elsinga et al; Hanson et al., 2017; Ingersoll et al., 2013; Velasquez et al., 2017).

(4) Physical activity

Four studies were related to physical activity and used the SUQASH (Short Questionnaire to Assess Health-enhancing physical activity) and the International Physical Activity Questionnaire (IPAQ). In a study that provided counseling and behavior modification plans to obese infertile women, women in the intervention group were more physically active than women in the control group (van Elten et al., 2018). In a study that provided health education to low-income women of childbearing age, the intervention significantly increased “greater willingness to be physically active” and “greater frequency of performing recommended levels of physical activity” (Hillemeier et al., 2008). In addition, providing motivational interviews to overweight or obese women of childbearing age had a positive effect on physical activity (Nourizadeh et al., 2020). On the other hand, they reported that preconception lifestyle interventions for women at high risk of gestational diabetes (obese or women with a history of gestational diabetes) did not reduce the incidence of gestational diabetes (Rono et al., 2018).

(5) BMI, blood tests, and other physical and physiological indices

Four studies reported on physical measurements and biochemical tests such as body weight, BMI, abdominal circumference, blood pressure, adiposity, blood tests, and pulse wave velocity (PWV). In a study that provided a lifestyle program for obese infertile women, women who successfully lost weight during the intervention period showed a decrease in abdominal circumference, a decrease in weight, BMI, blood glucose, HbA1c, and an increase in HDL cholesterol levels, but no improvement in long-term cardiometabolic health (Wekker et al, 2019). On the other hand, a study that followed births after a preconception intervention showed that higher preconception vegetable intake led to lower diastolic blood pressure in offspring and higher fruit intake led to lower PWV in offspring, suggesting that women’s favorable body composition

may affect the health of their offspring (van Elten et al., 2019b). Motivational interviewing of obese infertile women had been shown to significantly reduce weight (van Elten et al., 2019a).

(6) Alcohol and tobacco exposure prevention of pregnancy

There were four studies on AEP and tobacco exposure pregnancy (TEP) prevention. In studies that provided counseling and health education to women of childbearing age at risk for AEP, the odds ratios for a reduction in risk of AEP were approximately 2-fold immediately, 3 months, and 9 months later, respectively (Floyd et al., 2007; Hanson et al., 2017; Ingersoll et al., 2013). Similarly, in a study that provided health education to women at risk for AEP and TEP, the effectiveness was also demonstrated at a 9-month follow-up (Velasquez et al., 2017). These brief interventions had large effects and their long-lasting effects were attributed to the lack of awareness of the possibility of AEP among the women themselves, who had no intention to become pregnant, and to their ability to change their behavior once they were aware of this possibility (Floyd et al., 2007).

(7) Folic acid supplementation

Four studies were related to folic acid supplementation or other supplementation, and Block Dietary Folate Equivalents (DFE) was used as the indicator. In a study that provided counseling and SNS messages to community-dwelling women, folate knowledge scores increased significantly in the intervention group (Lin et al., 2017), and in a study of low-income women of childbearing age, educational interventions led to significantly higher daily use of multivitamins containing folic acid higher (Cena et al., 2008; Hillemeier et al., 2008).

(8) Mental and psychological changes

Four studies were related to perceived stress, and the Perceived Stress Scale

(PSS) was used as an indicator, and the Hospital Anxiety Depression Scale (HADS) was used for depression and anxiety. A follow-up study after providing a lifestyle program to obese infertile women found no impact on perceived stress or symptoms of depression or anxiety five years after the intervention (van Dammen et al., 2019). In a study of health education for low-income women of childbearing age, each additional session attended was associated with higher rates of daily participation in relaxation exercises and meditation for stress management (Hillemeier et al., 2008). Studies that offered educational packages that included stress management to women of childbearing age also reported smaller differences in stress management scores while perceived stress decreased (Marzieh et al., 2016).

(9) Outcomes on pregnancy, childbirth, and neonates

There were three outcomes related to pregnancy, whether or not the woman gave birth, and births. A 6-month lifestyle intervention prior to fertility treatment for obese infertile women did not increase the rate of vaginal delivery of healthy singleton babies 24 months later (Mutsaerts et al., 2016). In a study of health education for low-income women of childbearing age, the intervention was associated with a significant reduction in weight gain during pregnancy among women who became pregnant and delivered a full-term single fetus during the 12-month follow-up period. This was explained by the fact that obese women gained less weight during pregnancy than non-obese women, and that more obese women delivered in the intervention group (Weisman et al., 2011).

(10) Other outcomes

Other outcomes included sleep quality (PSQI) and QoL (SF-36) as outcomes in a study of obese infertile women, neither of which showed significant differences (van Dammen et al., 2019). The Health Belief Model (intention, self-efficacy, and benefit) as

outcomes, resulted in increases in intention and benefit but no significant increase in self-efficacy (Charron-Prochownik et al., 2013; Fazeli et al., 2018). In a study that used the Health Promoting Lifestyle (HPLP-II) to measure health-promoting behaviors among women of childbearing age, the intervention significantly increased total scores (Marzieh et al., 2016). An intervention that targeted high school girls and provided health education and pamphlets measured reproductive attitudes and knowledge using the Reproductive Health Assessment Scale (RHAB, RHKS-W) and reported improved quality of sex education, family planning, and preconception health knowledge about healthy eating, and increased exercise frequency (Hameed, 2018).

Table 5

Scope of Intervention/Program Effects in the Included Overseas Studies

Included studies (country, year)	Scope of intervention/program effects								
	Food intake and weight control	Know/ledge of fertility and health information (incl. STD)	Contraceptive method	Physical activity	physiological indices	AEP and TEP	Folic acid supplementation	Mental and psychological changes	Outcomes on pregnancy, childbirth, and neonates
<i>LIFEstyle</i>[‡]									○
Mutsaerts et al. (Netherland, 2016)									
van Elten et al. (Netherland, 2018)	○			○					
Karsten et al. (Netherland, 2019)									
van Elten et al. (Netherland, 2019a)	○				○				○
van Dammen et al. (Netherland, 2019)								○	
van Dammen et al. (Netherland, 2021)									
<i>LIFEstyle & RADIEL</i>[‡]					○				
Wekker et al. (Netherland/Finland, 2019)									
<i>RADIEL</i>[‡]	○			○					
Rönö et al. (Finland, 2018)	○								
Valkama et al. (Finland, 2018)	○								
<i>READY Girl</i>[‡]		○							
Charron-Prochownik et al. (USA, 2008)									
Fischl et al. (USA, 2010)	○								
Charron-Prochownik et al. (USA, 2013)		○							
<i>Strong Healthy Women</i>[‡]	○			○			○	○	
Hillemeier et al. (USA, 2008)									
Weisman et al. (USA, 2011)					○				○
<i>Gabby</i>[‡]	○								
Jack et al. (USA, 2015)									
Jack, et al. (USA, 2020)									
<i>CHOICES</i>[‡]						○			
Floyd et al. (USA, 2007)									
Velasquez et al. (USA, 2017)			○			○			
Hanson et al. (USA, 2017)			○			○			
<i>Parent to be</i>[‡]		○	○						
Elsinga et al. (Netherland, 2008)									
<i>EARLY</i>[‡]			○			○			
Ingersoll et al. (USA, 2013)									
Jack et al. (USA, 1998)									
Watson et al. (Australia, 2001)		○							
Cena et al. (USA, 2008)							○		
Schwarz et al. (USA, 2008)									
Bastani et al. (Iran, 2010)									
Richards et al. (USA, 2012)									
Marzieh et al. (Iran, 2016)								○	
Lin et al. (China, 2017)							○		
Batra et al. (USA, 2018)			○						
Fazeli et al. (Iran, 2018)		○							
Fooladi et al. (Iran, 2018)		○							
Hameed et al. (Iraq, 2018)									
Skogsdal et al. (Sweden, 2019)		○							
van Elten et al. (Netherland, 2019b)	○				○				
Azami et al. (Iran, 2020)							○		
Mirghafourvand et al. (Iran, 2020)								○	
Nourizadeh et al. (Iran, 2020)	○			○					
Total	9	7	5	4	4	4	4	4	3

Note: ‡Name of study or intervention

Intervention Study on Preconception Care in Japan

Three studies on preconception care in Japan were reported. One study was a RCT and two were intervention studies. (Table 6)

Table 6

Study Design and Types of Interventions and Their Effects in the Selected Japanese Studies

Included studies (country, year)	Scope of the intervention effect			Study design	Type of intervention	Effect
	Knowledge of health and preconception care	Awareness related to preconception care	Food intake and weight control (incl. folic acid supplementation)			
Tsuchikawa et al. (2018)	○			Intervention study	Health Education Lectures	●
Nagusa et al. (2020)	○	○	○	Intervention study	Preconception Seminar	×
Maeda et al. (2020)	○			RCT	Chatbot interaction	●
Total	3	1	1			

Note: Studies in which the preconception care intervention was effective in improving knowledge or changing behavior are indicated with ●; studies in which it was not effective are indicated with ×

Types of Intervention

Tsuchikawa et al. (2018) conducted a preconception seminar planned with reference to the transtheoretical model and group discussion at the end. Nagusa et al. (2020) conducted a health education lecture, and Maeda et al. (2020) used a chatbot developed for the study.

Publication year

The reporting year for the Japanese literature was recent. It was 2018 for one case and 2020 for two cases.

Scope of intervention/program effectiveness

The scope of effectiveness of the preconception health education evaluation and research studies and the scope of evaluation indicators are presented next. There are four areas reviewed.

(1) Knowledge about health and preconception care

All three studies assessed knowledge, and one study used the Japanese version of the Cardiff Fertility Knowledge Scale (CFKS-J) (Maeda et al., 2020). The provision of health education to mature working women increased the proportion of those with “knowledge of preconception care” at the end of the seminar and maintained this level three months later (Nagusa et al., 2020). The provision of antenatal education using a chatbot improved fertility knowledge and preconception behavior optimization without increasing anxiety, but knowledge improved only slightly (Maeda et al., 2020).

(2) Attitudes toward preconception care.

One study reported on attitudes toward preconception care. Researchers found that awareness of items such as “actively eating foods containing folic acid” and “performing breast cancer self-examination” improved among mature working women (Nagusa et al., 2020).

(3) Food intake and weight control (including folic acid supplementation)

One study evaluated food intake and weight control, using the Food Intake Frequency Survey. However, there was no significant difference in folic acid intake after the intervention (Nagusa et al., 2020).

(4) Other outcomes

One study gave a lecture on dating domestic violence to high school female students as one of the three goals. Researchers evaluated their level of understanding, and what specific action they could work on. Respondents were also asked to “acquire the ability to identify a dating partner and face the opposite sex,” indicating that they had achieved their instructional goals. (Tsuchikawa et al., 2018).

Discussion

Preconception care in Japan and abroad

Preconception care is a concept that has evolved from life course studies, and is now being emphasized internationally as a comprehensive women’s health support program for women and couples before pregnancy, for their own lifelong health, and for the health of future generations (WHO, 2012). In the U.S., the public and private sectors are working together to systematically promote preconception care. Australia and Sweden have also introduced preconception care based on their strong reproductive health care systems (Maeda, 2020).

Preconception care is a field in which midwives can make a difference in supporting women’s health throughout their lives and in supporting the health of the next generation of children. The International Confederation of Midwives (ICM) clearly stated that the ability to care for preconception women is an essential competency of the midwife. These competencies include for example, assessing nutritional status, immunization, and health behaviors, and providing counseling on necessary supplements, dietary intake, exercise, and modification of risk behaviors (ICM, 2019). In Japan, midwives originally have a history of providing health support for women before pregnancy, including sex education and health support for women as adults in general (Ishikawa, 2003).

The results of this study showed that intervention studies on preconception care in Japan have been conducted since 2018. The number of studies outside of Japan has increased significantly since the late 2010s. It is expected that this research field will be further deepened by midwives, nurses and public health nurses involved in women's health as well as the promotion of preconception care in Japan, and that care and activities will be expanded in the future.

Intervention/program content and effects

While the food intake and weight control related items generally had effects on behavior change in all studies, the intervention for adolescent women with type 1 diabetes was reported to have no actual change in behavior change (Fischl et al., 2010). The difference in motivation to change behavior may be influenced by the difference between subjects who believed that pregnancy and childbirth were likely to occur in the near future and those who viewed them as events that were still distant in time. Fooladi et al. (2018) stated that reproductive life plans were used to identify pregnancy intentions and the importance of providing health guidance based on the understanding of pregnancy intentions. They suggested that it was important to provide tailor-made preconception care based on a good assessment of whether the care recipient has pregnancy intentions and, if the pregnancy plan was for the distant future, and what were the individual risks and benefits of health behaviors.

Several studies reported that while there was an effect on short-term outcomes such as increased risk awareness and knowledge, there was no effect on the long-term incidence of gestational diabetes or prevention of cardiometabolic diseases. They attributed these findings to the dropout rate of study participants during the follow-up period and a bias toward subjects with a history of gestational diabetes (Rono et al., 2018; Wekker et al., 2019). It is clear that obesity is a risk factor for gestational diabetes and cardiometabolic diseases, and further research is needed on study design and

intervention content.

The Batra et al. (2018) study also mentioned the possibility that more specialized provider contraceptive care may be required for interventions regarding contraceptive methods. The study also suggested that there is a need to improve the expertise and consultation skills of care providers and to improve consultation services for accessible professionals so that preconception women can receive care that meets their individual needs.

Scope of effectiveness of interventions/programs

In this study, the scope of effectiveness of interventions/programs and the scope of evaluation indicators of research studies were categorized into 10 areas in the international studies and four areas in the Japanese studies. Looking at these 10 areas, it is apparent that they include items common to general adult health care and items related to fertility. The results of the present study suggested that it is important to comprehensively assess and intervene in these areas without dividing them into separate areas. The problems surrounding women in Japan are diverse, including irregular lifestyles, low rates of gynecological and cancer screening, increasing infertility and use of assisted reproductive technologies, increasing pregnancies complicated by adult diseases and pregnancy complications, and increasing births of low birthweight infants (National Center for Child Health and Development, 2019b; Nishioka, 2020). In addition, women's health changes significantly at each stage of life throughout their lives. In a society surrounded by these many health issues, further exploration is needed to determine how to support the health of women and couples and the health of their next generation.

The results of this study indicate that research on preconception care in Japan is still limited to the areas of knowledge, awareness, and food intake including supplementation related to preconception care. There is scant research about folic acid

supplementation, physical activity, alcohol and tobacco exposure pregnancy, mental and psychological changes, physical and physiological indicators, and pregnancy and birth outcomes in preconception, physical and physiological parameters, and pregnancy and birth outcomes. We hope that these studies will be conducted in the future to accumulate more knowledge in the field of preconception care.

Conclusion and implementation to the main research

This study has classified the range of intervention/program effects and the range of evaluation indicators for research studies in the field of preconception care in Japan and abroad. In Japan, research on preconception care is still limited to the areas of knowledge and awareness of preconception care and adequate food intake, and there is a lack of research on folic acid supplementation in preconception, physical activity, alcohol and tobacco exposure pregnancy prevention, mental and psychological changes, physical and physiological indicators, pregnancy and birth.

This preliminary study suggested the need to incorporate interventions for the 10 areas classified by this preliminary study. Although these 10 areas have already been studied and their effectiveness is becoming clear, they do not necessarily cover all the areas needed in preconception care. Further exhaustive review of recommended interventions is needed to develop educational programs on preconception care.

Preliminary Study 2

Title: Opinion Survey of Nursing Professions on the Development of Educational Materials for Midwives, Nurses and Public Health Nurses Providing Preconception Care

Background

Preconception care is based on the recognition that care during pregnancy provided from the first trimester of pregnancy onward is not sufficient, which indicates the need to expand the care provision timeframe and to provide interventions and services even before conception. In the United States, the National Preconception Health and Health Care Initiative (PCHHC), is a public-private partnership of over 70 organizations that has been campaigning since 2006. The PCHHC offers online educational programs for care providers. The health education before pregnancy changes women's perceptions of their health, preconception care is considered to be an intervention that can reduce the risk of future pregnancies and fetal health risks (PCHHC, 2023). In Japan, the importance of "preconception care," which intervenes even before pregnancy to enable comprehensive health support for modern women, is increasing (National Center for Child Health and Development, 2019b; Nishioka, 2020). While, the importance of preconception care is attracting attention, there have been no studies on educational programs for nursing specialists who provide care. Therefore, the content of this educational program on preconception care was developed based on programs and existing guidelines published by PCHHC. Modifications were made based on the results of a questionnaire to experts in related fields to create a prototype of the educational program.

Study aim

The purpose of this study was twofold. Firstly, to develop an educational program on preconception care for midwives, nurses, and public health nurses who

supported women's health in Japan, which was aligned with the social and cultural context of Japan. Secondly, to conduct an opinion survey to modify the program content to better meet the current situation and needs of the nursing professions.

Methods

Development of contents

Search for and selection of guidelines

The contents of e-learning were based on available educational programs for care providers and guidelines on preconception care. Educational programs for care providers were searched for on PubMed, Google, and Google Scholar using the following terms: care provider*, preconception care, preconception health, prepregnancy, before pregnancy, and before conception. Two educational programs for care providers were searched through online programs by PCHHC and ONE KEY QUESTION by Power to Decide in the United States. For guidelines, we searched PubMed, Google, and Google Scholar using the terms guideline*, preconception care, preconception health, prepregnancy, before pregnancy, and before conception. In addition, international and national websites of professional organizations providing guidelines were searched. The guidelines that were perused were those of the CDC, WHO, Public Health Agency of Canada, Royal Australian and New Zealand College of Obstetricians and Gynecologists (RANCOG).

Selection of topics and initial development of contents

The overall structure of the e-learning content was based on existing educational programs and consisted of three parts: (1) Overview of preconception care in Japan, (2) Care for low-risk women, and (3) Care for high-risk women. For the care items for low-risk women in the second section, key topics were extracted from the retrieved guidelines by comparing the items to those listed as recommended

interventions. In selecting topics, we took into account the social and cultural background of Japan and extracted only those that were relevant (**Table 7**). For the care items for high-risk women in Chapter 3 of e-learning, the content list was created while referring to the e-learning items created by PCHHC (**Table 8**).

Participants

The participants in this study were recruited using the snowball sampling method. The principal investigator reached out to midwives, nurses, and public health nurses affiliated with St Luke's International University, with advice from the supervising professor. For experts affiliated with other institutions, the principal investigator requested introductions to experts with relevant knowledge and experience in caring for women of reproductive age through an external adviser. Participants were included if they were (i) qualified midwives, nurses, or public health nurses, and (ii) had experience in caring for women of reproductive age. A request email with a research description attached was sent to the eligible experts, and those who provided their consent were included in the study.

Ethical considerations: This study has been approved by the research ethics committee of St. Luke's international university, Tokyo, Japan (approval number: 22-A058).

Data collection

The semi-structured interviews with participants were conducted by the principal investigator using a pre-determined topic guide. Prior to the interviews, the participants were asked to read the proposed e-learning content to be developed, along with a table comparing existing e-learning items and the items to be developed in this study. Existing e-learning slides translated into Japanese were also provided as a reference for participants to review the details of each item, although they did not need

to be read in full beforehand. They were used as reference material in case the content of the items was unclear. On the day of the interview, the research consent form was used to explain the purpose of the research, including the option to withdraw consent. The consent explanatory letter, consent form, and consent withdrawal form were provided to the participants, who signed the consent form if they were able to provide their consent. Interviews were conducted in private locations away from public places, and the content of the interviews was recorded and documented after obtaining the consent of the participants.

The interviews mainly focused on the following points: (i) the necessity or unnecessary of 161 items of educational program content, (ii) the reasons for judging the necessity or unnecessary, and (iii) opinions and suggestions for improvements in the educational program content.

Data analysis

The interviews were conducted to evaluate the necessity of each item in the e-learning content proposal and the reasons behind the decisions. Based on the interviews, a list of items to be added or removed from the content was compiled, taking into account the opinions and suggestions for improvement provided by the participants. The final decision on adding or removing items was made through a consensus among the principal investigator, supervising professor, and external adviser.

Table 7

Recommendations in the Global Guidelines for Preconception

Extracted items	CDC, 2006 (USA)	CDC, 2020 (USA)	WHO, 2013		Public Health Agency of Canada, 2019 (Canada)		RANZCOG**, 2021
Folic acid supplementation	Folic acid deficiency	Take 400µg of Folic Acid Every Day	Nutritional conditions	Supplementing iron and folic acid	Preparing for a Healthy Pregnancy	Nutrition	Folic acid and iodine supplementation
				Iodization of salt			
				Monitoring nutritional status			
				Screening for anemia and diabetes			
				Information, education, and counseling			
Food intake and weight control				Supplementing energy- and nutrient-dense food			
				Management of diabetes, including counseling people with diabetes mellitus			
Healthy body weight	Obesity	Reach and Maintain a Healthy Weight				Healthy body weight	
Physical activity				Promoting exercise		Physical activity	
STIs/Contraceptives Sexual education	STD		Sexually transmitted Infections: STIs	Providing age-appropriate comprehensive sexuality education and services	Preparing for a Healthy Pregnancy	Non-vaccine-preventable infectious diseases	
				Promoting safe sex practices through individual, group and community-level behavioral interventions			
				Promoting condom use for dual protection against STIs and unwanted pregnancies			
				Ensuring increased access to condoms			
				Screening for STIs			
				Increasing access to treatment and other relevant health services			
	HIV/AIDS		HIV	Family planning			
				Promoting safe sex practices and dual method for birth control (with condoms) and STI control			
				Provider-initiated HIV counseling and testing, including male partner testing			
				Providing antiretroviral therapy for prevention and pre-exposure prophylaxis			
				Providing male circumcision			
				Providing antiretroviral prophylaxis for women not eligible for, or not on, antiretroviral therapy to prevent mother-to-child transmission			
				Determining eligibility for lifelong antiretroviral therapy			
Vaccinations	Hepatitis B	See Your Doctor—Vaccinations (shots)	Vaccine-preventable diseases	Vaccination against rubella		Immunizations and infectious diseases	Vaccinations
	Rubella seronegativity			Vaccination against tetanus and diphtheria			
				Vaccination against Hepatitis B			
Smoking	Smoking	Stop Drinking Alcohol, Smoking, and Using Certain Drugs	Tobacco use	Screening of women and girls for tobacco use (smoking and smokeless tobacco) at all clinical visits			Smoking, alcohol and substance use
				Providing brief tobacco cessation advice, pharmacotherapy (including nicotine replacement therapy, if available) and intensive behavioral counseling services			

				Screening of all non-smokers (men and women) and advising about harm of second-hand smoke and harmful effects on pregnant women and unborn children			
Alcohol	Alcohol misuse						
Substance use			Psychoactive substance use	Screening for substance use Providing brief interventions and treatment when needed Treating substance use disorders, including pharmacological and psychological interventions Providing family planning assistance for families with substance use disorders (including postpartum and between pregnancies) Establishing prevention program to reduce substance use in adolescents	Preparing for a Healthy Pregnancy	Substance use	
Environmental hazard		Avoid Toxic Substances and Environmental Contaminants	Environmental health	Providing guidance and information on environmental hazards and prevention Protecting from unnecessary radiation exposure in occupational, environmental and medical settings Avoiding unnecessary pesticide use/providing alternatives to pesticides Protecting from lead exposure Informing women of childbearing age about levels of methyl mercury in fish Promoting use of improved stoves and cleaner liquid/gaseous fuels	Preparing for a Healthy Pregnancy	Environmental hazard and toxins	Travel and environmental risks Healthy environment
Medical Conditions	Isotertinoinis Anti-epileptic drugs Diabetes (preconception) Hypothyroidism Maternal PKU Oral anticoagulant	See Your Doctor—Medical Conditions			Preparing for a Healthy Pregnancy Women with chronic diseases	Medications Hypertension Diabetes Thyroid disorders Seizure disorders Asthma HIV Chronic Hepatitis virus	Clinical assessment Medication use
NCDs/Cancer/Gynecology			Genetic conditions	Taking a thorough family history to identify risk factors for genetic conditions Family planning Genetic counseling Carrier screening and testing Appropriate treatment of genetic conditions Community-wide or national screening among populations at high risk	Preparing for a Healthy Pregnancy	Genetic and family history	Genetic/Family history
		Learn Your Family History			Preparing for a Healthy Pregnancy	Reproductive history	Healthy environment
		See Your Doctor—Lifestyle and Behaviors				Lifestyle recommendations	
					Preparing for a Healthy Pregnancy	Physical examination	
Dentist					Preparing for a Healthy Pregnancy	Oral health	
Stress		Get Mentally Healthy	Mental health	Assessing psychosocial problems Providing educational and psychosocial counseling before and during pregnancy	Preparing for a Healthy Pregnancy	Mental Health and illness	

				Counseling, treating and managing depression in women planning pregnancy and other women of childbearing age			
				Strengthening community networks and promoting women's empowerment			
				Improving access to education for women of childbearing age			
				Reducing economic insecurity of women of childbearing age			
Intimate partner violence		Stop partner violence	Interpersonal violence	Health promotion to prevent dating violence	Preparing for a Healthy Pregnancy	Intimate partner violence	
				Providing age-appropriate comprehensive sexuality education that addresses gender equality, human rights, and sexual relations			
				Combining and linking economic empowerment, gender equality and community mobilization activities			
				Recognizing signs of violence against women			
				Providing health care services (including post-rape care), referral and psychosocial support to victims of violence			
				Changing individual and social norms regarding drinking, screening and counseling of people who are problem drinkers, and treating people who have alcohol use disorders			
Reproductive-Life Plan		Make a Plan and Take Action			Decision-making Around Pregnancy	Reproductive-Life Plan	
		Plan pregnancies				Language and decision-making	
						Indigenous women and decision-making	
Definition of preconception care					Family-centered Preconception Care		
					Determinants of Health		
					The place of preconception care	School and home	
						The workplace	
						Community setting	
						Media	
						Primary care setting	
			Infertility/sub-fertility	Creating awareness and understanding of fertility and infertility and their preventable and unpreventable causes		Advanced maternal age/delayed child-bearing	
				Defusing stigmatization of infertility and assumption of fate			
				Screening and diagnosis of couples following 6–12 months of attempting pregnancy, and management of underlying causes of infertility/sub-fertility, including past STIs			
				Counseling for individuals/couples diagnosed with unpreventable causes of infertility/sub-fertility			
Sexual diversity					Women with the specific needs	Assisted human reproduction	
			Female genital mutilation (FGM)	Discussing and discouraging the practice with the girl and her parents and/or partner		Adolescents	
				Screening women and girls for FGM to detect complications		LGBTQ populations	
				Informing women and couples about complications of FGM and about access to treatment		Women who have experienced female genital cutting	
				Carrying out defibulation of infibulated or sealed girls and women before or early in pregnancy			

Basal body temperature						
Menstrual						
Biological differences between men and women						
			Too-early, unwanted and rapid successive pregnancies	<div>Keeping girls in school</div> <div>Influencing cultural norms that support early marriage and coerced sex</div> <div>Providing age-appropriate comprehensive sexuality education</div> <div>Providing contraceptives and building community support for preventing early pregnancy and contraceptive provision to adolescents</div> <div>Empowering girls to resist coerced sex</div> <div>Engaging men and boys to critically assess norms and practices regarding gender-based violence and coerced sex</div> <div>Educating women and couples about the dangers to the baby and mother of short birth intervals</div>		

*Note: **Royal Australian and New Zealand College of Obstetricians and Gynecologists, 2021 (Australia & New Zealand)*

Table 8*Content Drafts of Educational Program*

Module 1: Overview of Preconception Care	
① Rationale for promoting preconception care	
② Incidence of adverse pregnancy events	
• Perinatal deaths	
• Low birth weight	
• Preterm birth	
• Congenital malformations	
• Preterm birth	
• Pregnancy complications	
③ Prevalence of women's lifestyle	
• Smoking rate	
• Inadequate weight (obesity/low BMI)	
• Alcohol consumption	
④ Significant events that occur before the start of antenatal care	
⑤ Legal basis for preconception care	
⑥ Opportunities to provide preconception care	
⑦ Resources related to preconception care	
Module 2: Preconception Care for Low-risk Women	
Itemized discussion for low-risk women	
① Food intake	
② Adequate weight control (obese/ low BMI)	
③ Folic acid intake	
④ Vaccination	
• Rubella	
• HPV	
⑤ Existing medical conditions	

<ul style="list-style-type: none"> • Diabetes mellitus • Obesity • Hypothyroidism <p>⑥ Prevention of lifestyle diseases/cancer screening</p> <p>⑦ Prevention of exposure to hazardous substances</p> <p>⑧ Substances uses (alcohol, tobacco, drugs)</p> <p>⑨ Stress management</p> <p>⑩ Dental checkup</p> <p>⑪ Life planning/ family planning (contraception)</p> <p>⑫ Sexually transmitted diseases</p> <ul style="list-style-type: none"> • HPV • Genital chlamydia • Genital Herpes • Condyloma • Acuminatum • Syphilis • Gonorrheal infection <p>⑬ Domestic Violence (DV) response</p> <p>⑭ Reproductive history/results of previous pregnancies</p> <p>⑮ Gynecological disorders</p> <p>⑯ Genetic/family history</p> <p>⑰ Paper Patient (Case Study 1 & 2)</p>
Module 3: Preconception Care for High-risk Women
<p>① Needs for preconception care for high-risk women</p> <p>② Role of midwives, nurses, public health nurses in preconception care</p> <p>③ Epilepsy</p> <ul style="list-style-type: none"> i) Impact of pregnancy on women ii) Impact on pregnancy outcomes iii) Family planning needs

- iv) Evidence-based recommendations for preconception care for women
- v) Common and unique aspects of primary care and preconception care

④ Diabetes mellitus

- i) Impact of pregnancy on women
- ii) Impact on pregnancy outcomes
- iii) Family planning needs
- iv) Evidence-based recommendations for preconception care for women
- v) Common and unique aspects of primary care and preconception care

⑤ Chronic hypertension

- i) Impact of pregnancy on women
- ii) Impact on pregnancy outcomes
- iii) Family planning needs
- iv) Evidence-based recommendations for preconception care for women
- v) Common and unique aspects of primary care and preconception care

⑥ HIV infection

- i) Impact of pregnancy on women
- ii) Impact on pregnancy outcomes
- iii) Family planning needs
- iv) Evidence-based recommendations for preconception care for women
- v) Common and unique aspects of primary care and preconception care

⑦ Obesity

- i) Impact of pregnancy on women
- ii) Impact on pregnancy outcomes
- iii) Family planning needs
- iv) Evidence-based recommendations for preconception care for women
- v) Common and unique aspects of primary care and preconception care

⑧ Depression

- i) Impact of pregnancy on women
- ii) Impact on pregnancy outcomes
- iii) Family planning needs
- iv) Evidence-based recommendations for preconception care for women
- v) Common and unique aspects of primary care and preconception care

Results

The survey results reflect the expert opinions of five experts: two midwives, two nurses, and one public health nurses. The characteristics of participants were shown in the **Table 9**.

Table 9

Characteristics of Participants

Participants	Qualification	Years of post-qualification experience	Experience of caring for women of reproductive age
A	Nurse	8 years	Experience of working in sexually transmitted disease testing facilities.
B	Nurse	18 years	Worked with a primary care center abroad to support women's health.
C	Midwife	17 years	Engaged in caring for women through antenatal care in hospital wards and outpatient clinics.
D	Public Health Nurse	8 years	Experience in providing health education to female university students in the community.
E	Midwife	24 years	Engaged in caring for women through antenatal care in hospital wards and outpatient clinics.

With regard to the e-learning content, the following comments were gleaned from the interviews regarding (1) Module 1: target of e-learning and background of preconception care, (2) Module 2: food intake, stress management, cancer screening, and sexual transmitted infections (STIs), (3) Module 3: preconception care for high-risk women, and (4) other additional/ unnecessary items.

Target of e-learning

The suggestion was made to include not only midwives and nurses but also public health nurses as part of the target audience. The term preconception care is not yet widespread and thus not yet familiar to health care providers on the preconception

care provider side. They provided the following comments.

“There are differences in the projects being undertaken, as it depends on the health issues of the municipality.” (PHN)

“Public health nurses are not familiar with the term preconception care. The medical part is in hospitals, but public health nurses are also familiar with it because they target high-risk women in their practice, so the image is easy to grasp”. (PHN)

The “life classes” are offered at the request of schools. Depends on the needs of the school, midwives would change the topics. For junior high school students, they teach about pregnancy and contraception; for high school students, about STIs; and for university students, about fertility as part of the class of career design.” (PHN)

Module1: Overview of Preconception Care

There were comments about the statistical data that was missing as an overview of preconception care. It was also pointed out that only women are eligible for preconception care.

“Would it be a good idea to include the domestic violence (DV) incidence rate in the adverse pregnancy event rate?” (MW)

“Whether to include the rate of unplanned pregnancies (Japan has a relatively high rate of unplanned pregnancies, but is the rate of truly unwanted pregnancies high?) ”(MW)

“Preconception care for men could also be mentioned. (e.g., male HPV vaccination, counseling services for sexual problems, etc.) ”(RN)

Module 2: Preconception Care for Low-risk Women

Opinions were heard on food intake, stress management, cancer screening, and sexually transmitted diseases, among others. Regarding STIs, there was an opinion that syphilis is on the increase and should be emphasized in accordance with the current

situation in Japan. It was also suggested that HIV infection is a health issue related to women's life plans, so it would be better to inform nurses about how to take care of women with HIV infection along with their family planning.

Food intake

"As for food intake, a school nurse might know more about skipping breakfast and eating habits for students." (PHN)

Stress management

"University students are under high stress and need stress management."
(PHN)

Cancer screening

"In obstetrics clinical practice, I believe it is important to know about cancer. It is important to know your body before considering pregnancy." (MW)

STIs

"Young people (who come to the HIV testing sites) do not know how STIs are transmitted. Many people think that condoms prevent only pregnancy." (RN)

"I work in an HIV testing sites, and I feel that syphilis is on the rise. I actually feel that the number of positive results is high. I think that preconception care is very necessary for those who are doing "Papa Katsu"." (RN)

"There are some HIV-infected people in Japan, but their numbers are not as large as in overseas. Although it is included in the high-risk section (Module 3), it might be better to talk about the influence on women's health in general in the low-risk chapter (Module 2)." (MW)

"Overseas, HIV is still more common. I know a woman who had contracted HIV overseas. Now people can be treated properly, but if they want to have a child, it might be difficult. It is difficult to tell other people about it, and it is a hurdle when it comes to marriage or childbirth. Considering these cases, it would be better to explain the topics together with family planning in the high-risk chapter (Module 3)." (RN)

“HIV should be included also in Module 2. It seems unnatural that HIV is not on the list of STIs.” (MW)

Module 3: Preconception Care for High-risk Women

Participants commented that it was good for nurses to know what could put them at high risk for preconception health. They also commented that it would be an excellent addition to the program because some nurses do not know that nutritional status, such as excessive dietary restrictions, can lead to ovulation problems. In addition, it also raised the possibility that other mental disorders psychosocial backgrounds other than depression may also be a preconception risk.

“I thought it would be good to know “these things are high-risk” when I take care of them.” (RN)

“(About weight loss) If the woman is not morbidly skinny, she may not have to be considered at high-risk.” (RN)

“Excessive diet restrictions should be explained in the program. Some people may not know about it unless they are midwives, for example, that it can lead to ovulation disorders.” (RN)

“The definition of obesity should be clearly stated. In the U.S., the definition is 26 or more, but in Japan (Japan Society for the Study of Obesity), the definition is different: 25 or more.” (RN)

“Specific expectant pregnant women (Tokutei-ninpu) in need of assistance at the time of pregnancy notification need help with socio-psychological aspects.” (PHN)

“Depression may not be the only depression. People with developmental disabilities and those who have difficulties in living need to see a doctor as soon as possible. (What do you mean by “see a doctor earlier?” Do you mean that when she starts to think of getting pregnant?) When she realizes her difficulty to live. There are many cases where people are able to live normally and don’t notice it, but when they

become pregnant, they often find their difficulty.” (MW)

Additional and Unnecessary Items

It was suggested that the following items should be added; knowledge about menstruation (abnormal sign), women’s age and fertility, hypertension as chronic disease.

“I think it would be better to include information about menstruation (amount of menstrual blood, cycles, etc.).” (RN)

“It would be better to include information on the age at which a woman is most likely to become pregnant.” (RN)

“In the section on pre-existing medical conditions, instead of obesity, it is better to include hypertension.” (WM)

On the contrary, the following items were considered unnecessary, pre-existing medical conditions especially obesity.

“The item on pre-existing medical conditions is also included in the high-risk category, so it may not be necessary.” (MW)

“However, the item of obesity is unnecessary because it is also included in the appropriate weight.” (MW)

Discussion

In the present study, an educational e-learning program contents for nursing professions was developed aimed to enable midwives, nurses, and public health nurses to provide health education to young women and couples, learning about the impact of preconception health and lifestyle habits on young people’s future health for themselves and for the next generation they may have in the future. This educational e-learning program will provide midwives, nurses, and public health nurses with general guidance on the impact of a young person’s lifestyle and background on the health of young

people and their healthy lifestyle support and may serve as a tool for health care providers to increase awareness of preconception health.

Targets for the educational program

Each nurse, midwife, and public health nurse who was interviewed in this study suggested the need for an educational program on preconception care. Nurses emphasized their need for knowledge regarding preconception health conditions that could pose risks, such as extreme dietary restrictions and obesity increase the risk of ovulation problems. In addition, while public health nurses also work closely with school nurses and midwives to provide healthcare and 'life lessons' to students, they were unfamiliar with the term preconception care. This suggests the importance of equipping them with the ability to provide health counseling from the perspective of preconception care. In recent years, midwifery education has included lectures on preconception care (Japan Society Midwifery Education, 2020). However, in contrast, there were no such lectures in earlier midwifery education, and many midwives lacked the knowledge and confidence in caring for women before pregnancy.

Based on these considerations, it is desirable to include all midwives, nurses, and public health nurses as part of a feasibility study to understand their specific needs and the nature of preconception care, which should be provided in a wide range of settings.

Educational program contents

It was determined that the educational program content developed prior to the interviews, although comprehensive, had a large number of items, which would require a step-by-step learning process. Therefore, the educational program developed in this study is designed as an introductory educational program for nursing professionals who may perform or want to perform preconception care. It was considered desirable to

initially focus on basic and highly important items and structure the program to gradually cover more advanced items.

Based on the interview results, the most important items to be included in the preconception care educational program for low-risk women were nutrition (food intake), stress management, cancer screening, and sexually transmitted diseases. In addition, knowledge about menstruation and fertile time were identified as items to be included. Furthermore, a survey on the preconception care of women aged 18-39 years using the Health Literacy Scale for Preconception Care (Suto, 2021) found that knowledge of folic acid intake, contraceptive methods, and the menstrual cycle was low compared to other items, and these items were selected for inclusion in a provisional version of the education program (**Table 10**).

Moreover, as an introductory educational program, the seminar was designed to include mock counseling sessions to enable participants to acquire the ability to provide basic health counseling to young people.

Table 10

Provisional version of the education program content

Module 1: Overview of Preconception Care
① Rationale for promoting preconception care
② Incidence of adverse pregnancy events <ul style="list-style-type: none">• Low birth weight• Pregnancy complications
③ Significant events that occur before the start of antenatal care
④ Opportunities to provide preconception care
⑤ Resources related to preconception care

Module 2: Preconception care detailed explanation ①
① Adequate weight control (include food intake & exercise)
② Folic acid intake
③ Smoking and alcohol consumption
Module 3: Preconception care detailed explanation ②
④ Vaccination (HPV/ rubella) & family doctor (including cancer screening)
⑤ Reviewing contraceptives (including STI prevention)
⑥ Menstrual cycle and pregnancy
Module 4: Preconception care in practice
① Youth Friendly Healthcare
② Counseling process using materials
Seminar: Role-play
① Role-play

Although the percentage of women in Japan who have a family doctor for gynecology is not indicated, it is expected to be low given the low cervical cancer screening uptake rate (MoHLW, 2019) and the low contraceptive pill use rate (UN, 2019). Thereby, opportunities to communicate appropriate health information from health professionals are limited. In addition to gynecology, there is a need to provide health support to the younger generation in a variety of settings, including other medical institutions, education, communities, and industries, and there is a need to expand learning to various segments of the nursing workforce. On the other hand, preconception care is a relatively new field with a short history and limited research on educational tools for preconception care providers.

There are many challenges to successfully delivering health information to preconception generations, as many seem to begin seeking information only after they know they are pregnant or when pregnancy becomes difficult (Delbaere et al., 2016). However, for young people to benefit from information about preconception health

recommendations, the information needs to be available early in life, regardless of future birth plans.

This preliminary study focused on identifying items that nursing professionals consider important in preconception care. However, it was recognized that these items alone may still be insufficient, and preconception care providers need to further expand their knowledge to provide effective care for high-risk women with complications and other health problems in the next phase.

Conclusion and implication for the research

This preliminary research used qualitative methods to evaluate the e-learning content items. All interviews provided valuable suggestions for improving the content. Based on the results of the preliminary study, additional items of high importance were extracted, and a provisional version of the content was created that is commensurate with the aim of the educational program developed in this study, which focuses on the introductory part of the educational program.

Chapter 4 Methods

Development of e-learning

Confirmation of expert opinion on final education program

The principal investigator developed an educational program using the content items of the e-learning educational program developed in Preliminary Study 2. The created e-learning was presented to the experts listed below for comments and revisions. Particular attention was paid to ensure that there are no derogatory expressions in the sections on sex education and gender.

Experts in the following field related to preconception care are:

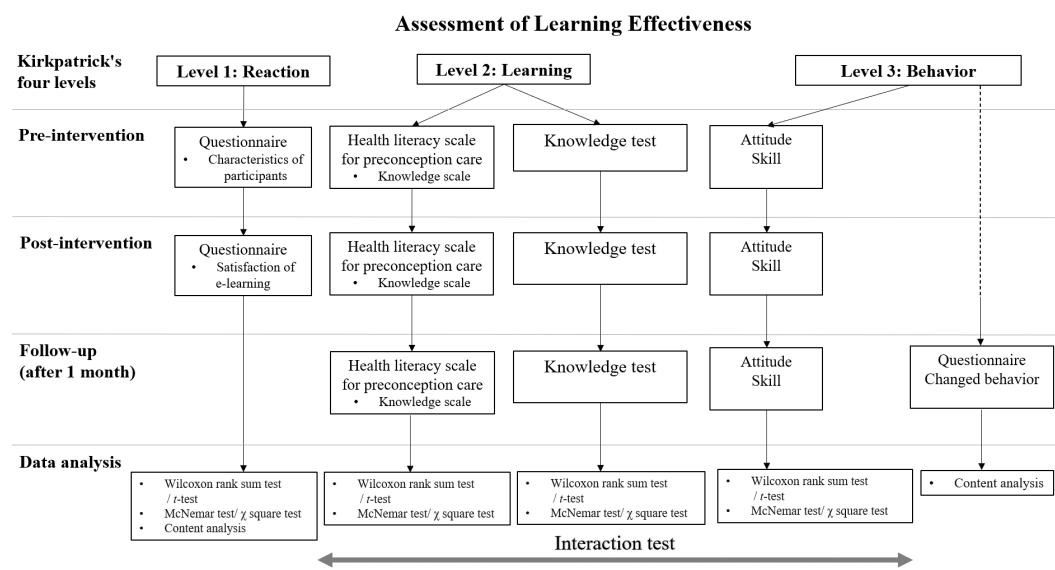
- Preconception care practitioner
- Women's health
- Sexual education
- Nutritionist
- Behavioral science

Development of knowledge tests

In this study, a researcher developed knowledge test was administered to evaluate learning effectiveness. Although a knowledge scale component of the Health Literacy Scale for Preconception Care (Suto et al., 2021), has been validated, it was not be possible to use this measure to find the differences in knowledge before and after the intervention for the study participants, who are health professionals, because the scale was designed for non-medical people. Therefore, a new knowledge test was developed for the current e-learning content.

In order to evaluate the effectiveness of the learning process, these points were evaluated that reaction (participants' satisfaction), learning (knowledge test scores), and behavior (attitude and skill) (**Figure 10**). After developing measurements, five nursing professionals who meet the study participation criteria were asked to view the e-learning

lecture and complete the test before and after viewing to gain insights for any needed changes. After creating a knowledge test, five nursing professionals who meet the study participation criteria were asked to watch the e-learning and respond to the test before and after viewing the e-learning.



Note: Developed assessment items based on Bloom's Taxonomy (2001) and Kirkpatrick's (1998) four levels of training evaluation model.

Figure 10

Assessment of Learning Effectiveness

Main study

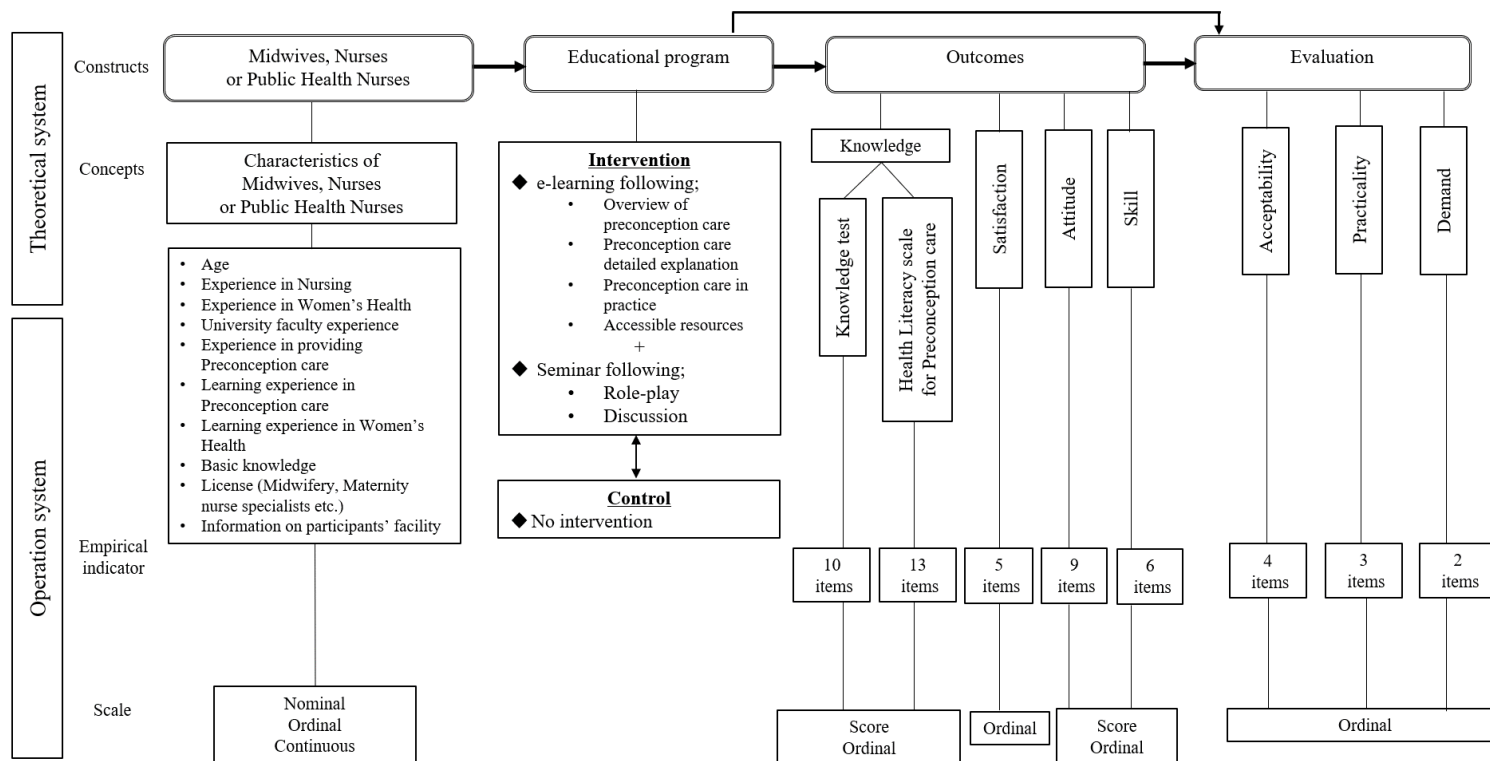
Study design

The study design involves a feasibility pilot comparing an intervention group, which introduces an educational program aimed at enabling nurses in gaining knowledge and counseling skills related to preconception care for young people of reproductive age, with a control group that does not receive an introduction to the

program.

