

# Conceptual analysis of "Sex Awareness" Influencing Adolescent Sexual Behavior in Japan

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## Abstract

This study aimed to use Rodgers' evolutionary concept analysis method to clarify components of the "sex awareness" concept which influence adolescent sexual behavior and to obtain suggestions for necessary sex education. A comprehensive literature review identified 28 papers published in Japan between 2000 and 2024 that met selection criteria and contained descriptions of "sex awareness" influencing sexual behavior in adolescents. Analysis of these papers extracted concept components into five categories of attributes and three categories of antecedent conditions. Attributes were [Prevention of Sexually Transmitted Infections], [Understanding of Fertility], [Awareness of Sexual Behaviors], [Acceptance of One's Own Sexuality], and [Methods to Interact with People of a Different Physical Sex]; and antecedent conditions were [Education on Reproductive Functions and Sexual Behaviors], [Existence or Lack of Sexual Experiences], and [Others' Perceptions of Sexual Behaviors]. It was shown that "sex awareness" was influenced by the specificity of educational methods, family sexual behaviors and family-provided sex education, the presence or absence of someone able to be consulted about information on sexual behaviors, and the existence or lack of sexual experiences. Results suggest that developing an understanding of others and oneself with regards to sexual behaviors leads to an individual gaining interest in their own sexuality and positively accepting their own sexuality and sexual behaviors, which is connected to the consequent stages of [Sexual Identity Formation] and [Self-Dignity].

## Introduction

Adolescent sexual issues have evolved with modern changes in social structures and advances in IT technology, becoming more diverse and complicated with sexually transmitted infections, abortions, and sex crimes being experienced by young people ages 10 to 19[1]. The second phase of the Japanese government's "Healthy Parents and Children 21" plan includes diverse content and instructional methods for sex education, with accurate knowledge about sexual behaviors considered necessary for junior high school students and essential for high school students[1]. Adolescence in Japan is often defined as the period from 12 to 18 years of age, but research on sex education for adolescents and research on "sex awareness" suggests there is a need for sexual identity formation[2], methods to interact with people of a different physical sex[3], and an understanding of fertility[4] for people between the ages of 10 and 19. Some research has been performed on sex education content, including on awareness of sexual behaviors[5,6], prevention of sexually transmitted infections[7,8], and acceptance of one's own sexuality[9]. Examples of implemented sex education methods include peer support counseling[3,9]; learning about reproductive functions, pregnancy, and sexuality[6,7,8]; hands-on experience with methods to prevent sexually transmitted diseases[7]; and group work[3,9]. However, there are few studies which have included participants under 14 years of age. Existing research has suggested that junior high school students (ages: 12-15) have difficulty understanding or were indifferent to concepts related to sexuality[6], and high school students (ages: 15-18) exhibited positive changes in their attitudes towards sexual behaviors following the implementation of sex education[2,7].

In the Japanese educational system, sex education instruction is conducted as a part of related subjects such as physical education or health and physical education, in accordance with established curriculum guidelines[10]. Despite sex education being considered

an important part of all school educational activities, not only physical education or health and physical education courses but also moral education and special activities, there are existing challenges such as the following: establishing a common understanding among faculty and staff, implementing programs that sufficiently take into consideration students' developmental stages, gaining understanding from parents and the community to promote cooperation between home and community, and clearly distinguishing between content to be taught to groups or to individuals. Additionally, Japanese government curriculum guidelines stipulate that sexual behaviors and the pregnancy process shall not be covered, prompting some to express the opinion that without detailed discussions such education is insufficient. However, as this content is not explicitly prohibited, schools are allowed to teach it if such instruction is deemed necessary. This has created the current situation where the content of sex education in Japan is determined by individual educational institutions.

Research on the parents of junior high school students has shown a tendency for a low awareness of sexuality[8], which suggests that, in addition to the growth and development of cognitive functions, sex education from a young age should also be considered important in Japan. For example, it has been reported that there is high self-esteem

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and a deliberate attitude toward romantic relationships when the parent-child relationship is positive and conversations about sexuality take place[11]. Additionally, it has been shown that having someone nearby who readily listens to one's opinions is associated with high-self-esteem, conversations with parents and surrounding people have an influence, and there are differences in the awareness of sexual behaviors between males and females[7,8].

As indicated by the above, there is a need to consider both the implementation of progressive sex education programs starting from junior high school and differences in educational programs for male and female students. There is also a need to have sex education that enables mutual understanding of the differences between the sexes and corresponds to modern social systems. To that end, we believe it necessary to first foster an individual's interest in their own sexuality to develop a positive understanding of sexuality which includes elements such as the accurate knowledge of sexual behaviors. As a precursor to fact-finding surveys which will lead to effective sex education, this study aimed to address the need to clarify the "sex awareness" which influences sexual behaviors in adolescence.

## Methods

### Method of concept analysis

Rodgers' evolutionary concept analysis was used[12]. In this concept analysis method, concepts are considered to arise from social contexts, changing over time and as circumstances change. The method involves reading how concepts are used in the literature and extracting their constituent elements. This study applied this method while considering cultural and temporal influences on concepts.

### Data acquisition

We used the following three databases to search for literature published from 2000 to 2024: Ichushi-Web (Central Journal of Medicine Web version), Medical Online, and CiNii. The literature selection criteria were to adopt studies that examined sex education for junior high school and high school students during adolescence. Searched Japanese keywords were "*seikyouiku* (sex education)" and "*ninshiki* (awareness)", and the full texts of studies with these keywords and meeting the following conditions were obtained: studies published in Japanese that described the content and methods of sex education provided to junior high and high school students without health issues. A total of 144 papers were identified from Ichushi-Web, 42 from Medical Online, and 23 from CiNii. Duplicate papers were integrated based on the established eligibility criteria. Ultimately, 28 of the identified papers were designated for analysis after repeated careful readings to determine whether the articles contained descriptions of "sex awareness" that influences sexual behavior in adolescents (ages 12-18).

### Data analysis

While each paper was being thoroughly read and its contents comprehended, a datasheet was prepared that extracted verbatim and reproduced exactly portions of each paper that were considered to correspond to pre-concept antecedent conditions, attributes constituting the concepts, and the consequences which lead to concepts. Each input datapoint was coded, and subcategories and categories were created through comparing content commonalities, similarities, and differences. This process allowed us to examine how this data was connected.

These results allowed us to clarify the components of "sex awareness" which influence sexual behaviors in adolescence. As a part of this process, we engaged in discussions to extract concepts while being mindful of concept meaning and context. Finally, we used a model case to review concept components..

### Ethical considerations

All papers referenced in this study have been published and all sources are clearly indicated in compliance with Article 32, Paragraph 1 of Japan's Copyright Law.

## Results

The 28 papers selected for this study were comprised of studies from the following fields: nursing field (23), medical field (1), psychology field (2), and education field (3). The nursing field had the highest number of relevant papers. As a result of the concept analysis, 5 categories of attributes, 3 categories of antecedent conditions, and 2 categories of consequences were extracted. Hereinafter, categories are indicated by square brackets ( [...] ) and subcategories by angle brackets ( < ... > ).

### Attributes

Five categories of attributes were extracted: [Prevention of Sexually Transmitted Infections], [Understanding of Fertility], [Awareness of Sexual Behaviors], [Acceptance of One's Own Sexuality], and [Methods to Interact with People of a Different Physical Sex]. Content details of each category are presented below.

[Prevention of Sexually Transmitted Infections] included two subcategories. Adolescents often learn about the mechanisms of pregnancy and menstruation. It has been shown that when instruction about sexual intercourse is also included there is a <deepened understanding of reproductive function>[7,8,13]. Furthermore, learning about the risks of HPV, HIV, and syphilis, along with gaining knowledge about the uncertainty of contraceptive methods and contraceptives leads to a <deepened understanding of contraceptive methods>[13-17], which indicates an increased awareness of the [Prevention of Sexually Transmitted Infections].