Study framework

The substruction of this study (**Figure 11**) explains its theoretical foundation and its connection to the research methodology. Bloom's Taxonomy (2001) was used to develop the current education program aimed at examining the process of competency development required for the provision of preconception care. Kirkpatrick's (1998) four levels of training evaluation model was also used to set outcome items in order to evaluate the effectiveness of the educational program.



Note: Developed educational program based on Bloom's Taxonomy (2001) and Kirkpatrick's (1998) four levels of training evaluation model for evaluation of educational program.

Figure 11

Substruction of this Study

Sampling methods

Sample size

Regarding the estimation of sample size for pilot study, no power calculations were required (Thabane et al., 2010), however, the simplest methods to apply are sample size rule of thumb such as recommended by Julious (2005) who recommends a sample size of at least 12 participants. The principal investigator designed the study to have 12 participants in each of the intervention and control groups to stabilize the analysis (p. 287-291). A total of 30 participants were set up in this study, 15 in each arm, with an expected dropout rate of 25%, therefore a total of 40 midwives, nurses, and public nurses will be the research participants.

Study participants

The eligible participants for this study included qualified midwives, nurses, and public health nurses who are involved in or interested in providing preconception care to women of reproductive age. The inclusion criteria are (a) qualified midwives, nurses, or public health nurses, and (b) those who are involved in providing preconception care to women of reproductive age or are interested in doing so.

Recruitment of study participants

The recruitment of research participants was conducted through snowball sampling, whereby research participants are asked to assist in identifying other potential participants with similar knowledge, qualifications, and experience. Furthermore, to prevent bias among midwives, nurses, and public health nurses, a request for referral was sent by post to the head nurse of a hospital or clinic with an obstetrics and gynecology department, and to public health centers. In addition, recruitment was extended via mailing lists of professional associations such as the Japanese Midwives Association and the Japan Academy of Midwifery, in conjunction with the study.

The research participants were asked to access a Google form using a QR code

provided on the research participation request form (Appendix A). Participants then completed a web questionnaire, and at the beginning of the questionnaire, they were asked to indicate their willingness to participate in the research. Those who agreed to participate were registered as research participants.

Study allocation

As a pilot study, random allocation was conducted to also demonstrate the random allocation method. After eligible participants consent to the study enrollment by submitting the Google form ‘confirmation of consent’, they were randomly allocated by an independent research assistant to either the intervention or control group. Participants were stratified by license (nurse, midwifery, public health nurse, clinical nurse specialist (CNS) in women’s health nursing, adolescent health counselor, certified infertility counselor, certified IVF coordinator.) and experience years of nursing based on their responses to a questionnaire at the time of consent, and then assigned to one of the two groups using a block randomization method. Randomization was conducted using the web-based randomization system MUJINWARI (<https://autoassign.mujinwari.biz/>). Due to the nature of the intervention, study participants and researchers cannot be blinded. Therefore, the study participants in the control group were informed that they have been assigned to the control group and that after answering the questionnaire one month later, they were told how to access the e-learning program so that they can take it if they wish. Analysis was performed by intention-to-treat (ITT) analysis on all participants who have been randomly assigned. The study flowchart is shown in **Figure 12**.

Intervention

Title: Educational e-learning program for midwives, nurses, and public health nurses providing preconception care

Objective of the education program: To enable nursing professionals who may provide health care to young people of reproductive age to acquire knowledge and counseling skills in preconception care

Table 11

Learning Objectives and Goals of the Educational Program

	Learning objectives	Learning goals
Chapter 1: Overview of Preconception care	Understanding what Preconception care is	1. Understand the definition of preconception care 2. Understand what preconception care aims to achieve 3. Understand who preconception care is aimed at
Chapter 2: Preconception care detailed explanation ① • Adequate weight • Folic acid intake • Smoking and alcohol consumption	Understand and be able to explain each of the preconception care components	1. Understand the need to maintain an appropriate weight 2. Be able to explain the benefits of maintaining an appropriate weight 3. Understand the need for folic acid intake 4. Be able to explain the purpose of taking folic acid before pregnancy and the amount needed 5. Understand the effects of smoking and alcohol consumption on pregnancy and the fetus 6. Explain the benefits of smoking cessation and abstaining from alcohol consumption
Chapter 3: Preconception care detailed explanation ②	Understand and be able to explain each of the preconception care components	1. Understand the risk of infectious diseases on future health and the fetus 2. Be able to explain the benefits of vaccination

<ul style="list-style-type: none"> • Immunization (HPV/rubella) & family doctor • Reviewing contraceptives • Menstrual cycle and pregnancy 		3. Understand contraceptive method 4. Be able to explain contraceptive methods 5. Understand the menstrual cycle, sex hormone changes and the process of achieving pregnancy 6. Be able to explain the menstrual cycle, sex hormone changes and the process of achieving pregnancy
Chapter 4: Preconception care in practice	1. Understand Youth Friendly Healthcare 2. Understand the counseling process using teaching materials	1. Understand Youth Friendly Healthcare 2. Understand the counseling process using teaching materials
Group discussion	1. To be able to organize the information needed to assess preconception health and how to collect it	1. Understand the information needed to assess preconception health 2. Consider methods for gathering information
Conducting role-plays	1. Conduct mock counseling sessions to understand practical skills 2. Understand what to look out for in counseling by taking on the role of a mock client	1. Be able to collect information on the subject regarding preconception care 2. Be able to organize problems related to preconception health 3. Be able to explain how to care for health problems that the subject has
Discussion Networking	1. To be able to set personal goals for the future from discussion about each other's experiences and feasible preconception care 2. To be able to create network enables the exchange of information and consultation with a small number of preconception care provider	1. To be able to set personal goals for the future from discussion about each other's experiences and feasible preconception care 2. To be able to create network of preconception care provider

Structure of the educational program:

【e-learning】

Based on Bloom's Taxonomy, the e-learning program covers Chapters 1-3, which focus on providing knowledge about preconception care, while Chapter 4 examines the theory of care for young people and the specific counseling process. Each chapter of e-learning is approximately 10 minutes and was viewed at the participants' convenience up to the date of the online seminar. After viewing each chapter of e-learning, participants were asked to answer a short questionnaire of two questions each. This short questionnaire aimed to interact with the participants and connect them with their past experiences. The responses to the short questionnaire were collected by the principal investigator, incorporated into the online seminar, and used to inform the seminar's content. The learning objectives and goals for each chapter are listed in **Table 12**.

【Seminar】

The e-learning program was followed by an online workshop involving mock counseling sessions using case studies. The online seminar was conducted with 20 participants divided into two groups of 10 participants each. The online seminar is conducted using Zoom. In the first half of the online seminar, participants discussed what information is necessary for each topic and how to obtain it (e.g., calculating BMI with subjects, checking food intake using dietary history, etc.). In discussion ①, the opinions of each group were shared with the whole group. In the second half of the session, participants conducted mock counseling on the case using those questions and information-gathering methods. In discussion ②, asked the participants to share what they noticed after the role-play (e.g., points of hesitation to ask, points that could have been devised, etc.). Networking enables connecting among a small number of preconception care practitioners to share difficulties and good practices when starting

something new and to learn from each other. A mailing list was created that people can exchange information by email. Participants who do not wish to be added to the mailing list were informed that they may contact the principal investigator later.

Table 12

Structure of the Educational Program

	Contents	Duration
【e-learning】		
Chapter 1: Overview of Preconception care	1. Rationale for promoting preconception care 2. Incidence of adverse pregnancy events <ul style="list-style-type: none"> • Low birth weight • Pregnancy complications 3. Significant events that occur before the start of antenatal care 4. Opportunities to provide preconception care 5. Resources related to preconception care	10 min
Short questionnaire ①	1. What do you think has been achieved in preconception care in Japan? 2. What do you think is necessary but not yet achieved in preconception care in Japan?	5 min
Chapter 2: Preconception care detailed explanation ①	1. Adequate weight control (include food intake & exercise) 2. Folic acid intake 3. Smoking and alcohol consumption	10 min
Short questionnaire ②	1. Of the three items you learned about, what did you think was necessary for young people in Japan? 2. Does it provide care provision in the facility you are in?	5 min
Chapter 3: Preconception care detailed explanation ②	1. Immunization (HPV/ rubella) & family doctor 2. Reviewing contraceptives 3. Menstrual cycle and pregnancy	10 min
Short questionnaire ③	1. Of the three items you learned about, what did you think was necessary for young people in Japan? 2. Does it provide care provision in the facility you are in?	5 min
Chapter 4: Preconception care in practice	1. Youth Friendly Healthcare 2. Counseling process using teaching materials	10 min
Short questionnaire ④	1. What do you think is youth friendly healthcare practiced in Japan? 2. in contrast, what do you think is needed that is not being practiced?	5 min

【Seminar】		
1. Explanation of today's objectives and tasks 2. Ice-break	<ul style="list-style-type: none"> • Explanation with slides • Self-introductions, etc. 	5 min
Group discussion (2 groups of 5 participants each) 1 facilitator per group	<ul style="list-style-type: none"> • Divide into two groups of five people each • Discuss the information required for each theme and how to collect it, and have participants write their opinions on the online whiteboard. <p><u>Group A</u></p> <ol style="list-style-type: none"> 1. Adequate weight control (include food intake & exercise) 2. Folic acid intake 3. Smoking and alcohol consumption <p><u>Group B</u></p> <ol style="list-style-type: none"> 1. Immunization (HPV/ rubella) & family doctor 2. Reviewing contraceptives 3. Menstrual cycle and pregnancy 	10 min
Discussion ①	<ul style="list-style-type: none"> • Share the opinions expressed by each group with the whole group 	5 min
Role play (5 pairs of 2 people each) Two facilitators go round each pair of sessions in turn	<ul style="list-style-type: none"> • Divide into 5 groups of 2 people each • The role of the subject and the role of the nursing professionals will be decided, and the roles will be switched for the second time. • Send the case study to the chat for the subject role. • Conduct a 5-minute mock counseling session • One facilitator and one principal investigator go around the breakout rooms 	15 min
Discussion ②	<ul style="list-style-type: none"> • Discussion on the points noticed 	15 min
Networking	<ul style="list-style-type: none"> • Discussion about each other's experiences and feasible preconception care, which can be used to help create future personal goals • Explain the purpose of networking • Create a mailing list so that people can exchange information (Inform participants who do not want to be on the mailing list that they may contact the principal investigator later.) 	10 min

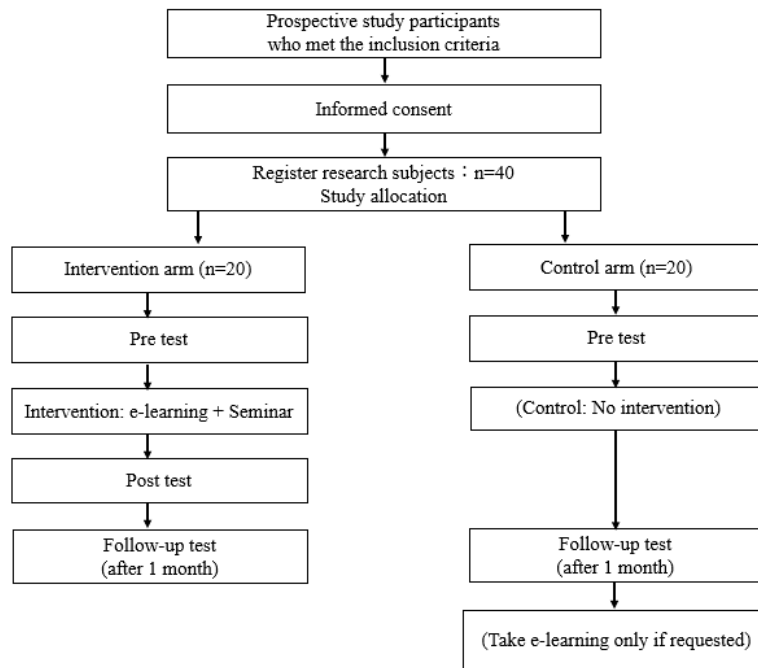


Figure 12
Study Flowchart

Study procedure

Midwives, nurses, and public health nurses who choose to participate in the study were asked to read the research description carefully, and those who still wish to participate in the research were asked to access the Google form and fill in the fields to confirm their consent and submit the form. Participants who have accessed the barcode and expressed consent are sent a consent declination form by email and asked to mail the form along with the office address if they decline consent. Providing a reason for declining participation is optional. At the same time, participants were requested to indicate their preferred date and time for the seminar on the form.

After informed consent and randomization, the intervention group was provided with the content of an e-learning program on preconception care by e-mail. e-learning were conducted using the YouTube, a social networking service. The principal investigator monitored whether the e-learning videos were watched, with responses to a short questionnaire at the end of the video. The date and time of the seminar was

determined based on the preferences indicated at the time of consent confirmation. The seminar was conducted online and is designed to last 60 minutes, including mock counseling and discussion.

The evaluation was conducted three times: at baseline after informed consent (Appendix B), immediately after the intervention (Appendix C) and one month after the intervention (Appendix D). Participants were emailed a QR code and a link to access the evaluation questionnaire. At the one-month follow-up for the intervention group, a descriptive design was used with a questionnaire to ascertain the acceptability of the intervention materials (Appendix G). To reinforce the quantitative findings, open-ended questions were used to give a qualitative focus to the findings. At the end of the pre-test and at the one-month follow-up, study participants received 3,000 Amazon gift points (email type). The control group received the same e-learning content by email one month after the end of the analysis.

Data collection

Demographic characteristics and satisfaction questionnaire

The Characteristics of Participants Questionnaire was developed to obtain following data: (a) age, (b) years of experience in the nursing field, (c) years of experience in the field of women's health, (d) university faculty experience, (e) experience in providing preconception care, (f) learning experience in preconception care, and (g) learning experience in women's health.

1) Level 1 Reaction

Satisfaction: For e-learning satisfaction, a five-point Likert scale was used to ask questions about content, usability, acceptability, practicality, demand, time required, learning, and future use.

2) Level 2 Learning

Health literacy scale for preconception care (knowledge test): The Health Literacy Scale for Preconception Care developed by Suto et al. (2017) consists of a knowledge test and behavioral skills questions; however, since this present study was for care providers, only the knowledge test was used. The knowledge test is a multiple-choice test consisting of 13 questions.

Knowledge test: Knowledge test will be modified to match e-learning contents.

3) Level 3 Behavior

Attitude: A preconception care attitude questionnaire on primary care was developed based on the Sexual Health in Primary Care Questionnaire—Attitude by Leyva-Moral et al. (2020). Nine questions were answered on a 5-point scale ranging from Strongly agree, Agree, neither agree nor disagree, Disagree, and Strongly disagree.

Skill: Skill was measured using four options (cannot or have never done, can follow the example, can apply what they learn to achieve subjects' goals and provide personalized care in a varied way, can provide personalized care, incorporating collaboration with doctors, dietitians and other multidisciplinary professionals when necessary).

Post-course changes: The post-course changes were reported in the multiple answer question and free-text section of the questionnaire, including examples such as engaging in actual preconception health counseling, incorporating a section on preconception care into the medical questionnaire, organizing study sessions with colleagues, and other relevant changes.

This educational program aims to develop the capacity to conduct basic preconception care counseling using role play as an introduction to preconception care. In order to assess “Results” at Level 4, it is necessary to implement preconception care in participants' facilities for a certain period and to check the performance in terms of

specific health improvement for reproductive women. It is not always possible to immediately implement preconception care in participants' facilities, and obtaining this information is difficult. For this reason, no specific items were set for evaluating Level 4, as there are ways to substitute Level 3 behavior change for Level 4 evaluation.

4) Evaluation of program

The evaluation questionnaire for the educational program was created based on the feasibility research of Bowen, et al., (2009). Feasibility studies determine whether an intervention is appropriate for further testing. Therefore, we asked questions about the key areas suggested as needing attention in the feasibility study. *Acceptability* assesses suitability, satisfaction, or attractiveness to the program. *Demand* estimates are likely to be used, and *practicality* considers it will be carried out with intended participants using existing means, resources, and circumstances and without outside intervention. These areas were scored using a five-point Likert scale (0 = Strongly disagree, 1 = Disagree, 2 = Neither agree nor disagree, 3 = Agree, 4 = Strongly agree).

Outcomes and measures

Primary outcome

Knowledge test.

Difference in the distribution of scores between the **pre-intervention test** and **post-intervention test** between the intervention group and the control group was computed.

Secondary outcome

Knowledge test

Difference in the distribution of scores between the **pre-intervention test** and **follow-up test (after 1 month)** between the intervention group and the control

group was computed as follows:

- **Differences in the percentages** above or below the thresholds between the **pre-intervention test** and **post-intervention test** between the intervention group and the control group.
- **Differences in the percentages** above or below the thresholds between the **pre-intervention test** and **follow-up test** between the intervention group and the control group.
- Qualitative analysis of the scoring status of each item.

Attitude

The following was computed:

- **Difference in distribution of scores** between the **pre-intervention questionnaire** and **post-intervention questionnaire** between the intervention group and the control group.
- **Difference in distribution of scores** between the **pre-intervention questionnaire** and **follow-up questionnaire (after 1month)** between the intervention group and the control group.
- **Differences in the percentages** above or below the thresholds between the **pre-intervention questionnaire** and **post-intervention questionnaire** between the intervention group and the control group.
- **Differences in the percentages** above or below the thresholds between the **pre-intervention questionnaire** and **follow-up questionnaire** between the intervention group and the control group.

Skill

The following was computed:

- **Differences in the percentages of options changed for the better** between the

pre-intervention questionnaire and **post-intervention questionnaire** between the intervention group and the control group.

- **Differences in the percentages of options changed for the better** between the **pre-intervention questionnaire** and **follow-up questionnaire (after 1 month)** between the intervention group and the control group.

Satisfaction of e-learning

- The question responses about content, user-friendliness, time required, learning, and future use between the intervention group and the control group was computed.
- Qualitative analysis of free-text items was examined.

Changes in behavior related to preconception care

- A qualitative analysis of the free-text items was conducted.

Evaluation of e-learning

- The Likert scale proportions for each of the acceptability, demand, and practicality items was calculated and described.
- The reasons of evaluation by the open-ended questions were summarized descriptively by themes.

Data analysis

Data analytics will be performed using EZR software (version 1.4) (Kanda, 2013). Two-sided p -values was used, and p -values of less than 0.05 was considered statistically significant. Descriptive statistics was used for frequency, mean and standard deviation (SD), or median and interquartile range (IQR). Assumptions of the normality of the variables were verified using graphs or the Shapiro-Wilk test. The

comparisons between the two groups were made using the chi-square and t-tests. If the variables do not meet these assumptions, statistical comparisons were made using nonparametric tests. The differences in the distribution of scores for the two groups were compared using the Wilcoxon sum rank test. The differences in the percentages above or below the thresholds were compared using the McNemar test. Similar comparisons were made for the questions of Attitude and Skill.

To adjust for common effects observed in both the intervention and control groups, regression models were built using a difference-in-difference framework, which allows the effect of the intervention to be distinguished from common changes across the control and intervention groups, adjusting for pre-test levels of the outcome of interest. Logistic regression models were used to analyze the effect of the intervention as a function of randomization group, time, and group \times time interaction, with the primary outcome, with the score of the knowledge test about preconception care, as the dependent variable. Only participants with at least one valid response for both pre-and post-intervention outcomes were included in each model. Multiple regression analyses were then conducted to explore the relationship between the intervention and overall changes, using the secondary outcomes of the Health Literacy Scale (knowledge test) score, questions of attitude and skill as independent variables.

The researcher systematically coded and categorized the qualitative data from independent open-ended questions to evaluate the educational program. The predetermined categories were based on the evaluation for the acceptability, practicality, and demand of the e-learning program for participants.

Ethical consideration

Procedures for obtaining informed consent

The purpose and methods of the research, the fact that participation in the research is voluntary, and the freedom to withdraw consent was fully explained to

eligible research participants using the research explanation form. After confirming consent, those who have given their consent was considered as research participants.

Protection of personal information.

Research data was handled in a manner that separates it from personal information, and information obtained in the research was analyzed only by the principal investigator. At the end of the research, the research data will be for five years, after which all data will be irretrievably destroyed, and any paper-based data will be shredded and destroyed. Although not planned at this time, there is a possibility of secondary use of the data in the event that future research is conducted using this data, and such secondary use will only be conducted upon application to and approval by the Research Ethics Review Committee.

Anticipated risks and benefits of participating in the study

Participation in the study imposed a time constraint of viewing the e-learning program (60 minutes), online seminar (60 minutes), completing the pre-test and questionnaire (10 minutes), completing the post-test and questionnaire (15 minutes or 10 minutes), and completing the follow-up test and questionnaire (10 minutes). A time constraint of 2 hour 35 minutes or 2 hour 30 minutes was imposed.

Conflicts of interest in research

This research was funded by a grant from Yamaji Fumiko Professional Nursing Education and Research Foundation (*Yamaji Fumiko Nursing Research Fund* [2021]).

Ethical approval and registration of research protocol

This study was approved by the St. Luke's International University Ethics Committee (approval number: 23-A014). In addition, the research protocol was registered with University Medical Information Network-Clinical Trial Registry (ID:

UMIN000051089).

Table 13*Data collection*

		Pre-intervention questionnaire	Post-intervention questionnaire (Immediately)	Follow-up questionnaire (After 1 month)
Characteristics of participants	Intervention group	●		
	Control group	●		
Outcomes				
Knowledge test	Intervention group	●	●	●
	Control group	●		●
Health Literacy Scale for Preconception Care	Intervention group	●	●	●
	Control group	●		●
Satisfaction	Intervention group		●	
	Control group			
Attitude	Intervention group	●	●	●
	Control group	●		●
Skill	Intervention group	●	●	●
	Control group	●		●
Changes in behavior	Intervention group			●
	Control group			
Evaluation				
Evaluation for educational program	Intervention group		●	
	Control group			

Chapter 5 Results

Description of Participants

A total of 41 nursing professionals registered in July 2023, and all who requested to participate in the present study met the inclusion criteria. Therefore, 41 nursing professionals were included and randomly allocated to either the intervention group (n = 21) or control group (n = 20) in a 1:1 ratio by computer and were stratified according to their principal occupation, which was midwife, nurse, public health nurse, or faculty member of a nursing university. The flow diagram of participants is shown in **Figure 13**. In the intervention group, one participant withdrew, and one dropped out for unknown reasons. Of the 21 participants, 19 (90.5%) received interventions such as e-learning and online seminars. Finally, included in the analysis by October 2023 were the 39 (95.1%) participants, 19 (90.5%) in the intervention group and 20 (100.0%) in the control group who completed the post-test and follow-up. The drop-out rate was two participants (4.9%).

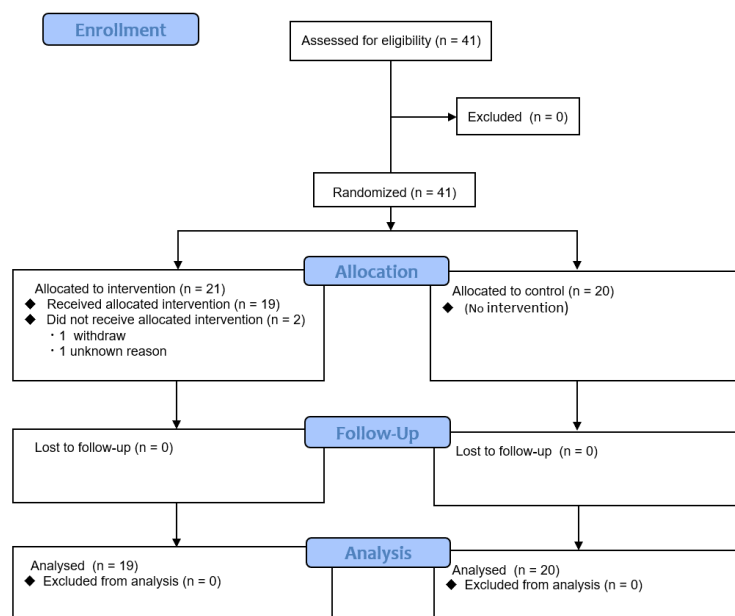


Figure 13

Trial Flow Diagram

Characteristics of participants

The characteristics of the study participants are shown in **Table 14**. The study participants were generally in their 20s to 40s. Most participants were female nursing professionals. One male nursing professional was interested in participating; however, he withdrew after randomization. The most common profession noted was midwifery, with some participants being certified adolescent health advisors, comprehensive sexuality education (CSE) practice midwives, and CNS in genomic nursing. The most common lifetime experience in nursing was between five and 20 years, and more than half of the respondents had never worked in a gynecology or fertility clinic. Although it was expected that many of those teaching nursing and midwifery would be interested in preconception care, 60% to 70% of the participants had no experience teaching nursing.

Table 14

Characteristics of Participants

Factor	Group	Intervention group (n = 21)	Control group (n = 20)	p-value
Age (%)	20-29 years	7 (33.3)	3 (15.0)	.331
	30-39 years	5 (23.8)	6 (30.0)	
	40-49 years	6 (28.6)	9 (45.0)	
	50-59 years	1 (4.8)	2 (10.0)	
	60-69 years	2 (9.5)	0 (0.0)	
Sex (%)	Female	19 (90.5)	20 (100.0)	.367
	Male	1 (4.8)	0 (0.0)	
	I do not want to answer	1 (4.8)	0 (0.0)	
Qualifications obtained (Multiple answers allowed)	Nurse	20	18	—
	Midwife	14	15	
	Public health nurse	13	11	
	Adolescent Health Advisor	0	2	
	CSE [¶] for Children Practice Midwives	0	1	
	CNS [§] in Genomic Nursing	0	1	
Principal occupation engaged in (%)	Nurse	3 (14.3)	5 (25.0)	.324
	Midwife	12 (57.1)	12 (60.0)	
	Public health nurse	3 (14.3)	0 (0.0)	
	Faculty member	3 (14.3)	3 (15.0)	
Years of lifetime experience as a midwife, nurse or health professional (%)	< 3 years	2 (9.5)	2 (10.0)	.143
	3 years < 5 years	4 (19.0)	1 (5.0)	
	5 years < 10 years	7 (33.3)	4 (20.0)	

	10 years < 20 years	3 (14.3)	10 (50.0)	
	≥ 20 years	5 (23.8)	3 (15.0)	
Years of experience in gynecology (%)	none	9 (42.9)	7 (35.0)	.366
	< 3 years	5 (23.8)	5 (25.0)	
	3 years < 5 years	3 (14.3)	2 (10.0)	
	5 years < 10 years	3 (14.3)	1 (5.0)	
	10 years < 20 years	0 (0.0)	4 (20.0)	
	≥ 20 years	1 (4.8)	1 (5.0)	
Years of experience in fertility clinics (%)	none	18 (85.7)	16 (80.0)	.779
	< 3 years	2 (9.5)	2 (10.0)	
	3 years < 5 years	1 (4.8)	1 (5.0)	
	5 years < 10 years	0 (0.0)	0 (0.0)	
	10 years < 20 years	0 (0.0)	1 (5.0)	
Teaching experience in nursing education institutions (%)	none	15 (71.4)	12 (60.0)	.659
(e.g., nursing schools, universities, graduate schools)	experienced	6 (28.6)	8 (40.0)	
Do you know the term preconception care? (%)	I know	14 (66.7)	9 (45.0)	.248
	I have heard of it, but I don't know much	7 (33.3)	8 (40.0)	
	I don't know	0 (0.0)	2 (10.0)	
	I have never heard of it	0 (0.0)	0 (0.0)	
	other	0 (0.0)	1 (5.0)	
Have you ever learned about preconception care before? (%)	I have learned it	8 (38.1)	7 (35.0)	.378
	I have never learned it	11 (52.4)	12 (60.0)	
	I don't know	2 (9.5)	0 (0.0)	
	Other	0 (0.0)	1 (5.0)	
Where did you learn about preconception care? (Multiple answers allowed)				
-	Internet, social networking, television, radio and other media			n = 8
-	Continuing education for nurses, midwives and public health nurses, seminars and other courses that are NOT aimed at certification			n = 8
-	Training institutions for nurses, midwives and public health nurses, such as universities or colleges			n = 5
-	Continuing education for nurses, midwives and public health nurses, seminars and other courses that are aimed at certification			n = 4
-	Journals			n = 1
-	Seminars at academic conferences			n = 1
-	Seminars by the Japan Midwives Association			n = 1
Have you ever learned about women's health before? (%)	I have learned it	15 (71.4)	14 (70.0)	.797
	I have never learned it	5 (23.8)	4 (20.0)	
	I don't know	1 (4.8)	2 (10.0)	
Where did you learn about women's health? (Multiple answers allowed)				
-	Training institutions for nurses, midwives and public health nurses, such as universities or colleges			n = 21
-	Continuing education for nurses, midwives and public health nurses, seminars and other courses that are aimed at certification			n = 7
-	Continuing education for nurses, midwives and public health nurses, seminars and other courses that are NOT aimed at certification			n = 5
-	Internet, social networking, television, radio and other media			n = 4
-	Graduate schools			n = 1
Do you provide Women's Health Care or care for reproductive aged women? (%)	Yes	8 (38.1)	6 (30.0)	.665
	No	10 (47.6)	9 (45.0)	
	I don't know	3 (14.3)	5 (25.0)	

Note: Significant association * $p < .05$, ** $p < .01$, [†]Comprehensive Sexual Education,

§Certified Nurse Specialist

Participants' thoughts on preconception care

Study participants were asked about their thoughts of preconception care prior to attending the program, and the results are summarized in **Table 15**. The responses obtained were qualitatively summarized and themed by the researcher. This resulted in the following six themes: 'Care towards healthy pregnancy including body preparation', 'Comprehensive care not only limited to pregnancy', 'Comprehensive health care for young people', 'Care for couples including preparedness for pregnancy', 'Care of the preparedness for when they wish to have children in the future', 'Reproductive health' and others. Only one participant answered 'I don't know'.

Table 15*Program Participants' Thoughts on Preconception Care*

Theme	Raw data
Care towards healthy pregnancy including physical preparedness	<p><i>"To prepare both physically and mentally for pregnancy. It is important that men as well as women are involved in preconception care."</i></p> <p><i>"Health support for women who are at the stage of wanting or considering raising a baby in the future."</i></p> <p><i>"Preconception care for a healthy birth for both mother and child."</i></p> <p><i>"Care from the preconception age to improve health in view of pregnancy and childbirth."</i></p> <p><i>"Care and physical development from before pregnancy"</i></p> <p><i>"Care that makes living and decision-making based on pregnancy and childbirth feel natural and familiar."</i></p> <p><i>"Care to enable women to have a healthy pregnancy prior to conception"</i></p> <p><i>"Care related to femininity, pregnancy, childbirth and fertility received prior to conception"</i></p> <p><i>"Assisting couples who want to conceive in their preconception preparation"</i></p> <p><i>"Preconception body preparation"</i></p>
Comprehensive care not only limited to pregnancy	<p><i>"To provide comprehensive care, including information and counseling, to enable women to take ownership of their own life plan choices, including health and reproduction."</i></p> <p><i>"Investments in the body and mind that can be made now, not only to build up the body before conception, but also for the future."</i></p> <p><i>"Care for holistic, lifelong health"</i></p> <p><i>"Health support provided before considering pregnancy"</i></p> <p><i>"Care that is important for all women of childbearing age, care that helps them to manage themselves and develop healthy lifestyles, not only to maintain their health but also to lead a more wonderful life."</i></p> <p><i>"Health program for a nicer life for all"</i></p> <p><i>"Preparing the body and mind to be able to conceive when you want to, whether you get pregnant or not"</i></p> <p><i>"Care for a healthier, happier life for all, I think"</i></p> <p><i>"Thinking about physical health even before pregnancy"</i></p> <p><i>"Care in daily life for good physical and mental health"</i></p> <p><i>"Preserving and promoting the physical, mental and social health of all people of reproductive age from pre-adolescence onwards."</i></p>
Comprehensive health care for young	<i>"Care and information for young people who are about to become pregnant"</i>

people	<p><i>“Care for young people to become health-conscious before pregnancy with a view to the future.”</i></p> <p><i>“Body building from adolescence with an awareness of pregnancy and self-care”</i></p> <p><i>“Care to raise awareness about future life, reproduction and health, not only during the childbearing years, but also in middle and high school.”</i></p> <p><i>“Teenagers' information is mainly from social networking sites, and they don't really think about whether this is beneficial for their health or not. First of all, they search only for what interests them. Also, they have been busy with lessons and cram school since they were toddlers and are not used to thinking and acting on their own. I have the impression that the parents' generation (in their 30s and 40s) are also busy. With economic disparities, it is important for all children to first become aware of the concept of health and what they can do to help.</i></p> <p><i>The Ministry of Health, Labor and Welfare's age trends for abortion in R3 showed the rate of abortions performed under the age of 18. I think there are many factors such as economic deprivation, family environment, being in school, social networking sites, etc., but I think there is a need for practicable sex education so that even one person does not have to go through this painful experience.”</i></p>
Care for couples including preparedness for pregnancy	<p><i>“Care for couples to face their future and the health of their future baby.”</i></p> <p><i>“Preconception care to help men and women prepare their lives and health for pregnancy.”</i></p> <p><i>“Care to encourage couples to think about family planning as they consider their future.”</i></p> <p><i>“Guidance for parents to ensure that the pregnancy and birth process is as normal as possible.”</i></p>
Care of the preparedness for when they wish to have children in the future	<p><i>“Knowledge building to create a body that is ready to welcome a baby when she wants one.”</i></p> <p><i>“Creating a body that is relevant to all women and that can easily conceive.”</i></p> <p><i>“Taking care of women's body with future pregnancies in mind. Creating a body that can easily conceive.”</i></p> <p><i>“Care that supports women to make a life plan and to conceive and give birth at the best time for them.”</i></p> <p><i>“Care for preparing the subject's physical and mental health for when she wants to become pregnant.”</i></p>
Reproductive health	<p><i>“Care to ensure correct reproductive knowledge and implementation.”</i></p> <p><i>“Care to help them acquire knowledge about pregnancy and childbirth from an early stage.”</i></p> <p><i>“Facing the body, including pregnancy, with an eye to the future.”</i></p> <p><i>“Health education to make them feel comfortable about their choice to become pregnant or not to become pregnant.”</i></p> <p><i>“Health guidance to avoid unwanted pregnancies.”</i></p>
Wider idea	<p><i>“Pre-pregnancy care”</i></p> <p><i>“A kind of life plan”</i></p>

Outcome measures

Total scores and average scores of outcomes

Each correct answer was added to one point for the knowledge tests, and the total score was calculated. Regarding responses on attitudes obtained from the questionnaire, they were scored as Strongly agree = 4, Agree = 3, Neither agree nor disagree = 2, Disagree = 1, and Strongly disagree = 0, and the average scores were calculated. Responses on skills obtained from the questionnaire, were scored as follows: ‘cannot or have never done’ = 0, ‘can follow the example’ = 1, ‘can apply what has been learned to achieve the subject’s goals and provide individualized care in a variety of ways’ = 2, ‘can provide individualized care, incorporating collaboration with doctors, dieticians, and other multidisciplinary professionals as necessary’ = 3 and the average scores were calculated.

The medians and IQR of the scores for the intervention and control groups, respectively, on the pre-test, post-test, and follow-up test are shown in **Table 15**. The pre-test, post-test, and follow-up tests increased knowledge, attitudes, and skills scores through their process. The percentages of those above the threshold are shown in **Table 16**. Thresholds were set for those who reached full marks in the knowledge tests; moreover, at least 3 points, more than ‘Agree’ in attitudes, and at least 1 point, more than ‘Can follow the example’ in skills. For the Health Literacy Scale for Preconception Care (Knowledge), Knowledge Test, Attitudes, and Skills, **Figures 14-17** show comparisons between the two groups, and **Figure 18** shows pre-test, post-test, and follow-up test comparisons.

Table 16*Median Scores for Total and Average Scores of Outcomes*

Measures	Full scores	Pre-test (Median [IQR])			Post-test (Median [IQR])		Follow-up test (Median [IQR])	
		Intervention (n = 21)	Control (n = 20)	p-value	Intervention (n = 19)	Intervention (n = 19)	Control (n = 20)	p-value
Total score of Health Literacy Scale for Preconception Care (Knowledge)	13	12.0 [12.0-13.0]	13.00 [12.00-13.00]	.022*	13.00 [13.00-13.00]	13.00 [12.50-13.00]	13.00 [12.00-13.00]	.176
Total score of knowledge test score	10	8.00 [7.00-9.00]	8.00 [7.00-9.00]	.688	9.00 [9.00-10.00]	9.00 [9.00-10.00]	8.00 [7.00-9.00]	.014*
Average score of Attitude	4	2.20 [1.80-2.60]	2.30 [1.90-2.70]	.714	2.40 [2.05-2.65]	2.90 [2.70-3.05]	2.25 [2.10-2.73]	.011*
Average score of Skill	3	1.00 [0.80-1.30]	1.00 [0.30-1.72]	.990	1.50 [1.00-2.00]	1.80 [1.25-2.15]	1.00 [0.20-1.55]	.003**

Note: Significant association * $p < .05$, ** $p < .01$ **Table 17***Percentage of Above Threshold*

Measures	n (%)	Pre test			Post test		Follow-up test		
		Intervention (n = 21)	Control (n = 20)	p-value	Intervention (n = 19)	p-value	Intervention (n = 19)	Control (n = 20)	p-value
Health Literacy Scale for Preconception Care (Knowledge)	Full score	6 (28.6)	13 (65.0)	.029*	15 (78.9)	1	14 (73.7)	11 (55.0)	.320
	Less than full score	15 (71.4)	7 (35.0)		4 (21.1)		5 (26.3)	9 (45.0)	
Knowledge test score	Full score	2 (9.5)	4 (20.0)	.41	8 (42.1)	1	6 (31.6)	2 (10.0)	.127
	Less than full score	19 (90.5)	16 (80.0)		11 (57.9)		13 (68.4)	18 (90.0)	
Average score of Attitude	Average score ≥ 3	4 (19.0)	4 (20.0)	1	2 (10.5)	1	7 (36.8)	3 (15.0)	.155
	Less than 3	17 (81.0)	16 (80.0)		17 (89.5)		12 (63.2)	17 (85.0)	
Average score of Skills	Average score ≥ 1	11 (52.4)	12 (60.0)	.756	19 (100.0)	1	18 (94.7)	11 (55.0)	.008*
	Less than score 1	10 (47.6)	8 (40.0)		0 (0.0)		1 (5.3)	9 (45.0)	

Note: Significant association * $p < .05$, ** $p < .01$

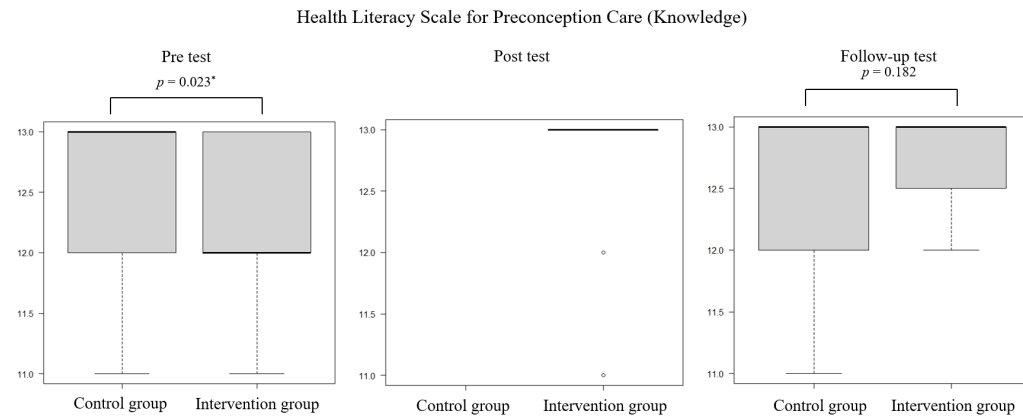


Figure 14

Two-group Comparison of Health Literacy Scale for Preconception Care (Knowledge)

Note: Significant association $^*p < .05$, $^{**}p < .01$

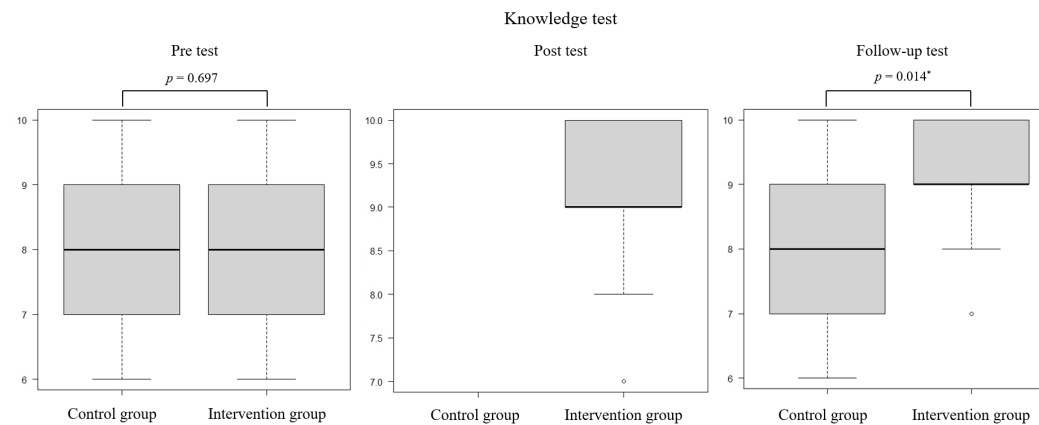


Figure 15

Two-group Comparison of Knowledge Tests

Note: Significant association $^*p < .05$, $^{**}p < .01$

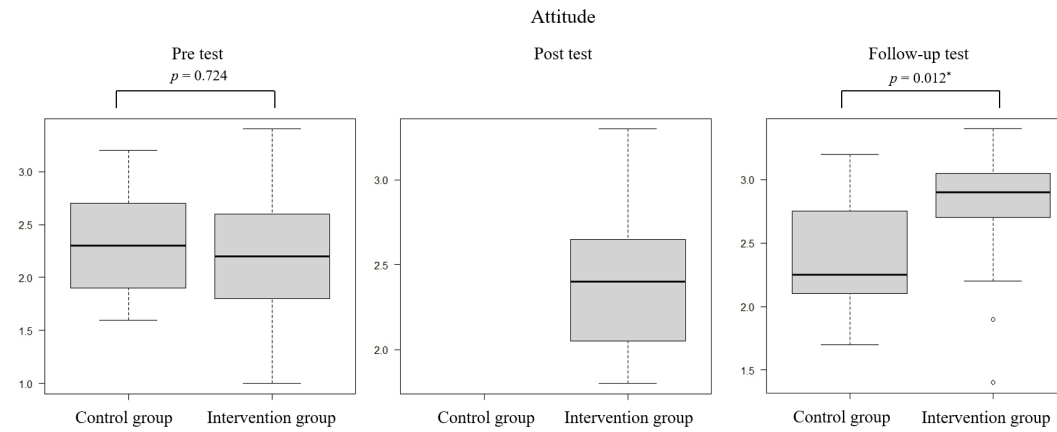


Figure 16

Two-group Comparison of Attitudes

Note: Significant association * $p < .05$, ** $p < .01$

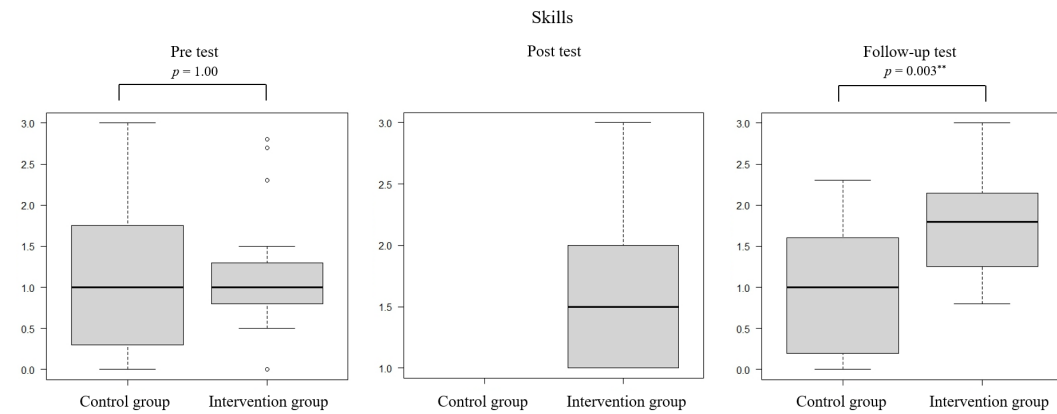


Figure 17

Two-group Comparison of Skills

Note: Significant association * $p < .05$, ** $p < .01$

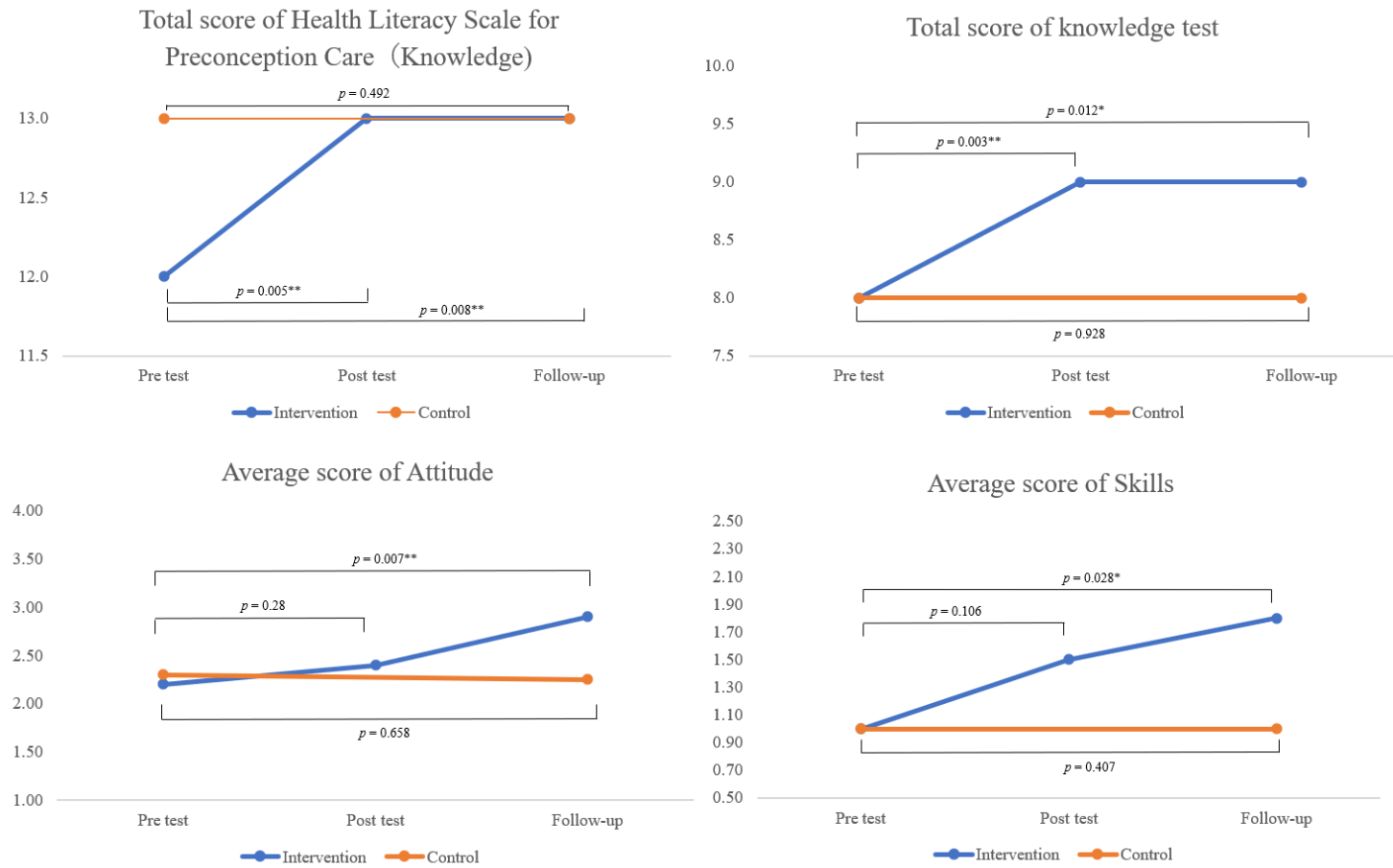


Figure 18

Comparison Between Pre-test, Post-test and Follow-up tests

Note: Significant association * $p < .05$, ** $p < .01$

Table 18*Number and Percentage of Correct Answers for Each Item: Health Literacy Scale for Preconception Care (Knowledge)*