[Understanding of Fertility] included two subcategories. When adolescents have opportunities to think about pregnancy as a part of their lives, they perceive it as something related to their future, and it was shown that <consideration for others> emerges[2,7]. Furthermore, feeling the significance of the birth of a new life and the preciousness of life itself provides an opportunity to <consider one's own dignity>[3,9,14,18]. This was shown to lead to realizations of the need to have an [Understanding of Fertility].

[Awareness of Sexual Behaviors] included three subcategories. The widespread adoption of the internet has provided adolescents with knowledge of various harm risks such as defamation, bullying, fraud, the leaking of personal information, and dating violence. This knowledge has been shown to allow them to <develop an ethical awareness of internet-related harm>[4,8,19]. Additionally, individuals with experience of sexual behaviors gain an awareness that such behaviors are a familiar part of their personal lives, demonstrating an <interest in sexuality>[4,20,21]. Furthermore, when individuals have romantic partners or are exposed to others' thoughts about sexuality, they develop an awareness of sexuality as something familiar to their own circumstances, which leads to an <interest and concern for

others>[4,8,22,23,24] and this has been shown to be connected to having [Awareness of Sexual Behaviors].

[Acceptance of One's Own Sexuality] was composed of two subcategories. It was shown that by reevaluating how one communicates with others and one's own lifestyle (including attitudes towards sexual behaviors), adolescents began to sense femininity and masculinity, which leads to <understanding the differences between male and female sexuality>[7,8]. Furthermore, understanding one's own lifestyle and perceptions allows for <understanding of how to face one's own sexuality>[5,6,8,9,25], which leads to the realization of the necessity of valuing oneself and connects to [Acceptance of One's Own Sexuality].

[Methods to Interact with People of a Different Physical Sex] was composed of two subcategories. It was shown that adolescents improve their communication skills with others and <realize the necessity of understanding others>[5,9] as a method of coping with unwanted sexual behaviors. Furthermore, it was shown that <understanding the ability to cope with people and situations> [4,13,23,24] leads to proper sexual behaviors and ethical human conduct, which is important for [Methods to Interact with People of a Different Physical Sex].

#### Antecedent conditions

Three categories were extracted for antecedent conditions: [Education on Reproductive Functions and Sexual Behaviors], [Existence or Lack of Sexual Experiences], and [Others' Perceptions of Sexual Behaviors].

[Education on Reproductive Functions and Sexual Behaviors] was composed of three subcategories. Adolescent children learn in health and physical education classes at school, with it indicated that the content of such education differs by biological sex. Female students <acquire knowledge about female reproductive systems and the mechanisms of menstruation> [6,9,22,23,26,27] while male students often <acquire knowledge about male reproductive systems and contraceptives>[6,9,22,23,27]. Additionally, acquiring knowledge about specific methods of contraceptive use, where to consult if there is trouble, and on testing methods can lead to <positive perceptions of sexual behaviors>[4,5,11], but positive perceptions differed between genders, with it shown that males had more positive perceptions than females. This indicates that [Education on Reproductive Functions and Sexual Behaviors] was shown to have an influence on perceptions of sexual behaviors.

[Existence or Lack of Sexual Experiences] was composed of two subcategories. It was shown that adolescents who <have an interest in people of a different physical sex>[5,6,8,11], including being involved with a romantic partner, often have experienced sexual behaviors and consider sexual behaviors as something close to them. Alternately, asking about or actually experiencing sexual behaviors leads to the <formation of perceptions about sexual behavior experiences> [2,4,6,11,13,14,20], which may lead to the perception of sexual experiences as something familiar. However, it was shown that children ages ten and older but under the age of fifteen who are limited in their experience of and opportunity to talk about sexual experiences have difficulty understanding and are indifferent to sexual behaviors. This indicates that [Existence or Lack of Sexual Experiences] was shown to influence interest in people of a different physical sex and understanding of sexual behaviors.

[Others' Perceptions of Sexual Behaviors] was composed of two subcategories. Adolescents who received peer support counseling and learned communication skills with people of a different physical sex gained knowledge about internet-related risks and understanding of the psychology of people of a different physical sex, and, by <considering how to interact with people of a different physical sex>[4,5,7,11], their anxiety about romantic relationships decreased. It was also shown that being exposed to the perspectives of older peers and adults regarding sexual behavior became an opportunity to understand others, leading to a <deepening of an appropriate understanding of sexual behaviors>[5,11,19,22,23]. Thus, it was shown that having opportunities for learning about communication skills and understanding others' thoughts on sexual behaviors leads to comprehending [Others' Perceptions of Sexual Behaviors].

#### Consequences

Two categories were extracted for consequences: [Sexual Identity Formation] and [Self-Dignity].

[Sexual Identity Formation] was composed of two subcategories. It was shown that when adolescents reflect on their lifestyles, such as through understanding accurate information about sexual behaviors, they come to <perceive sex related matters personally>[5,8,28,30]. Realizing the necessity to value oneself, it was shown adolescents come to <perceive sex related matters as a part of one's future>[2,25,29,30]. Thus, it was shown that deepening one's understanding of sexual behaviors as a personal matter leads to a positive view of sexuality and contributes to [Sexual Identity Formation].

[Self-Dignity] was composed of two subcategories. It was shown that engaging in emotional learning about living and becoming aware of the preciousness of life would provide adolescents an opportunity to <consider how to live as a human being>[4,25,29]. In learning about one's own lifestyle and thought processes, adolescents come to perceive that there is no shame and that it is acceptable to be as they are, which is shown to lead to <significance in valuing oneself>[2,5,9,11,25]. In this way, it was shown that opportunities to consider self-understanding, self-acceptance, and self-worth lead to [Self-Dignity].

#### The "sex awareness" concepts that influence sexual behavior during adolescence

Research has shown that adolescent junior high school students (ages 12-15) have difficulty in forming perceptions of sexuality. There is a demonstrated need for balanced instruction on sexuality that includes its significance and does not have a one-sided focus on only the pleasure aspects of sexual behaviors[6,8]. It was also indicated that there is a need for step-by-step instruction which allows for the interpretation of "sexuality" as something nurtured and formed through human relationships, develops a positive image of sexuality, and enables understanding of diverse sexualities[5,9].

For adolescent high school students (ages 15-18), research has shown that they can enhance their self-esteem and develop more favorable attitudes toward sexuality through positive feedback in discussions about sexual behaviors. This demonstrates that interpersonal relationships and self-understanding contribute to deepened positive perceptions of sexuality[7,21,30]. Furthermore, the necessity of learning methods that enable students to feel accepted by their peers and acquire appropriate knowledge, such as through improved self-understanding and communication skills, as well as the

importance of establishing solid knowledge about "sexuality", were demonstrated[4,11,30,31].

## Discussion

### Components of the "sex awareness" concept influencing adolescent sexual behavior in Japan

Based on the findings of this study, we have illustrated the conceptual components of "sex awareness" that influence sexual behaviors in a figure showing attributes, antecedent conditions, and consequences (Figure 1). These findings are described below using established categories.

In terms of attributes exhibiting concept characteristics, adolescents learn about the types of sexually transmitted infections, infection routes, how to use contraceptives, and other preventative measures, through which it is believed they understand the need for the [Prevention of Sexually Transmitted Infections]. However, male and female adolescents in Japan may learn different content and, moreover, the curriculum guidelines of the Japanese Ministry of Education, Culture, Sports, Science and Technology do not include any specific instructional content on sexual behaviors or the process of pregnancy. Such content is not prohibited, but it is currently the case that instructional content and methods are determined by individual schools[10]. This leads to some young children not considering sexual behaviors to be something which can affect them personally, leading them to tend to be unaware of specific preventative measures.