Health Literacy Scale for Preconception Care (Knowledge) (%)	Pre-test			Follow-up test		
	Intervention group (n = 21)	Control group (n = 20)	<i>p</i> -value	Intervention group (n = 19)	Control group (n = 20)	<i>p</i> -value
1. Contraception	18 (85.7)	20 (100.0)	.248	18 (94.7)	20 (100.0)	.979
2. Low-dose pill	19 (90.5)	20 (100.0)	.490	18 (94.7)	19 (95.0)	1
3. Pregnancy	21 (100.0)	19 (95.0)	.980	18 (94.7)	19 (95.0)	1
4. Recommended intake of folic acid	10 (47.6)	13 (65.0)	.420	18 (94.7)	14 (70.0)	.111
5. Need for folic acid intake	21 (100.0)	20 (100.0)	NA	19 (100.0)	20 (100.0)	NA
6. Sexual transmitted infections	20 (95.2)	20 (100.0)	1	19 (100.0)	19 (95.0)	1
7. Smoking	21 (100.0)	20 (100.0)	NA	19 (100.0)	20 (100.0)	NA
8. Alcohol	21 (100.0)	20 (100.0)	NA	19 (100.0)	19 (95.0)	1
9. Domestic violence response	21 (100.0)	20 (100.0)	NA	19 (100.0)	20 (100.0)	NA
10. Gynecological family doctor	21 (100.0)	20 (100.0)	NA	19 (100.0)	20 (100.0)	NA
11. Sexual hormone	21 (100.0)	20 (100.0)	NA	19 (100.0)	19 (95.0)	1
12. Menstrual cycle (1)	21 (100.0)	20 (100.0)	NA	19 (100.0)	20 (100.0)	NA
13. Menstrual cycle (2)	19 (90.5)	20 (100.0)	.490	18 (94.7)	20 (100.0)	.979

Note: Significant association * $p < .05$, ** $p < .01$

Table 19*Number and Percentage of Correct Answers for Each Item: Knowledge Test*

Knowledge test (%)	Pre-test			Follow-up test		
	Intervention group (n = 21)	Control group (n = 20)	<i>p</i> -value	Intervention group (n = 19)	Control group (n = 20)	<i>p</i> -value
1. Definition of Preconception care	21 (100.0)	19 (95.0)	.98	19 (100.0)	19 (95.0)	1
2. Contraception	21 (100.0)	19 (95.0)	.98	19 (100.0)	18 (90.0)	.491
3. Fetal development	11 (52.4)	16 (80.0)	.125	12 (63.2)	15 (75.0)	.650
4. Folic acid intake	19 (90.5)	17 (85.0)	.954	19 (100.0)	17 (85.0)	.248
5. Smoking	12 (57.1)	13 (65.0)	.845	16 (84.2)	16 (80.0)	1
6. Body Mass Index	18 (85.7)	17 (85.0)	1	18 (94.7)	18 (90.0)	1
7. Sexual transmitted infections	21 (100.0)	20 (100.0)	NA	19 (100.0)	18 (90.0)	.491
8. Menstrual symptoms	19 (90.5)	16 (80.0)	.612	17 (89.5)	19 (95.0)	.963
9. Cervix cancer prevention	19 (90.5)	20 (100.0)	.49	19 (100.0)	19 (95.0)	1
10. Physical activity	9 (42.9)	8 (40.0)	1	14 (73.7)	5 (25.0)	.007*

Note: Significant association * $p < .05$, ** $p < .01$

Table 20*Number and Percentage of Answers for Each Item: Attitude*

Attitude (%)	Group	Pre test			Follow-up test		
		Intervention (n = 21)	Control (n = 20)	<i>p</i> -value	Intervention (n = 19)	Control (n = 20)	<i>p</i> -value
1. Care recipients ask me about preconception care	Disagree or strongly disagree	9 (42.9)	6 (30.0)	.693	6 (31.6)	10 (50.0)	.356
	Neither agree nor disagree	5 (23.8)	6 (30.0)		2 (10.5)	3 (15.0)	
	Agree or strongly agree	7 (33.3)	8 (40.0)		11 (57.9)	7 (35.0)	
2. I ask care recipients about preconception care	Disagree or strongly disagree	10 (47.6)	5 (25.0)	.162	5 (26.3)	7 (35.0)	.726
	Neither agree nor disagree	4 (19.0)	9 (45.0)		4 (21.1)	5 (25.0)	
	Agree or strongly agree	7 (33.3)	6 (30.0)		10 (52.6)	8 (40.0)	
3. I do not like it when care recipients ask me about preconception care	Disagree or strongly disagree	11 (52.4)	12 (60.0)	.387	14 (73.7)	12 (60.0)	.035*
	Neither agree nor disagree	6 (28.6)	7 (35.0)		2 (10.5)	8 (40.0)	
	Agree or strongly agree	4 (19.0)	1 (5.0)		3 (15.8)	0 (0.0)	
4. I am professionally interested in preconception care topics	Disagree or strongly disagree	0 (0.0)	0 (0.0)	1	0 (0.0)	0 (0.0)	.636
	Neither agree nor disagree	3 (14.3)	3 (15.0)		1 (5.3)	3 (15.0)	
	Agree or strongly agree	18 (85.7)	17 (85.0)		18 (94.7)	17 (85.0)	
5. I feel comfortable discussing preconception care with care recipients	Disagree or strongly disagree	5 (23.8)	3 (15.0)	.554	1 (5.3)	0 (0.0)	.318
	Neither agree nor disagree	2 (9.5)	4 (20.0)		2 (10.5)	5 (25.0)	
	Agree or strongly agree	14 (66.7)	13 (65.0)		16 (84.2)	15 (75.0)	
6. I feel confident discussing preconception care topics with care recipients	Disagree or strongly disagree	14 (66.7)	13 (65.0)	.493	2 (10.5)	6 (30.0)	.009**
	Neither agree nor disagree	1 (4.8)	3 (15.0)		2 (10.5)	8 (40.0)	
	Agree or strongly agree	6 (28.6)	4 (20.0)		15 (78.9)	6 (30.0)	
7. I feel comfortable discussing preconception care with women care recipients	Disagree or strongly disagree	5 (23.8)	1 (5.0)	.185	1 (5.3)	0 (0.0)	.044*
	Neither agree nor disagree	3 (14.3)	2 (10.0)		0 (0.0)	5 (25.0)	
	Agree or strongly agree	13 (61.9)	17 (85.0)		18 (94.7)	15 (75.0)	
8. I feel comfortable discussing preconception care with young care recipients	Disagree or strongly disagree	3 (14.3)	3 (15.0)	.774	1 (5.3)	1 (5.0)	.069
	Neither agree nor disagree	5 (23.8)	3 (15.0)		1 (5.3)	7 (35.0)	
	Agree or strongly agree	13 (61.9)	14 (70.0)		17 (89.5)	12 (60.0)	
9. I feel comfortable discussing preconception care with adult care recipients	Disagree or strongly disagree	2 (9.5)	1 (5.0)	.389	1 (5.3)	1 (5.0)	.498
	Neither agree nor disagree	5 (23.8)	2 (10.0)		2 (10.5)	5 (25.0)	
	Agree or strongly agree	14 (66.7)	17 (85.0)		16 (84.2)	14 (70.0)	

Note: Significant association * $p < .05$, ** $p < .01$

Table 21*Number and Percentage of Answers for Each Item: Skills*

Skills (%)	Group	Pre-test			Follow-up test		
		Intervention (n = 21)	Control (n = 20)	<i>p</i> -value	Intervention (n = 19)	Control (n = 20)	<i>p</i> -value
1. Proper Body Mass Index	cannot or have never done	5 (23.8)	5 (25.0)	1	0 (0.0)	7 (35.0)	.015*
	more than 'can follow the example'	16 (76.2)	15 (75.0)		19 (100.0)	13 (65.0)	
2. Folic acid intake	cannot or have never done	8 (38.1)	8 (40.0)	1	0 (0.0)	8 (40.0)	.007**
	more than 'can follow the example'	13 (61.9)	12 (60.0)		19 (100.0)	12 (60.0)	
3. Vaccination and find your family gynecology	cannot or have never done	4 (19.0)	7 (35.0)	.424	1 (5.3)	8 (40.0)	.028*
	more than 'can follow the example'	17 (81.0)	13 (65.0)		18 (94.7)	12 (60.0)	
4. Contraception counseling	cannot or have never done	6 (28.6)	6 (30.0)	1	0 (0.0)	6 (30.0)	.031*
	more than 'can follow the example'	15 (71.4)	14 (70.0)		19 (100.0)	14 (70.0)	
5. Menstrual cycle counseling	cannot or have never done	5 (23.8)	6 (30.0)	.925	0 (0.0)	8 (40.0)	.007**
	more than 'can follow the example'	16 (76.2)	14 (70.0)		19 (100.0)	12 (60.0)	
6. Smoking and drinking alcohol	cannot or have never done	2 (9.5)	7 (35.0)	.111	0 (0.0)	7 (35.0)	.015*
	more than 'can follow the example'	19 (90.5)	13 (65.0)		19 (100.0)	13 (65.0)	

Note: Significant association * $p < .05$, ** $p < .01$

Knowledge

Health Literacy Scale for Preconception Care (Knowledge)

From the pre-test phase, there was a significant difference between the intervention and control groups, in terms of median and IQR scores (median [IQR]), with the control group having a higher percentage of full marks, albeit by one point (intervention group: 12.0 [12.0-13.0], control group: 13.00 [12.00-13.00], $p = .023$). The intervention group increased from pre-test was 12.0 [12.0-13.0] to post-test was 13.00 [13.00-13.00] and follow-up test was 13.00 [12.50-13.00]. In contrast, the control group stayed at 13.00 [12.00-13.00] to 13.00 [12.00-13.00]. In the follow-up test, there was no significant difference between the intervention and control groups (intervention group: 13.00 [12.50-13.00], control group: 13.00 [12.00-13.00], $p = .182$). The median total score on the knowledge scale in the intervention group became higher as they progressed through the pre-test to the post-test and stayed full marks at the follow-up test (**Figure 18**). At the pre-test, six (28.6%) participants in the intervention group and 13 (65.0%) in the control group showed full scores of 13. In the follow-up test, 14 (73.7%) in the intervention group and 11 (55.0%) in the control group, (more than half of the participants) showed full scores. The percentage of participants in the intervention group who indicated a full score increased from 28.6% in the pre-test to 78.9% and 73.7% in the post-test and follow-up test, respectively. There were no significant differences between the intervention and control groups by scale item that occurred at follow-up (**Table 18**).

Knowledge test

In the intervention group, median total knowledge test scores and IQR (median [IQR]) increased from pre-test levels: 8.00 [7.00-9.00] to post-test: 9.00 [9.00-10.00] and follow-up test: 9.00 [9.00-10.00]. Meanwhile, the control group stayed from 8.00 [7.00-9.00] to 8.00 [7.00-9.00]. **Figure 15** shows a two-group comparison of the knowledge test. In the pre-test, there was no significant difference between the

intervention and control groups, intervention group 8.00 [7.00-9.00]: control group 8.00 [7.00-9.00] ($p = .697$). In the follow-up test, between the intervention and control groups, the intervention group was 9.00 [9.00-10.00], and the control group was 8.00 [7.00-9.00] ($p = .014$). The median total score on the knowledge test in the intervention group became higher as they progressed through the pre-test to the post-test and stayed full marks at the follow-up test (**Figure 18**). The percentage of intervention group participants who indicated a full score increased from 9.5% in the pre-test to 42.1% and 31.6% in the post-test and follow-up test, respectively. For each item of the knowledge test, only Physical activity was significantly different between the intervention and control groups at follow-up (**Table 19**).

Attitude

The intervention group increased the median and IQR (median [IQR]) of the average score of Attitude from the pre-test of 2.20 [1.80-2.60] to the post-test of 2.40 [2.05-2.65] and follow-up test as 2.90 [2.70-3.05]. The control group decreased from 2.30 [1.90-2.70] to 2.25 [2.10-2.73]. **Figure 16** shows a two-group comparison of Attitudes. In the pre-test, there was no significant difference between the intervention and control groups: intervention group 2.20 [1.80-2.60] and control group 2.30 [1.90-2.70] ($p = .724$). In the follow-up test, between the intervention and control groups there was a significant difference of 2.90 (2.70-3.05) in the intervention group and 2.25 (2.10-2.73) in the control group ($p = .012$). The median average score for attitudes in the intervention group did not change significantly between pre-test and post-test; however, scores increased significantly at the follow-up test (**Figure 18**). The proportion of participants in the intervention group who indicated an average attitude score of 3 or more in the 'Agree' and 'Strongly agree' category increased from 19.0% in the pre-test and 10.5% in the post-test to 36.8% in the follow-up test. There were significant differences between the intervention and control groups by attitude the item: 'I do not

like it when care recipients ask me about preconception care’, ‘I feel confident discussing preconception care topics with care recipients’ and ‘I feel comfortable discussing preconception care with female care recipients’ at follow-up test (**Table 20**).

Skills

The intervention group increased their median and IQR (median [IQR]) of the average score of Skills pre-tests from of 1.00 [0.80-1.30] to the post-test of 1.50 (1.00-2.00) and the follow-up test to 1.80 (1.25-2.15). The control group stayed at 1.00 (0.30-1.72) to 1.00 (0.20-1.55). **Figure 17** shows a two-group comparison of Skills. In the pre-test, there was no significant difference between the intervention and control groups: intervention group 1.00 (0.80-1.30) and control group 1.00 (0.30-1.72) ($p = 1.00$). In the follow-up test, there was a significant difference between the intervention and control groups: intervention group (1.80 [1.25-2.15]) and control group (1.00 [0.20-1.55]; $p = .003$). The median average score on the skills in the intervention group became higher as they progressed through the pre-test, post-test, and follow-up test (**Figure 18**). The proportion of participants who indicated an average score for Skills of 1 or more in the ‘can follow the example’ category increased from 52.4% in the pre-test and 100.0% in the post-test to 94.7% in the follow-up test. When looking at the significant differences between the intervention and control groups at follow-up by skill item, significant differences occurred across all items (**Table 21**).

Interaction test

The multiple regression analyses were used to assess the effect of the intervention after adjusting for the effects of interactions, with each continuous variable as an independent variable (**Table 22**). Group effects (intervention and control groups), Period effects (pre- and follow-up test), and their interactions (intervention \times period) were entered into the model. Data from participants with missing values were excluded

from each analysis.

Multiple regression analysis showed statistically significant changes for all dependent variables except the knowledge test. Therefore, there were differences between groups for the Health Literacy Scale for Preconception Care (Knowledge), Attitudes, and Skills after adjusting for interactions, indicating a significant effect of the intervention on improving scores.

Table 22

Multiple Regression of Health Literacy Scale for Preconception Care (Knowledge), Knowledge Test, Attitude, Skills

Predictors	Health Literacy Scale for Preconception Care (Knowledge)			
	Coefficient	Standard error	<i>t</i>	<i>p</i>
Group (Intervention)	-0.46	0.20	-2.26	.03
Period (Follow-up)	-0.03	0.21	-0.14	.89
Group × Period	0.66	0.29	2.29	.03*

$R^2 = .13$, Adjust $R^2 = .10$, $F = .01$, $p < .001^{***}$

Predictors	Knowledge test			
	Coefficient	Standard error	<i>t</i>	<i>p</i>
Group (Intervention)	-0.09	0.38	-0.24	.81
Period (Follow-up)	-0.12	0.40	-0.29	.77
Group × Period	1.01	0.54	1.85	.07

$R^2 = .10$, Adjust $R^2 = .06$, $F = .05$, $p < .001^{***}$

Predictors	Attitude			
	Coefficient	Standard error	<i>t</i>	<i>p</i>
Group (Intervention)	-0.04	0.19	-0.24	.81
Period (Follow-up)	0.01	0.20	0.05	.95
Group × Period	0.56	0.27	2.11	.04*

$R^2 = .13$, Adjust $R^2 = .10$, $F = .01$, $p < .001^{***}$

Predictors	Skills			
	Coefficient	Standard error	<i>t</i>	<i>p</i>
Group (Intervention)	0.18	0.27	0.66	.50
Period (Follow-up)	-0.28	0.29	-0.97	.34
Group × Period	0.82	0.38	2.14	.04*

$R^2 = .14$, Adjust $R^2 = .10$, $F = .01$, $p < .001^{***}$

Note: Significant association * $p < .05$, ** $p < .01$, *** $p < .001$

Subgroup analysis

The study prioritized the benefits of all nursing professionals having knowledge, attitudes and skills in preconception care and set all midwives, nurses and public health nurses as the target population. As a feasibility study, it also aimed to measure which target group had the greatest need. Subgroups were created according to years of nursing experience and primary occupation, and median and IQR were compared to determine changes in scores between subgroups (**Figures 19-20**).

By years of experience, the groups with between three and five years and those with more than 20 years of experience showed the greatest improvement in scores on the knowledge test. Conversely, the groups with between five and 10 years and between 10 and 20 years had higher original scores and the differences due to the intervention were smaller. For attitudes and skills, there was a trend towards relatively higher scores in the group with more than 20 years. However, the improvement due to the intervention did not differ significantly between all groups (**Figure 19**).

In the subgroup analysis by primary occupation, only one nurse was included due to post-randomization drop-out. The results of the analysis by primary occupation showed that in the knowledge test, public health nurses showed the greatest improvement in scores. In attitudes and skills, the opposite was true for faculty members of nursing universities, where scores decreased (**Figure 20**).

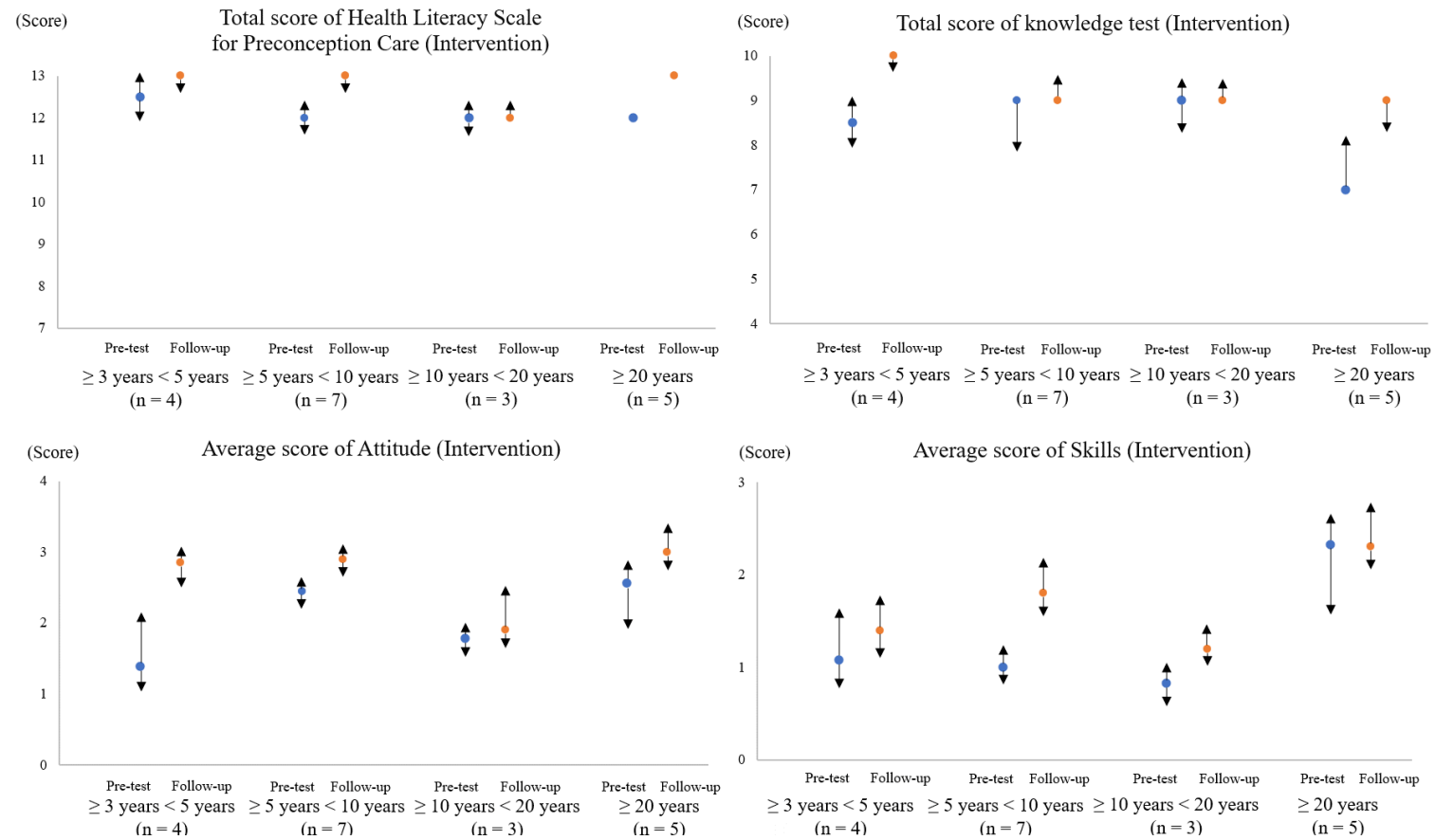


Figure 19

Subgroup Analysis: Years of Experience in the Nursing Profession

↔ ; Interquartile range

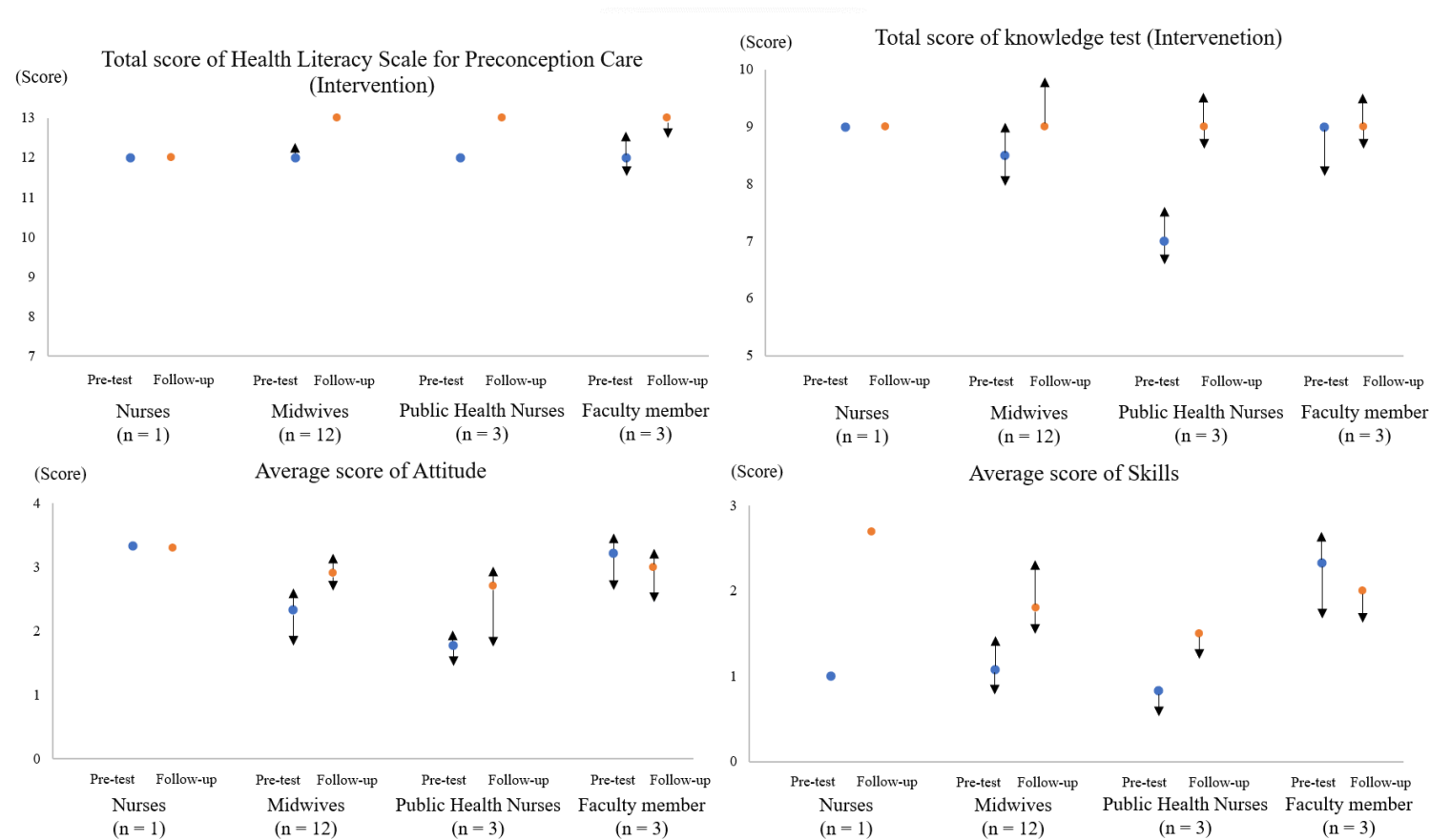


Figure 20

Subgroup Analysis: Principal Occupation

↔ ; Interquartile range

Feasibility analysis

Satisfaction (Intervention group)

Knowledge enhancement through participation in the program

Regarding satisfaction, the question asked whether the program had provided knowledge; 11 (57.9%) answered 'Strongly agree,' seven (36.8%) answered 'Agree,' and one (5.3%) answered 'Neither agree nor disagree' (**Figure 21**). By occupation, all three public health nurses and more than half of the midwives answered, 'Strongly agree' (**Figure 22**). Regarding lifetime experience in nursing, one (20.0%) respondents with more than 20 years' experience answered, 'Neither agree nor disagree,' while those with other years' experience answered, 'Strongly agree' or 'Agree' (**Figure 23**). The reasons for this response are given in **Table 23**. Overall, the structure and volume of the program were rated well, as it was appropriate and easy to understand. On the other hand, one participant answered 'Neither agree nor disagree' because the content was already known.

Improvement of work performance through the program

The question asked whether the program would improve work performance; 10 (52.6%) answered 'Strongly agree,' seven (36.8%) answered 'Agree,' and two (10.5%) answered 'Neither agree nor disagree' (**Figure 24**). By occupation, midwives were the most frequent respondents as six (50.0%) of those who answered, 'Strongly agree.' Of those who answered, 'Neither agree nor disagree,' one (5.3%) each was a midwife, and one (8.3%) was a faculty member (33.3%) (**Figure 25**). By years of experience, the highest number of respondents who answered 'Agree' were those with three- and five years of experience (five respondents). Those who answered 'Neither agree nor disagree' were between five and ten years old, and one (14.3%) had ten to twenty years of experience (**Figure 26**). The reasons for this response are given in **Table 24**. Respondents indicated that gaining practical experience and knowledge and seeing and

hearing how others felt about counseling will improve their work performance. Some also said they could clarify points and keep them in mind. On the other hand, some respondents stated that they were ‘Neither agree nor disagree’ as their skills and knowledge were still not sufficient for providing counseling.

Possibility of using the learning content

The question asked possibility of using learning content; 12 (63.2%) answered ‘Strongly agree,’ and seven (36.8%) answered ‘Agree’ (**Figure 27**). By occupation, midwives were the most likely to respond ‘Strongly agree’ with seven respondents (58.3%), while all public health nurses and nurses responded ‘Strongly agree’ (**Figure 28**). By years of experience, those between five and ten years and those with more than 20 years were the most likely to respond, ‘Strongly agree,’ with four (57.1%; 80.0%) each (**Figure 29**). The reasons for this response are given in **Table 25**. The fact that they were able to experience counseling led to responses that they could use in practice. Some respondents also stated that the fact that they were able to know their peers led to them being able to put their information into practice.

Satisfaction with the program

Regarding satisfaction with the program, 12 (63.2%) answered ‘Strongly agree,’ seven (36.8%) answered ‘Agree’ (**Figure 30**). By occupation, of those who answered ‘Strongly agree,’ midwives were the most common, with seven (58.3%), while all public health nurses and nurses answered ‘Strongly agree’ (**Figure 31**). By years of experience, the highest number of respondents, five (71.4%), ‘Strongly agree,’ especially those with five and ten years’ experience (**Figure 32**). The reasons for this response are given in **Table 26**. Overall, the responses were highly positive, with respondents saying that they were satisfied with the content, the actual counseling, and the opportunity to get open feedback from others.

Positive feeling about the experience on this program

Regarding positive feeling about the experience on this program, 15 (78.9%) answered 'Strongly agree,' four (21.0%) answered 'Agree' (**Figure 33**). By occupation, of those who answered 'Strongly agree,' nine (47.4%) were midwives, the highest proportion (**Figure 34**). By years of experience, the highest number of respondents, six (85.7%), who answered 'Strongly agree' were those with five to ten years of experience (**Figure 35**). The reasons for this response are given in **Table 27**. The opinions expressed that it was a good experience, as it showed a willingness to listen to different people's opinions (including positive and negative ones). This is also an important area for future health promotion in Japan and people need this information. Some participants also said they had enjoyed the program.

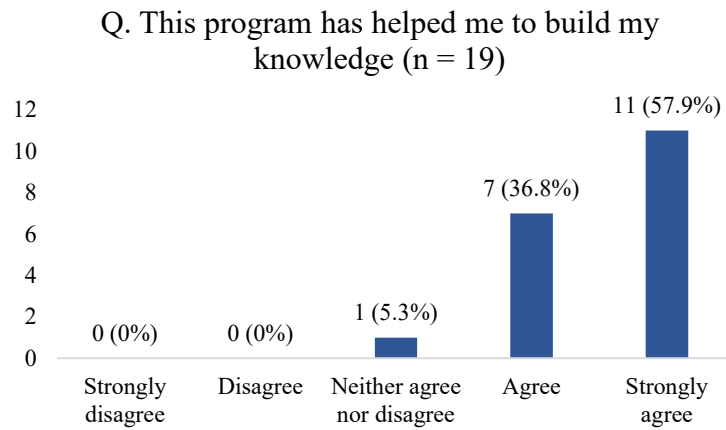


Figure 21

Knowledge Enhancement Through Participation in the Program

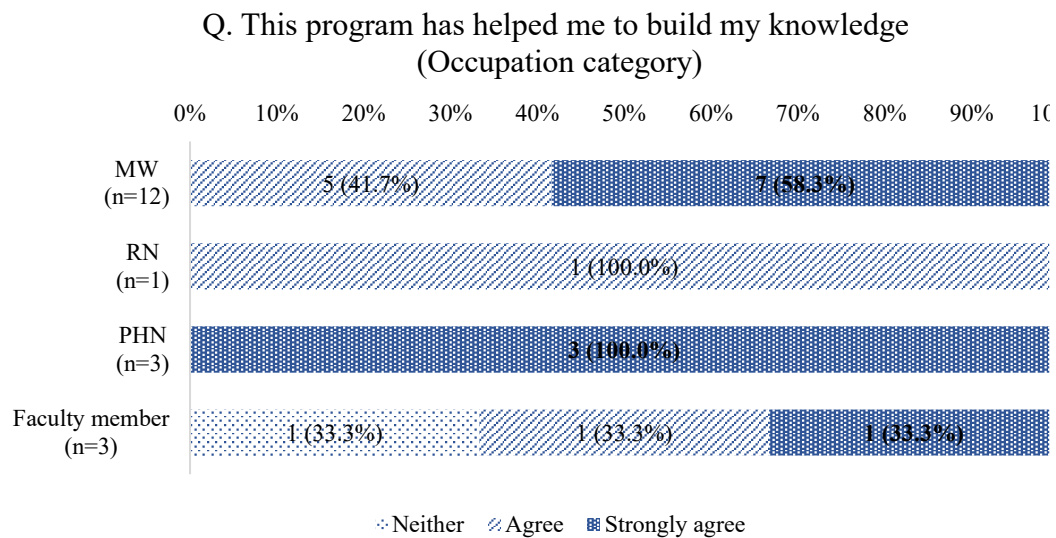


Figure 22

Subgroup Analysis by Occupation Category of Knowledge Enhancement Through Participation in the Program

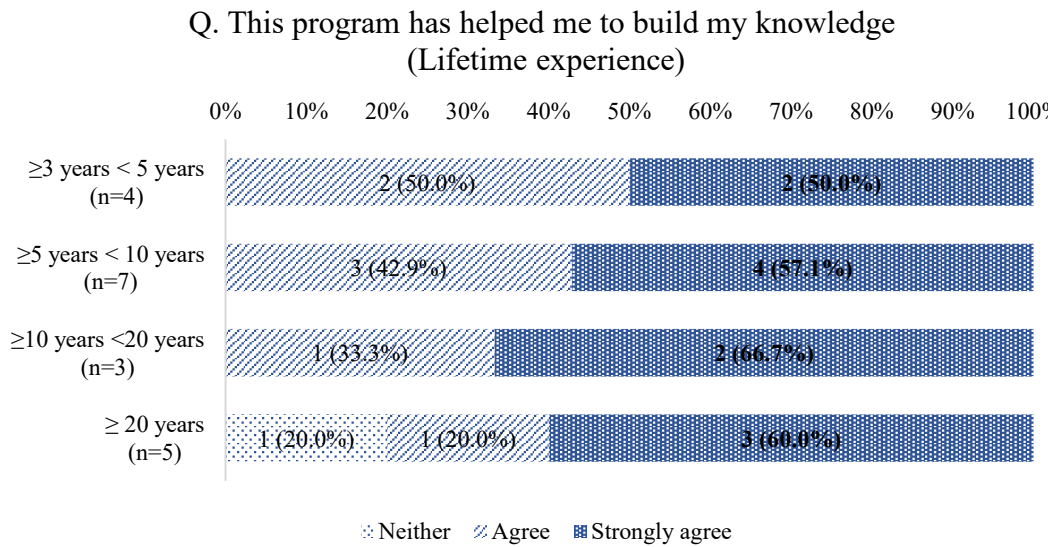


Figure 23

Subgroup Analysis by Lifetime Experience of Knowledge Enhancement Through Participation in the Program

Table 23

Reasons for the Knowledge Enhancement Through the Program

(n = 5)

Strongly agree	"Because the lecture content was structured and in a volume that was easy to understand." (PHN)
	"It was very efficiently organized." (MW)
	"Because they were able to understand specific figures and evidence." (MW)
Agree	"I think I've learned the basics of preconception care" (Faculty member)
Neither agree nor disagree	"Because I felt that I already knew a lot of the information and felt that it was confirmed." (Faculty member)

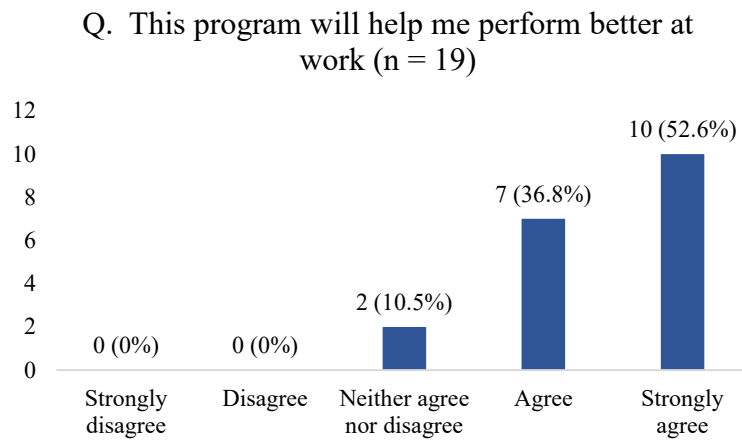


Figure 24

Improvement of Work Performance Through the Program

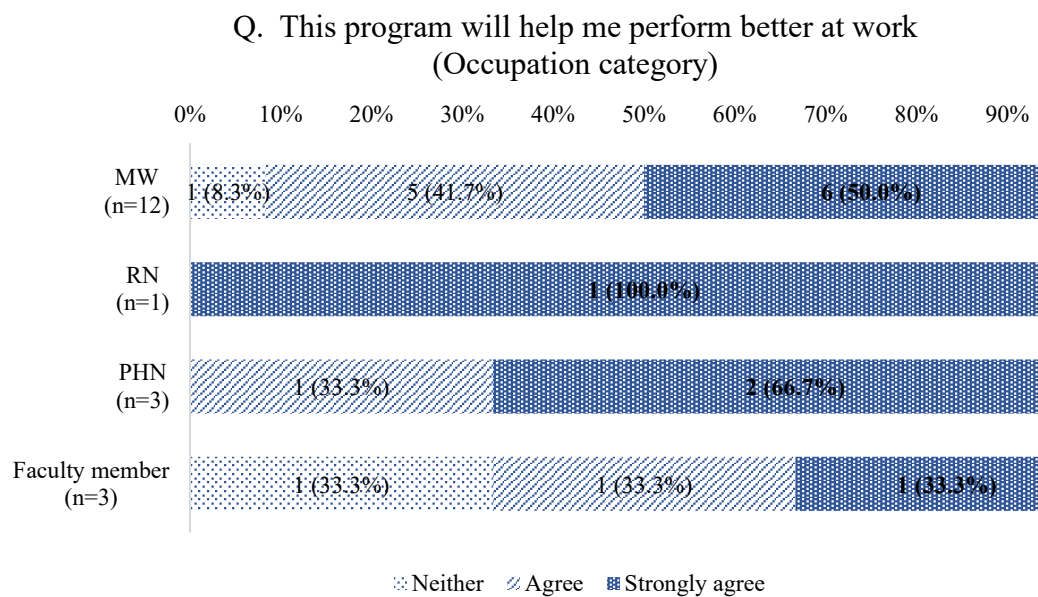


Figure 25

Subgroup Analysis by Occupation Category of Improvement of Work Performance Through the Program

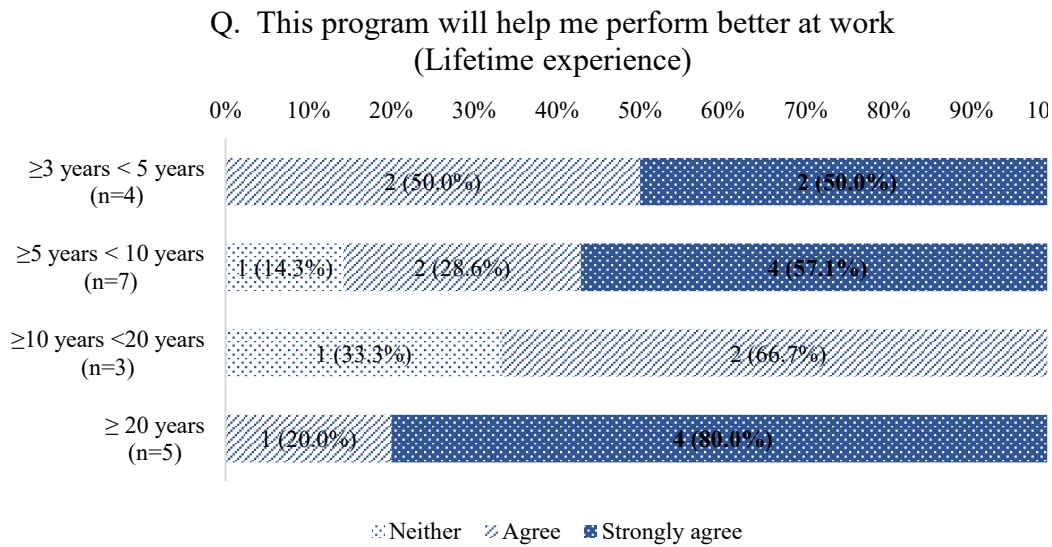


Figure 26

Subgroup Analysis by Lifetime experience of Improvement of Work Performance Through the Program

Table 24

Reasons for the Improvement of Work Performance Through the Program

(n = 8)

Strongly agree	"I believe that we can use the experience and knowledge gained here." (MW)
	"It was very helpful as I don't often get the chance to see other people counseling." (NS)
	"I was able to clarify the points that I need to keep in mind." (MW)
	"I can discuss with them how they are feeling." (MW)
	"As I have opportunities to come into contact with women of all ages at work in outpatient clinics and on hospital wards, I felt that I would like to have a continuous relationship with them so that I can be sympathetic to their wishes (hopes) and provide support that is not a one-off event." (MW)
Agree	"Knowing that we have a peer group has motivated me." (Faculty member)
	"The reason for this was that it would enable us to help people to think about sexual health in their lives, rather than considering pregnancy and sexually transmitted infections, each in isolation, and giving advice to the subject." (PHN)
Neither agree nor disagree	"Because I do not yet feel that my knowledge and skills are sufficient." (Faculty member)

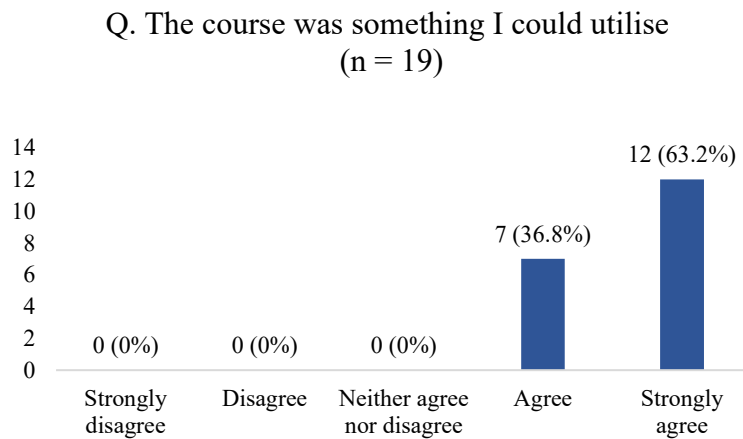


Figure 27

Possibility of Using the Learning Content

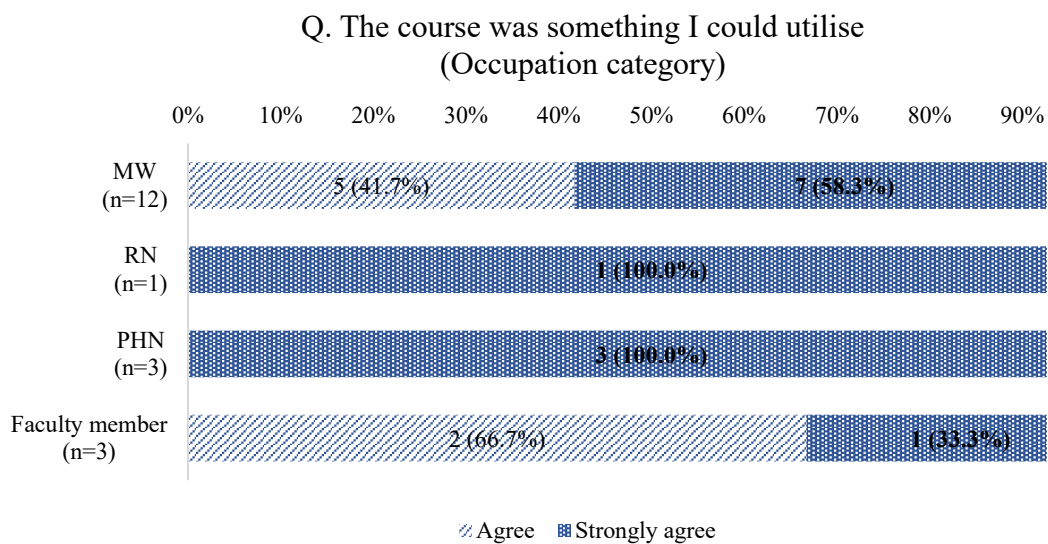


Figure 28

Subgroup Analysis by Occupation Category of Possibility of Using the Learning Content

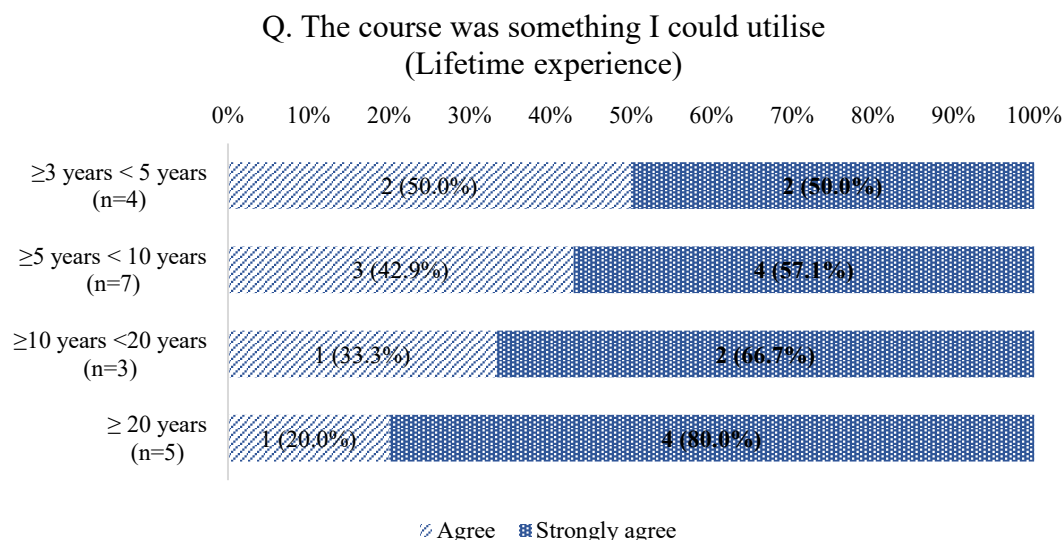


Figure 29

Subgroup Analysis by Lifetime Experience of Possibility of Using the Learning Content

Table 25

Reasons for the Possibility of Using the Learning Content

(n = 7)

Strongly agree	"Along with the knowledge, the students learn specific skills in interviewing practice." (MW)
	"The fact that I could actually do counseling was very good and a big difference from self-study." (NS)
	"Because I was able to gain thoughts on how to view sexual health in people's life stages and how to incorporate preconception into pregnancy and future health. Also, because the second lecture helped me to know how to translate knowledge into practice." (PHN)
	"I feel more confident and comfortable to consult with them." (MW)
	"Because I had a chance to discuss discharge guidance and family planning after childbirth in a face-to-face manner, instead of one-sided explanations." (MW)
	"Because I was able to clarify the points I needed to keep in mind." (MW)
Agree	"It is because we have made friends who have learned the latest information together." (Faculty member)

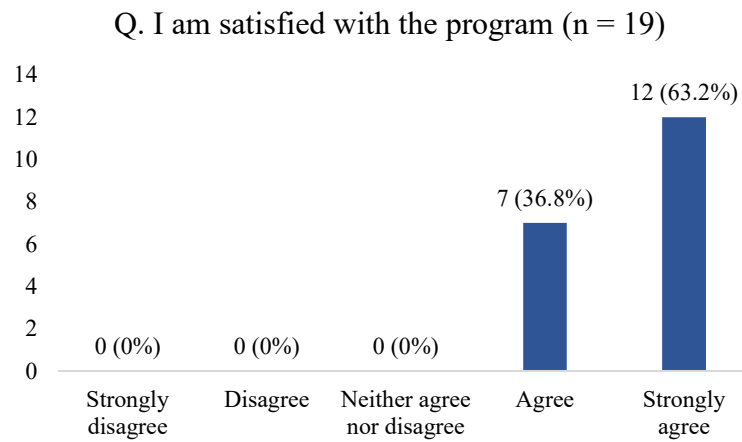


Figure 30

Satisfaction with the Program

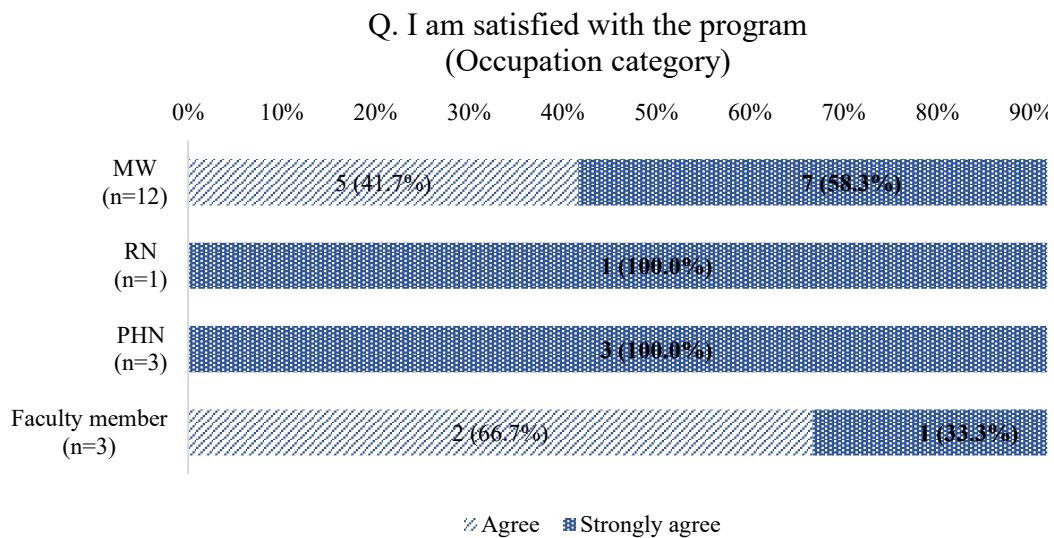


Figure 31

Subgroup Analysis by Occupation Category of Satisfaction with the Program

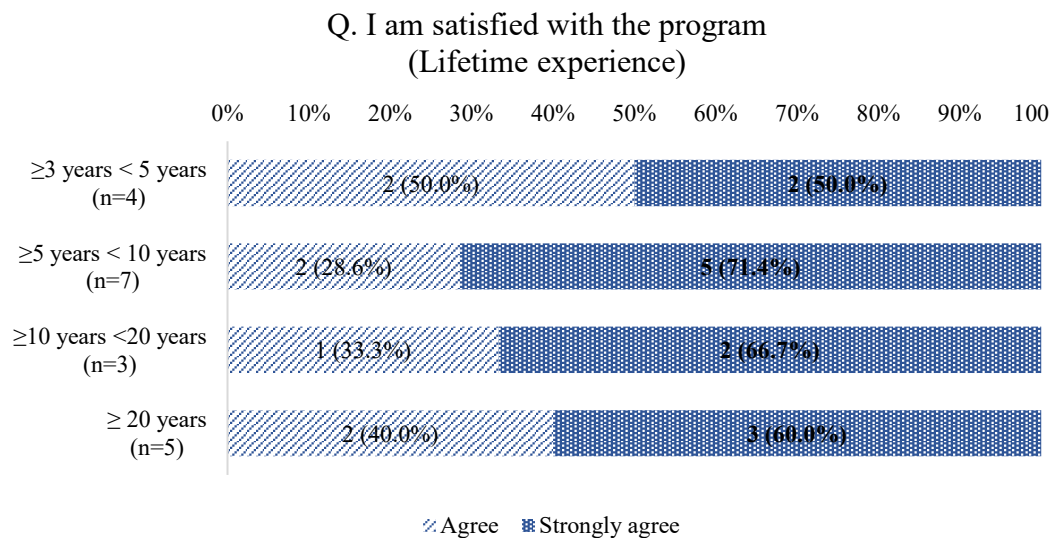


Figure 32

Subgroup Analysis by Lifetime Experience of Satisfaction with the Program

Table 26

Reasons for the Satisfaction with the Program

(n = 6)

Strongly agree	<i>"It was an enriching program." (MW)</i>
	<i>"Because I was able to actually do counseling and see other people counseling." (NS)</i>
	<i>"Because I could gain new insights and use them in practice." (PHN)</i>
	<i>"I could learn at a time of my choice." (MW)</i>
	<i>"Because the counseling content was a learning experience for me. Also, because I felt I could talk more deeply with women when actually dealing with them." (MW)</i>
Agree	<i>"I felt that the program was open to receiving opinions (including good and bad) from various people and trying to think together about the reasons and responses to these opinions." (MW)</i>

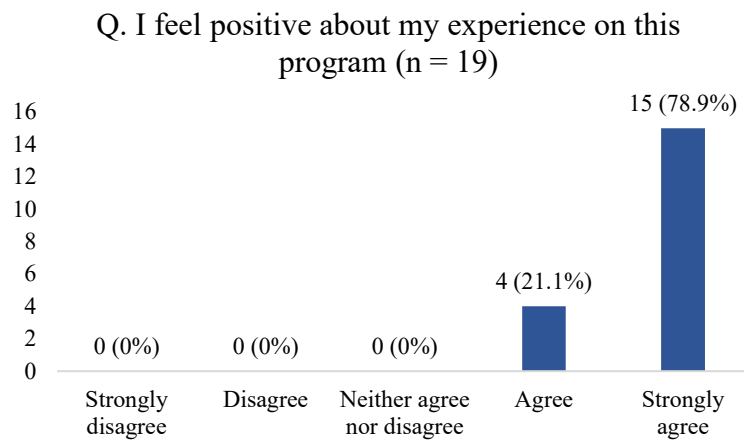


Figure 33

Positive Feeling about the Experience on This Program

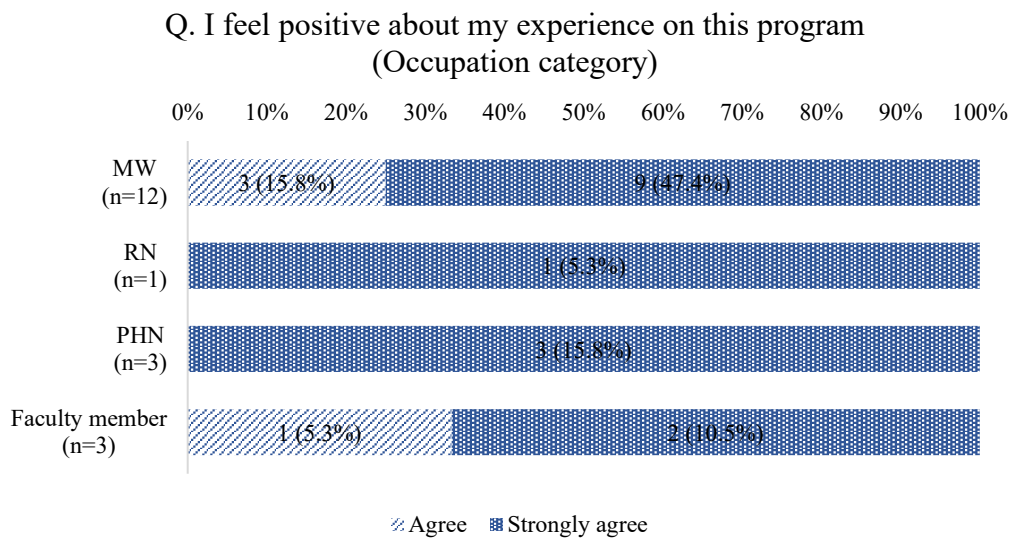


Figure 34

Subgroup Analysis by Occupation Category of Positive Feeling about the Experience on This Program

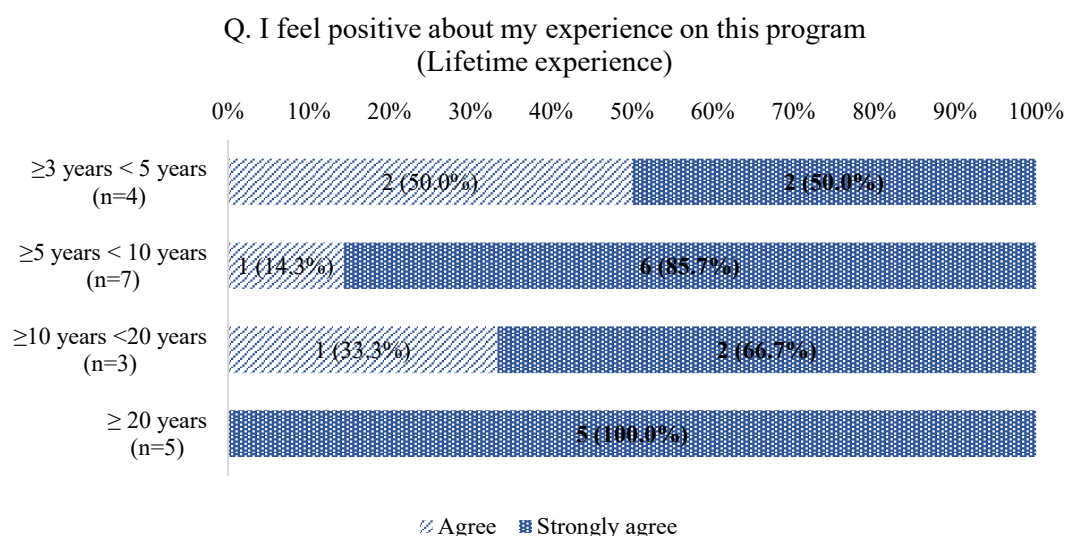


Figure 35

Subgroup Analysis by Lifetime Experience of Positive Feeling about the Experience on This Program

Table 27

Reasons for the Positive Feeling about the Experience on This Program

(n = 6)

Strongly agree	"It was a good experience." (MW)
	"I felt that I was given a variety of people's opinions (including good and bad) and that they were willing to work together to find out why and how to respond to these opinions." (MW)
	"This is an important area for future health improvement in Japan. I hope that those with medical knowledge can take part without feeling pressured." (Faculty member)
	"The concept of preconception care is not yet widespread, but it is information that is necessary for people, and the need for it may increase in the future." (PHN)
	"It was reaffirming and enjoyable." (MW)
	"I felt that it would help me to provide +a information on the counseling process and information." (MW)

Feasibility analysis (Intervention group)

Acceptability

First, the question asked whether the program has increased your interest in preconception care; 11 (57.9%) answered ‘Strongly agree,’ five (26.3%) answered ‘Agree,’ two (10.5%) answered ‘Neither agree nor disagree,’ and one (5.2%) answered ‘Disagree’ (**Figure 36**). By occupation, the largest number of respondents, seven (58.3%), were midwives among those who answered ‘Strongly agree.’ In contrast, one faculty member answered ‘Disagree’ (**Figure 37**). In terms of years of experience, of those who answered ‘Strongly agree,’ the highest number of respondents, six (85.7%), had between five and ten years of experience (**Figure 38**). The reasons for this response are given in **Table 28**. The participants commented that the program had clarified their knowledge, that the role-plays had made them aware of the importance of counseling, and that they had realized the need for and enjoyment of counseling. On the other hand, several participants answered that they were originally interested in preconception care, and these participants gave ‘Neither agree nor disagree’ and ‘Disagree’ responses.

Second, the question asked whether the program has motivated you to provide preconception care; five (26.3%) answered ‘Strongly agree,’ 10 (52.6%) answered ‘Agree,’ three (15.8%) answered ‘Neither agree nor disagree,’ and one (5.2%) answered ‘Strongly disagree’ (**Figure 39**). By occupation, midwives had the highest proportion of respondents agreeing with the statement, with nine respondents (75.0%) (**Figure 40**). By years of experience, the highest number of respondents, three (42.9%; 60.0%), had between five and ten and more than 20 years of experience of those who answered ‘Strongly agree’ (**Figure 41**). The reasons for this response are given in **Table 29**. The main motivating factor was the ability to discuss specific preconception care delivery settings. Some participants commented that it gave them an image of how care could be provided in their own facilities. On the other hand, those who did not belong to a facility where they could provide preconception care, or who were providing care to

other subjects, gave 'Neither agree nor disagree' or 'Strongly disagree' responses.

Third, the question asked whether the program gave you a good understanding of preconception care; 11 (57.9%) answered 'Strongly agree,' seven (36.8%) answered 'Agree,' and one (5.2%) answered 'Neither agree nor disagree' (**Figure 42**). By occupation, midwives showed the highest proportion of 'Agree' with seven participants (57.3%) (**Figure 43**). By years of experience, four participants each answered 'Agree' for between five and ten years, and four participants (57.1%; 80.0%) for more than 20 years (**Figure 44**). The reasons for this response are given in **Table 30**. Many had learned about preconception care in this program, and many said they understood basic preconception care well. Others said that the role-plays helped them to deepen their learning further.

Finally, the question asked whether the program has enhanced your own ability to provide preconception care; four (21.1%) answered 'Strongly agree,' seven (36.8%) answered 'Agree,' seven (36.8%) answered 'Neither agree nor disagree,' and one (5.2%) answered 'Disagree' (**Figure 45**). By occupation, midwives accounted for the largest proportion of those who answered 'Agree' or 'Neither agree nor disagree', with four (33.3%) each (**Figure 46**). By years of experience, one participant with more than 20 years said they disagreed, while three participants with between five and ten years of experience said they agreed, which was the most common response (**Figure 47**). The reasons for this response are given in **Table 31**. The fact that they found support such as educational materials created by preconception care practitioners, the glimpse of real-life counseling through role-plays, and the information being useful in real life, all contributed to their feeling that they had gained competence in care provision. They also commented on the need for further learning in care provision.

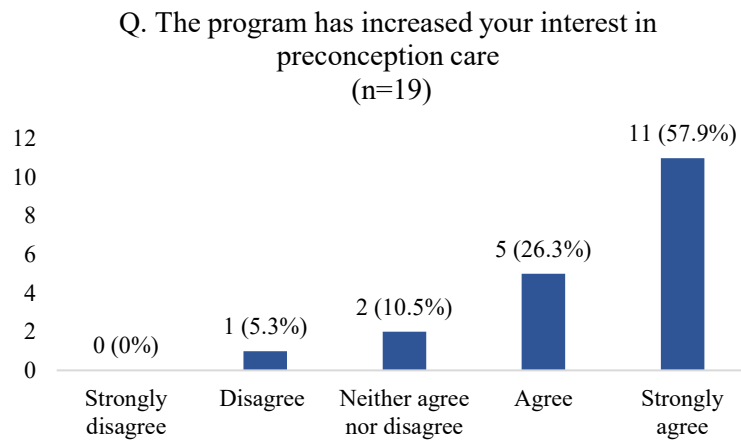


Figure 36

Increase in Interest Through the Program

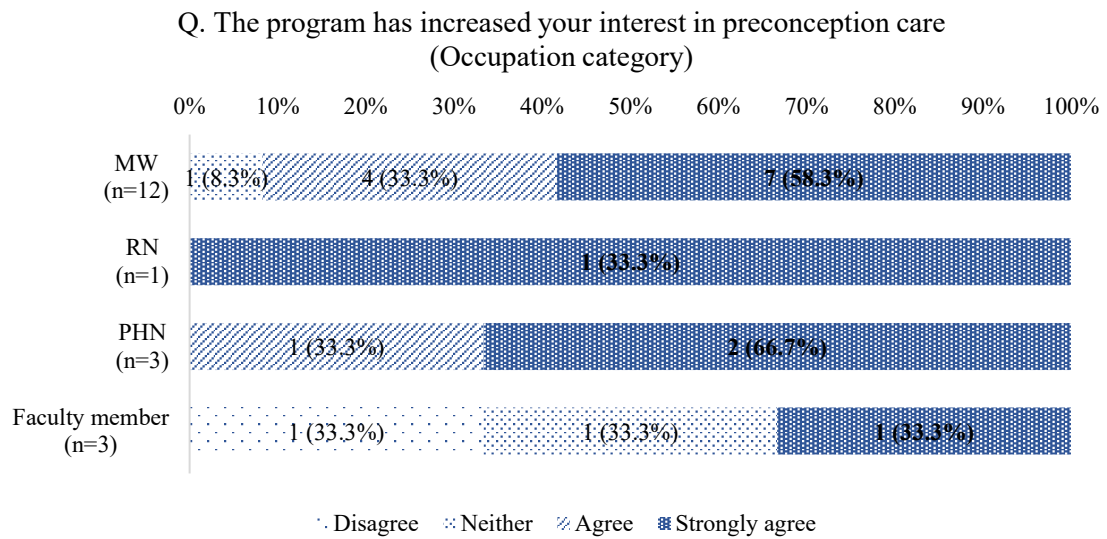


Figure 37

Subgroup Analysis by Occupation Category of Increase in Interest Through the Program

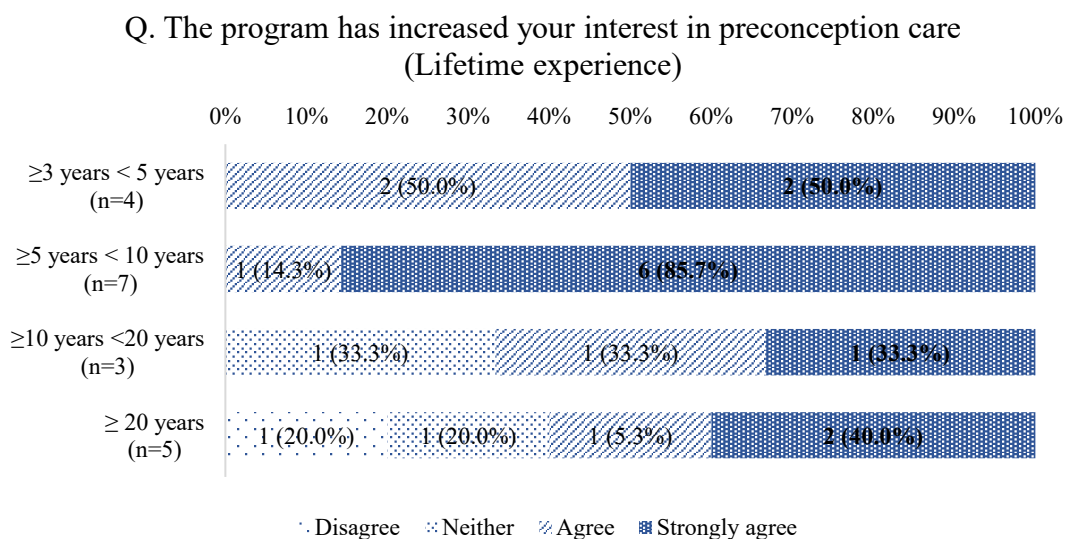


Figure 38

Subgroup Analysis by Lifetime Experience of Increase in Interest Through the Program

Table 28

Reasons for the Increase in Interest Through the Program

(n = 18)

Strongly agree	"My understanding of preconception care was vague before, but with the correct knowledge, I wanted to study further to provide better consultation as a public health nurse." (PHN)
	"I felt that the need for preconception care had not changed." (MW)
	"I spoke with people who are actually providing care and had simulated experiences, which made me want to have these kinds of conversations in the future." (MW)
	"I am planning to organize a study meeting." (Faculty member)
	"I felt a renewed sense of the importance of the care needed, and my interest grew." (PHN)
	"Up until now, the only way I had to learn about preconception care was through materials I had researched on my own, but this program allowed me to learn about preconception care from different perspectives." (NS)
	"It was very easy to understand, and I believe it is necessary care." (MW)
	"I got a glimpse of the overall picture, understanding that this is what is called preconception care." (MW)
	"I gained confidence because I was able to acquire knowledge through the program I took." (MW)
	"I became interested in providing health support to people of various ages." (MW)
Agree	"I realized that there were things I couldn't do at all when I tried to put into practice what I had learned on e-learning, which piqued my interest." (MW)

	<p><i>"I learned that preconception care provides valuable and necessary information at different stages of life." (PHN)</i></p> <p><i>"Because I already had an interest in it." (MW)</i></p> <p><i>"I gained basic knowledge about what preconception care is." (MW)</i></p> <p><i>"I wanted to acquire the correct knowledge to be able to respond when needed." (MW)</i></p>
Neither agree nor disagree	<p><i>"I participated because I originally had an interest in preconception care." (Faculty member)</i></p> <p><i>"I originally had an interest in preconception care." (MW)</i></p>
Disagree	<p><i>"I had been practicing diligently even before taking the program." (Faculty member)</i></p>

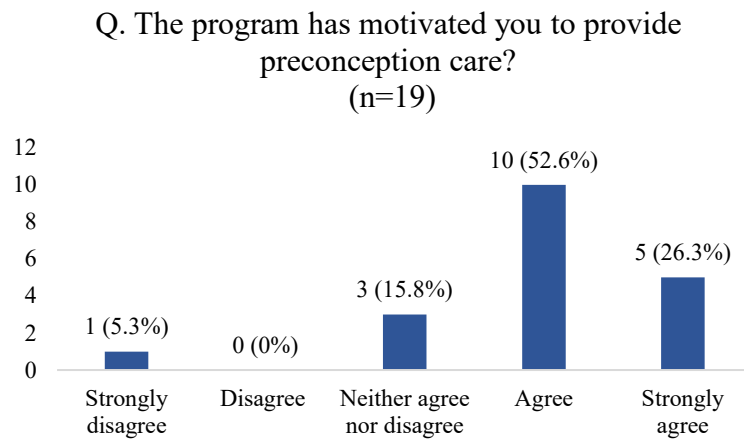


Figure 39

Increase in Motivation Through the Program

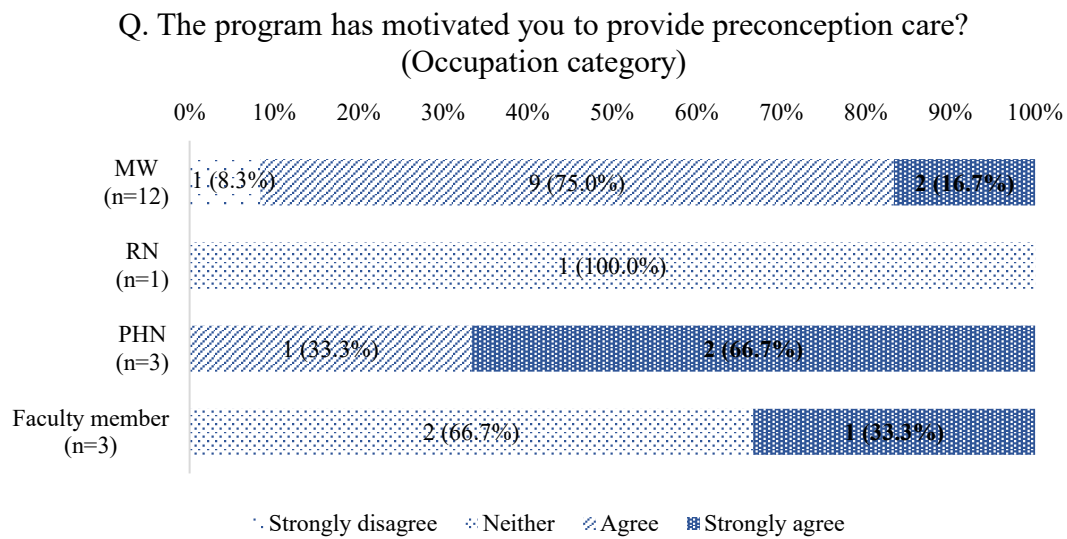


Figure 40

Subgroup Analysis by Occupation Category of Increase in Motivation Through the Program

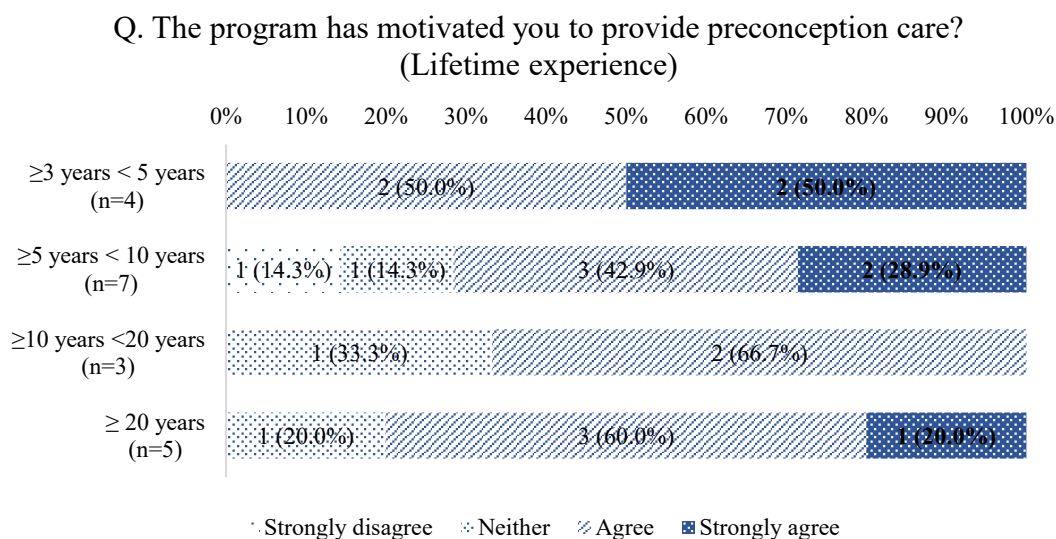


Figure 41

Subgroup Analysis by Lifetime experience of Increase in Motivation Through the Program

Table 29

Reasons for the Increase in Motivation Through the Program

(n = 14)

Strongly agree	"It made me think about how I can incorporate preconception care into my work situations." (PHN)
	"I received support from researchers, and I received information that I could use for consultation and support when providing care." (MW)
	"In my professional context, I was able to imagine providing information at the timing of newborn visits." (MW)
Agree	"I lack confidence because I feel that my knowledge is not sufficient." (MW)
	"My interest has increased. However, I also realized the complexity, so I can't answer very confidently. I want to understand the depth of this field better, not just in terms of knowledge but also in how to approach the target audience, and I'm eager to take on the challenge." (MW)
	"I want to understand the depth of this field better, not just in terms of knowledge but also in how to approach the target audience, and I'm eager to take on the challenge." (MW)
	"Although I recognized the value of this information at different life stages, the lack of practical experience and future opportunities to provide it made it less motivating." (PHN)
	"I feel the need for it." (MW)
	"The key points of preconception care were summarized concisely and clearly, and I believe I now know what to convey." (MW)
	"After the training, I felt that I could do it myself." (MW)

	<i>"The case studies sparked my motivation." (MW)</i>
Neither agree nor disagree	<i>"I had been practicing some aspects before taking this program." (MW)</i> <i>"Since e-learning primarily focused on knowledge acquisition, it didn't have much impact on my willingness to provide care, I believe." (PHN)</i>
Strongly disagree	<i>"I wanted to get involved in health support tailored to different age groups, along with a reconfirmation of my knowledge." (MW)</i>

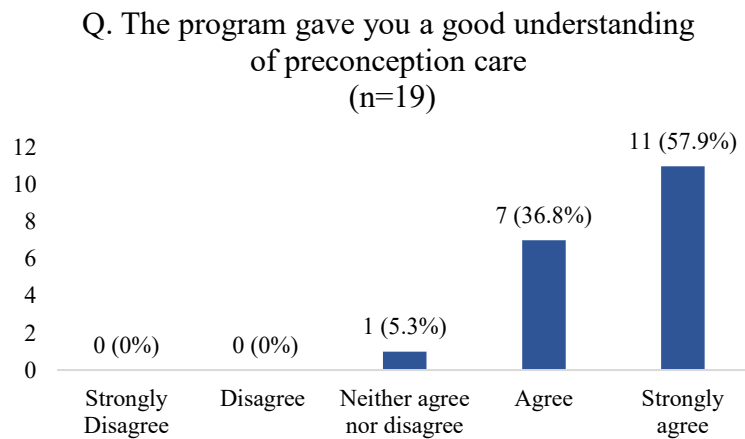


Figure 42
Understanding of Program Content

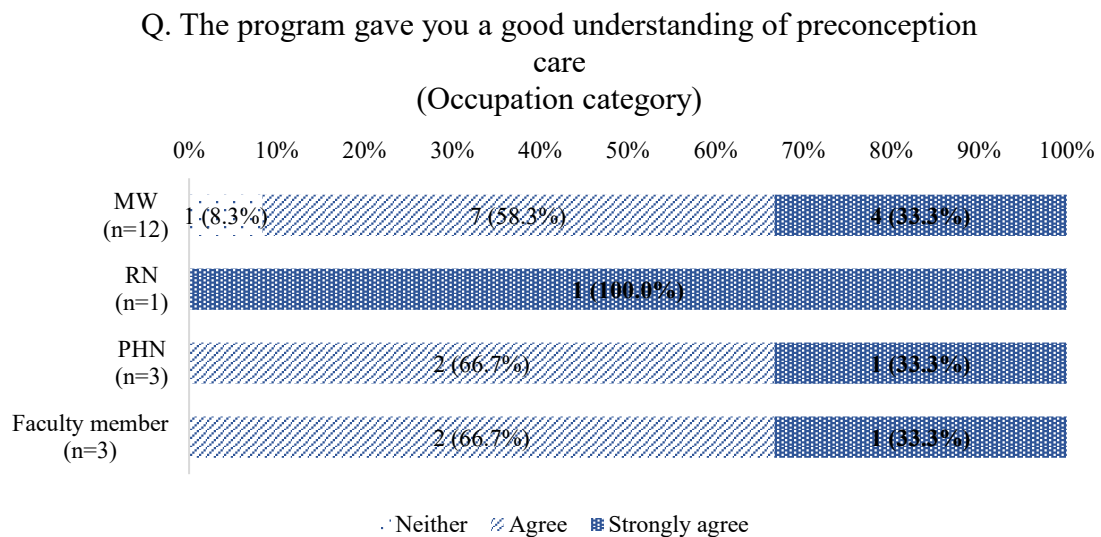


Figure 43
Subgroup Analysis by Occupation Category of Understanding of Program Content

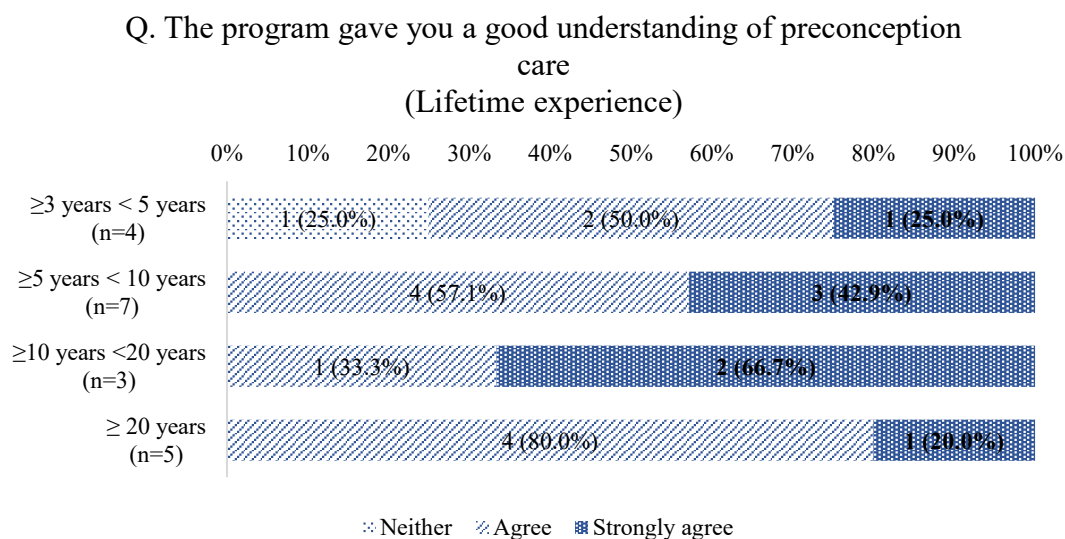


Figure 44

Subgroup Analysis by Lifetime experience of Understanding of Program Content

Table 30

Reasons for the Understanding of Program Content

(n = 11)

Strongly agree	"This was my first comprehensive opportunity to learn the basics and details of preconception care, which allowed me to organize my knowledge." (NS)
	"The content was concise and easy to understand, making it easy to comprehend." (PHN)
	"The slide content was very clear." (MW)
	"The video content was very clear and of an appropriate length." (MW)
Agree	"I can recognize my own weaknesses." (MW)
	"There is still much more to learn, but this opportunity deepened my understanding." (PHN)
	"I was able to learn the basics of preconception care." (Faculty member)
	"I was able to share new information." (Faculty member)
	"I could understand the fundamentals of preconception care very well." (MW)
	"I had taken only formality about preconception care before, but I was able to learn through this e-learning." (MW)
	"I was able to learn specific numbers and evidence for intake." (MW)

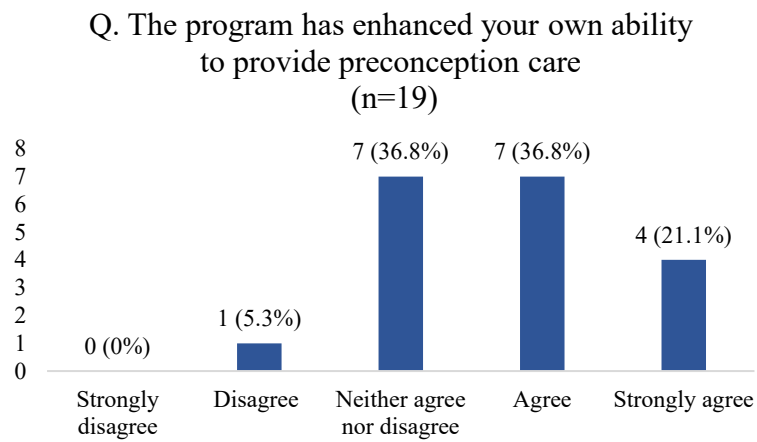


Figure 45

Increased Confidence in Preconception Care Provision Through Program

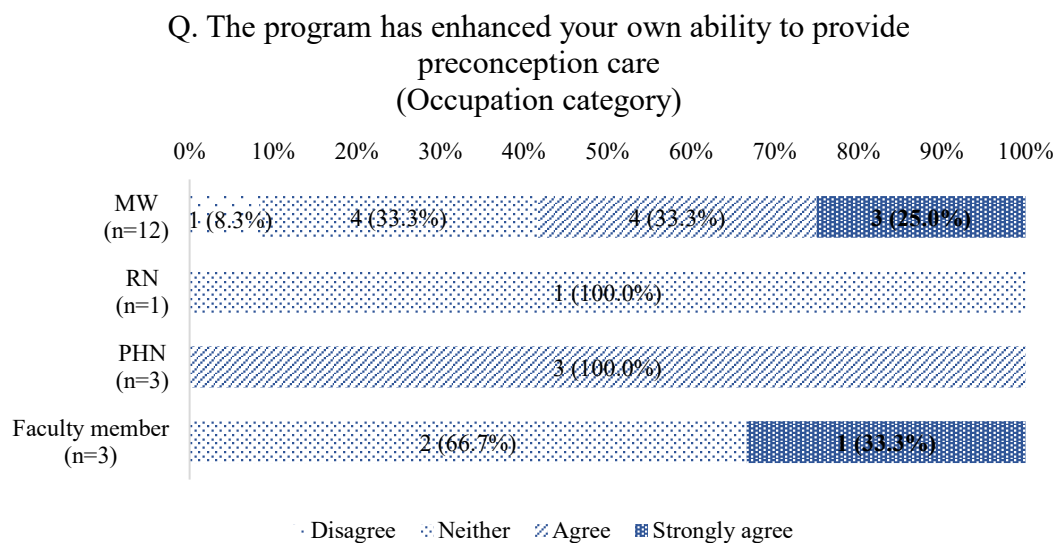


Figure 46

Subgroup Analysis by Occupation Category of Increased Confidence in Preconception Care Provision Through Program

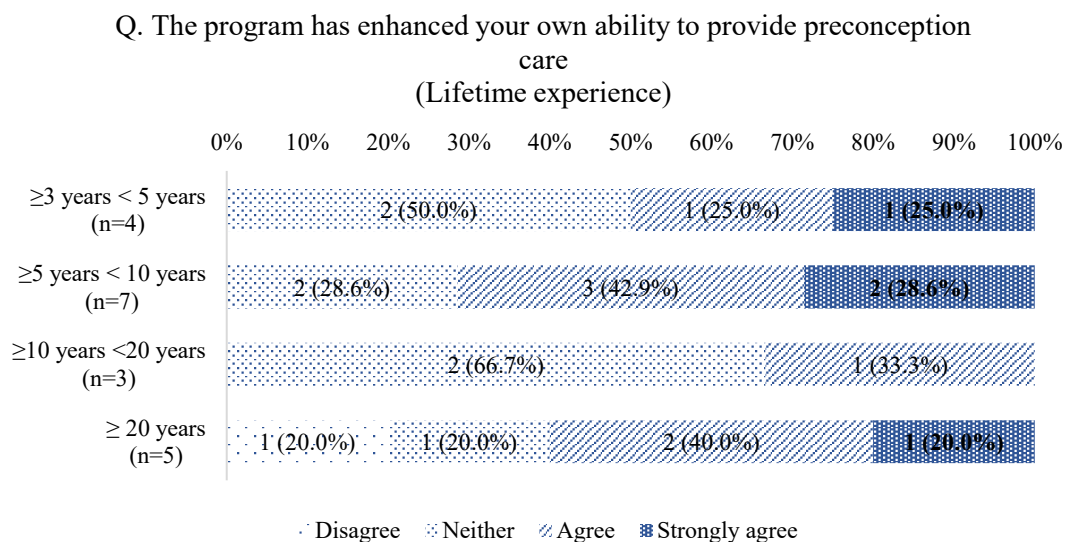


Figure 47

Subgroup Analysis by Lifetime Experience of Increased Confidence in Preconception Care Provision Through Program

Table 31

Reasons for the Increased Confidence in Preconception Care Provision Through Program (n = 12)

Strongly agree	"I felt supported because there was a backup." (MW)
	"Through role-play, I could imagine real-life scenarios." (MW)
	"I started to feel more connected to everyday life and became more conscious of health." (MW)
Agree	"The lecture content was focused on specific examples, which helped connect knowledge with practical application." (PHN)
	"I could grasp the key points that need to be conveyed." (MW)
	"I found it interesting." (MW)
Neither agree nor disagree	"I felt the need for further learning." (MW)
	"While I learned the basics of preconception care, I believe I need to deepen both my knowledge and skills to become a provider." (Faculty member)
	"I got the impression that this field is still in the research stage." (Faculty member)
	"I was very satisfied with the program content. I thought I would like to repeat the counseling practice several times." (NS)
	"To provide with confidence, I felt that I may need some more training." (MW)

Disagree	<i>“I could be aware of my weaknesses, but overcoming them is not easy, and it usually takes several experiences. Moreover, since each individual is different, the same approach cannot always be used.” (MW)</i>
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Practicality

First, the question asked whether the program gave you the knowledge you need to provide preconception care; seven (36.8%) answered ‘Strongly agree,’ 11 (57.9%) answered ‘Agree,’ and one (5.2%) answered ‘Neither agree nor disagree’ (**Figure 48**). By occupation, midwives were the most common of respondents agreeing with the statement, with six (50.0%), followed by midwives with five (41.7%) among those who answered ‘Strongly agree’ (**Figure 49**). By years of experience, five of those who answered ‘Strongly agree,’ and four (57.1%) had between five and ten years of experience, the highest proportion (**Figure 50**). The reasons for this response are given in **Table 32**. Basically, participants indicated that the program was clear and up to date. However, that further learning was needed for care delivery and that there were some ambiguous areas. Some also expressed a desire to observe counseling.

Secondary, the question asked whether the program made you want to actively offer it in own’s institution; seven (36.8%) answered ‘Strongly agree,’ eight (42.1%) answered ‘Agree,’ and four (21.0%) answered ‘Neither agree nor disagree’ (**Figure 51**). By occupation, midwives had the highest proportion with five (41.7%) each agreeing ‘Strongly agree’ or ‘Agree’ (**Figure 52**). In terms of years of experience, four (57.1%) of the respondents agreed with the statement ‘Agree,’ the highest proportion (**Figure 53**). The reasons for this response are given in **Table 33**. Basically, the participants realized the need for preconception care; however, they also need colleagues to work with them and that they would try to spread knowledge first. Some also said that they would try to start in a possible way (e.g., interconnection care at infant health check-ups).

Finally, the question asked whether the program was found to be effective in improving care for women of reproductive age; 13 (68.4%) answered ‘Strongly agree,’ five (26.3%) answered ‘Agree,’ and one (5.2%) answered ‘Neither agree nor disagree’ (**Figure 32**). Of those who answered ‘Strongly agree,’ midwives were the most

common, at eight (66.7%) (**Figure 55**). In terms of years of experience, of those who answered ‘Strongly agree,’ five (71.4%) had between five and ten years of experience (**Figure 56**). The reasons for this response are given in **Table 34**. More than half of the participants responded ‘Strongly agree,’ indicating that preconception care was the care they needed and that all the information they learned in the program was necessary. They also agreed that more specific care was needed for women who wanted to become pregnant.

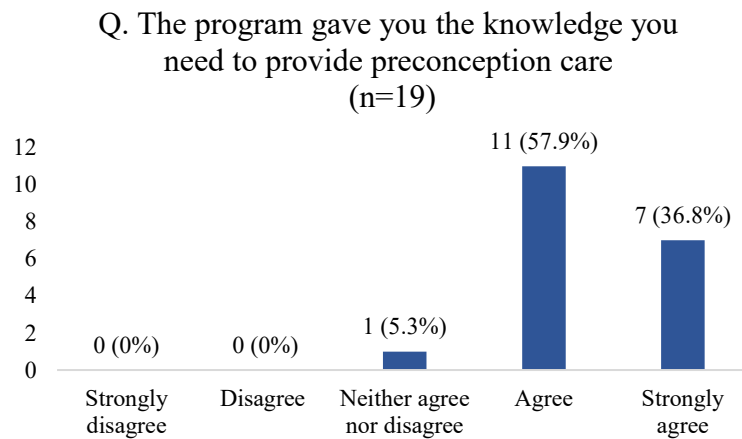


Figure 48

Obtaining the Knowledge Required for the Provision of Preconception Care Through Program

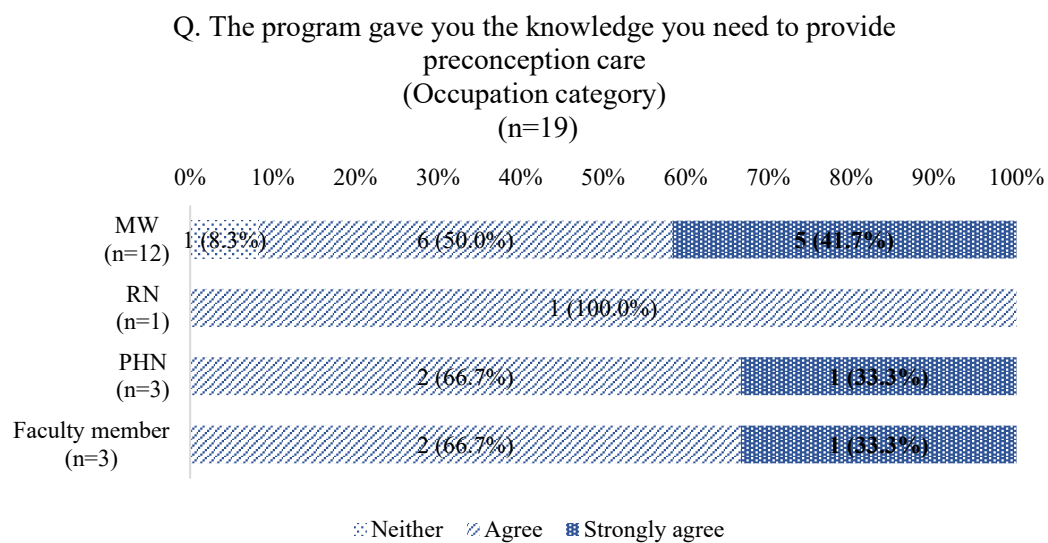


Figure 49

Subgroup Analysis by Occupation Category of Obtaining the Knowledge Required for the Provision of Preconception Care Through Program

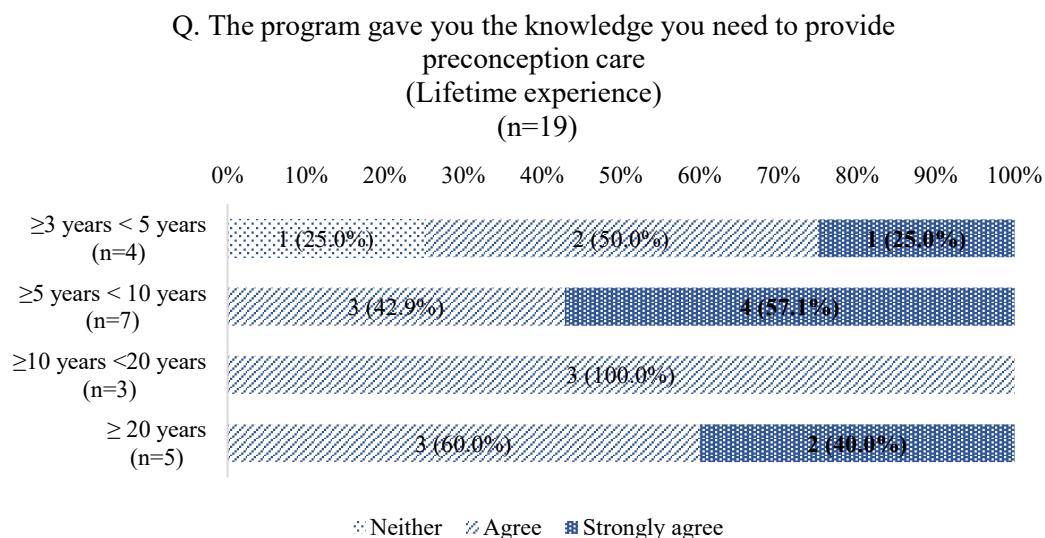


Figure 50

Subgroup Analysis by Lifetime experience of Obtaining the Knowledge Required for the Provision of Preconception Care Through Program

Table 32

Reasons for the Obtaining the Knowledge Required for the Provision of Preconception Care Through Program

(n = 14)

Strongly agree	"I believe the content was enriching." (MW)
	"I now have a clearer idea of what I should study and deepen my understanding of." (PHN)
	"I was able to learn the latest knowledge." (MW)
	"I think I acquired the generally necessary knowledge." (MW)
	"The key points were concise and easy to understand." (MW)
	"There was additional information that I found could lead to practical advice in daily life." (MW)
	"I am anxious about whether I can answer the questions raised by the clients." (MW)
Agree	"I feel the need to learn from my weaknesses in tests." (MW)
	"While I have learned the basics of preconception care, I believe I need to deepen my knowledge further to become a provider." (Faculty member)
	"I found joy in meeting like-minded individuals who share my interest." (Faculty member)
	"I also want to understand who should receive this knowledge and how best to provide it." (NS)

"I have a good overall understanding, but I believe that having deeper knowledge would give me more confidence when conveying it to others."
(PHN)

"I was able to research and repeatedly watch the video to find answer of my questions as needed." (MW)

Neither agree
nor disagree

"There are still many aspects that are vague to me. I would like to observe counseling sessions to see what women are actually seeking when they come for counseling and how they express themselves." (MW)