Although opportunities to think about the meaning of pregnancy, including thinking about the sanctity of life, contributes to [Understanding of Fertility], it is currently believed that adolescents do not have a concrete image of their relationship with sexual behaviors. Children ages ten and older but under the age of fifteen had a limited [Awareness of Sexual Behaviors] and often did not think it was something that would happen to them personally. Furthermore, results suggest female adolescents older than fifteen have a more

negative view of sexual behaviors than male adolescents older than fifteen. Conversely, the opportunity to reflect on one's own sexuality through learning about how other people, such as family members, familiar adults, and people of other genders, view sexuality is thought to lead adolescents to an [Acceptance of One's Own Sexuality]. In order for adolescents to engage in correct sexual behaviors and act in an ethically human manner, communicating with peers their age or older, rather than guidance from teachers and experts, seems to improve their skills to determine and act on their own feelings related to coping with sexual behaviors. It was thought this would lead to a deepened understanding of the details of [Methods to Interact with People of a Different Physical Sex].

The antecedent condition of [Education on Reproductive Functions and Sexual Behaviors] begins once children start school. In adolescence, instruction on secondary sexual characteristics is implemented at educational institutions, with adolescents learning about the menstrual cycle, reproductive functions, and the types and infection routes of sexually transmitted infections. This type of education is thought to lead to knowledge acquired on the [Prevention of Sexually Transmitted Infections] and an [Understanding of Fertility]. In Japan, unwanted teenage pregnancies are a priority issue[1], but there is a trend to avoid providing adolescent children with instruction on specific sexual behaviors due to a sense of shame and ethical concerns. The younger the child, the fewer opportunities they have to think about their own sexuality, which is thought to have an influence on their [Awareness of Sexual Behaviors] and [Acceptance of One's Own Sexuality]. Moreover, a lack of actual sexual experiences or the opportunity to hear about sexual behaviors produces an indifference towards people of a different physical sex and sexual behaviors in conjunction with a vague anxiety, showing the [Existence or Lack of Sexual Experiences] affects awareness of positive sexual behaviors. Exposure to [Others' Perceptions of Sexual Behaviors] promotes understanding of sexual behaviors, allowing adolescents to realize the need to accurately understand sexual behaviors because such knowledge will be useful in their own futures, a realization which is thought to lead to an [Acceptance of One's Own

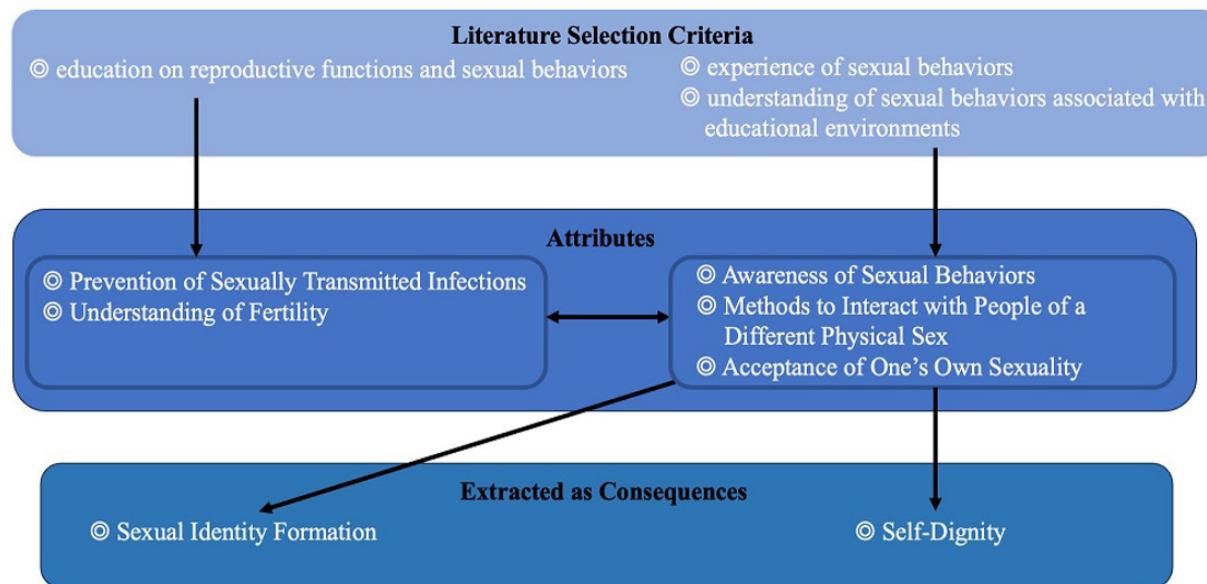


Figure 1: Components of the concept of "sexual awareness" that influence sexual behaviors during adolescence in Japan.

Sexuality] and understanding of [Methods to Interact with People of a Different Physical Sex].

Results for consequences showed that knowledge was gained in the [Prevention of Sexually Transmitted Infections]. A deepened [Understanding of Fertility], an increased [Awareness of Sexual Behaviors] through opportunities to talk about experiences of sexual behaviors and [Understanding Others' Thoughts on Sexual Behaviors], and an interest in one's own sexuality led to an [Acceptance of One's Own Sexuality]. It is thought that learning about appropriate [Methods to Interact with People of a Different Physical Sex] clarifies an adolescent's awareness of their own sexuality.

Once an adolescent's awareness of their own sexuality is clear there is [Sexual Identity Formation], which is considered to lead to the development of feelings of compassion for others. In addition, it is thought that understanding the self as it is makes the [Acceptance of One's Own Sexuality] possible. In turn, there is also an understanding of one's own [Methods to Interact with People of a Different Physical Sex] and discovery of [Self-Dignity], which leads to engaging in appropriate sexual behaviors that value the self. On reaching the consequences stage, it is thought adolescents possess a positive image of sexuality, understand sexuality's diversity, and have an established knowledge base on sexuality.

### Model case

Based on conceptual analysis results, the following model case will be used to further understanding of study concepts.

Student A (age: 14 years) had a menstrual cycle of 28 days. She studied reproductive function and menstruation in health education at school (1) but she did not regularly discuss menstruation, even with her mother (2). She expressed no interest in men and her romantic interest was directed towards an anime character (3). One day, a classmate with irregular periods asked for advice about visiting a hospital (4). Student A thought it was a menstrual cycle issue and told her classmate "I think you should talk with your mother and go to the hospital", but her classmate said nothing and continued to seem worried. Later, Student A had an opportunity to talk with an older peer about sexual behaviors in sex education class at school (5). This was Student A's first time to hear concrete information about relationships with people of a different physical sex and contraceptive methods (6). Then, Student A realized her ignorance and remembered being consulted about irregular periods by her classmate (7). There is a sense of shame when talking about sexual behaviors, and Student A realized she had been unable to provide emotional support to her classmate (8) who had a sexual experience and was worried. Although Student A at this time was not interested in people of a different physical sex, she began to consider sexual behaviors as a personal matter, coming to think that contraception is essential and, especially as a woman, it is important to think about pregnancy and childbirth in the future (9).

In this model case, the antecedent condition in underlined content (1) was [Education on Reproductive Functions and Sexual Behaviors]. Although Student A had studied reproductive functions, the [Existence or Lack of Sexual Experiences] in underlined content (2) shows no experience of sexual behaviors and underlined content (3) details a lack of interest in people of a different physical sex or sexual behaviors. There was no [Understanding Others' Thoughts on Sexual Behaviors] in underlined content (4), nor was such imagined. However, underlined content (5) shows that sex education at school

allowed for an increased [Awareness of Sexual Behaviors] and learning about [Methods to Interact with People of a Different Physical Sex]. This allowed Student A to realize she lacked an awareness of sexual behaviors, thus gaining an understanding of [Others' Perceptions of Sexual Behaviors] in underlined content (6) and feelings for others in underlined content (7) and (8). Opportunities to think about sexuality and learn created an opportunity for Student A to consider her own sexuality, allowing her to perceive it as something connected to her personally, leading to the [Sexual Identity Formation] in underlined content (9) and [Acceptance of One's Own Sexuality].

### The utility of the "sex awareness" concept in influencing adolescent sexual behavior in Japan

The results of this study suggest that an adolescent's perceptions of sexuality are influenced by attitudes towards sex education at home and school, the specificity of educational methods, the family's sexual behaviors and educational practices, the presence or absence of someone to speak with about knowledge of sexual behaviors, and the existence or lack of experience of sexual behaviors.