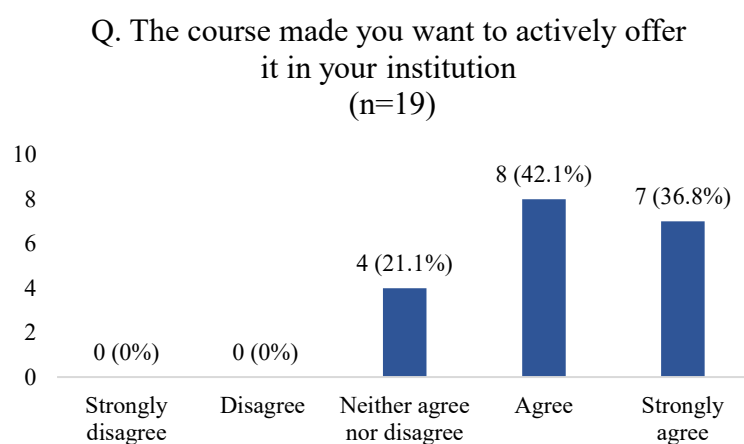


Figure 51

Willingness to Provide Preconception Care Through Program

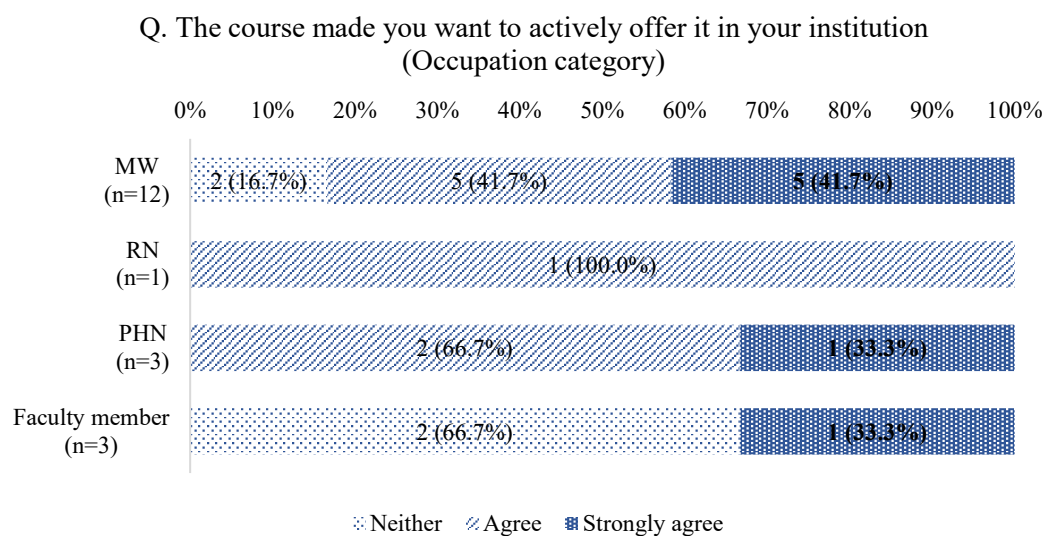


Figure 52

Subgroup Analysis by Occupation Category of Willingness to Provide Preconception Care Through Program

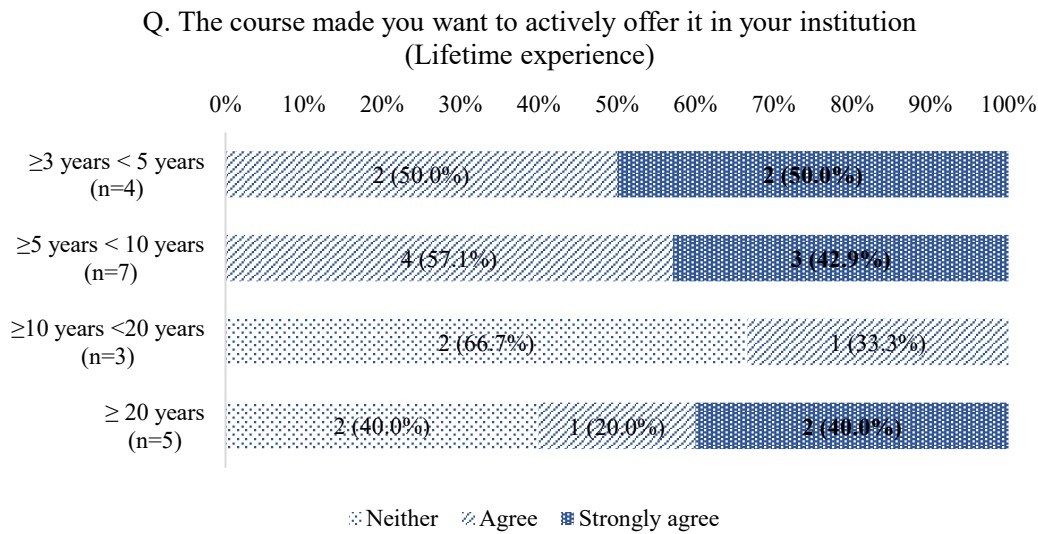


Figure 53

Subgroup Analysis by Lifetime Experience of Willingness to Provide Preconception Care Through Program

Table 33

Reasons for the Willingness to Provide Preconception Care Through Program

(n = 9)

Strongly agree	"In my current workplace, I'm the only midwife, so I want to share knowledge with the staff and increase the number of staff who can convey this information to the target audience." (MW)
	"I believe it's ideal to provide preconception care tailored to each person." (MW)
	"Because I work in a setting where I interact with women of various age groups, I want to provide health support with empathy." (MW)
Agree	"Because I feel that there is a great need for preconception care, and we hope that more people will get involved." (MW)
	"In addition to the excellent content, just having the accomplishment of learning from this program gives me confidence." (NS)
	"This knowledge can contribute to the healthy lives of the community, which is why I believe it's valuable." (PHN)
Neither agree nor disagree	"I understand that it's not always clear when or where to intervene." (MW)
	"I feel that creating the right moment can be challenging." (Faculty member)
	"Because there are many postpartum cases." (MW)

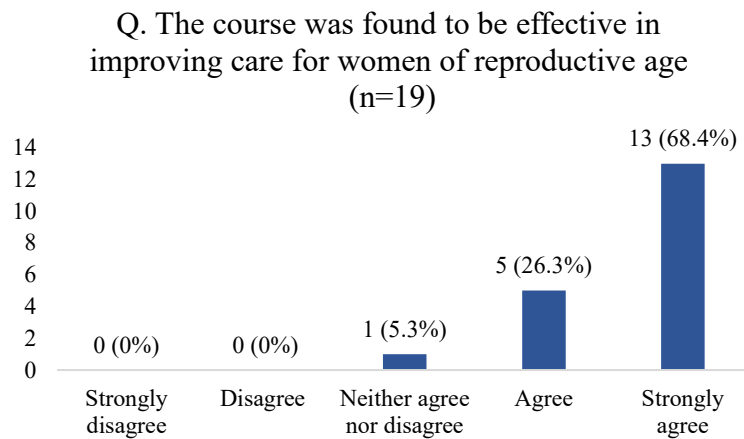


Figure 54

Thoughts on the Effectiveness of Preconception Care for Reproductive Aged Women

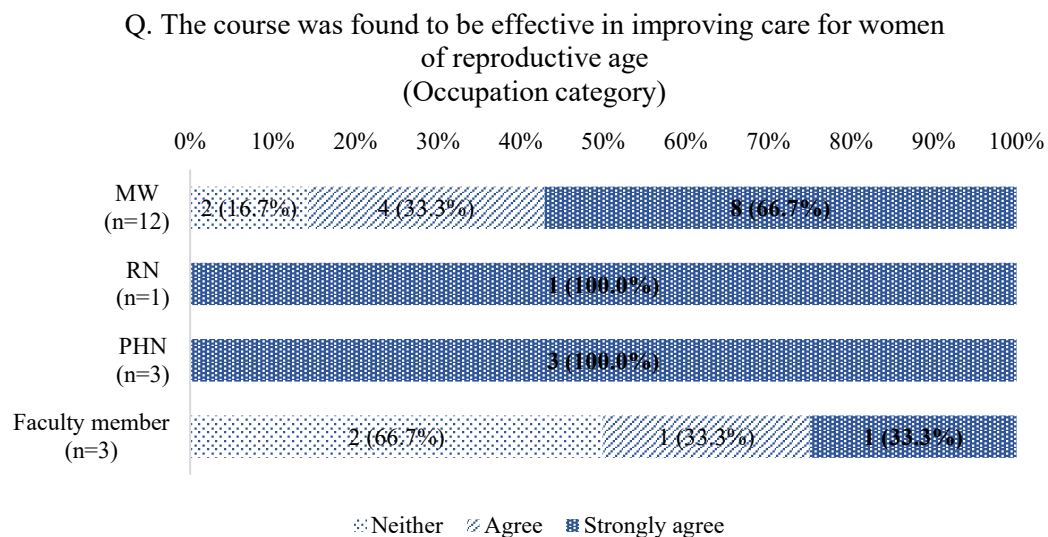


Figure 55

Subgroup Analysis by Occupation Category of Thoughts on the Effectiveness of Preconception Care for Reproductive Aged Women

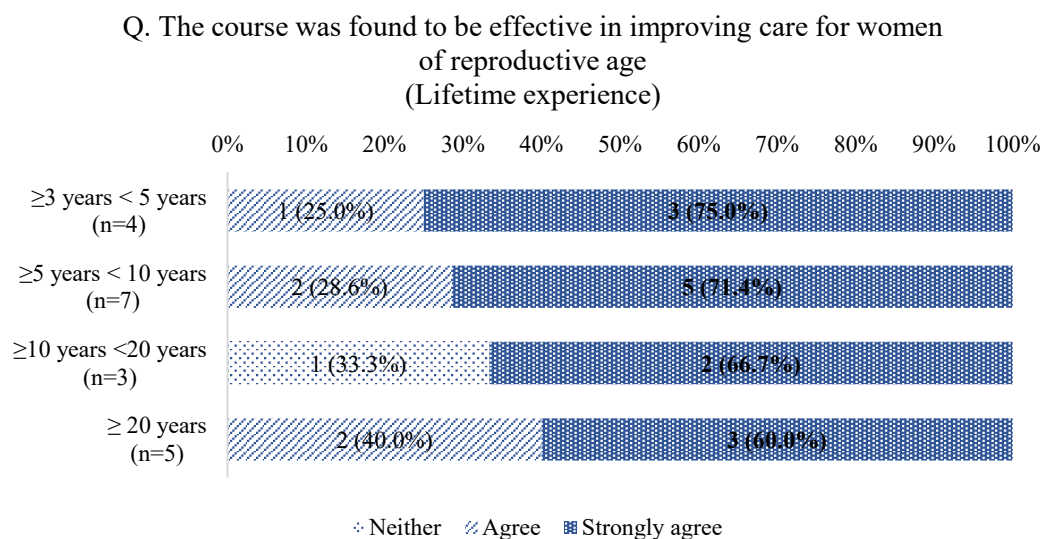


Figure 56

Subgroup Analysis by Lifetime Experience of Thoughts on the Effectiveness of Preconception Care for Reproductive Aged Women

Table 34

Reasons for the Thoughts on the Effectiveness of Preconception Care for Reproductive Aged Women

(n = 9)

	<p><i>"To promote preconception care, there is a need for educational programs for nursing professionals, and I felt that this program is very suitable for that purpose." (NS)</i></p> <p><i>"Providing knowledge about future pregnancies and sexuality can have a positive impact on a person's overall health, not just during pregnancy. For example, proper BMI and dietary habits can affect future health as well." (PHN)</i></p>
Strongly agree	<p><i>"The necessity was evident." (MW)</i></p> <p><i>"The content was easy to approach for women of childbearing age, so I felt that it could be applied effectively." (MW)</i></p> <p><i>"It's all-important information." (MW)</i></p> <p><i>"Knowing this information before pregnancy can help reduce anxiety when pregnancy occurs." (MW)</i></p> <p><i>"I felt that by considering the hopes of women before or after pregnancy for future childbearing, more specific health support can be provided." (MW)</i></p>
Agree	<p><i>"Today's cases seemed to focus on that as well." (MW)</i></p> <p><i>"I felt that there is insufficient sexual education, and it made me think about how to address this issue." (Faculty member)</i></p>
Neither agree nor disagree	<p><i>"I think I need more of my own knowledge and skills to improve my care." (Faculty member)</i></p>

Demand

The question asked whether the program made you think that preconception care is an essential skill for midwives, nurses, and public health nurses; 16 (84.2%) answered 'Strongly agree,' three (15.7%) answered 'Agree' (**Figure 57**). By occupation, midwives accounted for more than half of the respondents who answered 'Strongly agree,' with 10 (83.3%) (**Figure 58**). By years of experience, seven (100.0%) of those who answered 'Strongly agree' had between five- and ten-years' experience, the highest proportion (**Figure 59**). The reasons for this response are given in **Table 35**. All participants responded 'Strongly agree' or 'Agree.' The respondents agreed that this care is necessary for people of all ages and that it is a competence that is needed both inside and outside of medical settings.

Moreover, the question asked whether the program has made you think that preconception care should be provided in hospitals and clinics that have gynecology departments; 14 (73.7%) answered 'Strongly agree,' four (21.1%) answered 'Agree,' and one (5.2%) answered 'Disagree' (**Figure 60**). By occupation, midwives accounted for more than half of the respondents who answered 'Strongly agree,' with 10 (83.3%) (**Figure 61**). By years of experience, of those who answered 'Strongly agree,' six (85.7%) had between five and ten years of experience (**Figure 62**). The reasons for this response are given in **Table 36**. Although preconception care is necessary care and should be provided in hospitals and clinics with gynecology departments many respondents agreed that it should be provided outside hospitals as well, not only in health facilities but also in community etc.

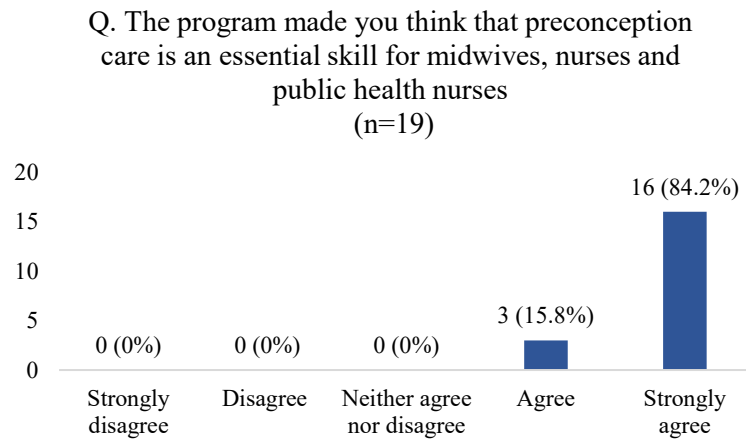


Figure 57

The Need for Nurse Professionals to Have Knowledge, Attitudes and Skills in the Provision of Preconception Care

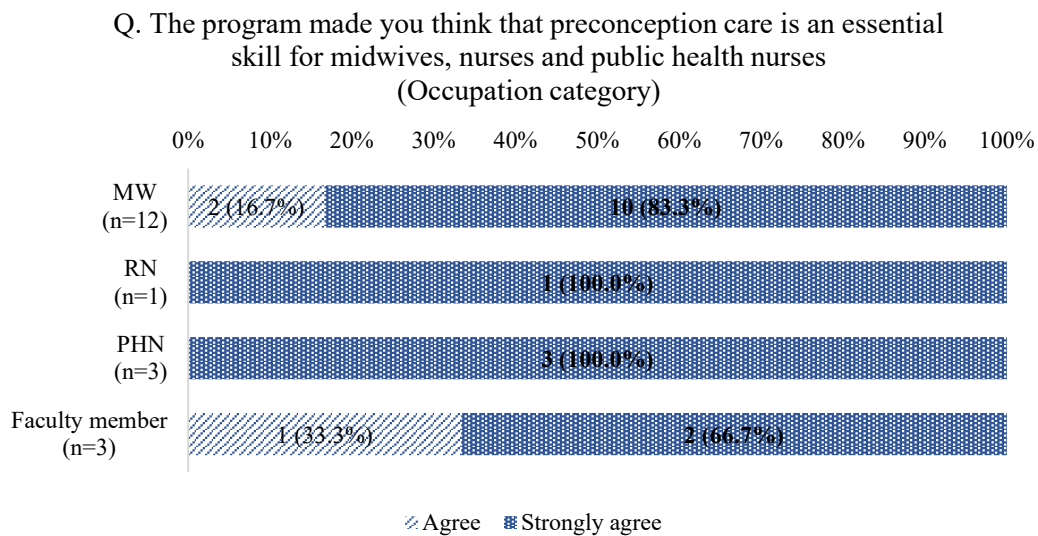


Figure 58

Subgroup Analysis by Occupation Category of The Need for Nurse Professionals to Have Knowledge, Attitudes and Skills in the Provision of Preconception Care

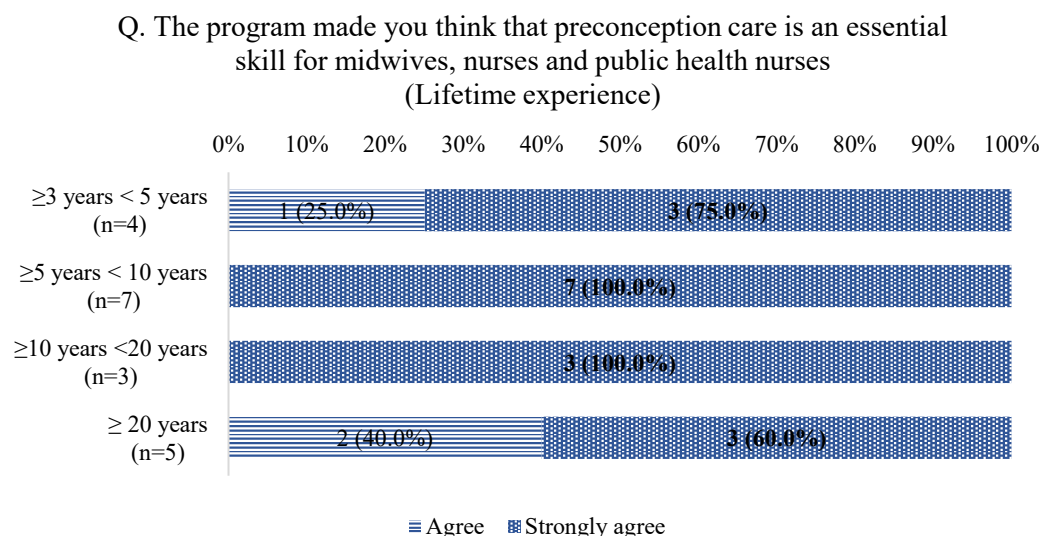


Figure 59

Subgroup Analysis by Lifetime Experience of The Need for Nurse Professionals to Have Knowledge, Attitudes and Skills in the Provision of Preconception Care

Table 35

Reasons for the Need for Nurse Professionals to Have Knowledge, Attitudes and Skills in the Provision of Preconception Care

(n = 13)

Strongly agree	"Currently, there are limited opportunities to learn about this in schools or other educational institutions, which is why I believe it is essential for healthcare professionals to get involved." (MW)
	"As a midwife, I meet many women after they become pregnant, but I often wish I had been involved before pregnancy. I felt it was important to talk to the target group at the stage of thinking about pregnancy and at the stage when they are not thinking about it." (MW)
	"It was felt that care should be provided in all institutions, not just medical institutions." (PHN)
	"I believe this is fundamental knowledge that everyone should be aware of." (Faculty member)
	"In most workplaces where nursing professionals are present, there is a subject in their care, and they never knew when an opportune moment for counseling would arise." (NS)
	"This is because it pertains to significant aspects of people's lives. Although it may not be highly emphasized in Japan now, if we can spread this knowledge as a common practice for sexual health and future fertility, it can significantly improve the quality of life for many individuals. Healthcare professionals such as midwives, nurses, and public health nurses, who are involved in people's health, should acquire this knowledge." (PHN)
	"It's a profession that can easily disseminate preconception care." (MW)

	<p><i>"I believe this knowledge is necessary at any age for women, whether inside or outside the hospital setting." (MW)</i></p> <p><i>"It's content that I would like all young people to know, so I believe all nursing professions should have this knowledge." (MW)</i></p> <p><i>"I consider midwives, nurses, and public health nurses to be essential for providing preconception care." (MW)</i></p> <p><i>"Even if each item is understood as knowledge, I believe it should be actively provided in face-to-face interactions and other settings." (MW)</i></p>
Agree	<p><i>"The knowledge in this field is essential for professions that support women." (MW)</i></p> <p><i>"While I think it is part of health guidance, I wonder is it guidance? I think it means having the knowledge to make suggestions." (Faculty member)</i></p>

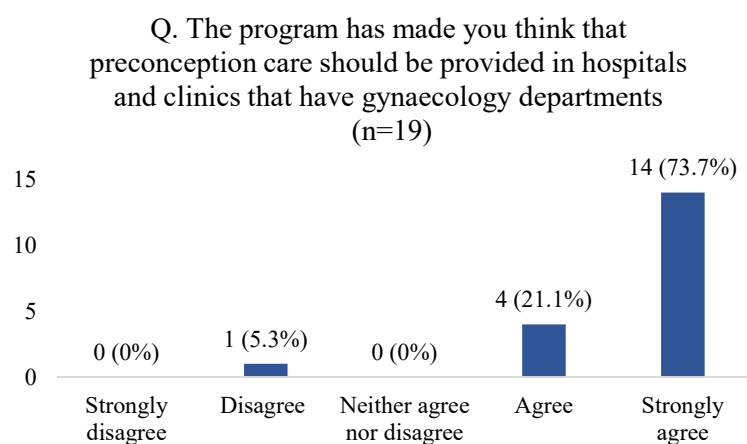


Figure 60

The Needs for Preconception Care to be Provided in Hospitals and Clinics with Gynecology Departments

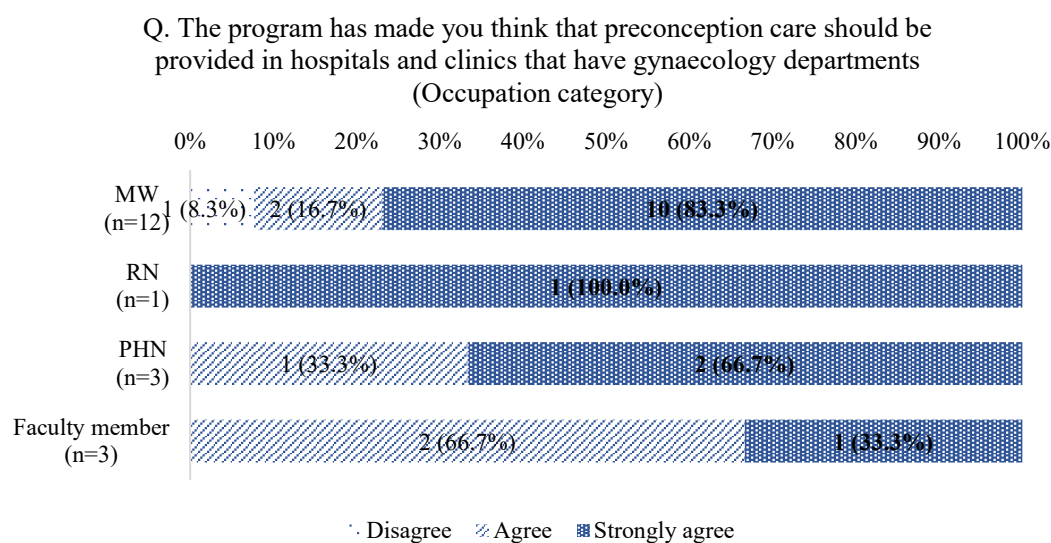


Figure 61

Subgroup Analysis by Occupation Category of The Needs for Preconception Care to be Provided in Hospitals and Clinics with Gynecology Departments

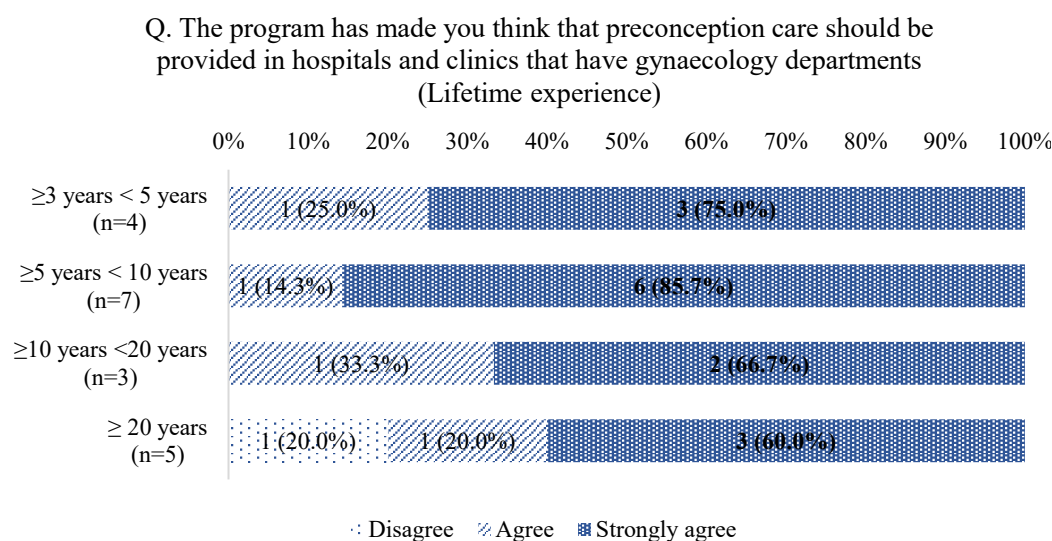


Figure 62

Subgroup Analysis by Lifetime Experience of The Needs for Preconception Care to be Provided in Hospitals and Clinics with Gynecology Departments

Table 36

Reasons for the Needs for Preconception Care to be Provided in Hospitals and Clinics with Gynecology Departments

(n = 13)

	"Many people are going through preconception without information." (MW)
	"I think there is a need for some kind of gateway. However, I believe it may take time to establish a dedicated preconception care gateway, so starting by offering it in gynecology would be a good step." (MW)
	"It is necessary because all couples are eligible for this care." (NS)
Strongly agree	"I believe it is necessary because preconception care is relevant to issues related to sexuality, and it would be more readily accepted when provided by gynecologists, who have opportunities to interact with young women and offer preconception knowledge." (PHN)
	"It's necessary." (MW)
	"I think that care interventions can lead to behavior changes, improve the quality of life, and provide better choices." (MW)
	"It is needed because it applies to everyone." (MW)
	"It's important to empathize with individuals, understand their thoughts, and consider what they want for the future." (MW)
	"I want to focus on individualized health support, taking into account the backgrounds and desires of women of various age groups who visit the outpatient department." (MW)

Agree	<p><i>"It would be ideal if nurse professionals could provide care in any institution that the target audience connects with, not just in gynecology." (PHN)</i></p> <p><i>"After taking this program, I realized that this type of care should be available to younger generations not only in hospitals and clinics but also in the community." (Faculty member)</i></p> <p><i>"Having a gynecologist in the same building might make it easier to work collaboratively." (Faculty member)</i></p>
Disagree	<p><i>"I believe that whether to connect to medical services should be determined after attempting a health approach." (MW)</i></p>

Feeling of reward and the length of the program

The question asked whether attending this program made you feel rewarded: nine (47.3%) answered ‘Strongly agree,’ seven (36.8%) answered ‘Agree,’ and three (15.8%) answered ‘Disagree’ (**Figure 63**). By occupation, the highest number of respondents with six (50.0%) of those who answered ‘Strongly agree’ were midwives (**Figure 64**). By years of experience, the highest number of respondents with five (71.4%) had between five and ten years of experience (**Figure 65**) of those who answered ‘Strongly agree.’ The reasons for this response are given in **Table 37**.

Participation in the program itself was rewarding in terms of meeting fellow participants, interacting through role-playing and challenging new things. Some participants also commented that although preconception care is needed in Japan, it is not yet widespread. The care providers’ practice needs to be spread-out, with the hope that spreading the care might change Japan, which is rewarding. On the other hand, some said that participation in the program was not directly rewarding.

Moreover, the question asked whether the time taken to attend this program was appropriate: one (5.2%) answered ‘Somewhat long’, 10 (52.6%) answered ‘Just right,’ seven (36.8%) answered ‘Somewhat short,’ and one (5.2%) answered ‘Too short’ (**Figure 66**). By occupation, the most common response was ‘Just right’ or ‘Somewhat short,’ with five (41.7%) midwives each (**Figure 67**). By years of experience, three (42.9%; 60.0%) each said they were ‘Just right’ between those with between five and ten or more than 20 years’ experience (**Figure 68**). The reasons for this response are given in **Table 38**. Regarding the e-learning, the participants said that overall, the length was just right, and the points were easy to understand, although one participant would have liked to learn more. As for the role-plays, some teams were not able to experience all the roles due to the short time available, so a longer time was needed to accommodate the number of participants.

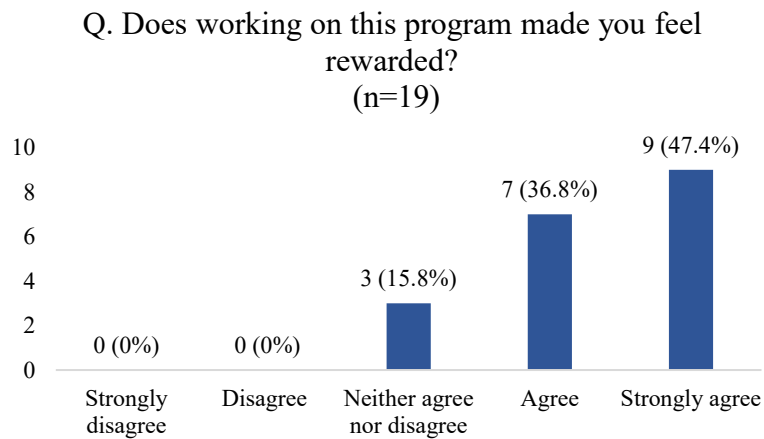


Figure 63

Rewards from Attending the Program

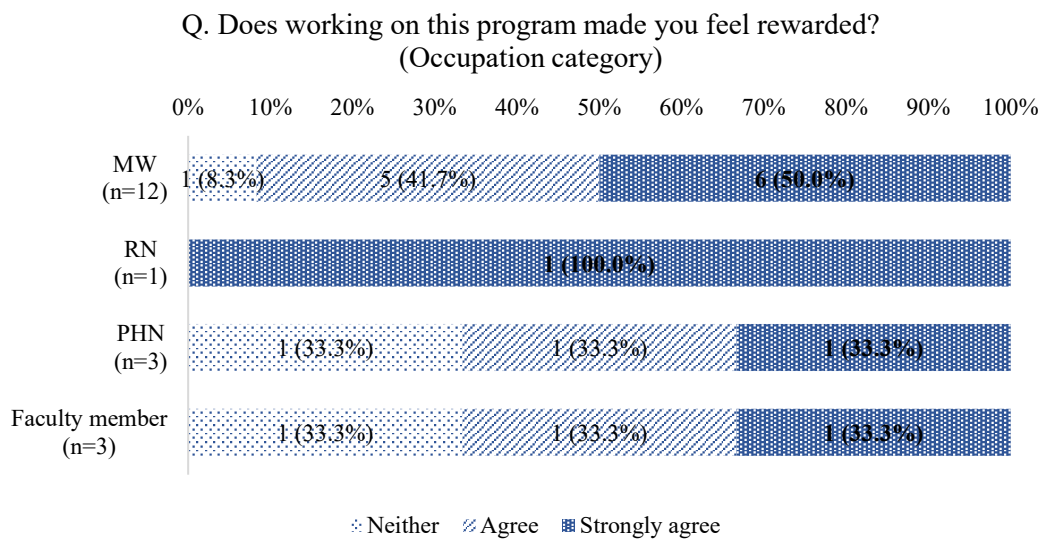


Figure 64

Subgroup Analysis by Occupation Category of Rewards from Attending the Program

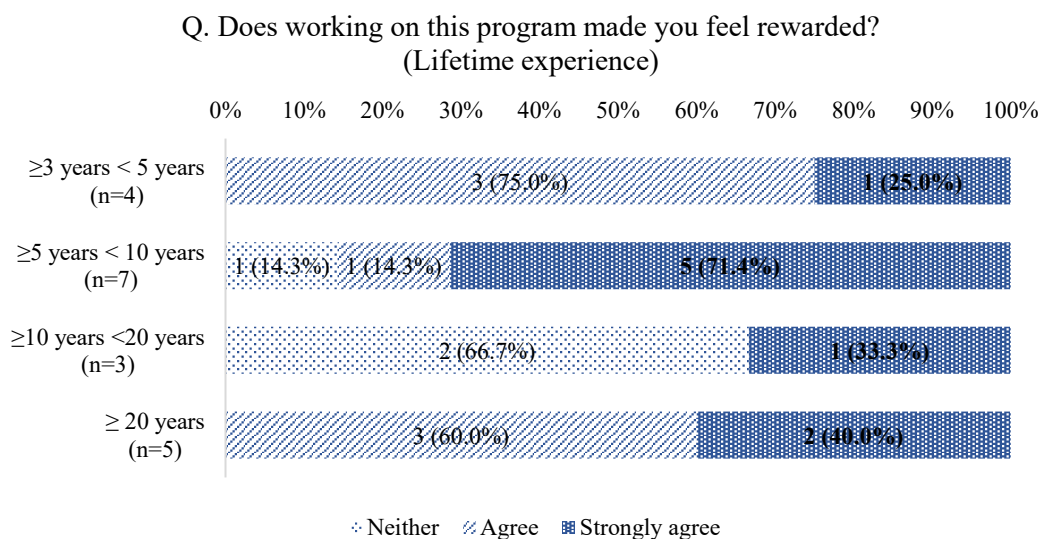


Figure 65

Subgroup Analysis by Lifetime Experience of Rewards from Attending the Program

Table 37

Reasons for the Rewards from Attending the Program

(n = 9)

Strongly agree	"The aspect that I can meet people interested in preconception care has been rewarding." (NS)
	"Because there is the potential to change the future of Japan." (MW)
	"The final role-play and the information exchange among the Zoom participants were very informative." (MW)
	"Preconception care tailored to each individual is not yet widely practiced in Japan, which is why it has been rewarding." (MW)
	"It has also been an opportunity for me to become more aware of my own health and think about what I should do specifically." (MW)
Agree	"The willingness to take on challenges can be connected to a sense of accomplishment." (MW)
	"It seems like a clue to discovering new things. I'll help with what I can." (Faculty member)
Neither agree nor disagree	"I understand that the sense of accomplishment is not directly tied to this." (Faculty member)
	"The program content helped me understand the significance of preconception care, but since I don't have the opportunity to provide it in the actual field, it's difficult to relate it to a sense of accomplishment." (PHN)

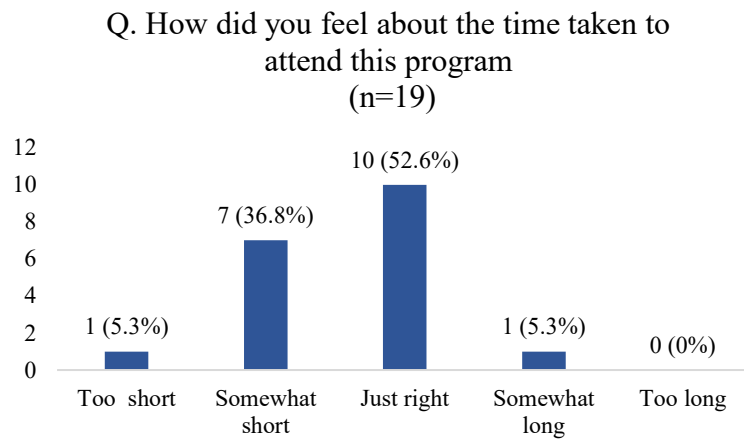


Figure 66

Length of Program Time

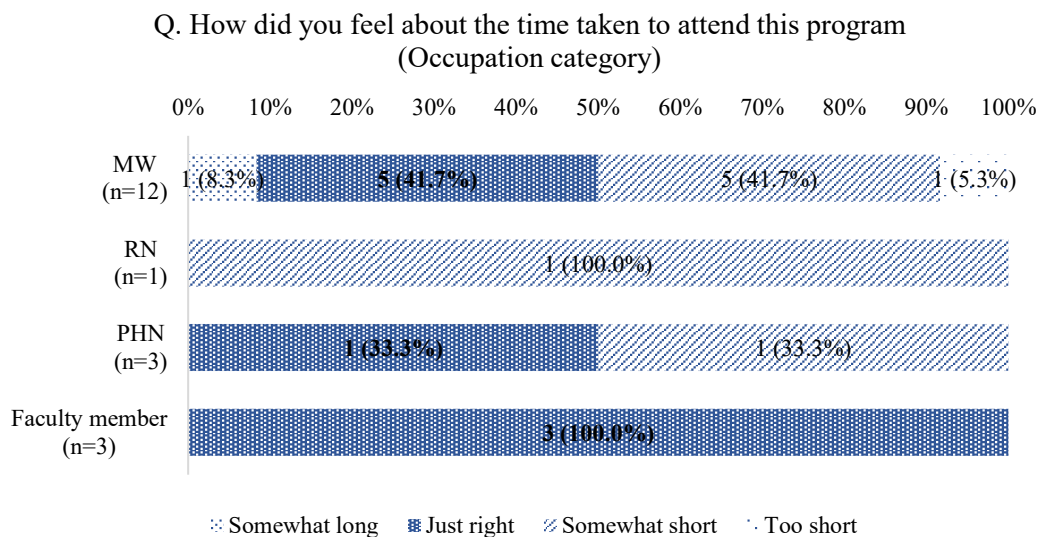


Figure 67

Subgroup Analysis by Occupation Category of Length of Program Time

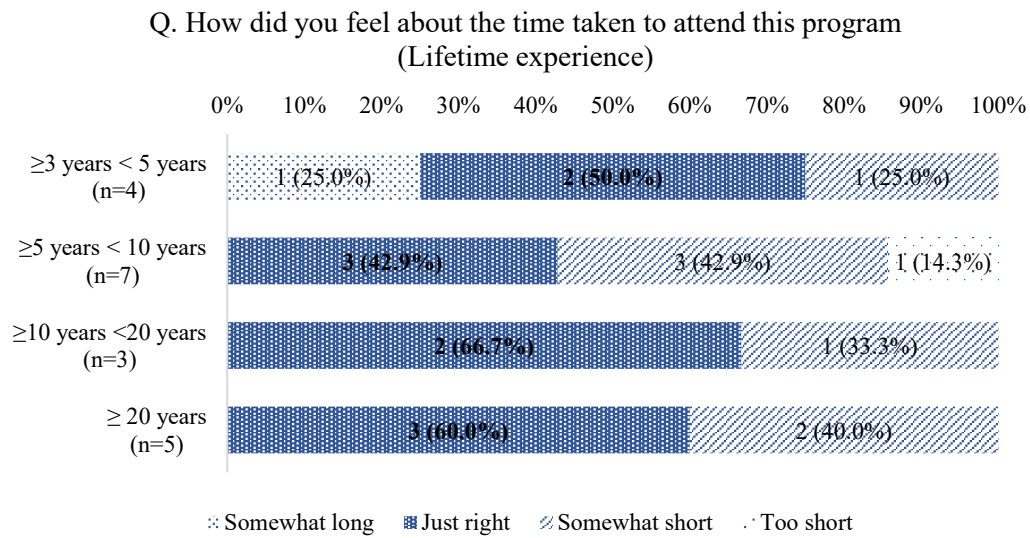


Figure 68

Subgroup Analysis by Lifetime Experience of Length of Program Time

Table 38

Reasons for the Length of Program Time

(n = 11)

Too short	<p><i>"I wanted to watch more practical counseling scenarios and discuss together how to intervene with women who are interested in preconception care and support them." (MW)</i></p>
Somewhat short	<p><i>"Today, I would have liked to hear the opinions of participants on what kind of care they provided to the mock clients." (MW)</i></p> <p><i>"In today's session, there were two scenarios prepared, but only one was covered. It would have been even better if all group members could have had the experience." (MW)</i></p> <p><i>"At the e-learning stage, it would have been great to have more information on case introductions, such as knowing what kind of information to provide to different individuals. Even if it meant a longer duration, it would have been beneficial." (NS)</i></p> <p><i>"I want to acquire deeper knowledge to be able to teach others." (PHN)</i></p> <p><i>"I also felt the desire to delve deeper into the role-plays." (MW)</i></p> <p><i>"Having actual videos or images of care being provided might make it easier to visualize." (MW)</i></p> <p><i>"The lecture content was compactly summarized, which was not a mistake, but it left me wanting to hear more." (MW)</i></p>
Just right	<p><i>"Each piece of content was short, which made it easy to allocate study time and clear to understand." (Faculty member)</i></p> <p><i>"It was easy to engage with." (Faculty member)</i></p>

“The length of each video was just right.” (MW)

Changes after intervention

Changes after one month of intervention (Intervention group)

One month after the intervention, 15 (78.9%) said they had started something new (**Figure 37**). The most common being a ‘I have searched for and learned something new about preconception care or related materials’ with 12 (63.2%), followed by ‘Informed surrounding nursing professionals about preconception care’ with nine (47.4%) and ‘Started asking questions on preconception health’ with four (21.1%). Conversely, four respondents (21.1%) answered they had not started anything new.

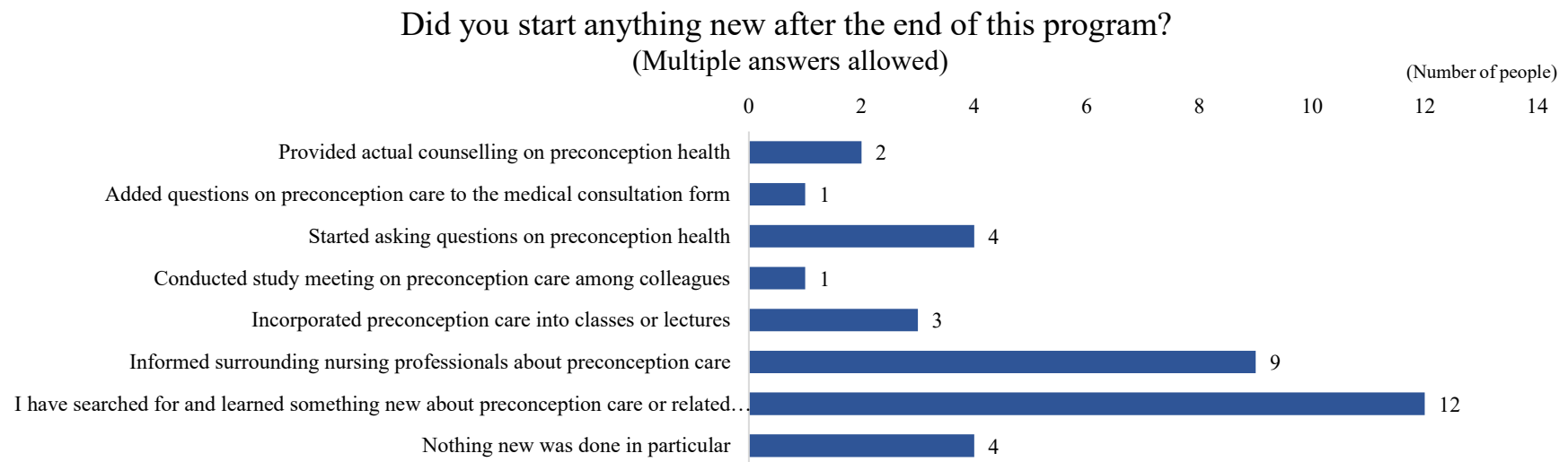


Figure 69

Newly Started Actions One Month After Attending the Program

Apart from **Figure 69**, the following is a list of new things that have been done after attending the program.

(One of each)

- Study groups have been initiated and a pilot program will be launched this year
- I prepared for teaching by researching folic acid and thinking about the recipes.
- I put it into practice in practical training.
- During the preconception study for the project on interacting with babies, I became careful to talk about things to be aware of before pregnancy, including proper weight, alcohol consumption, smoking, and the reproductive age.
- I signed up for workshops on sex education and preconception care.
- Study sessions will be held in August (Zoom) and face-to-face in September, once/month for the time being.

In contrast, the reasons why respondents indicated that there were no new ones done are described.

(One of each)

- Did not have the opportunity to implement.
- I was too busy to carry it out.
- Did not have the opportunity to use preconception care or talk about it with colleagues. I was too busy with work to do preconception care even if I wanted to.
- I have been doing it for some time and didn't have the opportunity or time to do it afresh.

Comments from participants in the intervention group

Comments on the program in the free-text sections are shown in **Tables 39** and **Table 40** of the post- and follow-up questionnaires respectively.

Table 39

Free-text Comments: Post-questionnaire

Good points
<i>"I thought it was good that there were online seminars as well as e-Learning."</i>
<i>"I think it is a very comprehensive program. I hope that the research will progress and that it will be available to be studied in the nurse-midwife training process."</i>
<i>"I would like to work hard together with the researcher."</i>
<i>"Thank you very much for making such an opportunity."</i>
<i>"The researcher explained very clearly about preconception, which helped me to understand it better."</i>
<i>I think preconception care is necessary for both men and women, but I had the impression that the program in general was somehow targeted at women in this way.</i>
<i>Especially from the perspective of gender inequality in Japan, I think it would be good if both men and women can proactively develop their health for pregnancy and childbirth, so I hope that we can target men and women from the preconception education."</i>
<i>"I can see that the researcher is very ingenious and put her heart and soul into her efforts, including the videos, questionnaires, and the creation of counseling cases. We support you. I will do my utmost to help where I can."</i>
<i>"The program was an opportunity for me to think about how I, as a health worker, can spread the knowledge of preconception care to the public, as well as spreading the knowledge to healthcare professionals. Thank you very much."</i>
<i>"I had a very good learning experience, and I learned a lot and felt relieved not only from the e-running but also from the seminar at the end. Thank you very much."</i>
<i>"Thank you for allowing me to participate."</i>
Points of improvement
<i>"I feel I would learn more if there were more practical sessions such as role-plays."</i>
<i>"It would be great to watch actual counseling situations and learn more about what to devise."</i>
<i>"I thought the content and volume was comprehensive and just right for a beginner like me. On the other hand, I feel a bit of a hurdle when it comes to putting it into practice as a professional. It would be better if there were more practical tips and case studies."</i>
<i>"The rationale for why it was necessary was clearly presented, and the video made it easy for care providers to understand what points they needed to convey. In the part about menstruation, I thought it would be good to use expressions such as changing napkins at least three hours apart, as I don't think people measure their menstrual flow between 20ml and 140ml."</i>

Table 40

Free-text Comments: Follow-up questionnaire

Comments from participants
<i>"I learned a lot. Thank you very much."</i>
<i>"The e-learning was easy to understand. I learned a lot from the training, but the reality is that it is difficult for me to actually provide my own support regarding preconception consultation."</i>
<i>"I learned a lot, thank you very much."</i>
<i>"The role-plays and discussions at the Zoom study session gave me the opportunity to think about my own way of throwing words at people, which was a learning experience. Also, sorry it took so long to return the questionnaire. Overall, thank you for your hard work. Please keep up the good work!"</i>
<i>"I appreciate the opportunity to expand my world and get to know different people."</i>
<i>"The preliminary video was easy to understand and well organized, and I still watch it from time to time. I learned a lot."</i>
<i>"As someone who is just starting to learn about preconception care, I found the program easy to work with, giving me a quick overview in a short time."</i>
<i>"I hope that this program will touch many people and help improve the health of as many women as possible. I would like to incorporate it in a small way so that I can play a part in this."</i>
<i>This was a valuable experience for me. Thank you very much and I look forward to working with you in the future."</i>
<i>"I received so many insights. Thank you very much for your kind support during the online seminar. I am glad I had the opportunity to participate. I would like to act and make use of it in the future."</i>
<i>"The video was easy to understand, and the online seminar was meaningful, and I will be able to make use of it in my future activities. Thank you very much. I look forward to working with you in the future."</i>
<i>"I learned a lot about preconception care. Thank you very much."</i>
<i>"I wish many people could have attended this program. I was able to update my knowledge! Thank you very much."</i>
<i>"I would like to refer to the video or lecture on how counseling is actually done and how to proceed in order to reconfirm my knowledge and make good use of the information I gained from watching the video."</i>

Follow-up of control group

After the completion of the study, the control group was offered the same opportunities to attend the program as the intervention group. E-learning links were emailed to all participants, and online seminar attendance requests were confirmed. Of the 20 participants in the control group, 14 (70.0%) wished to participate. Of these, three (15.0%) could not be contacted and two (10.0%) withdrew to participate (**Figure 70**).

From the free feedback, the e-learning sessions were just 10 minutes long each and the content was easy to understand. Some participants commented that they understood their bodies, pregnancy, and contraception well and were able to put the content into practice immediately. Some said it would be better if there were videos of practical counseling sessions. Furthermore, issues remained to be addressed, such as how to convey information and explain the methods of the role play, the content of information to be provided in advance about the paper patient, and the setting of timekeepers.

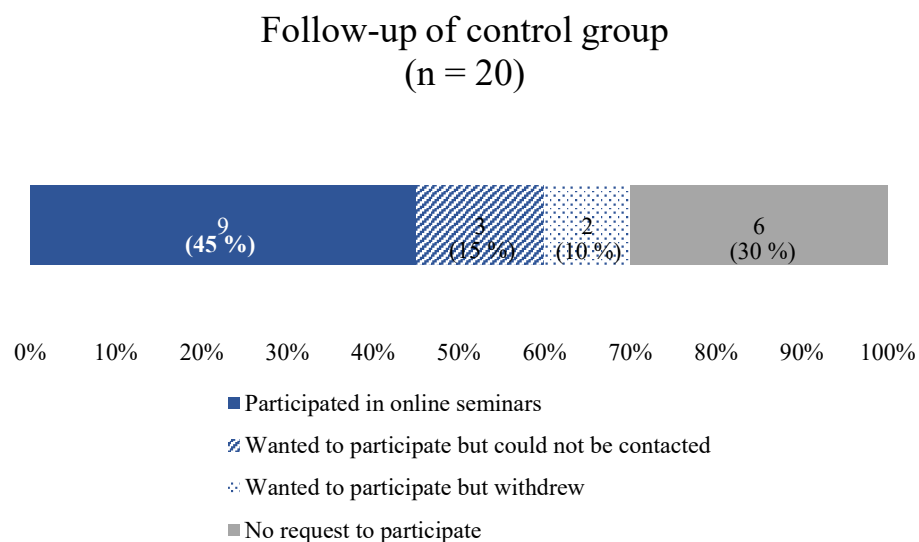


Figure 70

Follow-up of Control Group

Chapter 6 Discussion

The research results overview

In the present study, an educational program for preconception care providers in the nursing profession was developed using Bloom's Taxonomy to guide the level of the introduction to preconception care. The aim was to develop the knowledge, attitudes, and skills required for preconception care delivery. The program included e-learning on basic preconception care. Online seminars featuring preconception care role-plays and interaction with researchers and other participants for 39 Japanese midwives, nurses and public health nurses interested in preconception care. The feasibility and acceptability of the developed program and its potential effects were assessed.

To the best of our knowledge, there have been no studies conducted for preconception care providers in Japan. This is the first study of the research regarding developing educational programs for preconception care providers. The study results showed that knowledge, attitudes, and skills were all significantly improved in the intervention group who attended the e-learning and online seminar compared to the control group, indicating the potential positive effects of attending this program.

In addition, significant improvements were found in the Health Literacy Scale for Preconception Care (Knowledge), Attitudes, and Skills after adjusting of the interaction effects. The hypothesis of the study was that 'A systematically developed preconception care educational program for care providers tend to improve their knowledge, attitudes, and skills about preconception care, compared to no intervention group', and the results support the hypothesis of the present study. Furthermore, both the feasibility aspects of acceptability, practicality and demand were all rated highly by the study participants, indicating that the program was well accepted by midwives, nurses, and public health nurses in Japan, and the second research objective of using the

program to inform future definitive randomized controlled trials, while identifying areas for improvement, was also achieved.

Evaluation of the developed program

The program was assessed for the following three levels of the Kirkpatrick framework: 'Level 1 - Reactions' to the program were evaluated from the perspectives of knowledge enhancement, work performance improvement, practicality of the learning content, rewarding feeling of taking the program, and overall satisfaction; 'Level 2 - Learning' from attending the program, was assessed through improvements in knowledge test scores, and 'Level 3 - Behaviors' were assessed using the changes in average scores for Attitude and Skill as well as the changes in behavior one month after attending the program.

Level 1: Evaluation of Reaction

Concerning knowledge enhancement, a large majority of participants answered either 'Strongly agree' or 'Agree.' The structure and volume of the program were rated highly as appropriate and easy to understand. However, only one participant answered 'Neither agree nor disagree' because the participant was already familiar with the content. The program content was generally suitable for improving knowledge as an introduction to preconception care. As for improving work performance, a large majority strongly agreed or agreed although this was somewhat less than for improving knowledge. Gaining practical experience and knowledge and learning to consult with others were found to contribute to improved work performance. Continuing education is considered necessary to acquire new competencies and skills (Mlambo et al., 2021; Ortega-Lapiedra et al., 2023). Participation in one program alone is not sufficient for care provision, which would be the reason of the percentage of improved work performance was lower than the improvement in knowledge.

In terms of the applicability of the learning, all participants either ‘Strongly agree’ or ‘Agree,’ indicating that practical experience of counseling led to applicability and that knowing one’s peers contributed to practice. When asked if they felt participating in the program was rewarding, 17 (84.1%) of the participants answered ‘Strongly agree’ or ‘Agree.’ While meeting peer participants, interacting through role-playing, and trying new things were considered rewarding factors, some said that participating in the program was not directly rewarding.

Overall, the program was highly rated in terms of satisfaction with the program, with all participants responding either ‘Strongly agree’ or ‘Agree.’ They were satisfied with the content, the role-play, and the frank feedback from other participants. All participants also had positive feedback on their experience of the program, coming from their willingness to listen and listen to the opinions of various participants and from their perception that it was a good experience and an important area for future health promotion in Japan. Some also commented that they enjoyed the program.

Regarding the length of the program, 10 (52.6%) answered it was ‘Just right’ and eight (42.0%) answered it was ‘Somewhat short’ or ‘Too short.’ About the e-learning, the overall length and points were considered appropriate. In contrast, more time for role-plays was cited as an area for improvement. In conducting training using role-plays, it was noted that advance materials, demonstrations, and reflections were needed (Arakida et al., 2020). Through the present feasibility study, improvement points of role-play methods were also identified.

Level 2: Evaluation of Learning

The changes in knowledge test scores in the pre-test, post-test, and one month later increased immediately after the participating program compared to the pre-test and was maintained one month later. For the Health Literacy Scale for Preconception Care (Knowledge), the control group reached a full average total score from the pre-test

stage. In the intervention group, a full score was reached immediately after the program and maintained one month later, albeit by one point. However, there was a significant increase in the median total score on the knowledge test immediately after program and one month later. Suto, M., Mitsunaga, H., Honda, Y. et al. (2021) developed the Knowledge of Health Literacy Scale for Preconception Care (Knowledge) for nonmedical personnel, suggesting that a knowledge scale for care providers should be developed and used.

The results of the interaction test showed significant difference, only for the knowledge test. It is noted that knowledge retention occurs through repetitive learning (Boutis et al., 2019). In the present study, the e-learning videos were uploaded online and also created in short time units of 10 minutes. This may have led to knowledge retention, as the participants commented that they were able to watch the videos in their spare time, watch them repeatedly, and confirmed again the parts they were interested in.

The significant difference in the knowledge test also indicates that the effect of time on knowledge improvement may be due to the passage of time and that knowledge improvement cannot be attributed to the intervention alone. In fact, regarding changes after participation in the program, some participants stated that they had newly researched and learned about preconception care, suggesting that there was an improvement in knowledge not only due to the effect of the intervention but also due to subsequent self-learning. However, the increased willingness to learn afterward due to participation in this study is desirable, and there was a spillover effect from the educational program. From these facts, it is possible to conclude that the developed program had a potential effect on acquiring knowledge on preconception care.

Level 3: Evaluation of Behavior

Changes in Behavior due to participation in the program were evaluated by

changes in Attitudes and Skills between the pre-test, post-test, and one month after the program, as well as the changes due to participation which evaluated one month later.

The changes in average scores for Attitude between pre-test and post-test were not significantly different; however, it increased significantly after one month. In addition, after the adjusted interaction effects, the average scores of Attitudes increased significantly with the intervention, indicating that the intervention improved Attitudes towards preconception care. The items, 'I feel comfortable discussing preconception care with women care recipients' and 'I feel confident discussing preconception care topics with care recipients' were the ones that showed a significant difference compared to the control group. Moreover, the average score significantly increased for the participants who disagreed with the item, 'I do not like it when care recipients ask me about preconception care.' These points indicated that the experience of practical role-play improved the confidence to provide preconception care and changed the Attitude score. It indicates the potential effect of the program to increase Attitude towards preconception care.

In addition, the average scores of Skills improved from the post-test and persisted one month later. For Skills, the intervention significantly increased average scores, even after adjusting for the interaction effects, indicating that the intervention improves Skills. Moreover, all items were significantly different from the control group, indicating the potential effect of the program to improve skills in preconception care delivery. This was particularly true for nursing professionals who had yet to gain experience discussing preconception care with or providing counseling on the subject at all. However, many participants may have felt they gained confidence that they were able to follow the model through the role plays.

One month after the intervention, 15 (78.9%) of participants said they had started some new actions. These participants were more interested in preconception care due to their participation in this program and were engaged in new self-learning and

telling others about it. Some also indicated that they created folate-rich recipes and added questions about preconception care to their questionnaires. Some participants indicated that they had originally planned a study session and incorporated what they learned this time. On the other hand, the participants mentioned that it was challenging to implement preconception care because it requires working with the organization and it is challenging to provide counseling, so they mainly incorporated elements of preconception care into their daily care.

Previous studies have shown that primary care providers require more preventative sexual health education for adolescents; however, they indicate that conversations about sexual health between physicians and adolescents rarely occur, although this has not been reported for nurses (Alexander et al., 2014; Boekeloo, 2014). Although the context was different in this study, as it was preconception care counseling more broadly defined than just sexual health, still only a few of the participants had provided preconception care counseling before. The understanding of the need for nurses to provide preconception care through the program and the experience of practical role-plays might led to changes in Attitudes and Skills.

Feasibility

Regarding the feasibility of the study design, the low dropout rate of two participants (4.9%) and the positive evaluation of the educational program suggests that preconception care education for midwives, nurses, and allied health professionals in Japan is well accepted.

Regarding the program's acceptability, most participants indicated that their interest in preconception care had increased. Regarding the increased willingness to provide preconception care, their answers were influenced by whether they belonged to a facility where care could be provided, and those who mentioned they could imagine providing care answered that they agreed. In contrast, those who had difficulty

providing care at their facility answered that they disagreed. Those who said the program helped them clarify their knowledge and recognize the importance and enjoyment of preconception care.

About the practicality of the program, many of those who participated in the program felt that they had a good understanding of preconception care and felt that their ability to provide care had improved. Through role-playing and practical experience, participants commented that their understanding and skills in actual counseling had improved.

Regarding the practicality and effectiveness of the program, the majority of those who attended the program felt that they gained the necessary knowledge of preconception care and were more motivated to provide preconception care. They recognized that preconception care is the care they need and information about the program.

Concerning the need for preconception care, participants highly agreed that preconception care is an essential skill for midwives, nurses, and allied health professionals, with 16 (84.2%) of participants answered 'Strongly agree.' A common perception existed that preconception care is a necessary care regardless of age and is a skill that is needed both within and outside of the healthcare setting. Participants also believed that preconception care should be provided in hospitals and clinics which has gynecology department, with 14 (73.7%) answered 'Strongly agree.' At the same time, there is also a view that preconception care could be offered outside settings of hospitals.

Subgroup analyses were conducted by primary occupation and by years of lifetime experience in nursing. The results of the subgroup analyses suggest that, overall, differences in the number of respondents were largely influenced by the number of populations, with no obvious trends by occupation or years of lifetime experience. However, when asked about the need for nursing professionals to learn about

preconception care regarding demand and the need to provide preconception care in hospitals and clinics with gynecology departments, there was a trend towards more respondents agreeing 'Strongly agree' among midwives. The fact that midwives, as midwives, routinely provide care to women, and that they are between five and 20 years of post-graduation, may have been more aware of the importance of incorporating preconception care, as they could easily visualize their care and clinical practice with women.

On the other hand, this study's results also revealed several points for improvement. First, the aim of this present study was to acquire basic preconception care knowledge, attitude, and skills as an introduction to preconception care. To achieve this objective, mock counseling could be expected to have the effect of deepening learning as part of active learning, and the results of this study suggest that participants were highly satisfied with the inclusion of mock counseling and online discussions. The scenario used in this study had many blank spaces to allow for flexible counseling. However, some participants were confused with these scenarios. It was suggested that in future randomized controlled trials, it would be desirable to modify the introductory section to allow participants to experience counseling in a form like role-playing.

Secondly, the challenge of not being able to easily visualize counseling situations related to preconception care was raised. During the online seminar, the counseling on preconception care conducted as research was introduced. However, it was considered effective to incorporate cases closer to practice settings, such as more concrete cases or cases where the participants had difficulties in answering the questions, into the mock counseling. It may be desirable to conduct surveys or interviews at facilities where counseling is practiced, select cases that are like practice setting and incorporate counseling content into the scenarios. In addition, the venues in which preconception care can be incorporated differ greatly depending on the nursing profession. Through the results of this study, the overwhelming number of midwives

who expressed interest in participating in the study and many of them expressed agreement regarding the need for preconception care, and the subgroup analyzes suggest a greater need for public health nurses who showed greater improvement in knowledge and attitudes after the intervention, suggesting that future randomized controlled trials, suggesting the need to target study participants by occupation and incorporate simulated counseling scenarios appropriate to each occupation. Furthermore, midwives and public health nurses will have different settings for counseling. It is assumed that midwives working in clinical practice will mainly provide counseling from medical perspectives to women who have received medical examinations in hospitals and other medical institutions, while community midwives and public health nurses will mainly work in the health field, such as outreach to schools or other communities and health counseling for citizens. There is a need to modify the learning objectives and assessment items to suit each of these different settings of counseling provision.

For the mock counseling, in particular, the roles of the care recipient and the nurse were set out in the research protocol. However, an odd number of participants were available on the day of some seminars, which led to situations such as playing the observer role and varying numbers of participants on different days and times. Through this present study, the effect of having observers was observed, as they were able to objectively evaluate the content of the counseling sessions, and to hold more useful discussions. To ensure that, in future randomized controlled trials, the implementation of role-plays will enable more efficient learning for participants and lead to higher satisfaction levels. For this reason, it is considered effective to set up three persons in advance: the subject, the nurse, and the observer. The improvements in the methods of role-plays were discussed with reference to previous cases in nursing education (Hata, 2006).

a. Prior Learning

In role-plays, participants take on one of the roles of nurse, care recipient, or observer. It is necessary to prepare well, and each can fully imagine the situation to fulfill the role they play and clarify in advance how the role-play is to be conducted. From the evaluation perspective and the criteria, the appropriate evaluation can be made after the fact that e-learning should include video examples of role-plays, which should be explained well in advance.

b. Clarification of objectives

In role-plays, all the nurses, care recipients, and observers play important roles. The roles to be played must be clarified and explained during the introduction.

c. Formation of the group

All participants should be able to experience the roles of nurse, care recipient, and observer. Set up three participants per group in advance and conduct three scenarios. It allows every participant to learn from multiple perspectives, not just one role.

d. Time management

No timekeepers were set up when the present study was conducted. It meant that some groups ended up with one scenario, and some groups needed help to switch between two scenarios and between the roles of nurse and care recipient. Time management is needed to ensure that the facilitator also plays the role of timekeeper, that roles can be changed in time, and that all participants can experience each role.

e. Reflection through group discussion

During the reflection session, the nurse role evaluates their behavior during the role-play, the care recipient role evaluates the nurse role's behavior from the care

recipient's perspective, and the observer role evaluates the nurse role's behavior from an objective perspective. As the most of participants in this study were nurses with more than five years of nursing experience, they were able to share the good points of the counseling and move smoothly into the discussion. However, it is thought that the learning effect could have been more effective if the evaluation perspectives had been clarified and presented beforehand.

f. Duration.

In this study, two role-plays of 10 minutes each were conducted, and a total of 20 minutes were allocated for role-play time. However, in the online seminar with more than three groups of participants, it was only possible to experience some of the roles or allow enough time for the reflection. In a future randomized controlled trial, three scenarios and sufficient time for pre-assessment and reflection would take approximately two hours. In addition, in the present study, the researcher visited each breakout room. However, it was necessary to employ a facilitator in online seminars with more than three groups of participants. It was considered desirable to have a facilitator in each group when conducting a definitive randomized controlled trial, with the facilitator taking on the role of timekeeper and facilitating role-plays when there were questions about how to proceed. In one online seminar, 3 x 3 groups should be designed, and three facilitators, including the researcher, should act as facilitators. Therefore, assuming six online seminars for a calculated sample size of 52 people, including the intervention and control groups, a total number of 12 facilitators would be required.

As an assessment of the feasibility of the research design, the feasibility study revealed several areas for improvement.

Firstly, regarding the short questionnaire after the e-learning: as the e-learning is a one-way viewing experience for the research participants, this study aimed to create

a touch point for interaction and asked the participants to answer a short questionnaire with two questions at the end of each chapter. The answers to this questionnaire asked about the participants' thoughts on preconception care and what was being practiced in their institutions, which was useful in understanding the current situation of these issues. On the other hand, answering the short questionnaire also required time and effort and could be a burden on the participants. These answers were used during the online seminar. However, it would have been more effective to share them with other study participants during the online discussion. In future randomized controlled trials, setting the time of the online seminar to two hours would allow participants to share their thoughts on preconception care and the actual situation at their institution during the discussion time. In addition, the positive feedback on the e-learning was also positive, which suggests that omitting the short questionnaire will not result in a lower viewing rate. In future randomized controlled trials, it would be desirable to omit the short questionnaire and enhance the online discussion.

Second, regarding the freely stated question in **Table 15** about the participants' thought of preconception care. In general, the name 'preconception' tends to be perceived as care that prepares women who wish to conceive for pregnancy, as it is a care with a strong image of pregnancy. At the beginning of this study, the researcher assumed that the participants' image of preconception care might be 'care to get pregnant.' Prior to the intervention, this question was set up to ascertain what the participants' image of preconception care was. However, the actual responses obtained showed that many participants mentioned that preconception care is 'comprehensive care, not limited for pregnancy,' 'comprehensive health care for young people' and 'reproductive health.' The simulated counseling scenarios used in this study were based on two cases, one of a woman in her twenties who wanted to get pregnant and the other of a woman who did not want to get pregnant. However, the simulated counseling scenarios to be used in future randomized controlled trials should consider the responses

obtained in this study, increase the variation of the scenarios and it was considered necessary to devise scenarios that more closely resemble actual counseling.

Third, as an introduction, this pilot study focused on only six items required for preconception care, creating e-learning and mock counseling scenarios. The results of this study indicate that the drop-out rate was low for two participants (4.9%), and the fact that some participants stated in their free text that they repeatedly watched and checked the e-learning suggests that the educational benefits of this research program were achieved because it was a short educational program that was used as an introduction. However, counseling on preconception care inherently requires sufficient competence to support the health of a wide range of young people. In addition to this introduction to preconception care, there is also a need for educational programs that cover the 21 topics selected in Preliminary Study 2, which are more extensive and sufficient. It is necessary to create an educational program for learning about preconception care, including the creation of an introduction and advanced program structure for learning about preconception care, to step up the learning process.

Finally, the definition of what this study refers to as ‘preconception care’ was not fully shared with the participants. Although it was emphasized and explained that the educational program conducted in this study was an introduction to the subject and that it was about acquiring basic knowledge, attitudes, and skills, and that it focused on six items related to preconception care, there was insufficient explanation of the fact that the focus was only on women in this study. Essentially, preconception care is important not only for women but also for men. The participants were aware of this point and pointed out in their free comments that preconception care is also important for men. While the development of preconception care for men is an important issue for the future research. It is essential to state or explain at the outset that the preconception care referred to in this study is to learn the six preconception care points for women as a first step towards providing preconception care. Future randomized controlled trials

should be modified to take this into account and clarify the definition of preconception care to which the current study refers before proceeding to the intervention.

Implementation in future randomized controlled trials

A larger sample size and a longer study period would also be needed to ascertain the effectiveness of the education program for preconception care providers developed in this study in improving the knowledge, attitudes, and skills of nursing professionals. The appropriate number of sample size were calculated with G*power ver. 3.1.9.7 (Faul et al., 2007). According to the results of the primary outcome, the knowledge test, significance was set at $\alpha = 0.05$ and $\beta = 0.80$. Based on the results of this study, the sample size would be 46 participants in the intervention and control groups. The design of the study set a drop-out rate of 25%; however, the actual drop-out rate was 4.8%. Considering the larger number of participants in a randomized controlled trial and the longer duration of the study, a drop-out rate of 10% should be set, resulting in a final participation rate of 52 participants in total.

The results of this study show that the e-learning content, as well as the structure and time required, were generally well received. However, the challenge with the online seminar was that the time for role-playing was shortened depending on the number of participants at any one time. Other issues such as how to inform for role-plays beforehand, announce methods, show information in scenarios, and having a timekeeper were also identified, and improvements to these issues would make learners more efficient for participants and lead to higher levels of satisfaction.

This pilot study confirms that the educational program developed in this study for nurses providing preconception care is feasible and acceptable and should be used in a definitive randomized controlled trial with modifications to the way the role-plays are conducted regarding pre-learning, clarification of objectives, methods for creating small groups, time management, reflection through group discussion and time required.

Significance of the Present Study

The present study is the first to develop an educational program for Japanese nursing professionals providing preconception care. In Japan, as women become more educated and enter the workforce, they are marrying later in life and giving birth later in life, and the average age of first childbirth in Japan rose to 30.9 years by 2021, the highest age ever recorded (MoHLW, 2021). Total assisted reproductive technology (ART) registrations in Japan in 2016 totaled 447,790 cycles, more than in any other country in the region (De Geyter et al., 2020; Japan Society of Obstetrics and Gynecology, 2020). The incidence of gestational diabetes mellitus (GDM) also increased to 7.3% in 2018 (Japan Society of Obstetrics and Gynecology, 2018b). The risk of pregnancy and perinatal outcomes is increasing as the childbearing age increases. In addition, with increasing stress and unhealthier lifestyles, preconception care addressing the health of young people before pregnancy is becoming increasingly important. At the same time, research on educational programs for care providers offering preconception care just beginning to be conducted in Japan. Preconception care is health care for various problems surrounding young people, and care providers need to acquire sufficient skills to deal with them. It is also essential to train care providers and enable them to provide care to spread preconception care in Japanese society.

In this study, e-learning was incorporated into the self-learning program. Hatakeda (2007) identified the advantages of e-learning as the ability to provide homogeneous education to a large number of people in a short period, the flexibility to study at participants' convenience from any location as long as they are connected to a server, efficient self-paced learning, and effective learning. Furthermore, continuing nursing education is prone to problems caused by special working regimes, such as night shifts. Indeed, e-learning, which is created in short units of 10 minutes and can be viewed online according to one's schedule, was rated highly by the study participants.

Another example of a typical theory of instructional design is Gagne's classification of the nine events of instruction, which include gaining the attention of students, informing students of the objectives, stimulating recall of prior learning, presenting content, providing learning guidance, eliciting performance through practice, providing feedback, assessing performance, and enhancing retention and transfer (Khadjooi, 2011). Including interaction through online seminars, using prior learning content, practicing role-plays, and providing feedback to each other among the participants is considered to have improved their knowledge, attitudes, and skills.

The present study analyzed the health risks to pregnancy, childbirth, and the fetus that many preconception women in Japan have. It aimed to improve the ability of midwives, nurses, and public health nurses to collect and assess information incorporating a risk perception perspective, thereby contributing to the health of the women themselves and the prevention of health risks for their future born children and contributing to the development of preconception care fields that have not yet been established in Japan.

Significance of the Present Study for Global Health Nursing

The present study developed an introductory educational program for preconception care providers for midwives, nurses, and public health nurses in Japan. The results obtained in this study are expected to lead to the introduction of preconception care in developing countries, where preventive interventions for health issues are particularly effective, with a view to future application in overseas countries. The educational program developed in this study for the provision of preconception care contributes to three goals of the Sustainable Development Goals (SDGs) to be achieved across the world (United Nations, 2023).

First, by promoting a preconception care delivery environment for young people, it will contribute to Goal 3: 'Ensure healthy lives and promote well-being for all

at all ages' by making health services accessible. In particular, ensuring universal access to sexual and reproductive health-care services, including for family planning, information and education. The spread of preventive interventions could also contribute to reducing global maternal mortality and child mortality under five years of age.

Second, although this study focused on preconception care for women as an introduction, preconception care is critical not only for women but also for men, and the concept of preconception care for men needs to be developed. Under Goal 5: 'Achieve gender equality and empower all women and girls,' strengthening the use of enabling technologies for the promotion of women's empowerment could contribute to promoting women's and girls' ability to respond to all forms of gender-based violence. Therefore, it could also contribute universal access to reproductive health and rights.

Finally, preconception care, which aims to ensure that no one left behind and everyone benefits from education on sexual and reproductive health for a better life, including comprehensive sexual education, contributes to Goal 4: 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.'

Study Limitations

There are some limitations to the present study. First, this pilot study was conducted using snowball sampling to recruit qualified midwives, nurses, and public health nurses with an interest in preconception care. In this regard, participants were those with a strong interest in learning about preconception care, thus increasing the likelihood of learning retention and behavior change following the program. This may have resulted in selection bias, which may have affected the distribution of the data. Because this study focused on the feasibility rather than the effectiveness of the education program, the generalizability of the study results is limited. In addition, this study did not collect data on participants' place of residence. The dissemination of information on preconception care is still subject to regional differences, and

participants in this study may have been biased towards those from urban areas. Careful consideration should be given to this issue when conducting future definitive randomized controlled trials.

Second, all outcomes in the present study were based on self-reported data. In particular, there was no difference between the two groups on the knowledge scale of the Health Literacy Scale for Preconception Care, which was developed for non-medical professionals, as most participants reached a full score. The use of data from more valid measures would improve the accuracy of measuring the learning effects of the educational program.

Finally, as an introduction, this pilot study was created to focus only on the six items required for preconception care in the education program. Although the educational program was short as an introduction and therefore effective in learning, counseling on preconception care inherently requires sufficient competence to support the health of a wide range of young people. Future research should include a more extensive and sufficient content education program in addition to an introduction to learning about preconception care. It is necessary to create educational programs that step up the learning process, including the creation of an introduction and advanced program structure for learning about preconception care.

Chapter 7 Conclusion

The present study was a parallel pilot randomized controlled trial with two groups. The intervention group was provided with an educational program for preconception care providers through e-learning and online seminars. In contrast, the control group was conducted in a no-intervention study design. Following recruitment, 41 midwives, nurses, and public health nurses participated, and 39 (95.1%) completed the study. Subsequently, assessed were the Health Literacy Scale for Preconception Care (knowledge scale) and an independently developed knowledge test, the modified Sexual Health in Primary Care Questionnaire-Attitude, and Likert scales as skills scale on preconception care, as well as the feasibility of using them to inform future randomized controlled trials.

1. The knowledge test as the primary outcome, the total scores of the intervention group were significantly different between the intervention group (median: 9.00 [IQR: 9.00-10.00]) and the control group (median: 8.00 [IQR: 7.00-9.00]) at the one-month follow-up test ($p = .014$).
2. Regarding the Health Literacy Scale for Preconception Care (knowledge scale), there was a significant difference between the intervention group (median: 13.00 [IQR: 12.50-13.00]) and the control group (median: 13.00 [IQR: 12.00-13.00]) with no significant differences between the intervention and control groups ($p = .182$) at the one-month follow-up test.
3. Regarding attitudes, there was a significant difference between intervention group (median: 2.90 [IQR: 2.70- 3.05]) and control group (median: 2.25 [IQR: 2.10- 2.73]) at the one-month follow-up test ($p = .012$).
4. There was a significant difference between the intervention group (median: 1.80 [IQR: 1.25-2.15]) and control group (median: 1.00 [IQR: 0.20-1.55]) in terms of skills at one-month follow-up test ($p = .003$).

5. All 19 participants in the intervention group indicated Strongly Agree or Agree on their satisfaction with the developed educational program.
6. Both the e-learning content and the online seminar content were highly rated, and modifications for a definitive randomized controlled trial were also identified.
7. Of the 19 participants in the intervention group, 15 (78.9%) indicated that they had undertaken one or more of the new preconception care-related actions after the program.

In summary, the intervention group who attended the developed e-learning and online seminar showed significant improvements in all knowledge, attitudes, and skills compared to the control group, indicating the potential positive effects of this program. Furthermore, after adjusting for interaction effects, significant improvements were found in Health Literacy Scale for Preconception Care (knowledge scale), attitudes, and skills. Therefore, the hypothesis that the educational program systematically developed in this study will improve participants' knowledge, attitudes and skills is supported. Furthermore, study participants gave high ratings for acceptability, practicality, and demand, indicating that the program is accepted by midwives, nurses, and public health nurses in Japan. The second research objective of using the program in a future definitive randomized controlled trial while identifying areas for improvement was also achieved. The sample size required for a randomized controlled trial, derived from the results of the present study, is 52 participants and should be implemented with modifications regarding the role-play method, as well as modifications regarding the expansion of items related to preconception care.

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Appendixes

Appendix A. Informed consent explanation

Appendix B. Consent form and Pre-intervention questionnaire

Appendix C. Consent retraction form

Appendix D. E-learning contents (Chapter 1~Chapter 4)

Appendix E. Post-intervention questionnaire (Intervention group)

Appendix F. Post-intervention questionnaire (Control group)

Appendix G. Follow-up questionnaire

Appendix H. Paper patient for role-play

研究の説明書

この度「プレコンセプションケアを提供する助産師・看護師・保健師に対する教育的介入教材の開発と実行可能性の検討：パイロット無作為化比較研究」を実施いたします。この文書は、研究の内容、実施上の倫理的配慮などを説明するものです。よくお読みになり、内容をご理解いただき、研究にご協力いただける場合、下記 Google form（同意確認書兼介入前アンケート）より同意確認をお願いいたします。

1. 研究体制

本研究は、聖路加国際大学の学長の許可を受け、聖路加国際大学大学院博士後期課程に所属する研究責任者（鈴木 瞳）が、指導教員（大田 えりか）の指導のもと実施いたします。

2. 研究の目的および意義

1) 研究の目的

本研究は、現在または潜在的にプレコンセプションケアを提供する看護職者に対する、e ラーニングとオンラインセミナーを使用した教育的介入教材の実行可能性を検証することを目的としています。

2) 研究の意義

日本の周産期医療は目覚ましい進歩を遂げ、周産期・妊産婦死亡率は世界で一番低い水準となりました。しかし、その一方で、我が国の若い女性の間で、低栄養や過度なダイエットによるやせが増加し、低出生体重児出生率の増加や、次世代の健康問題が懸念されています。また、妊娠前からの葉酸摂取率は非常に低く、喫煙・飲酒の曝露や性感染症、性教育に関するリテラシーも低いといった多くの課題があります。プレコンセプションケアは、これらの課題を抱える若い世代の男女に医学的・行動学的・社会的な健康管理を行うことを指しています。

昨今、『プレコンセプションケア』の言葉は、急速に広まっていますが、ケアを提供する側の看護職者に向けた教育プログラムは未だ確立していません。エビデンスに基づいたケアの知識を深め、日常のケアに取り入れたり、ケアを見直したりすることで看護職者によってプレコンセプションケアがより良い形で提供されるようになると期待されます。私たちの知る限り、本研究は、プレコンセプションケアを提供する可能性のある日本の助産師、看護師、保健師を対象とした教育プログラムを開発した最初の研究であります。この教育プログラムは、基本的なプレコンセプションケアに関連した健康相談を行うために必要な知識、技術、態度を高めることを目的としています。また、参加者同士のネットワークづくりを促進することで、持続的に学び合うことができるようになることが期待されます。

3. 研究対象者

本研究の対象者は、(a) 助産師、看護師または保健師の有資格者で、(b) 生殖可能年齢の女性にプレコンセプションケアを提供することに関与している、または関心がある（やりたいと思っている）方です。

4. 研究の方法

- ① ご案内のメールに、「研究説明文」（本書）と「『同意確認書兼介入前アンケート』のための Google フォームの QR コード」を添付しています。
- ② 研究参加を考えて下さっている助産師、看護師、保健師の方は、「研究説明文」をよく読んでいただき、説明文の内容すべてに同意した方は、Google フォーム上で、同意確認のチェック、日付・お名前の入力をした上で送信をお願いいたします。
- ③ なお、同意確認が取れた方へ、ご入力いただいた E メール宛てに同意撤回書を送信いたします。同意撤回を希望される際には、「同意撤回書」の Google フォームに入力の上送信ください。
- ④ 同意確認書に続けて、「介入前アンケート」が表示されますので、ご回答をお願いいたします。

本研究は、ランダムに介入群と対照群の 2 つの群に分けて実施されます。

介入群となった方

- i. e ラーニングのアクセス方法と、プレコンセプションケアに関する小冊子のアクセス先、オンラインセミナーの希望日時アンケートのアクセス先を、同意確認書内にご入力いただいた e メール宛てにお送りいたします。
- ii. 各ビデオの視聴後に、「ビデオ視聴後のショートアンケート①～④」がございますのでお答えください。
- iii. ご希望いただいたご希望の日時を基に、オンラインセミナーの日時を決定いたしますので、ご参加をお願いいたします。オンラインセミナー終了後に、「介入直後アンケート」にお答えください。

対照群となった方

- i. 「介入前アンケート」回答日の約一か月後に、同意確認書内にご入力いただいた e メール宛て、2 回目のアンケートのアクセス先をお送りいたします。
 - ii. e ラーニングへのアクセス方法は、1 か月後のアンケート回答後にご提供させていただきます。
- ⑤ 介入群となった方には、「介入直後アンケート」を受け取ってから 1 カ月後に、「フォローアップアンケート」の QR コードを E メールにてお送りいたします。また、対照群となった方には、2 回目（1 カ月後）のアンケートの QR コードをお送りいたします。どちらの方も、1 カ月後のアンケートご回答後に、Amazon ギフトポイント 3,000 円分を進呈いたします。

5. 本研究に伴うリスクと対応について

介入群となった方は、介入前の質問紙調査（約 10 分）、e ラーニングの実施（第 1 章 15 分、第 2 章 15 分、第 3 章 15 分、第 4 章 15 分）、オンラインセミナー 60 分、介入直後の質問紙調査（約 10 分～15 分）、e ラーニング実施 1 か月後の質問紙調査（約 10 分）の計 2 時間 30 分程度の時間的拘束が生じます。

また、対照群となった方は、1 回目の質問紙調査（約 10 分）、2 回目の質問紙調査（約 10 分）の計 20 分程度の時間的拘束が生じます。研究後に e ラーニング・オンラインセミナーをご提供させていただきます。こちらの参加は自由参加となりますが、上記同様、e ラーニングの実施（第 1 章 15 分、第

2 章 15 分、第 3 章 15 分、第 4 章 15 分)、オンラインセミナー 60 分の所要時間となります。

収集されたアンケート回答データは、回収後に研究責任者により ID 番号をつけ、研究対象者 ID 対応表を作成した後、e メールアドレスとデータを切り離して管理し、個人が特定されないよう取り扱います。回答頂いたデータはすべて、本研究の代表機関である聖路加国際大学の学内ネットワーク下にある Google アカウントにて一元管理致します。なお、本研究で得られたデータを利用するのは本研究に携わる研究者のみです。研究結果は、個人が特定されない形で学会や論文等で公表されます。

6. 本研究に伴う利益について

本研究に協力することによって、研究対象者自身が直接利益を得ることはありませんが、日本におけるプレコンセプションケアの発展につながる可能性があります。

7. 研究対象者への倫理的配慮

以下のように、研究対象者の権利について説明し、尊重します。

- 1) 研究への参加は自由意思です。
- 2) 参加に同意しない場合も、それによる不利益を受けることはありません。
- 3) 同意はいつでも不利益を受けずに撤回することができます。ただし、データ解析が終了し、学会や論文発表された後のデータの消去は困難であることをご了承ください。
- 4) 研究への参加は、Google form を用いて同意確認を行います。
- 5) 対象者には、いつでも説明書と同意撤回書にアクセスできるようにし、撤回時には「同意撤回書」の Google フォームへの回答にて送信いただくことで撤回が可能です。

8. 研究計画書の開示について

本研究は、UMIN-CTR 臨床試験登録システム（登録番号：UMIN000051089）に登録され、聖路加国際大学倫理委員会の承認（登録番号：23-A014）を受けて実施しています。研究計画書の閲覧をご希望の方は、研究者までご連絡ください。他の研究対象者等の個人情報等の保護と、本研究の独創性の確保に支障がない範囲内でご覧いただけます。

9. 謝金について

研究対象者には、研究協力に対する謝金として、Amazon ギフトポイント 3,000 円分をお支払いいたします。

10. 研究に関する相談への対応について

研究対象者からの本研究に関する相談については、研究者が対応いたします。その際の問い合わせ先については、研究の説明書に記載します。

11. 得られたデータの使用方法

この研究で得られたデータは、研究者（鈴木 瞳）の学術論文の一部となり、学術集会・学術雑誌などで公に発表されます。個人を特定できる内容そのものが、公表されることはありません。現時点では計画されておりませんが、将来このデータを利用して研究が行われる場合に二次利用をする可能性があります。こうした二次利用をする際は改めて当法人の研究倫理審査委員会へ申請し、承認された場合のみ

Appendix A. Informed consent explanation

実施します。研究で得られたデータは、論文発表後 5 年間、研究者の管理の下で厳重に保管した後、復元できない状態ですべて破棄します。

12. 研究の経費について

本研究は、山路ふみ子専門看護教育研究助成基金の援助を受け実施します。また、研究責任者は本研究に係る利益相反の状況について、利益相反申告書を作成・提出し、当法人の研究利益相反管理委員会による管理を受けています。

こちらから、研究参加同意確認と介入前アンケートへのご回答をお願いいたします。

<https://forms.gle/CQP95eEhVVHW3z8r5>



本研究についてご質問等がございましたら、いつでも下記までお問い合わせください。
何卒ご高配を賜りますようよろしくお願い申し上げます。

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**『プレコンセプションケアを提供する助産師・看護師・保健師に対する
教育的介入教材（導入編）の開発と実行可能性の検討：パイロット無作為化比較研究』
における教育プログラム内容のご案内**

このプログラムはeラーニングとオンラインセミナーの構成になっています。

eラーニングのご視聴前に、「介入前アンケート」へのご回答をお願いいたします。

【eラーニング（合計1時間）】

eラーニングは、第1章から第4章までの4部構成になっています。eラーニングの各章は約10分で、オンラインセミナー開催日までのご都合の良いタイミングでご視聴ください。eラーニングの各章を視聴した後に、2問ずつの短いアンケートがございます。このアンケートの回答は、オンラインセミナーに取り入れ、セミナー内容に反映させます。

eラーニングの学習目的と目標

学習内容	学習目的	学習目標	時間
第1章：プレコンセプションケアの概要	プレコンセプションケアとは何かを理解する	1. プレコンセプションケアの定義について理解する 2. プレコンセプションケアが目指すものを理解する 3. プレコンセプションケアがどのような人を対象としているのかを理解する	10分
第1章：アンケート		1. 日本におけるプレコンセプションケアは、どのようなことが実現されていると思いますか？ 2. 日本のプレコンセプションケアにおいて、必要だがまだ実現されていないことは何だと思いますか？	5分
第2章：プレコンセプションケア各論 ① ・適正体重 ・葉酸摂取量 ・喫煙・飲酒	プレコンセプションケアの各要素を理解し、説明できる ・適正体重 ・葉酸摂取量 ・喫煙・飲酒	1. 適切な体重を維持することの必要性を理解する 2. 適正体重を維持することのメリットを説明できる 3. 葉酸摂取の必要性を理解する 4. 妊娠前の葉酸摂取の目的と必要量を説明できる 5. 喫煙や飲酒が妊娠や胎児に与える影響について理解する 6. 喫煙と飲酒を控えることの効果を説明する	10分
第2章：アンケート		1. 学んだ3つの項目のうち、日本の若者に必要なものは何だと思いましたか？ 2. そのケアは自分がある施設で提供されていますか？	5分
第3章：プレコンセプションケア各論 ② ・予防接種（HPV・風疹）・かかりつけ医 ・避妊具を見直す ・月経周期と妊娠	プレコンセプションケアの各要素を理解し、説明できる ・予防接種（HPV・風疹）・かかりつけ医 ・避妊具を見直す ・月経周期と妊娠	1. 感染症が将来の健康や胎児に及ぼすリスクについて理解する 2. ワクチン接種のメリットを説明できるようになる 3. 避妊法を理解する 4. 避妊法について説明できるようになる 5. 月経周期、性ホルモンの変化、妊娠成立までの過程を理解する 6. 月経周期、性ホルモンの変化、妊娠成立までの過程を説明できる	10分

Appendix A. Informed consent explanation

第3章：アンケート	1. 学んだ3つの項目のうち、日本の若者に必要なものは何だと思いましたか？ 2. そのケアは自分がある施設で提供されていますか？	5分
第4章：プレコンセプションケアの実際	1. ユースフレンドリーヘルスケアを理解する 2. 教材を使ったカウンセリングのプロセスを理解する	10分
第4章：アンケート	1. 日本で実践されているユースフレンドリーなヘルスケアは何だと思いますか？ 2. 反対に、実践されていないが必要なものは何だと思いますか？	5分

【オンラインセミナー（合計1時間）】

e ラーニング視聴後、オンラインワークショップを実施します。オンラインセミナーはZoomを使用し行われます。オンラインセミナーの前半では、テーマごとに必要な情報とその入手方法（例：対象者と一緒にBMIを計算する、食事歴で食事量を確認するなど）についてディスカッションを行います。後半は、それらの質問と情報収集方法を用いて、模擬カウンセリングを行います。

セミナーの最後に、ネットワーキングを行います。日本では、まだプレコンセプションケアを実践している看護師は少なく、メーリングリストを作成して、新しいことを始める時の苦労や好事例を共有して、お互いに学び合いたいと考えています。メーリングリストへの登録を希望しない場合は、研究代表者にご連絡ください。

オンラインセミナーの学習目的と目標

学習内容	学習目的	学習目標	時間
本日の目的・課題の説明 アイスブレイク			5分
グループディスカッション (5名ずつ2組) 各グループにファシリテーター1名	1. プレコンセプションヘルスをアセスメントするのに必要な情報とその収集方法を整理する事ができる	1. プレコンセプションの健康状態を評価するために必要な情報を理解する 2. 情報収集の方法を検討する	10分
ディスカッション	全体で共有		5分
ロールプレイ (2名ずつ5組) ファシリテーター2名が各組のセッションを順番に回る	1. 模擬カウンセリングを実施し、実践的なスキルを理解する 2. 模擬クライアントになり、カウンセリングの注意点を理解する	1. プレコンセプションケアに関する情報を収集できる 2. プレコンセプションヘルスに関する問題を整理することができる 3. 対象者が抱える健康問題のケア方法について説明できる	15分
ディスカッション	気づいた点について全体で共有		15分
ネットワーキング	1. お互いの経験や実現可能なプレコンセプションケアについて話し合うことから、今後の個人的な目標を立てる 2. プレコンセプションケア実	1. お互いの経験や実現可能なプレコンセプションケアについて話し合うことができる 2. プレコンセプションケア実践者同士で情報交換や相談ができるネットワークを構築できる	10分

Appendix A. Informed consent explanation

	践者同士で情報交換や相談が できるネットワーク構築		
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オンラインセミナー終了後に、介入直後アンケートへのご回答をお願いいたします。

また、1カ月後にフォローアップアンケートがございます。eメールにてリマインドをお送りいたしますので、ご回答をお願いいたします。

研究参加への同意確認書 兼 介入前アンケート

この度「ブレコンセプションケアを提供する看護職者に対する教育的介入教材の開発と実行可能性の検証研究」を実施いたします。この文書は、研究の内容、実施上の倫理的配慮などを説明するものです。よくお読みになり、内容をご理解いただき、研究にご協力いただける場合、下記Google formより同意確認をお願いいたします。

下記のリンクより、研究に関する同意説明文がございます。研究同意説明書をよくお読みになり、研究参加に同意される方のみお進みください。

※研究同意説明書はコチラ

本同意書は、研究対象者に該当するかどうかについての質問になります。下記の「同意する」にチェック（●）を入れていただいた上で、本Google formにご回答いただくことで、研究参加にご同意いただいたと判断いたします。

本研究の参加の有無は、研究者（鈴木 瞳）以外には知らせません。また、研究データは個人情報と切り離れた状態で取り扱います。

なお、この「同意書 兼 介入前アンケート」をすべて回答するにはおよそ10分程度の時間を要します。

どうぞ協力お願いいたします。

<研究者>

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※必須の質問です

1. メールアドレス *

同意確認

2. 同意確認 *

1つだけマークしてください。

☐ 私は、研究への参加に同意します。

☐ 私は、研究への参加に同意しません。

セクション 9（同意確認アンケートはここで終了になります。「送信」ボタンを押してください。ご協力誠にありがとうございました。）にスキップ

同意日と同意者氏名

3. 同意日 *

同意確認のために同意する日付の入力をお願いします。（アンケート回答結果とは切り離して管理いたします。）

例: 2019 年 1 月 7 日

4. 同意者の氏名 *

同意確認のために氏名を入力をお願いします。（アンケート回答結果とは切り離して管理いたします。）

セクション 1：あなたについて教えてください。

このセクションには14問の質問があります。

5. Q1-1. あなたの年齢はおいくつですか。 *

数値をご入力ください。（回答したくない場合には「答えたくない」をお書きください。）

Appendix B. Consent form and Pre-intervention questionnaire

6. Q1-2. あなたの性別を教えてください。*

1つだけマークしてください。

- ☐ 女性
☐ 男性
☐ 答えたくない

7. Q1-3. あなたがお持ちの資格について教えてください。（複数回答可）*

当てはまるものをすべて選択してください。

- ☐ 看護師
☐ 助産師
☐ 保健師
☐ 母性看護専門看護師
☐ 思春期保健指導士
☐ 不妊カウンセラー・体外受精コーディネーター
☐ その他: _____

8. Q1-3-2. 主として従事している職種を教えてください。*

1つだけマークしてください。

- ☐ 看護師
☐ 助産師
☐ 保健師
☐ その他: _____

9. Q1-4. あなたの助産師、看護師、保健師としての生涯経験年数はどのくらいですか。*

1つだけマークしてください。

- ☐ 3年未満
☐ 3年以上5年未満
☐ 5年以上10年未満
☐ 10年以上20年未満
☐ 20年以上
☐ その他: _____

10. Q1-5. あなたの婦人科での経験年数はどのくらいですか。（不妊治療クリニックは含まない）*

1つだけマークしてください。

- ☐ 3年未満
☐ 3年以上5年未満
☐ 5年以上10年未満
☐ 10年以上20年未満
☐ 20年以上
☐ 経験がない
☐ その他: _____

Appendix B. Consent form and Pre-intervention questionnaire

11. Q1-6. あなたの不妊治療クリニックでの経験年数はどのくらいですか。 *

1つだけマークしてください。

- ☐ 3年未満
☐ 3年以上5年未満
☐ 5年以上10年未満
☐ 10年以上20年未満
☐ 20年以上
☐ 経験がない
☐ その他: _____

12. Q1-7. あなたは看護教育機関（看護専門学校、大学、大学院等）での指導経験がありますか。 *

当てはまるものをすべて選択してください。

- ☐ 経験がない
☐ 看護専門学校で指導経験がある
☐ 大学での指導経験がある
☐ 大学院での指導経験がある
☐ その他: _____

13. Q1-8. あなたが思う「プレコンセプションケア」とはどのようなケアだと思いますか。 *

14. Q1-9. あなたは「プレコンセプションケア」の言葉を知っていましたか。 *

1つだけマークしてください。

- ☐ 知っている
☐ 聞いたことはあるがよく知らない
☐ 知らない
☐ 聞いたこともない
☐ その他: _____

15. Q1-10. あなたは「プレコンセプションケア」について学んだことがありますか。 *

1つだけマークしてください。

- ☐ ある
☐ ない
☐ わからない
☐ その他: _____

16. Q1-11. Q1-10で「ある」と回答した方にお聞きます。プレコンセプションケアを学んだのはどこでしたか。

当てはまるものをすべて選択してください。

- ☐ 大学・専門学校などの看護師・助産師・保健師の養成機関
☐ インターネットやSNS、テレビ、ラジオなどのメディア
☐ 資格取得を目的としない看護師・助産師・保健師の継続教育（卒後教育）、セミナーなどの講習
☐ 資格取得を目的とする看護師・助産師・保健師の継続教育（卒後教育）、セミナーなどの講習
☐ 海外で学んだ
☐ その他: _____