Puberty is a developmental process characterized by hormonal and physical changes that lead to reproductive capabilities; precocious puberty in females has been associated with an increased incidence of emotional and behavioral problems[31]. Adolescence is the life stage affected by both the biological changes of puberty and the emergence of new social challenges, a time when sex awareness becomes more important and there may be increased exposure to internal and external stressors[30]. Overseas studies have reported that sex awareness is low at younger ages, and it is important to provide health education on sexuality from the teens onward[32]. In Japan, adolescent junior high school students (ages 12-15) also exhibit a trend for limited awareness of sexuality, indicating an importance in increasing awareness of sexuality from a young age[6,8,31]. The lack of opportunities to ask questions about sexuality or seek related information has been cited as an issue[6,8,31,33]. In order to live a healthy life, it is necessary to have sexuality-related knowledge, attitudes, values, and skills[6,8,34], and we consider it essential for an individual to positively perceive their own body in order to live a human life. Therefore, it is important to have opportunities for self-reflection on sexual-behaviors, and we believe it necessary to increase interest in and curiosity regarding sexuality, thereby allowing sexuality to be viewed a positive manner. To enhance awareness of sexuality, we think adolescents need to be in a physically comfortable state (self-check), their family relationships are cultivated, they have spaces where they are able to freely consult on any subject, and they have formed trusting friendships where anything may be discussed.

Within the familial relationships of adolescent children, discussing adolescence-related physical, emotional, familial, and social changes is said to promote the healthy development of sexuality[33-36]. Maintaining open communication with adolescent children encourages them to think about the meaning of sexual behaviors and creates a comfortable environment, which we consider performs an indispensable role in family-provided education on changes to sexuality during adolescence. Parents and teachers who provide sex education often feel difficulties regarding the content and method of such education[38]. We believe it is necessary to examine support methods that allow parents and teachers providing sex education to have confidence in the sex education they provide, promoting the knowledge and behavior changes needed for children to be able to develop an interest in sexuality in stages: from early childhood,

to school age, and then into adolescence. When adolescent children experience an unexpected pregnancy and are unable to consult anyone, carrying that burden alone can affect their life moving forward [38,40,41] and we believe this may also lead to the newborn child's early postnatal death from abuse. Sex education content often varies by gender, but we consider it indispensable to have comprehensive sex education that includes the creation of an environment where young females can make contraceptive choices and where such elements as human rights, diversity, gender, and equality are all part of life. Self-definition of one's sexual identify is influenced by individual differences in sex, gender, sexual roles, and sexual orientation[42]. Research both domestically and internationally shows that females tend to have a more cautious mindset than men regarding sexual behaviors. We believe it absolutely necessary for a person to determine which knowledge is correct and which actions are appropriate, to increase their awareness of their own sexual behaviors, and to possess the knowledge which makes it possible to make appropriate decisions and to improve communication skills. In order to achieve this, it is important to foster interest in sexuality and connect this interest to appropriate sexual behaviors, both of which can be realized by providing consultation venues, specific coping methods that can be practically utilized, and educational opportunities allowing for the understanding of others and the self.

### Future challenges

In Japan, there is a wide variety of information available at home and in daily life due to the widespread adoption of information systems such as the internet and AI. When parents view sexual issues as taboo, children develop a negative impression of sexuality as something embarrassing or not to be asked about. This creates a relationship where children cannot seek or find it difficult to seek advice from their parent(s), which may be the trigger that causes them to obtain incorrect information from friends or the internet. Parent-child relationships where children can talk to their parent(s) about anything from early childhood and where sexuality may be discussed freely are said to result in positive perceptions of sexuality. This leads us to believe that sex education should not be provided only at educational institutions but also as a necessary part of the parent-child relationship, in an environment that allows for discussion of sexuality on a daily basis. Results suggest a need for sex education which understands the diversification of sexuality and corresponds to modern social systems, and which incorporates correct knowledge of reproduction functions, pregnancy, and sexual behaviors while at the same time allows for a self-awareness of these issues.