Appendix B. Consent form and Pre-intervention questionnaire

17. Q1-12. あなたは「ウィメンズヘルス」について学んだことがありますか。 *

1つだけマークしてください。

- ☐ ある
☐ ない
☐ わからない
☐ その他: _____

18. Q1-13. Q1-12で「ある」と回答した方にお聞きます。ウィメンズヘルスを学んだのはどこでしたか。

当てはまるものをすべて選択してください。

- ☐ 大学・専門学校などの看護師・助産師・保健師の養成機関
☐ インターネットやSNS、テレビ、ラジオなどのメディア
☐ 資格取得を目的としない看護師・助産師・保健師の継続教育（卒後教育）、セミナーなどの講習
☐ 資格取得を目的とする看護師・助産師・保健師の継続教育（卒後教育）、セミナーなどの講習
☐ 海外で学んだ
☐ その他: _____

19. Q1-14. あなたはウィメンズヘルスクア・妊娠可能年齢女性へのケアを提供していますか。 *

1つだけマークしてください。

- ☐ 提供している
☐ 提供していない
☐ わからない

セクション2：プレコンセプション・ヘルスに関してあてはまるものをお答えください。

このセクションには13問の質問があります。

20. Q2-1. 次のうち避妊に関する考え方として誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 性感染症の予防のためコンドームを使用する
☐ 基礎体温法だけでは確実に避妊できないので、コンドームも併用する
☐ 避妊を男性まかせにしないため、女性自らが低容量ピルを内服する
☐ 子宮内避妊システムを入れていれば性感染症は予防できる

21. Q2-2. 次のうちピル（避妊薬）について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 毎日決まった時間に内服する
☐ 服用中は定期的に受診する必要がある
☐ 血栓症のリスクがある場合には内服できない
☐ きちんと内服していれば避妊率は100%である

22. Q2-3. 次のうち妊娠について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 排卵は女性ホルモンによってコントロールされている
☐ 卵子と精子が会ってできた受精卵が子宮に着床することで妊娠が成立する
☐ 排卵日以外での性交渉では妊娠しない
☐ 妊娠した場合、生理が1週間遅れたと思ったときは妊娠5週間後である

Appendix B. Consent form and Pre-intervention questionnaire

23. Q2-4. 次のうち赤ちゃんの脳・脊髄の先天異常のリスクを減らすのに有効な葉酸の最小摂取量はどのぐらいですか。 *

1つだけマークしてください。

- ☐ 1 0 0 μg
☐ 2 0 0 μg
☐ 3 0 0 μg
☐ 4 0 0 μg

24. Q2-5. 次のうち妊娠の計画・予定がある女性の葉酸摂取に関して、正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 妊娠の計画・予定がある女性は、サプリメントから葉酸を摂ることを避けたほうがよい
☐ 妊娠の計画・予定がある女性は、普段の食事以外にサプリメントから葉酸を摂ることが望ましい

25. Q2-6. 次のうち性感染症を予防するために有効なものはどれですか。 *

1つだけマークしてください。

- ☐ オーラルセックスをする
☐ 低容量ピルを使用する
☐ 性交渉の時にコンドームを使用する

26. Q2-7. 次のうち妊娠中の喫煙について正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 妊婦の喫煙は、少量でも子どもに影響する可能性がある
☐ 電子タバコは子どもに影響する可能性はない
☐ 同居者の喫煙（受動喫煙）は子どもに影響する可能性はない

27. Q2-8. 次のうち妊娠中の女性の飲酒が赤ちゃんに与える影響として正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 連日でなければ、胎児に影響する可能性はない
☐ 1度に大量に飲まなければ、胎児に影響する可能性はない
☐ 少量でも胎児に影響する可能性がある

28. Q2-9. 次のうちパートナーからの暴力の相談場所として正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 病気のことではないので病院では相談できない
☐ 全国で利用できる電話相談がある
☐ 事件ではないので警察に相談はできない
☐ 個人的な問題なので、自分で解決するように努める

29. Q2-10. 気になる病気の症状が持続するときはどうしますか。 *

1つだけマークしてください。

- ☐ SNSの交流サイトで相談する
☐ 医療従事者に相談する
☐ 何もしないで様子を見る
☐ 自分の信仰や治療法に頼る

Appendix B. Consent form and Pre-intervention questionnaire

30. Q2-11. 次のうち女性の月経（生理）周期に関わるホルモンとして誤っている*
ものはどれですか。

1 つだけマークしてください。

- ☐ エストロゲン
☐ プロゲステロン
☐ オキシトシン
☐ 黄体ホルモン

31. Q2-12. 次のうち女性の月経（生理）周期に関する症状について誤っている*
ものはどれですか。

1 つだけマークしてください。

- ☐ 月経中の下腹部痛
☐ 排卵時の下腹部痛
☐ 月経前に不調が起こることはない
☐ 生理痛が辛いときは病院を受診したほうがよい

32. Q2-13. 次のうち女性の月経（生理）周期に関して誤っているものはどれです
か。

1 つだけマークしてください。

- ☐ 正常とされる月経のめやすは 2 5 ～ 3 8 日である
☐ ストレスが生理不順（生理の遅れ）の原因となることはない
☐ 生理不順が続く場合は、病院を受診したほうがよい
☐ 過度なダイエットは無月経（生理が止まる）の原因となる

セクション 3 : 知識テスト

このセクションは 1 0 問の質問があります。

33. Q3-1. プレコンセプションケアに関して、正しいものはどれですか。 *

1 つだけマークしてください。

- ☐ プレコンセプションケアとは、妊娠を望んでいる女性のみを対象とし、妊娠できるようにケアを行うことを指している。
☐ プレコンセプションケアとは、妊娠を望んでいる人も、望んでいない人も含んだ、すべての若者の健康管理である。
☐ プレコンセプションケアとは、妊婦を対象とし、妊娠合併症の予防や胎児の健康を高めるケアである。

34. Q3-2. 避妊方法に関して、正しいものはどれですか。 *

1 つだけマークしてください。

- ☐ 一般的な使用方法による避妊の失敗率は、低用量ピルで 15%、男性用コンドームで 8% であり、男性用コンドームの方が避妊効果が高い。
☐ 日本人の低用量ピルの使用率は 2.9% であり、世界全体の使用率よりも高い割合である。
☐ 日本人が選択する避妊法は、男性用コンドームが 35% 程度、低用量ピルが 3% 程度と圧倒的に男性用コンドームが多い。

35. Q3-3. 胎児の発生過程について、誤っているものはどれですか。 *

1 つだけマークしてください。

- ☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠 8 週目までにほとんど始まっている。
☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠 20 週頃に集中している。
☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠に気付く前から始まっている。

Appendix B. Consent form and Pre-intervention questionnaire

36。 Q3-4. 葉酸摂取について正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 葉酸は妊娠初期に必要な栄養素であるので、妊娠反応を確認しに来た女性へ必要量の葉酸摂取を勧めると良い。
- ☐ 葉酸は妊娠初期の血中濃度を高めるために、妊娠前からの摂取が必要である。
- ☐ 妊娠を考える女性へのサプリメントによる葉酸の摂取は、推奨されない。

37。 Q3-5. 喫煙が女性とその子どもに与える影響について、誤っているものはどれか *

1つだけマークしてください。

- ☐ 卵巣年齢が上昇し、残りの卵子の数が減少し、妊娠率も低下する。
- ☐ 流産や死産、子宮外妊娠のリスクが上昇する。
- ☐ 胎児の髄膜瘤の発生率が上昇する。

38。 Q3-6. 妊娠前の女性のBMIと妊娠率について、正しいものはどれか。 *

1つだけマークしてください。

- ☐ やせと肥満の女性のどちらも妊娠率が低下する。
- ☐ やせの女性のみ妊娠率が低下する。
- ☐ 肥満の女性のみ妊娠率が低下する。
- ☐ 正常BMIの女性が最も妊娠率が低い。

39。 Q3-7. 先天性風しん症候群の予防について、誤っているものはどれか。 *

1つだけマークしてください。

- ☐ 母子手帳での確認や、家族に聞いたりして、子どもの頃に風しん予防接種を行っているか確認する。
- ☐ パートナーの風しんワクチン接種は不要であるので、推奨しない。
- ☐ 風しんの抗体価検査を行い、抗体価を確認する。
- ☐ 風しんワクチンの追加接種を行ったので、その後2カ月程度の避妊する。

40。 Q3-8. 月経時の症状について、受診をすすめる目安として誤っているものはどれか。 *

1つだけマークしてください。

- ☐ 日常生活に支障をきたすぐらいの生理痛があり、鎮痛薬を使用しても効かない。
- ☐ 月経周期が24日以下、もしくは39日以上
- ☐ 月経の持続日数が1〜2日、もしくは8日以上
- ☐ 出血量が20ml〜140ml程度

41。 Q3-9. 子宮頸がん予防について、正しいものはどれか *

1つだけマークしてください。

- ☐ 15歳までのHPVワクチンの接種と、子宮がん検診の双方を行うことが望ましい。
- ☐ 15歳までにHPVワクチンを完了すれば、HPVに感染しないので、子宮がん検診は不要である。
- ☐ HPVワクチンを打たなくても、毎年子宮がん検診をしていれば、子宮頸がん症例の減少率は、HPVワクチンを打った場合と同じである。

Appendix B. Consent form and Pre-intervention questionnaire

42。 Q3-10. 運動について、正しいものはどれか。 *

1つだけマークしてください。

- ☐ 週に2日程度の有酸素運動が推奨されている。
- ☐ 週に2日程度、集中的に筋トレを行うことが推奨されている。
- ☐ 毎週、一定時間の有酸素運動を基本に、週に2日程度の筋トレが推奨されている。

セクション4：プレコンセプションケアの態度についての質問

このセクションには9項目の質問があります。

43。 Q4-1: 私は対象者からプレコンセプションケアについて聞かれることがある *

1つだけマークしてください。

- ☐ とてもそう思う
- ☐ どちらかと言えばそう思う
- ☐ どちらでもない
- ☐ どちらかと言えばそう思わない
- ☐ まったくそう思わない

44。 Q4-2: 私から対象者にプレコンセプションケアについて聞くことがある *

1つだけマークしてください。

- ☐ とてもそう思う
- ☐ どちらかと言えばそう思う
- ☐ どちらでもない
- ☐ どちらかと言えばそう思わない
- ☐ まったくそう思わない

45。 Q4-3: 私は対象者からプレコンセプションケアについて聞かれることが好き *
ではない

1つだけマークしてください。

- ☐ とてもそう思う
- ☐ どちらかと言えばそう思う
- ☐ どちらでもない
- ☐ どちらかと言えばそう思わない
- ☐ まったくそう思わない

46。 Q4-4: 私は臨床や地域、教育などの現場でのプレコンセプションケアについて専門的に興味を持っている *

1つだけマークしてください。

- ☐ とてもそう思う
- ☐ どちらかと言えばそう思う
- ☐ どちらでもない
- ☐ どちらかと言えばそう思わない
- ☐ まったくそう思わない

47。 Q4-5: 私は対象者とプレコンセプションケアについて快く話をする事ができる *

1つだけマークしてください。

- ☐ とてもそう思う
- ☐ どちらかと言えばそう思う
- ☐ どちらでもない
- ☐ どちらかと言えばそう思わない
- ☐ まったくそう思わない

Appendix B. Consent form and Pre-intervention questionnaire

48. Q4-6: 私は対象者にプレコンセプションケアについて話せる自信がある *

1つだけマークしてください。

- ☐ とても思う
☐ どちらかと言えば思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

49. Q4-7: 私は女性の対象者とプレコンセプションケアについて快く話をするこ
とができる *

1つだけマークしてください。

- ☐ とても思う
☐ どちらかと言えば思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

50. Q4-8: 私は若い対象者とプレコンセプションケアについて快く話をするこ
とができる *

1つだけマークしてください。

- ☐ とても思う
☐ どちらかと言えば思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

51. Q4-9: 私は成人の対象者とプレコンセプションケアについて快く話をするこ
とができる *

1つだけマークしてください。

- ☐ とても思う
☐ どちらかと言えば思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

セクション5: プレコンセプションケア実践の自信についての質問

このセクションには6項目の質問があります。

52. Q5-1: 適正体重を保つことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケ
アを行うことができる
☐ その他: _____

53. Q5-2: 葉酸摂取についてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケ
アを行うことができる
☐ その他: _____

Appendix B. Consent form and Pre-intervention questionnaire

54. Q5-3: 予防接種（HPV、風しん）・かかりつけ医を持つことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

55. Q5-4: 避妊方法を見直すことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

56. Q5-5: 月経周期と妊娠についてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

57. Q5-6: 喫煙と飲酒を控えることについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

同意確認アンケートはここで終了になります。「送信」ボタンを押してください。ご協力誠にありがとうございました。

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研究参加への **同意撤回書**

「プレコンセプションケアを提供する看護職者に対する教育的介入教材の開発と実行可能性の検証研究」参加への同意撤回書になります。

同意撤回を希望される方は、以下のフォームにご入力ください。
同意撤回者が確認できましたら、同意撤回者よりご回答いただいたすべてのデータを消去いたします。
ただし、データ解析が終了し、学会や論文発表された後のデータの消去は困難であることをご了承ください。

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大田 えりか

（聖路加国際大学 国際看護学 教授）

*** 必須の質問です**

1. メールアドレス *

同意撤回書

2. 同意撤回確認 *

1つだけマークしてください。

☐ 私は、研究参加への同意を撤回します。

☐ 私は、研究参加への同意を撤回しません。
セクション4（送信により同意撤回の申請を受け付けいたします。「送信」ボタンを押してください。ご連絡ありがとうございました。）にスキップ

同意日

3. 同意撤回申請日 *

同意撤回の確認のために、同意撤回を申請する日付の入力をお願いします。（アンケート回答結果とは切り離して管理いたします。）

例: 2019 年 1 月 7 日

4. 同意撤回者の氏名 *

同意撤回の確認のために、氏名を入力をお願いします。（アンケート回答結果とは切り離して管理いたします。）

送信により同意撤回の申請を受け付けいたします。「送信」ボタンを押してください。ご連絡ありがとうございました。

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本プログラムの説明

プレコンセプションケアを提供する助産師・看護師・保健師に対する教育的介入教材の開発と実行可能性の検討：パイロット無作為比較研究

プログラム全体の目的

- プレコン世代（生殖可能年齢）にある若者に対して、ヘルスクエアを行う可能性のある、もしくはやりたいと思っている看護職者が、プレコンセプションケアに関する知識とカウンセリングのスキルを習得できること

第1章 プレコンセプションケアの概要

2

プログラムの全体

【eラーニング】		
第1章	プレコンセプションケアの概要	10分
第2章	プレコンセプションケアの各論 ① (適正体重、喫煙、喫煙・飲酒を控える)	10分
第3章	プレコンセプションケアの各論 ② (ワカチン接種、避妊法、月経周期と妊娠)	10分
第4章	具体的なカウンセリングの方法	10分
【オンラインセミナー】		
セミナー (Zoom上)	ロールプレイ (模擬カウンセリング) ディスカッション ネットワークづくり	60分

第1章 プレコンセプションケアの概要

3



第1章：プレコンセプションケアの概要

第1章：プレコンセプションケアの概要の学習目標

学習の目的	学習の目標
プレコンセプションケアとは何かを理解する	1. プレコンセプションケアの定義を理解する
	2. プレコンセプションケアが何を目標としているのかを理解する
	3. プレコンセプションケアの対象者を理解する




図1-1 プレコンセプションケアの概要

そもそも「プレコンセプションケア」とは何？

「Pre-」 = 前の前 + 「Conception」 = 妊娠や受胎

WHOの定義

妊娠が成立する前の女性やカップルに対して、健康状態を改善し、母子の健康状態の悪化につながる行動や個人・環境要因を減らすことを目的とした、生物医学的、行動学的、社会的な健康介入の提供である。

➡ 妊娠する・しないに関わらず、**プレコン世代の若者すべての健康管理！**

図1-2 プレコンセプションケアの定義

女性のライフサイクルとプレコンセプションケア

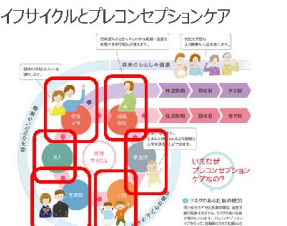
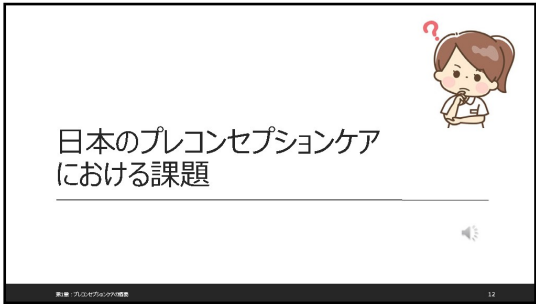
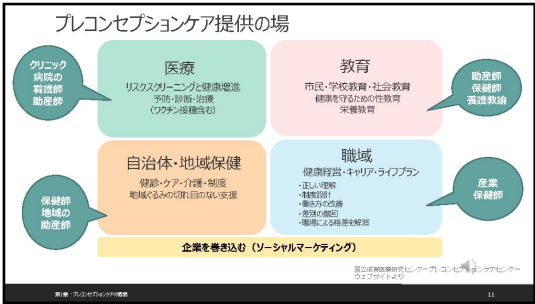
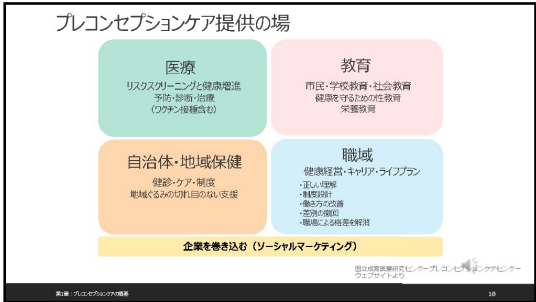
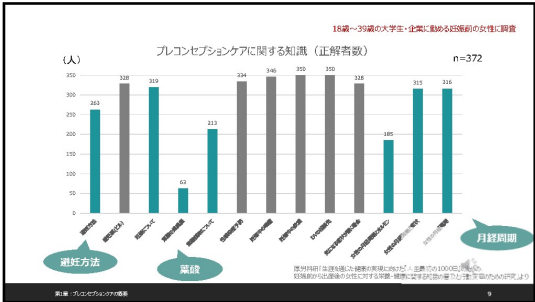


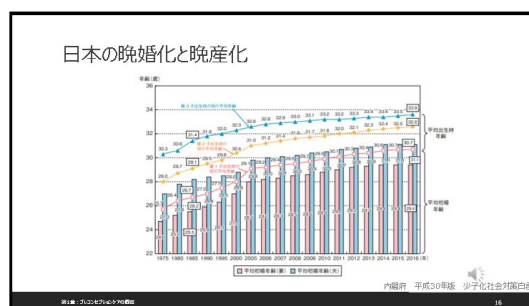
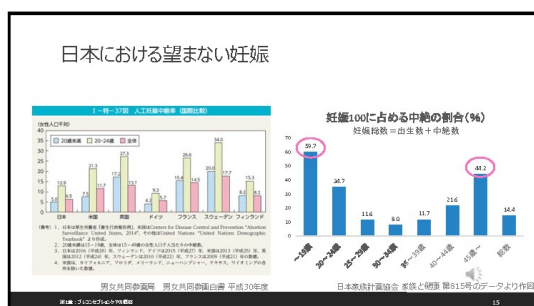
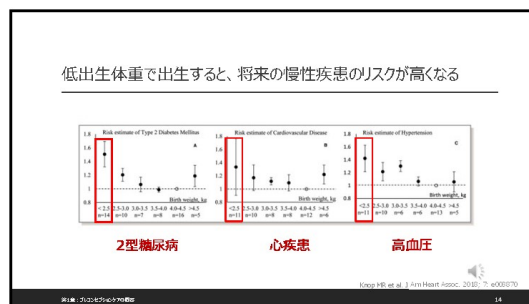
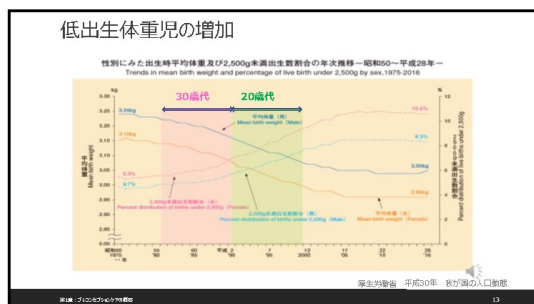
図1-3 女性のライフサイクルとプレコンセプションケア

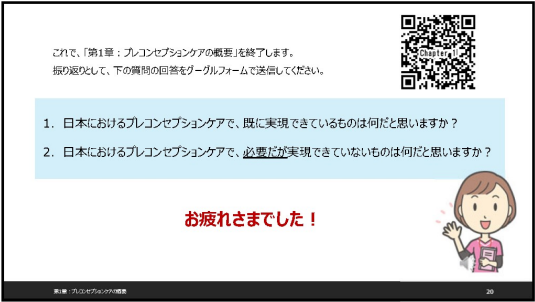
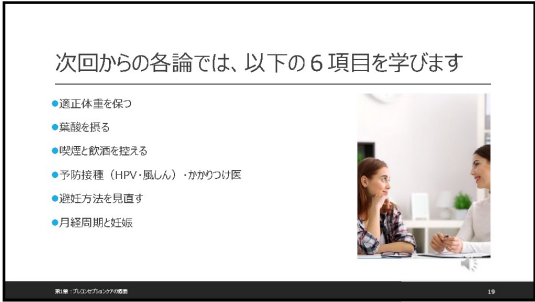
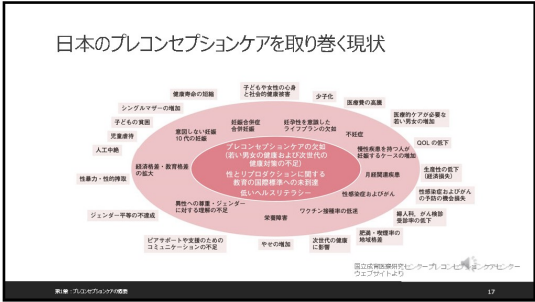


図1-4 女性のライフサイクルとプレコンセプションケア



Appendix D. E-learning contents (Chapter 1)







プログラムの全体

【Eラーニング】		
第1章	プレコンセプションケアの概要	10分
第2章	プレコンセプションケアの各論 ① (適正体重、葉酸、喫煙・飲酒を控える)	10分
第3章	プレコンセプションケアの各論 ② (ワクチン接種、避妊法、月経調節と妊娠)	10分
第4章	妊娠のリスクと対応の考え方	10分
【オンラインセミナー】		
セミナー (Zoom上)	ロールプレイ (妊娠カウンセリング) ディスカッション ネットワーク作り	60分

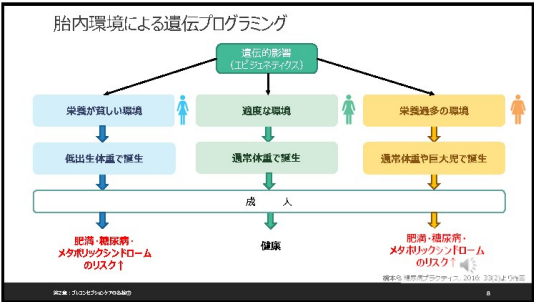
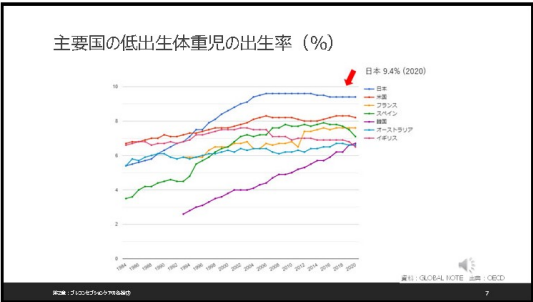
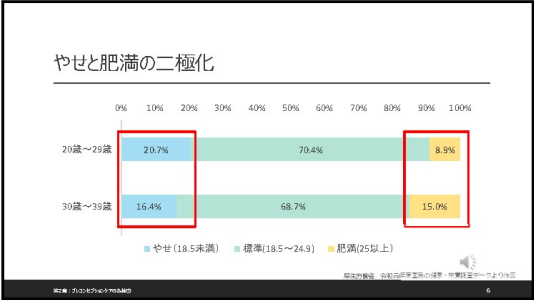
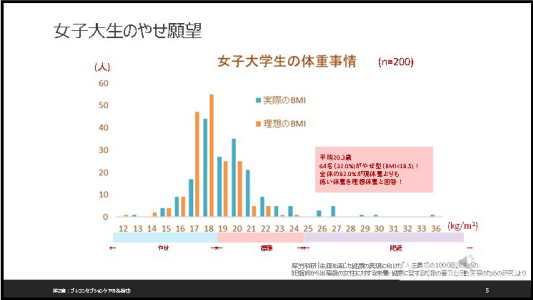
※ 全編 プレコンセプションケアの総論

第2章：プレコンセプションケアの各論①の学習目標

学習の目的	学習の目標
プレコンセプションケアの各項目について理解し、説明できるようになる	1. 適正体重を保つことの必要性を理解する
→適正体重を保つ	2. 適正体重を保つことの効果を説明できるようにする
→葉酸を摂る	3. 葉酸摂取の必要性を理解する
→喫煙・飲酒を控える	4. 妊娠前から葉酸を摂取する目的と必要量を説明できる
	5. 喫煙と飲酒による妊娠・胎児への影響を理解する
	6. 喫煙や飲酒を控える事によって得られる効果が説明できる

3





やせも肥満も不妊症を増加させる

肥満もやせも排卵障害のリスクが高い

米国の看護婦健康調査のデータを解析
26,125人の妊婦と503人の排卵障害の平均女性を比較
文獻: *Obstet Gynecol* 2014; 124(5): 1047-1052

BMI 20未満	BMI 20-24.9	BMI 25以上
排卵障害のリスク 12%リスク上昇	排卵障害のリスク 最も低い	排卵障害のリスク 29%リスク上昇

国立成育医療研究センター プレコンハートより

推奨されている運動習慣

- 1) 大前提として、毎週、一定の時間の有酸素運動をする
- 2) その上で、週に何回か筋トレをする
- 3) 加えて、動かないでじっとしている時間を減らす

有酸素身体活動
少なくとも週に 150分 300分
中等度の有酸素性の身体活動
または、強度と高強度の有酸素性の身体活動の組み合わせによる同等の量

筋力向上活動
少なくとも週に 2日
すべての主要筋群を鍛えて、中強度以上の強度で筋力を強化する活動を行う

要約版 WHOの身体活動・運動行動ガイドライン(日本語版)より

妊娠前に適正体重に整えることが必要

- 妊娠中の過度な食事制限は、胎内で栄養不足の環境を作り出してしまいます。
- やせている人たちは、一気に体重だけを増やすことがよいこととは思えません。
運動して筋肉をつけながら、徐々に体を作っていくことが大切です。
- 必要に応じて、医師や管理栄養士などの多職種につなげる

⇒ まずは、自分のBMIを知てもらう！

BMIの計算と判定

BMI = $\frac{\text{体重 (kg)}}{\text{身長 (m)}^2}$

BMI	判定
25以上	太り過ぎ
18.5-24.9(理想値は22)	標準の範囲
18.4以下	やせている

BMI(ボディ・マス・インデックス)は国際的に使われている肥満度を表す指標です。

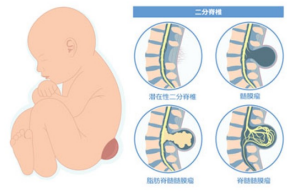
国立成育医療研究センター プレコンハートより

葉酸を摂る

FOLIC ACID

薬酸を摂る

葉酸不足は赤ちゃんの二分脊椎の原因になることがある



二分脊椎

脊髄二分脊椎症
無脳症
脊髄神経根脱出症
脊髄脊髄脱出症

神経管閉鎖は妊娠6週で完成します！

13

サプリメントもうまく活用して葉酸を摂取

- 葉酸は水溶性のビタミンB群の一種で、細胞の増殖や成長のために必要不可欠な栄養素
- 食事とサプリメント（400 μ g/日）による摂取が推奨される。（1mg/日は超えないこと）
（厚生省, 2020）

葉酸を多く含む食材



いちご
ほうれん草
レバー
納豆

+

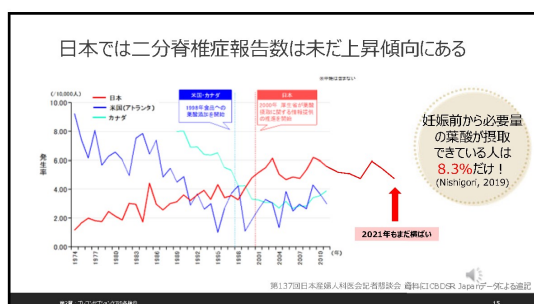


葉酸

血中濃度を上げるために、妊娠の3か月前に飲み始めるようにしましょう

エビデンス調査: 大塚エッセンスホームページより

14



妊娠中に鉄剤と葉酸を併せて飲むことで貧血予防効果も

- WHOのガイドラインでは、妊婦に対して鉄30～60mgと葉酸400 μ g（0.4mg）のサプリメントを毎日経口補給することが推奨されています
- 2015年に報告されたコクランレビューによると、妊娠中の鉄分の補給は、単独または葉酸補給と組み合わせることにより、**母親の貧血を70%、分娩時の鉄欠乏性貧血を57%減少**させるとされています

WHO recommendations on antenatal care for a positive pregnancy experience
Chlorine Database Syst Rev. (7). CD004736

16



喫煙・飲酒を控える

喫煙による影響

妊婦前

卵巣年齢の上昇
(残りの卵子の数が減少)
↓
妊娠率の低下

男性も…
精子の質の低下や
勃起不全
が起これたりする

妊娠中

流産や死産、子宮外妊娠の
リスクが増加

早産、低出生体重児、胎盤
早期剥離、前置胎盤

児の口蓋裂に影響する
ともいわれている

出産後

乳幼児突然死症候群
(SIDS)のリスクを確
実に高めると思われる
↑
副流煙でも喫煙と
同等にリスクがある

American Society for Reproductive Medicine. 2013 Smoking and Alcohol. A Report of the American Society for Reproductive Medicine. 2013.

主流煙と副流煙

- タバコの煙の中には、ニコチン、タール、アンモニア、一酸化炭素などの有害物質が含まれており、これらの成分は、主流煙より、タバコを吸わない人に直接影響する副流煙の方が何倍も多く含まれていることがわかっています。
- 空気中には、副流煙と吐き出された主流煙の両方が存在することになり、タバコを吸わない人は、この両方の煙を吸うことにより、一層多くの害を受けることになります。

飲酒による影響

【妊娠前】

- 自然に妊娠する可能性が下がる（ビール1缶/日でも10%低下）

妊娠前は、機会飲酒なら問題ないと言われています！


【妊娠中】

- 妊娠初期では、流産や死産、先天異常の可能性が増加
- 妊娠中の飲酒は、胎児性アルコール症候群のリスクを高めます
妊娠中にアルコール摂取をした女性の約1/3の人にひとりの確率で、胎児アルコール症候群で出生
 - ・特徴的な顔貌（小さな目、薄い唇など）
 - ・発育の遅れ
 - ・中枢神経の障害（学習、記憶、注意力の持続、コミュニケーション、視覚、聴覚などの障害）などの先天異常がみとめられること

妊娠中は、禁酒を！

【男性では】


- 精子の質が下がる



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Appendix D. E-learning contents (Chapter 2)

これで、「第2章：フレコンセプションケアの各論③」を終了します。
振り返りとして、下の質問の回答をグループフォームで送信してください。



1. 今回学んだ3項目の中で、日本の若者に必要だと思ったものは何でしたか？
2. それは、あなたがいる施設ではケア提供を行っていますか？

お疲れさまでした！



英語：フレコンセプションケアの各論③

21



プログラムの全体

【Eラーニング】		
第1章	プレコンセプションケアの概要	10分
第2章	性・生殖健康と生殖力低下のリスク (薬物使用、喫煙、飲酒、妊娠・出産)	10分
第3章	プレコンセプションケアの各論 ② (ワクチン接種、避妊法、月経周期と妊娠)	10分
第4章	妊娠のリスクと予防	10分
【オンラインセミナー】		
セミナー (Zoom上)	ロールプレイ (模擬カウンセリング) ディスカッション ネットワーク作り	60分


第3章：プレコンセプションケアの各論②の学習目標

学習の目的	学習の目標
プレコンセプションケアの各項目について理解し、説明できるようになる ・予防接種（HPV・風しん） ・かかりつけ医 ・避妊方法を理解する ・月経周期と妊娠	1. 感染症による将来の健康・胎児への影響を理解する 2. ワクチン接種することの効果説明できる 3. 避妊方法について理解する 4. 避妊方法について説明することができる 5. 月経周期と性ホルモンの変化、妊娠成立の過程を理解できる 6. 月経周期と性ホルモンの変化、妊娠成立の過程を説明できる



先天性風しん症候群

- 妊娠中（特に妊娠初期）の女性が風疹に感染すると胎児に先天性風疹症候群が治る可能性が有る。
- 感染する時期が早いほど赤ちゃんの症状が重篤になる。
- まずは、母子手帳や家系に話を聞くなど確認を促す。
- 接種後数年の経過と共に文化値が下がることもあるが、追加接種を行って免疫力を強化することが可能である。



先天性の目の障がい
- 白内障
- 網膜症
- 緑内障 等

先天性の耳の病
- 難聴

先天性の心臓の病気
- 肺動脈狭窄 等

※ 1990年4月1日以前に生まれたひととは、風しんワクチンを1回しか受けていない
※ 1990年4月1日以前に生まれた男性は、風しんをワクチンで1回も受けていない

提出主件書
血小小板減少症候群 など

妊娠する前に必要なワクチンを接種

- 妊娠前にワクチン接種をすることで、下記の感染症が予防できる
- 生ワクチンなので、接種後 2ヶ月間は避妊が必要
- 妊娠中のワクチン接種はできません。

感染症	胎児への影響	母体への影響	ワクチンのタイプ
麻疹（はしか）		重症化しやすい	生ワクチン
風しん	先天性風しん症候群 （心疾患、難聴、白内障）		
水痘	先天性水痘症候群 （神経障害、奇形）	重症化しやすい	

茨城県保健医療関係者連絡会についてはこちら
このページをシェアする

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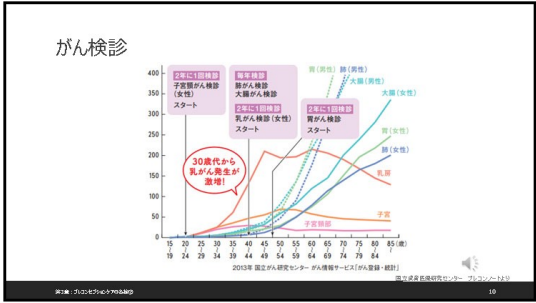
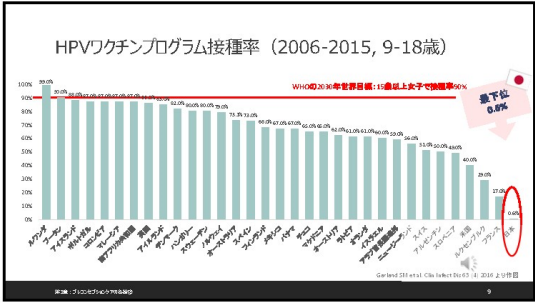
HPVワクチン接種＋年に1回の頸がん検診が重要！

子宮頸がん症例減少率

検診頻度	ワクチンのみ	検診＋ワクチン
なし	75.0%	-
1回/年	-	50.0%
1回/3年	-	60.0%
1回/2年	-	70.0%
1回/年	-	94.0%

子宮頸がん検診の実施頻度

引用：厚生労働省「HPVワクチン接種の実施状況について」(Regulation Health Service 2007) の1年～2年未満



ブレストアウェアネス

★乳がん 月に1回セルフチェック

月経がはじまって1週間前後のタイミングでチェックしましょう!

『乳房を意識する生活習慣』

～ブレストアウェアネス4つのポイント～

1. 自身の乳房の状態を知る (見てさわって)
2. 乳房の変化に気を付ける (しこり、分泌など)
3. 変化に気づいたらすぐ医師に相談
4. 40歳になったら2年に1回マンモグラフィ

指で触れてチェック

鏡の前でチェック

避妊方法を見直す

各避妊方法の実施率

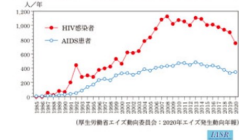
	世界	日本	米国	ドイツ	英国	フィンランド
いずれかの方法での避妊実行者	48.5%	46.5%	61.4%	58.1%	71.7%	78.0%
男性用 Condom	10.0%	3.9%	9.3%	10.0%	10.4%	27.6%
股外射精		45.4%	4.3%	0.2%	3.9%	4.1%
リズム法	1.5%	2.1%	1.4%	0.7%	1.6%	0.7%
IUD / IUS	8.4%	0.4%	8.3%	6.8%	7.6%	9.0%
ピル（経口避妊薬）	8.0%	2.9%	13.7%	31.7%	26.1%	32.1%

United Nations. (2019). Contraceptive Use by Method 2019. データより一部抜粋の上作図

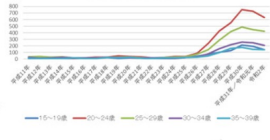
第3章：プシエセプシム・カフの巻終結

近年の性感染症の増加

図2 HIV感染者およびAIDS患者新規報告数の年次推移, 1985~2020年



梅毒の感染者報告数(女性)



厚生労働省 感染症発生動向調査事業 年報のデータを用いて作成

東シベリア：プシエセプシム/カマの毛織物

確実に自分にあった避妊方法を選ぶように



避妊効果の高い低用量ピル
+
性感染症予防効果のあるコンドーム
などで二重の防衛！

[illegible]

日本産婦人科学会JMAH+ 女士のフィジカル（改訂第二版）より

第3巻：プレゼンテーションの構築

1.5

女性が主体的に行える避妊方法のメリット・デメリット



【ビルのメリット】

- 毎日1粒ずつ飲むだけで確実な避妊ができる
 - 月経を自分の好きな日に移動できる、月経痛が軽減する、月経量が増える、ニキビがきれいになるなど避妊以外の利点がある
 - 妊娠を希望する場合は、服用をやめるだけ
 - 健康な若い女性が服用する場合には、副作用は極めてまれ
- 【IUS-IUDのメリット】**
- 挿入後、数年にわたる避妊が可能
 - 授乳中でも使用可能
 - 飲み忘れの心配がない

【ビルのデメリット】

- 飲み初めには眠気や吐き気、気分の落ち込み、むくみ、乳房の張り、頭痛、下腹部痛、不正出血などの副作用が起こることがあるが、2〜3か月以内に収まることが多い
- 血栓症の発症リスクがあるが、妊娠・出産の方が高リスクである。

【IUS・IUDのメリット】

- 挿入後、数年にわたり避妊が可能
- 授乳中でも使用可能
- 飲み忘れの心配がない

【IUS・IUDのデメリット】

- 人によっては不正出血がある
- また、細菌感染の可能性があるが、抗生物質を服薬することで治癒する

妊娠するかどうかは、自分で選択！

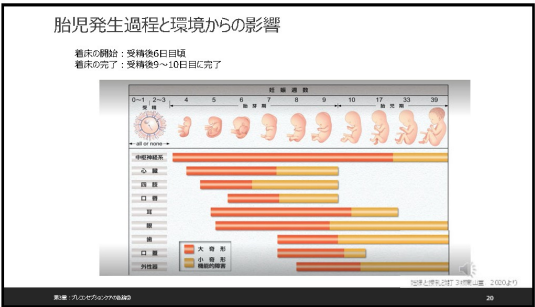
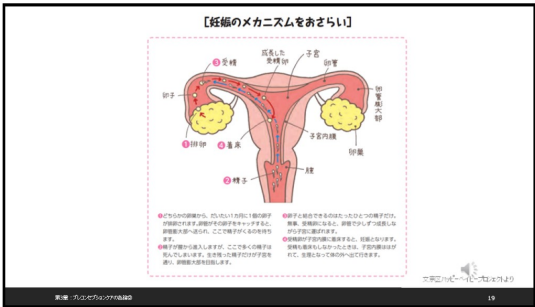
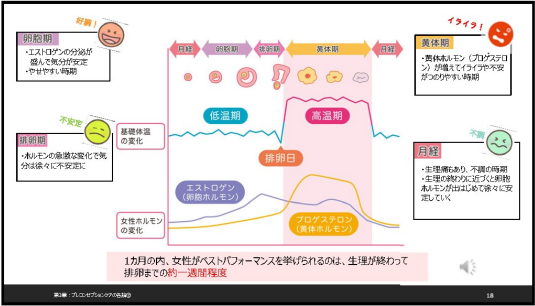
日本理化学会 HUMAN + 文化科学ダイナミクス (改訂第二版) より

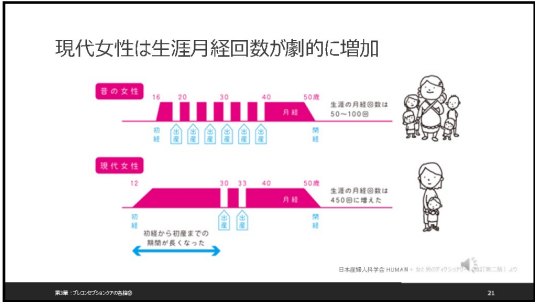
第2編：プレゼンテーションのスキル

16



月経周期と妊娠





婦人科のかかりつけ医のすすめ

月経痛は？ <input type="radio"/> あつても軽い痛み <input checked="" type="checkbox"/> 日常生活に支障をきたす痛み、量が足りない	月経の間隔は？ <input type="radio"/> 25～35日おき <input checked="" type="checkbox"/> 24日以下、39日以上	月経の持続日数は？ <input type="radio"/> 3～7日間 <input checked="" type="checkbox"/> 1～2日、8日以上
出血量は？ <input type="radio"/> 20～140ml <input checked="" type="checkbox"/> ナプキン1～2枚で交換する、2.5cm以上の血の塊が出る	月経前の体調は？ <input type="radio"/> イライラやだるさがあるが、我慢できる <input checked="" type="checkbox"/> 感情がコントロールできない	月経時以外に？ <input type="radio"/> 特に問題なく過ごしている <input checked="" type="checkbox"/> 月経時以外でも出血や腹痛がある、貧血がある

ひとつでも ☒ があれば、婦人科受診がおすすめです。
かかりつけ婦人科医に相談しましょう。

アセスメントした上で、必要時医師につなげる！

国立産科医療センター 産科・婦人科診療科

これで、「第3章：プレコンセプションケアの各論②」を終了します。
振り返りとして、下の質問の回答をアンケートフォームで送信してください。

1. 今回学んだ3項目の中で、日本の若者に必要だと思ったものは何でしたか？

2. それは、あなたがいる施設ではケア提供を行っていますか？

お疲れさまでした！

QRコード

国立産科医療センター 産科・婦人科診療科




プログラムの全体

【Eラーニング】		
第1章	プレコンセプションケアの概要	10分
第2章	プレコンセプションケアの各論 ① (適正体重、禁煙、喫煙、飲酒を控える)	10分
第3章	プレコンセプションケアの各論 ② (ワクチン接種、避妊法、月経周期と妊娠)	10分
第4章	具体的なカウンセリングの方法	10分
【オンラインセミナー】		
セミナー (Zoom上)	ロールプレイ (模擬カウンセリング) ディスカッション ネットワーキング	60分

第4章：プレコンセプションケアの実践の学習目標

学習の目的	学習の目標
1. ユースフレンドリーなヘルスケアについて理解する	1. ユースフレンドリーなヘルスケアについて理解する
2. 教材を用いたカウンセリングの流れを理解する	2. 教材を用いたカウンセリングの流れを理解する





ユースフレンドリーなヘルス・サービスの実現

ヘルス・サービスをユースフレンドリーなものにするために

- ヘルス・サービス・プロバイダーが、青少年との関わりにおいて、**ノン・ジャッジメントル**で思いやりがあり、そして、**適切なヘルス・サービスを適切な方法で提供するために必要な能力**を持っていること。
- 医療施設が、**青少年に必要なヘルス・サービスを提供するための準備**をしていること。また、青少年にとって**魅力的で「フレンドリー」**であること。
- 青少年が、必要なヘルス・サービスをどこで受けられるかを認識しており、必要な時にはそれが**実現可能**であると同時に**喜んでほしい**と思える事。
- コミュニティの人々**が、様々な青少年グループにおけるヘルス・サービスのニーズを認識しており、その提供をサポートしていること。

WHO ユースフレンドリーなヘルス・サービスの提供のために (国連世界)

WHOの「ケアの質」をはかる枠組み (‘quality of care’ framework)

- 利用しやすいこと**：青少年が存在するヘルス・サービスに入手できること
- 受け入れやすいこと**：存在するヘルス・サービスが青少年にとって入手しやすくなるものであること
- 公平であること**：一部の選ばれたグループだけでなく、すべての青少年が存在するヘルス・サービスに入手できること
- 適切であること**：青少年に適切なヘルス・サービス（すなわち、青少年が必要としているもの）が提供されていること
- 効果的であること**：適切なヘルスサービスが適切な方法で提供され、青少年への確かな貢献がなされること

WHO ユースフレンドリーなヘルス・サービスの提供のために (国連世界)

ユースフレンドリーなヘルス・ケアの枠組み

- 医療へのアクセシビリティ**：立地、手頃な価格
- スタッフの態度**：正確な知識、全人的ケアの提供、尊重・支持的態度、誠実、信頼、親しみやすさ
- コミュニケーション**：情報の明確さと量、相談スタイルの質、コミュニケーションのトーン
- 医療的能力**：テクニカルスキル(手技)
- ガイドラインに基づいたケア**：守秘義務、自律性、成人向け医療サービスへの移行、包括的ケア
- 年齢に応じた環境**：予約時間の柔軟性、プライベートな物理的空間、若者向けの健康情報、清潔、待ち時間、ケアの継続性、プライバシー
- 健康管理への関与**
- ヘルスアウトカム**：終端管理、QOL

The Journal of adolescent health : official publication of the Society for Adolescent Medicine, 52(5), 479-481

様々な場所で実施が可能

- 病院（高次施設）
- 職場
- クリニック（プライマリケア）
- 薬局
- 地域
- ユースセンター
- 教育施設



WHO ユースフレンドリーなヘルス・サービスの提供のために (国連世界)

ウーマンセンタードケア・ユースセンタードケア

図1 中絶ケアの概念的枠組み

WHO 中絶ケアガイドラインエグゼクティブサマリーより

具体的なカウンセリングの流れ

例 プレコンセプション・カウンセリング

図2 例

カウンセリングを行う前に One Key Question[®]から始めます

プレコンセプション・チェックシート

～むかしてきてきた自分に、そして未来の赤ちゃんのために～

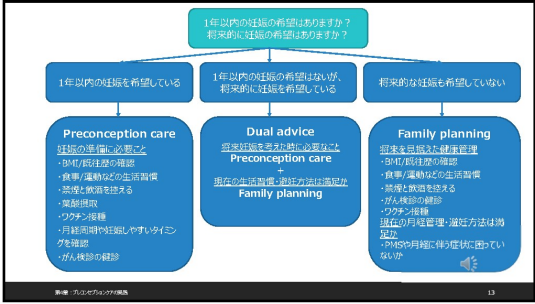
国立保健医療戦略センター プレコンセプション・カウンセリングのガイドより

例 食事記録表

図3 例

簡易な食事記録でも、実際の食事内容を記載してもらうことで、具体的な説明ができる

国立保健医療戦略センター プレコンセプション・カウンセリングのガイドより



アクション宣言

アクション宣言	効果
1. 体重管理を始める	1. 体重管理を始めることで、BMI/体重管理の指導を受けることができる。BMI/体重管理の指導を受けることで、BMI/体重管理の指導を受けることができる。
2. 食事/運動などの生活習慣を改善する	2. 食事/運動などの生活習慣を改善することで、BMI/体重管理の指導を受けることができる。BMI/体重管理の指導を受けることで、BMI/体重管理の指導を受けることができる。
3. 禁煙と飲酒を控える	3. 禁煙と飲酒を控えることで、BMI/体重管理の指導を受けることができる。BMI/体重管理の指導を受けることで、BMI/体重管理の指導を受けることができる。
4. 薬の服用を控える	4. 薬の服用を控えることで、BMI/体重管理の指導を受けることができる。BMI/体重管理の指導を受けることで、BMI/体重管理の指導を受けることができる。
5. ワクチン接種を受ける	5. ワクチン接種を受けることで、BMI/体重管理の指導を受けることができる。BMI/体重管理の指導を受けることで、BMI/体重管理の指導を受けることができる。
6. 月経周期や妊娠しやすいサインを知る	6. 月経周期や妊娠しやすいサインを知ることで、BMI/体重管理の指導を受けることができる。BMI/体重管理の指導を受けることで、BMI/体重管理の指導を受けることができる。
7. がん検診を受ける	7. がん検診を受けることで、BMI/体重管理の指導を受けることができる。BMI/体重管理の指導を受けることで、BMI/体重管理の指導を受けることができる。

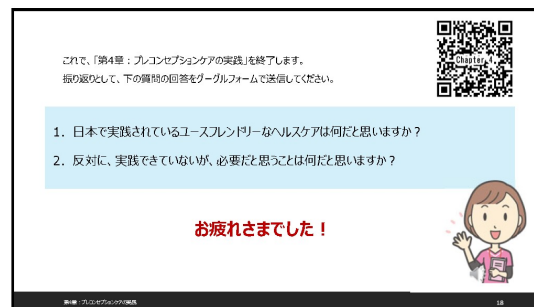
「アクション宣言」を行うことの効果

1つ目は、「近未来付」のアプローチとなる、生活習慣を改善すること、また続けることで得られる「メリット」を理解してもらう。

2つ目は、具体的な「アクション」を提案することで、「これで始められる」といって「目標」を与えるアプローチをする。

この「アクション」を自分の言葉で宣言してもらうことで、行動変容を促す。

Appendix D. E-learning contents (Chapter 4)



Appendix E. Post-intervention questionnaire (Intervention group)

直後のアンケート（介入群）

この度は、研究へのご参加にご協力いただき誠にありがとうございます。

こちらのアンケートはeラーニングの受講と、オンラインセミナー受講後にご回答ください。

このアンケートの回答には、15分程度の時間を要します。

※各アンケートを、メールアドレスにて同一者と判断しますので、毎回同じメールアドレスをご入力ください。

* 必須の質問です

1. メールアドレス *

研究用ID

2. 研究用ID *

セクション 1 : プレコンセプション・ヘルスに関してあてはまるものをお答えください。

このセクションには13問の質問があります。

3. Q1-1. 次のうち避妊に関する考え方として誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 性感染症の予防のためコンドームを使用する
- ☐ 基礎体温法だけでは確実に避妊できないので、コンドームも併用する
- ☐ 避妊を男性まかせにしないため、女性自らが低容量ピルを内服する
- ☐ 子宮内避妊システムを入れていれば性感染症は予防できる

4. Q1-2. 次のうちピル（避妊薬）について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 毎日決まった時間に内服する
- ☐ 服用中は定期的に受診する必要がある
- ☐ 血栓症のリスクがある場合には内服できない
- ☐ きちんと内服していれば避妊率は100%である

5. Q1-3. 次のうち妊娠について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 排卵は女性ホルモンによってコントロールされている
- ☐ 卵子と精子が会ってできた受精卵が子宮に着床することで妊娠が成立する
- ☐ 排卵日以外での性交渉では妊娠しない
- ☐ 妊娠した場合、生理が1週間遅れたと思ったときは妊娠5週前後である

6. Q1-4. 次のうち赤ちゃんの脳・脊髄の先天異常のリスクを減らすのに有効な葉酸の最小摂取量はどのぐらいですか。 *

1つだけマークしてください。

- ☐ 100μg
- ☐ 200μg
- ☐ 300μg
- ☐ 400μg

Appendix E. Post-intervention questionnaire (Intervention group)

- 7。 Q1-5. 次のうち妊娠の計画・予定がある女性の葉酸摂取に関して、正しいもの * はどれですか。

1つだけマークしてください。

- ☐ 妊娠の計画・予定がある女性は、サプリメントから葉酸を摂ることを避けたほうがよい
- ☐ 妊娠の計画・予定がある女性は、普段の食事以外にサプリメントから葉酸を摂ることが望ましい

- 8。 Q1-6. 次のうち性感染症を予防するために有効なものはどれですか。 *

1つだけマークしてください。

- ☐ オーラルセックスをする
- ☐ 低容量ピルを使用する
- ☐ 性交渉の時にコンドームを使用する

- 9。 Q1-7. 次のうち妊娠中の喫煙について正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 妊婦の喫煙は、少量でも子どもに影響する可能性がある
- ☐ 電子タバコは子どもに影響する可能性はない
- ☐ 同居者の喫煙（受動喫煙）は子どもに影響する可能性はない

- 10。 Q1-8. 次のうち妊娠中の女性の飲酒が赤ちゃんに与える影響として正しいもの * はどれですか。

1つだけマークしてください。

- ☐ 連日でなければ、胎児に影響する可能性はない
- ☐ 1度に大量に飲まなければ、胎児に影響する可能性はない
- ☐ 少量でも胎児に影響する可能性がある

- 11。 Q1-9. 次のうちパートナーからの暴力の相談場所として正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 病気のことではないので病院では相談できない
- ☐ 全国で利用できる電話相談がある
- ☐ 事件ではないので警察に相談はできない
- ☐ 個人的な問題なので、自分で解決するように努める

- 12。 Q1-10. 気になる病気の症状が持続するときはどうしますか。 *

1つだけマークしてください。

- ☐ SNSの交流サイトで相談する
- ☐ 医療従事者に相談する
- ☐ 何もしないで様子を見る
- ☐ 自分の信仰や治療法に頼る

- 13。 Q1-11. 次のうち女性の月経（生理）周期に関わるホルモンとして誤っているもの * はどれですか。

1つだけマークしてください。

- ☐ エストロゲン
- ☐ プロゲステロン
- ☐ オキシトシン
- ☐ 黄体ホルモン

Appendix E. Post-intervention questionnaire (Intervention group)

14. Q1-12. 次のうち女性の月経（生理）周期に関する症状について誤っているものはどれですか。 *

1 つだけマークしてください。

- ☐ 月経中の下腹部痛
☐ 排卵時の下腹部痛
☐ 月経前に不調が起こることはない
☐ 生理痛が辛いときは病院を受診したほうがよい

15. Q1-13. 次のうち女性の月経（生理）周期に関して誤っているものはどれですか。 *

1 つだけマークしてください。

- ☐ 正常とされる月経のめやすは 2 5 ～ 3 8 日である
☐ ストレスが生理不順（生理の遅れ）の原因となることはない
☐ 生理不順が続く場合は、病院を受診したほうがよい
☐ 過度なダイエットは無月経（生理が止まる）の原因となる

セクション 2 : 知識テスト

このセクションは 1 0 問の質問があります。

16. Q2-1. プレコンセプションケアに関して、正しいものはどれですか。 *

1 つだけマークしてください。

- ☐ プレコンセプションケアとは、妊娠を望んでいる女性のみを対象とし、妊娠できるようにケアを行うことを指している。
☐ プレコンセプションケアとは、妊娠を望んでいる人も、望んでいない人も含んだ、すべての若者の健康管理である。
☐ プレコンセプションケアとは、妊婦を対象とし、妊娠合併症の予防や胎児の健康を高めるケアである。

17. Q2-2. 避妊方法に関して、正しいものはどれですか。 *

1 つだけマークしてください。

- ☐ 一般的な使用方法による避妊の失敗率は、低用量ピルで 15%、男性用コンドームで 8% であり、男性用コンドームの方が避妊効果が高い。
☐ 日本人の低用量ピルの使用率は 2.9% であり、世界全体の使用率よりも高い割合である。
☐ 日本人が選択する避妊法は、男性用コンドームが 35% 程度、低用量ピルが 3% 程度と圧倒的に男性用コンドームが多い。

18. Q2-3. 胎児の発生過程について、誤っているものはどれですか。 *

1 つだけマークしてください。

- ☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠 8 週目までにほとんど始まっている。
☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠 20 週頃に集中している。
☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠に気付く前から始まっている。

19. Q2-4. 葉酸摂取について正しいものはどれですか。 *

1 つだけマークしてください。

- ☐ 葉酸は妊娠初期に必要な栄養素であるので、妊娠反応を確認しに来た女性へ必要量の葉酸摂取を勧めると良い。
☐ 葉酸は妊娠初期の血中濃度を高めるために、妊娠前からの摂取が必要である。
☐ 妊娠を考える女性へのサプリメントによる葉酸の摂取は、推奨されない。

Appendix E. Post-intervention questionnaire (Intervention group)

20. Q2-5. 喫煙が女性とその子どもに与える影響について、誤っているものはどれか。*

1つだけマークしてください。

- ☐ 卵巣年齢が上昇し、残りの卵子の数が減少し、妊娠率も低下する。
☐ 流産や死産、子宮外妊娠のリスクが上昇する。
☐ 胎児の髄膜瘤の発生率が上昇する。

21. Q2-6. 妊娠前の女性のBMIと妊娠率について、正しいものはどれか。*

1つだけマークしてください。

- ☐ やせと肥満の女性のどちらも妊娠率が低下する。
☐ やせの女性のみ妊娠率が低下する。
☐ 肥満の女性のみ妊娠率が低下する。
☐ 正常BMIの女性が最も妊娠率が低い。

22. Q2-7. 先天性風しん症候群の予防について、誤っているものはどれか。*

1つだけマークしてください。

- ☐ 母子手帳での確認や、家族に聞いたりして、子どもの頃に風しん予防接種を行っているか確認する。
☐ パートナーの風しんワクチン接種は不要であるので、推奨しない。
☐ 風しんの抗体価検査を行い、抗体価を確認する。
☐ 風しんワクチンの追加接種を行ったので、その後2カ月程度の避妊する。

23. Q2-8. 月経時の症状について、受診をすすめる目安として誤っているものはどれか。*

1つだけマークしてください。

- ☐ 日常生活に支障をきたすぐらいの生理痛があり、鎮痛薬を使用しても効かない。
☐ 月経周期が24日以下、もしくは39日以上
☐ 月経の持続日数が1～2日、もしくは8日以上
☐ 出血量が20ml～140ml程度

24. Q2-9. 子宮頸がん予防について、正しいものはどれか。*

1つだけマークしてください。

- ☐ 15歳までのHPVワクチンの接種と、子宮がん検診の双方を行うことが望ましい。
☐ 15歳までにHPVワクチンを完了すれば、HPVに感染しないので、子宮がん検診は不要である。
☐ HPVワクチンを打たなくても、毎年子宮がん検診をしていれば、子宮頸がん症例の減少率は、HPVワクチンを打った場合と同じである。

25. Q2-10. 運動について、正しいものはどれか。*

1つだけマークしてください。

- ☐ 週に2日程度の有酸素運動が推奨されている。
☐ 週に2日程度、集中的に筋トレを行うことが推奨されている。
☐ 毎週、一定時間の有酸素運動を基本に、週に2日程度の筋トレが推奨されている。

セクション3：プレコンセプションケアの態度についての質問

このセクションには9項目の質問があります。

Appendix E. Post-intervention questionnaire (Intervention group)

26。 Q3-1: 私は対象者からプレコンセプションケアについて聞かれることがある *

1 つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

27。 Q3-2: 私から対象者にプレコンセプションケアについて聞くことがある *

1 つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

28。 Q3-3: 私は対象者からプレコンセプションケアについて聞かれることが好き *
ではない

1 つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

29。 Q3-4: 私は臨床や地域、教育などの現場でのプレコンセプションケアについて専門的に興味を持っている *

1 つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

30。 Q3-5: 私は対象者とプレコンセプションケアについて快く話をする事ができる *

1 つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

31。 Q3-6: 私は対象者にプレコンセプションケアについて話せる自信がある *

1 つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

Appendix E. Post-intervention questionnaire (Intervention group)

32. Q3-7: 私は**女性の対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

33. Q3-8: 私は**若い対象者**とプレコンセプションケアについて快く話をするこ *
ができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

34. Q3-9: 私は**成人の対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

セクション4：プレコンセプションケア実践の自信についての質問

このセクションには6項目の質問があります。

35. Q4-1: 適正体重を保つことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

36. Q4-2: 葉酸摂取についてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

37. Q4-3: 予防接種（HPV、風しん）・かかりつけ医を持つことについてのカウ *
ンセリング

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

Appendix E. Post-intervention questionnaire (Intervention group)

38. Q4-4: 避妊方法を見直すことについてのカウンセリング *

1 つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

39. Q4-5: 月経周期と妊娠についてのカウンセリング *

1 つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

40. Q4-6: 喫煙と飲酒を控えることについてのカウンセリング *

1 つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

セクション5: **この教育プログラム**についてお聞きします。

eラーニングを受講してみて、あなたが感じたものに一番近いものをお答えください。また、**そう感じた理由がありましたら教えてください**（該当箇所のみで構いません）。このセクションは22問（うち11問のみ必須解答）の質問があります。

41. Q5-1. コースを受講した事で、プレコンセプションケアに対しての関心が高まった *

1 つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

42. Q5-2. その理由を教えてください

43. Q5-3. コースを受講した事で、プレコンセプションケアを提供する意欲が湧いた *

1 つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

Appendix E. Post-intervention questionnaire (Intervention group)

44。 Q5-4. その理由を教えてください

45。 Q5-5. コースを受講した事で、プレコンセプションケアについてよく理解で *

きた

1つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

46。 Q5-6. その理由を教えてください。

47。 Q5-7. コースを受講した事で、プレコンセプションケアを提供するのに必要 *
な知識が得られた

1つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

48。 Q5-8. その理由を教えてください

49。 Q5-9. コースを受講した事で、プレコンセプションケアは助産師・看護師・ *
保健師が習得すべきスキルであると思った

1つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

Appendix E. Post-intervention questionnaire (Intervention group)

50. Q5-10. その理由を教えてください

51. Q5-11. コースを受講した事で、プレコンセプションケアを提供する自身が高 *

まった

1つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

52. Q5-12. その理由を教えてください

53. Q5-13. コースを受講した事で、自分が所属する施設で積極的に提供したいと *

思った

1つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

54. Q5-14. その理由を教えてください

55. Q5-15. コースを受講した事で、プレコンセプションケアは婦人科を設置して *

いる多くの病院・クリニックで提供されるべきケアだと思った

1つだけマークしてください。

- ☐ まったく思わない
- ☐ あまりそう思わない
- ☐ どちらでもない
- ☐ まあまあそう思う
- ☐ とてもそう思う

Appendix E. Post-intervention questionnaire (Intervention group)

56。 Q5-16. その理由を教えてください

57。 Q5-17. このコースは、妊娠可能年齢の女性へのケアを向上させるのに有効だ *
と思った

1つだけマークしてください。

- ☐ まったく思わない
☐ あまりそう思わない
☐ どちらでもない
☐ まあまあそう思う
☐ とてもそう思う

58。 Q5-18. その理由を教えてください

59。 Q5-19. このコースに取り組むことでやりがいを感じさせてくれますか *

1つだけマークしてください。

- ☐ まったく思わない
☐ あまりそう思わない
☐ どちらでもない
☐ まあまあそう思う
☐ とてもそう思う

60。 Q5-20. その理由を教えてください

61。 Q5-21. このコースの受講に要した時間はどう感じましたか *

1つだけマークしてください。

- ☐ 短すぎる
☐ 少し短い
☐ ちょうどよい
☐ 少し長い
☐ 長すぎる
☐ その他: _____

Appendix E. Post-intervention questionnaire (Intervention group)

62。 Q5-22. その理由を教えてください

セクション 6 : **教育プログラム**を使用して感じたことを教えてください。

また、そう感じた理由がありましたら教えてください（該当箇所のみで構いません）。
このセクションでは10問（うち5問のみ必須解答）の質問があります。

63。 Q6-1. このコースを使うことで知識つける事ができた *

1 つだけマークしてください。

1	2	3	4	5	
まっ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	とてもそう思う

64。 Q6-2. その理由を教えてください

65。 Q6-3. このコースを使うことで仕事のパフォーマンスが上がると思う *

1 つだけマークしてください。

1	2	3	4	5	
まっ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	とてもそう思う

66。 Q6-4. その理由を教えてください

67。 Q6-5. このコースは自分にとって活用できるものであった *

1 つだけマークしてください。

1	2	3	4	5	
まっ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	とてもそう思う

68。 Q6-6. その理由を教えてください。

69。 Q6-7. 私はこのコースに満足している *

1 つだけマークしてください。

1	2	3	4	5	
まっ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	とてもそう思う

Appendix E. Post-intervention questionnaire (Intervention group)

70. Q6-8. その理由を教えてください。

71. Q6-9. 私はこのコースを受講した経験を好意的に感じている *

1 つだけマークしてください。

1 2 3 4 5
まったく 〇 〇 〇 〇 〇 とてもそう思う

72. Q6-10. その理由を教えてください。

ご意見・ご感想をお聞かせください。

73. 本プログラムに関して、ご意見・ご感想がございましたらお聞かせください。

74. 本研究に関して、ご意見・ご感想がございましたらお聞かせください。

アンケートはここで終了になります。**「送信」**ボタンを押してください。ご協力
いただきありがとうございました。

このコンテンツは Google が作成または承認したものではありません。

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2回目のアンケート（対照群）

この度は、研究へのご参加にご協力いただき誠にありがとうございます。

このアンケートの回答には、10分程度の時間を要します。

※各アンケートを、メールアドレスにて同一者と判断しますので、毎回同じメールアドレスをご入力ください。

*** 必須の質問です**

1。 メールアドレス *

研究用ID

2。 研究用ID *

セクション1：プレコンセプション・ヘルスに関してあてはまるものをお答えください。

このセクションには13問の質問があります。

3。 Q1-1. 次のうち避妊に関する考え方として誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 性感染症の予防のためコンドームを使用する
- ☐ 基礎体温法だけでは確実に避妊できないので、コンドームも併用する
- ☐ 避妊を男性まかせにしないため、女性自らが低容量ピルを内服する
- ☐ 子宮内避妊システムを入れていれば性感染症は予防できる

4。 Q1-2. 次のうちピル（避妊薬）について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 毎日決まった時間に内服する
- ☐ 服用中は定期的に受診する必要がある
- ☐ 血栓症のリスクがある場合には内服できない
- ☐ きちんと内服していれば避妊率は100%である

5。 Q1-3. 次のうち妊娠について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 排卵は女性ホルモンによってコントロールされている
- ☐ 卵子と精子が会ってできた受精卵が子宮に着床することで妊娠が成立する
- ☐ 排卵日以外での性交渉では妊娠しない
- ☐ 妊娠した場合、生理が1週間遅れたと思ったらときは妊娠5週前後である

6。 Q1-4. 次のうち赤ちゃんの脳・脊髄の先天異常のリスクを減らすのに有効な葉酸の最小摂取量はどのぐらいですか。 *

1つだけマークしてください。

- ☐ 100μg
- ☐ 200μg
- ☐ 300μg
- ☐ 400μg

Appendix F. Post-intervention questionnaire (Control group)

- 7。 Q1-5. 次のうち妊娠の計画・予定がある女性の葉酸摂取に関して、正しいもの * はどれですか。

1つだけマークしてください。

- ☐ 妊娠の計画・予定がある女性は、サプリメントから葉酸を摂ることを避けたほうがよい
- ☐ 妊娠の計画・予定がある女性は、普段の食事以外にサプリメントから葉酸を摂ることが望ましい

- 8。 Q1-6. 次のうち性感染症を予防するために有効なものはどれですか。 *

1つだけマークしてください。

- ☐ オーラルセックスをする
- ☐ 低容量ピルを使用する
- ☐ 性交渉の時にコンドームを使用する

- 9。 Q1-7. 次のうち妊娠中の喫煙について正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 妊婦の喫煙は、少量でも子どもに影響する可能性がある
- ☐ 電子タバコは子どもに影響する可能性はない
- ☐ 同居者の喫煙（受動喫煙）は子どもに影響する可能性はない

- 10。 Q1-8. 次のうち妊娠中の女性の飲酒が赤ちゃんに与える影響として正しいもの * はどれですか。

1つだけマークしてください。

- ☐ 連日でなければ、胎児に影響する可能性はない
- ☐ 1度に大量に飲まなければ、胎児に影響する可能性はない
- ☐ 少量でも胎児に影響する可能性がある

- 11。 Q1-9. 次のうちパートナーからの暴力の相談場所として正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 病気のことではないので病院では相談できない
- ☐ 全国で利用できる電話相談がある
- ☐ 事件ではないので警察に相談はできない
- ☐ 個人的な問題なので、自分で解決するように努める

- 12。 Q1-10. 気になる病気の症状が持続するときはどうしますか。 *

1つだけマークしてください。

- ☐ SNSの交流サイトで相談する
- ☐ 医療従事者に相談する
- ☐ 何もしないで様子を見る
- ☐ 自分の信仰や治療法に頼る

- 13。 Q1-11. 次のうち女性の月経（生理）周期に関わるホルモンとして誤っているもの * はどれですか。

1つだけマークしてください。

- ☐ エストロゲン
- ☐ プロゲステロン
- ☐ オキシトシン
- ☐ 黄体ホルモン

Appendix F. Post-intervention questionnaire (Control group)

14. Q1-12. 次のうち女性の月経（生理）周期に関する症状について誤っているもの ^{*}はどれですか。

1 つだけマークしてください。

- ☐ 月経中の下腹部痛
☐ 排卵時の下腹部痛
☐ 月経前に不調が起こることはない
☐ 生理痛が辛いときは病院を受診したほうがよい

15. Q1-13. 次のうち女性の月経（生理）周期に関して誤っているものはどれですか。

1 つだけマークしてください。

- ☐ 正常とされる月経のめやすは2 5～3 8 日である
☐ ストレスが生理不順（生理の遅れ）の原因となることはない
☐ 生理不順が続く場合は、病院を受診したほうがよい
☐ 過度なダイエットは無月経（生理が止まる）の原因となる

セクション 2 : 知識テスト

このセクションは1 0 問の質問があります。

16. Q2-1. プレコンセプションケアに関して、正しいものはどれですか。 ^{*}

1 つだけマークしてください。

- ☐ プレコンセプションケアとは、妊娠を望んでいる女性のみを対象とし、妊娠できるようにケアを行うことを指している。
☐ プレコンセプションケアとは、妊娠を望んでいる人も、望んでいない人も含んだ、すべての若者の健康管理である。
☐ プレコンセプションケアとは、妊婦を対象とし、妊娠合併症の予防や胎児の健康を高めるケアである。

17. Q2-2. 避妊方法に関して、正しいものはどれですか。 ^{*}

1 つだけマークしてください。

- ☐ 一般的な使用方法による避妊の失敗率は、低用量ピルで15%、男性用コンドームで8%であり、男性用コンドームの方が避妊効果が高い。
☐ 日本人の低用量ピルの使用率は2.9%であり、世界全体の使用率よりも高い割合である。
☐ 日本人が選択する避妊法は、男性用コンドームが35%程度、低用量ピルが3%程度と圧倒的に男性用コンドームが多い。

18. Q2-3. 胎児の発生過程について、誤っているものはどれですか。 ^{*}

1 つだけマークしてください。

- ☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠8週目までにほとんど始まっている。
☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠20週頃に集中している。
☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠に気付く前から始まっている。

19. Q2-4. 葉酸摂取について正しいものはどれですか。 ^{*}

1 つだけマークしてください。

- ☐ 葉酸は妊娠初期に必要な栄養素であるので、妊娠反応を確認しに来た女性へ必要量の葉酸摂取を勧めると良い。
☐ 葉酸は妊娠初期の血中濃度を高めるために、妊娠前からの摂取が必要である。
☐ 妊娠を考える女性へのサプリメントによる葉酸の摂取は、推奨されない。

Appendix F. Post-intervention questionnaire (Control group)

20. Q2-5. 喫煙が女性とその子どもに与える影響について、誤っているものはどれか。*

1つだけマークしてください。

- ☐ 卵巣年齢が上昇し、残りの卵子の数が減少し、妊娠率も低下する。
☐ 流産や死産、子宮外妊娠のリスクが上昇する。
☐ 胎児の髄膜瘤の発生率が上昇する。

21. Q2-6. 妊娠前の女性のBMIと妊娠率について、正しいものはどれか。*

1つだけマークしてください。

- ☐ やせと肥満の女性のどちらも妊娠率が低下する。
☐ やせの女性のみ妊娠率が低下する。
☐ 肥満の女性のみ妊娠率が低下する。
☐ 正常BMIの女性が最も妊娠率が低い。

22. Q2-7. 先天性風しん症候群の予防について、誤っているものはどれか。*

1つだけマークしてください。

- ☐ 母子手帳での確認や、家族に聞いたりして、子どもの頃に風しん予防接種を行っているか確認する。
☐ パートナーの風しんワクチン接種は不要であるので、推奨しない。
☐ 風しんの抗体価検査を行い、抗体価を確認する。
☐ 風しんワクチンの追加接種を行ったので、その後2カ月程度の避妊する。

23. Q2-8. 月経時の症状について、受診をすすめる目安として誤っているものはどれか。*

1つだけマークしてください。

- ☐ 日常生活に支障をきたすぐらいの生理痛があり、鎮痛薬を使用しても効かない。
☐ 月経周期が24日以下、もしくは39日以上
☐ 月経の持続日数が1～2日、もしくは8日以上
☐ 出血量が20ml～140ml程度

24. Q2-9. 子宮頸がん予防について、正しいものはどれか。*

1つだけマークしてください。

- ☐ 15歳までのHPVワクチンの接種と、子宮がん検診の双方を行うことが望ましい。
☐ 15歳までにHPVワクチンを完了すれば、HPVに感染しないので、子宮がん検診は不要である。
☐ HPVワクチンを打たなくても、毎年子宮がん検診をしていれば、子宮頸がん症例の減少率は、HPVワクチンを打った場合と同じである。

25. Q2-10. 運動について、正しいものはどれか。*

1つだけマークしてください。

- ☐ 週に2日程度の有酸素運動が推奨されている。
☐ 週に2日程度、集中的に筋トレを行うことが推奨されている。
☐ 毎週、一定時間の有酸素運動を基本に、週に2日程度の筋トレが推奨されている。

セクション3：プレコンセプションケアの態度についての質問

このセクションには9項目の質問があります。

Appendix F. Post-intervention questionnaire (Control group)

- 26。 Q3-1: 私は対象者からプレコンセプションケアについて聞かれることがある *

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 27。 Q3-2: 私から対象者にプレコンセプションケアについて聞くことがある *

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 28。 Q3-3: 私は対象者からプレコンセプションケアについて聞かれることが好き *
ではない

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 29。 Q3-4: 私は臨床や地域、教育などの現場でのプレコンセプションケアについて専門的に興味を持っている *

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 30。 Q3-5: 私は対象者とプレコンセプションケアについて快く話をする事ができる *

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 31。 Q3-6: 私は対象者にプレコンセプションケアについて話せる自信がある *

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

Appendix F. Post-intervention questionnaire (Control group)

32. Q3-7: 私は**女性の対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

33. Q3-8: 私は**若い対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

34. Q3-9: 私は**成人の対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

セクション4：プレコンセプションケアの自信についての質問

このセクションには6項目の質問があります。

35. Q4-1: 適正体重を保つことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

36. Q4-2: 葉酸摂取についてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

37. Q4-3: 予防接種（HPV、風しん）・かかりつけ医を持つことについてのカウ *
ンセリング

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

Appendix F. Post-intervention questionnaire (Control group)

38. Q4-4: 避妊方法を見直すことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

39. Q4-5: 月経周期と妊娠についてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

40. Q4-6: 喫煙と飲酒を控えることについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

オンラインセミナー参加のご希望をお聞かせください。

41. オンラインセミナー（所要時間1時間）参加のご希望をお聞かせください。 *

eラーニングのURLは皆さまにお送りいたします。

オンラインセミナー参加をご希望された方へは、後日日程調整のためのご連絡をお送りいたします。

1つだけマークしてください。

- ☐ 参加を希望します。
- ☐ 参加を希望しません。
- ☐ その他: _____

アンケートはここで終了になります。「送信」ボタンを押してください。ご協力いただきありがとうございました。

このコンテンツは Google が作成または承認したものではありません。

Google フォーム

1か月後 フォローアップアンケート

この度は、研究へのご参加にご協力いただき誠にありがとうございます。

こちらのアンケートは「介入直後」アンケートを回答してから1か月後にご回答ください。

このアンケートの回答には、10分程度の時間を要します。

※各アンケートを、メールアドレスにて同一者と判断しますので、毎回同じメールアドレスをご入力ください。

***必須の質問です**

1. メールアドレス *

研究用ID

2. 研究用ID *

セクション1：プレコンセプション・ヘルスに関してあてはまるものをお答えください。

このセクションには2問の質問があります。

3. Q1-1: 本プログラム終了後に、新たに実施したものはありましたか。 *
複数回答可

当てはまるものをすべて選択してください。

- ☐ 実際にプレコンセプションヘルスに関するカウンセリングを行った
- ☐ 問診票にプレコンセプションケアに関する質問を加えた
- ☐ プレコンセプションヘルスに関する質問をするようになった
- ☐ 同僚の間でプレコンセプションケアに関する勉強会を行った
- ☐ 授業や講座の中にプレコンセプションケアを取り入れた
- ☐ 周囲の看護職者にプレコンセプションケアについて伝えた
- ☐ プレコンセプションケアについてや、関連する資料を探し新たに学習した
- ☐ 特に新たに行ったものはなかった

4. Q1-2: 本プログラム終了後に、上記の他に新たに行ったものがあれば教えてください。

5. Q1-3: 「**特に新たに行ったものはなかった**」と回答された方にお聞きします。
「行わなかった理由」がありましたらお聞かせください。
例) 仕事が忙しく行えなかった、なんとなく、受講以前より既に行っている等

セクション2：プレコンセプション・ヘルスに関してあてはまるものをお答えください。

このセクションには13項目の質問があります。

Appendix G. Follow-up questionnaire

6. Q2-1. 次のうち避妊に関する考え方として誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 性感染症の予防のためコンドームを使用する
- ☐ 基礎体温法だけでは確実に避妊できないので、コンドームも併用する
- ☐ 避妊を男性まかせにしないため、女性自らが低容量ピルを内服する
- ☐ 子宮内避妊システムを入れていれば性感染症は予防できる

7. Q2-2. 次のうちピル（避妊薬）について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 毎日決まった時間に内服する
- ☐ 服用中は定期的に受診する必要がある
- ☐ 血栓症のリスクがある場合には内服できない
- ☐ きちんと内服していれば避妊率は100%である

8. Q2-3. 次のうち妊娠について誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 排卵は女性ホルモンによってコントロールされている
- ☐ 卵子と精子が会ってできた受精卵が子宮に着床することで妊娠が成立する
- ☐ 排卵日以外での性交渉では妊娠しない
- ☐ 妊娠した場合、生理が1週間遅れたと思ったときは妊娠5週前後である

9. Q2-4. 次のうち赤ちゃんの脳・脊髄の先天異常のリスクを減らすのに有効な葉酸の最小摂取量はどのぐらいですか。 *

1つだけマークしてください。

- ☐ 100μg
- ☐ 200μg
- ☐ 300μg
- ☐ 400μg

10. Q2-5. 次のうち妊娠の計画・予定がある女性の葉酸摂取に関して、正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 妊娠の計画・予定がある女性は、サプリメントから葉酸を摂ることを避けたほうがよい
- ☐ 妊娠の計画・予定がある女性は、普段の食事以外にサプリメントから葉酸を摂ることが望ましい

11. Q2-6. 次のうち性感染症を予防するために有効なものはどれですか。 *

1つだけマークしてください。

- ☐ オーラルセックスをする
- ☐ 低容量ピルを使用する
- ☐ 性交渉の時にコンドームを使用する

12. Q2-7. 次のうち妊娠中の喫煙について正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 妊婦の喫煙は、少量でも子どもに影響する可能性がある
- ☐ 電子タバコは子どもに影響する可能性はない
- ☐ 同居者の喫煙（受動喫煙）は子どもに影響する可能性はない

Appendix G. Follow-up questionnaire

13. Q2-8. 次のうち妊娠中の女性の飲酒が赤ちゃんに与える影響として**正しいもの**はどれですか。 *

1つだけマークしてください。

- ☐ 連日であれば、胎児に影響する可能性はない
☐ 1度に大量に飲まなければ、胎児に影響する可能性はない
☐ 少量でも胎児に影響する可能性がある

14. Q2-9. 次のうちパートナーからの暴力の相談場所として**正しいもの**はどれですか。 *

1つだけマークしてください。

- ☐ 病気のことではないので病院では相談できない
☐ 全国で利用できる電話相談がある
☐ 事件ではないので警察に相談はできない
☐ 個人的な問題なので、自分で解決するように努める

15. Q2-10. 気になる病気の症状が持続するときはどうしますか。 *

1つだけマークしてください。

- ☐ SNSの交流サイトで相談する
☐ 医療従事者に相談する
☐ 何もしないで様子を見る
☐ 自分の信仰や治療法に頼る

16. Q2-11. 次のうち女性の月経（生理）周期に関わるホルモンとして**誤っているもの**はどれですか。 *

1つだけマークしてください。

- ☐ エストロゲン
☐ プロゲステロン
☐ オキシトシン
☐ 黄体ホルモン

17. Q2-12. 次のうち女性の月経（生理）周期に関する症状について**誤っているもの**はどれですか。 *

1つだけマークしてください。

- ☐ 月経中の下腹部痛
☐ 排卵時の下腹部痛
☐ 月経前に不調が起こることはない
☐ 生理痛が辛いときは病院を受診したほうがよい

18. Q2-13. 次のうち女性の月経（生理）周期に関して**誤っているもの**はどれですか。 *

1つだけマークしてください。

- ☐ 正常とされる月経のめやすは2 5～3 8日である
☐ ストレスが生理不順（生理の遅れ）の原因となることはない
☐ 生理不順が続く場合は、病院を受診したほうがよい
☐ 過度なダイエットは無月経（生理が止まる）の原因となる

セクション3：知識テスト

このセクションは10項目の質問があります。

Appendix G. Follow-up questionnaire

19. Q3-1. プレコンセプションケアに関して、正しいものはどれですか。 *

1つだけマークしてください。

- ☐ プレコンセプションケアとは、妊娠を望んでいる女性のみを対象とし、妊娠できるようにケアを行うことを指している。
- ☐ プレコンセプションケアとは、妊娠を望んでいる人も、望んでいない人も含んだ、すべての若者の健康管理である。
- ☐ プレコンセプションケアとは、妊婦を対象とし、妊娠合併症の予防や胎児の健康を高めるケアである。

20. Q3-2. 避妊方法に関して、正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 一般的な使用方法による避妊の失敗率は、低用量ピルで15%、男性用コンドームで8%であり、男性用コンドームの方が避妊効果が高い。
- ☐ 日本人の低用量ピルの使用率は2.9%であり、世界全体の使用率よりも高い割合である。
- ☐ 日本人が選択する避妊法は、男性用コンドームが35%程度、低用量ピルが3%程度と圧倒的に男性用コンドームが多い。

21. Q3-3. 胎児の発生過程について、誤っているものはどれですか。 *

1つだけマークしてください。

- ☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠8週目までにほとんど始まっている。
- ☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠20週頃に集中している。
- ☐ 中枢神経や心臓、四肢、眼、耳などの重要な臓器の催奇形性に影響する時期は、妊娠に気付く前から始まっている。

22. Q3-4. 葉酸摂取について正しいものはどれですか。 *

1つだけマークしてください。

- ☐ 葉酸は妊娠初期に必要な栄養素であるので、妊娠反応を確認しに来た女性へ必要量の葉酸摂取を勧めると良い。
- ☐ 葉酸は妊娠初期の血中濃度を高めるために、妊娠前からの摂取が必要である。
- ☐ 妊娠を考える女性へのサプリメントによる葉酸の摂取は、推奨されない。

23. Q3-5. 喫煙が女性とその子どもに与える影響について、誤っているものはどれか。 *

1つだけマークしてください。

- ☐ 卵巣年齢が上昇し、残りの卵子の数が減少し、妊娠率も低下する。
- ☐ 流産や死産、子宮外妊娠のリスクが上昇する。
- ☐ 胎児の髄膜瘤の発生率が上昇する。

24. Q3-6. 妊娠前の女性のBMIと妊娠率について、正しいものはどれか。 *

1つだけマークしてください。

- ☐ やせと肥満の女性のどちらも妊娠率が低下する。
- ☐ やせの女性のみ妊娠率が低下する。
- ☐ 肥満の女性のみ妊娠率が低下する。
- ☐ 正常BMIの女性が最も妊娠率が低い。

Appendix G. Follow-up questionnaire

25. Q3-7. 先天性風しん症候群の予防について、誤っているものはどれか。*

1つだけマークしてください。

- ☐ 母子手帳での確認や、家族に聞いたりして、子どもの頃に風しん予防接種を行っているか確認する。
- ☐ パートナーの風しんワクチン接種は不要であるので、推奨しない。
- ☐ 風しんの抗体価検査を行い、抗体価を確認する。
- ☐ 風しんワクチンの追加接種を行ったので、その後2カ月程度の避妊する。

26. Q3-8. 月経時の症状について、受診をすすめる目安として誤っているものはどれか。*

1つだけマークしてください。

- ☐ 日常生活に支障をきたすぐらいの生理痛があり、鎮痛薬を使用しても効かない。
- ☐ 月経周期が24日以下、もしくは39日以上
- ☐ 月経の持続日数が1〜2日、もしくは8日以上
- ☐ 出血量が20ml〜140ml程度

27. Q3-9. 子宮頸がん予防について、正しいものはどれか*。

1つだけマークしてください。

- ☐ 15歳までのHPVワクチンの接種と、子宮がん検診の双方を行うことが望ましい。
- ☐ 15歳までにHPVワクチンを完了すれば、HPVに感染しないので、子宮がん検診は不要である。
- ☐ HPVワクチンを打たなくても、毎年子宮がん検診をしていれば、子宮頸がん症例の減少率は、HPVワクチンを打った場合と同じである。

28. Q3-10. 運動について、正しいものはどれか。*

1つだけマークしてください。

- ☐ 週に2日程度の有酸素運動が推奨されている。
- ☐ 週に2日程度、集中的に筋トレを行うことが推奨されている。
- ☐ 毎週、一定時間の有酸素運動を基本に、週に2日程度の筋トレが推奨されている。

セクション4：プレコンセプションケアの態度についての質問

このセクションには9項目の質問があります。

29. Q4-1: 私は対象者からプレコンセプションケアについて聞かれることがある*。

1つだけマークしてください。

- ☐ とてもそう思う
- ☐ どちらかと言えばそう思う
- ☐ どちらでもない
- ☐ どちらかと言えばそう思わない
- ☐ まったくそう思わない

30. Q4-2: 私から対象者にプレコンセプションケアについて聞くことがある*。

1つだけマークしてください。

- ☐ とてもそう思う
- ☐ どちらかと言えばそう思う
- ☐ どちらでもない
- ☐ どちらかと言えばそう思わない
- ☐ まったくそう思わない

Appendix G. Follow-up questionnaire

- 31。 Q4-3: 私は対象者からプレコンセプションケアについて聞かれることが好き *
ではない

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 32。 Q4-4: 私は臨床や地域、教育などの現場でのプレコンセプションケアについ *
て専門的に興味を持っている

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 33。 Q4-5: 私は対象者とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 34。 Q4-6: 私は対象者にプレコンセプションケアについて話せる自信がある *

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 35。 Q4-7: 私は**女性の対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

- 36。 Q4-8: 私は**若い対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

Appendix G. Follow-up questionnaire

37. Q4-9: 私は**成人の対象者**とプレコンセプションケアについて快く話をするこ *
とができる

1つだけマークしてください。

- ☐ とてもそう思う
☐ どちらかと言えばそう思う
☐ どちらでもない
☐ どちらかと言えばそう思わない
☐ まったくそう思わない

セクション5：プレコンセプションケア実践の自信についての質問

このセクションには6項目の質問があります。

38. Q5-1: 適正体重を保つことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

39. Q5-2: 葉酸摂取についてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

40. Q5-3: 予防接種（HPV、風しん）・かかりつけ医を持つことについてのカウ *
ンセリング

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

41. Q5-4: 避妊方法を見直すことについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

42. Q5-5: 月経周期と妊娠についてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
☐ 手本通りに実践することができる
☐ 目標達成のために学習内容を応用し、多様な方法で個別的なケアができる
☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
☐ その他: _____

Appendix G. Follow-up questionnaire

43. Q5-6: 喫煙と飲酒を控えることについてのカウンセリング *

1つだけマークしてください。

- ☐ できない、または、まったく行ったことがない
- ☐ 手本通りに実践することができる
- ☐ 目標達成のために学習内容に応用し、多様な方法で個別的なケアができる
- ☐ 必要に応じて医師や管理栄養士などの多職種との協働も取り入れ個別的なケアを行うことができる
- ☐ その他: _____

セクション4：自施設での活用について

44. 自分が所属する施設でプレコンセプションケアを提供していきたいと思いませんか。 *

1つだけマークしてください。

- ☐ 思う
- ☐ 思わない

45. Q4-2. Q4-1で思うと回答した方にお聞きします。
どのような形で提供できそうですか。

例) 診察の後にカウンセリング（相談）の時間を設けようと思った

46. Q4-3. Q4-1で思わないと回答した方にお聞きします。どのような点が難しいと思いますか。

例) 人員不足であり、時間と人を割けない

ご意見・ご感想をお聞かせください。

47. 今回のプログラム全体を通して、ご意見・ご感想がございましたらお聞かせください。

アンケートはここで終了になります。**「送信」ボタンを押してください。**ご協力いただきありがとうございました。

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プレコンセプションケア 模擬カウンセリング		
事例① (対象者用)		
適正体重／葉酸／喫煙・飲酒		
目標		
① プレコンセプションケアに関する対象者の情報を収集することができる ② プレコンセプションヘルスに関する問題を整理することができる ③ 対象者が持つ健康問題へのケア方法について説明することができる		
事例	健康問題	指導ポイント
<p>Aさん 28歳 女性 既婚 会社員</p> <p>パートナーとも子どもが欲しいと話しており、現在妊娠を望んでいる</p> <p>身長：158cm 体重：47kg BMI: 18.8</p> <p><昨日の食事> 朝食：クッキー、チョコパイ 昼食：ゼリー、菓子パン1個 夕食：コンビニおにぎり1個、春巻き1個 摂取しているサプリメント：なし</p> <ul style="list-style-type: none"> ・野菜嫌いではないが、調理が面倒で積極的には食べない。ブロッコリーは好きで食べられる ・肉・魚は少量なら食べられる <p><運動習慣></p> <ul style="list-style-type: none"> ・仕事はデスクワーク ・運動は好きではなく、運動する習慣はない ・通勤は駅まで15分の距離だがバスを使用し歩くことが少ない ・すぐに疲れやすく積極的に動くことが少ない <p><葉酸に関する知識> 葉酸の言葉は聞いたことがあるが、何に良い栄養素なのか知らない</p> <p><喫煙・飲酒></p> <ul style="list-style-type: none"> ・自分は非喫煙者であるが、夫が喫煙者であり、自宅での喫煙もする ・職場はきちんと分煙がされている ・飲酒の習慣はない 	<p># 定義上は適正体重であるが、やせ傾向</p> <p># 栄養バランスの偏りがある</p> <p># 運動の不足</p> <p># 葉酸についての知識がない状態</p> <p># 自宅での副流煙曝露</p>	<p>本人もパートナーも妊娠を望んでいる</p> <p>体型はやせ傾向であり、無理に体重を増やす必要はないが、食事内容と運動推進の必要性を説明する</p> <p>栄養バランスの偏りがあるため、食べられる野菜やたんぱく源となる肉・魚などを、どうしたら食べられるかを相談</p> <p>疲れやすいのは、貧血・栄養不足の可能性もある。食事内容を整えつつ、駅まで歩くなどの可能な範囲で運動を提案</p> <p>葉酸と二分脊椎症予防について、サプリメントの摂取の提案</p> <p>副流煙曝露の影響について。パートナーも子どもを持つ事を望んでおり、子どもへの影響を説明、パンフレットの紹介</p>

<p>プレコンセプションケア 模擬カウンセリング</p> <p>事例① <u>（看護者用）</u></p> <p>適正体重／葉酸／喫煙・飲酒</p>		
<p>目標</p> <p>① プレコンセプションケアに関する対象者の情報を収集することができる</p> <p>② プレコンセプションヘルスに関する問題を整理することができる</p> <p>③ 対象者が持つ健康問題へのケア方法について説明することができる</p>		
事例	健康問題	指導ポイント
<p>Aさん 28歳 女性 既婚 会社員</p> <p>身長：158cm</p> <p>体重：47kg</p> <p>BMI: 18.8</p>		

プレコンセプションケア 模擬カウンセリング		
事例② (対象者用)		
ワクチン接種・かかりつけ医／避妊を見直す／月経周期と妊娠		
目標		
① プレコンセプションケアに関する対象者の情報を収集することができる ② プレコンセプションヘルスに関する問題を整理することができる ③ 対象者が持つ健康問題へのケア方法について説明することができる		
事例	健康問題	指導ポイント
<p>Bさん 20歳 女性 未婚 大学生</p> <p>パートナー（男性）はいるが、まだ妊娠は望んでいない。将来的な妊娠の希望はまだわからない。</p> <p>身長：165cm 体重：55kg BMI: 20.2</p> <p><ワクチン接種状況></p> <ul style="list-style-type: none"> ・風しんワクチンの接種歴：不明 ・HPV ワクチンの接種歴：なし <p><避妊方法></p> <ul style="list-style-type: none"> ・パートナーとの性交渉：数回あり ・避妊はパートナーがコンドームを使用してくれているので大丈夫と思う ・ピルについては聞いたことはあるがよく分からない。聞いてみたいと思っていた。 <p><婦人科受診歴></p> <ul style="list-style-type: none"> ・婦人科への受診はタイミングが分からず受診した事がない ・子宮頸がん検診については聞いたことはあるが、いつ受けたらよいかわからない <p><月経について></p> <ul style="list-style-type: none"> ・月経周期は 27 日～30 日 ・月経痛は強く、痛み止めを飲んでもつらい時もある ・月経量は多く昼間も夜用ナプキン使用が必要 	<p># 風しんワクチン接種の確認</p> <p># 定期的な子宮がん検診の必要性</p> <p># 避妊方法の種類と特徴の説明の必要性</p> <p># 婦人科の定期受診の必要性</p> <p># かかりつけ婦人科を見つける必要性</p> <p># 過多月経の可能性</p>	<p>将来の妊娠の希望はまだ分からないとの事だが、知識として風しんと妊娠の関係について説明</p> <p>母子手帳や家族に話を聞くなどして、風しんワクチン接種歴を確認するのによいだろう</p> <p>HPV ワクチン接種歴がなく（あっても）、定期的な子宮頸がん検診が必要</p> <p>避妊方法の種類と特徴を説明し、対象者のニーズに合わせた選択ができるようにする</p> <p>婦人科の定期受診と自分に合った婦人科を見つけるメリットの説明</p> <p>過多月経の可能性があり、婦人科受診をすすめる</p>

<p>プレコンセプションケア 模擬カウンセリング</p> <p>事例② <u>（看護者用）</u></p> <p>ワクチン接種・かかりつけ医／避妊を見直す／月経周期と妊娠</p>		
<p>目標</p> <p>① プレコンセプションケアに関する対象者の情報を収集することができる</p> <p>② プレコンセプションヘルスに関する問題を整理することができる</p> <p>③ 対象者が持つ健康問題へのケア方法について説明することができる</p>		
事例	健康問題	指導ポイント
<p>Bさん 20歳 女性 未婚 大学生</p> <p>身長：165cm</p> <p>体重：55kg</p> <p>BMI: 20.2</p>		