### Conclusion

This study conducted a concept analysis based on Rodgers' evolutionary concept analysis method, examining components of the "sex awareness" concept which influence adolescent sexual behavior. [Education on Reproductive Functions and Sexual Behaviors] was involved in two extracted categories: [Prevention of Sexually Transmitted Infections] and [Understanding of Fertility]. [Existence or Lack of Sexual Experience], [Understanding Others' Thoughts of Sexual Behaviors], [Prevention of Sexually Transmitted Infections], and [Understanding of Fertility] were involved in three extracted categories: [Awareness of Sexual Behaviors], [Acceptance of One's Own Sexuality], and [Methods to Interact with People of a Different Physical Sex]. Results suggested that the specificity of educational methods, family sexual behaviors and family-provided sex education, the presence or absence of someone able to be consulted about

information on sexual behaviors, and the existence or lack of sexual experiences are influences on sex awareness.

Finally, results also suggested that developing an understanding of others and oneself with regards to sexual behaviors leads to an individual gaining interest in their own sexuality and positively accepting their own sexuality and sexual behaviors, which is connected to the consequent stages of [Sexual Identity Formation] and [Self-Dignity].

### Conflicts of Interest

The authors declared no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

### Authors' contributions

This study was conceptualized and designed by Rie Shinohara, who drafted the manuscript and was responsible for all stages of the research process, including data collection, analysis, and interpretation. Sayaka Kuwahara, Haruna Murakoshi, and Sayaka Takeda analyzed and interpreted collected data, commented on manuscript drafts, and contributed advice throughout the research process. All study authors have read and approved the final manuscript.

### References

1. Ministry of Health, Labour and Welfare (2015) About Sukoyaka Oyako 21 (Second Term).
2. Ueno Y, Takase M, and Kobayashi S (2018) The role of midwives in sex education at educational institutions: A study of high school students' "interest" in sex education and related factors. *Japanese Journal of Maternal Health* 59: 501–510.
3. Nishioka E (2018) Research trends in adolescent sex education and fertility awareness: Possibilities for life planning based on sexual and reproductive health education. *Journal of Oral Hygiene* 73: 185–199.
4. Okabe K, Saga T, Omori T, Kubo K, Shishido M, et al. (2009) Current situation and issues in high school sex education based on university students' perceptions (Report 1). *Japanese Journal of Maternal Health* 50: 343–351.
5. Tsuchiya A, Shinoki E, Matsushima K, Yokoi H, Abo J (2008) Report on adolescent peer counseling for junior high school students. *Bulletin of Hokkaido University of Health Sciences, Faculty of Nursing and Welfare* 15: 59–64.
6. Ueda K (2014) Analysis of junior high school students' "image of sexuality": Toward education on life and sexuality. *Journal of Showa University College of Medical Sciences* 12: 54–62.
7. Gunji N (2016) Gender differences in perception of STI prevention classes in high schools. *Adolescentology* 34: 165–176.
8. Hara K, Nagamatsu M, Nakagawa A, and Saito H (2012) Relationship between junior high school students' conversations with parents and teachers and their knowledge, awareness, and behaviors regarding romantic relationships and STIs. *Adolescentology* 30: 223–234.
9. Tanabe A, Tsuruta K (2019) Self-acceptance in junior high school students who participated in an adolescent peer counseling course. *Adolescentology* 37: 221–229.
10. Ministry of Education, Culture, Sports, Science and Technology (2015) Regarding sex education in schools.
11. Maeda H (2008) Evaluation of sex education through peer counseling by high school and university students. *Bulletin of Kumamoto University, School of Health Sciences* 4: 97–105.
12. Rodgers BL, Knafl KA (2000) Concept development in nursing: Foundation, techniques, and applications (2nd ed), Philadelphia: Saunders, pp. 77–102.

13. Nagamatsu M, Hara K, Nakagawa A, and Nakano R (2012) Effects of a program to prevent risks associated with sexual behavior: Combining STI prevention education and education to foster mutual respect. *Adolescentology* 30: 365–376.
14. Suzuki N, Takehana Y, and Takahashi M (2009) Life skills education to consider contraceptive behavior among adolescent girls. *Japanese Journal of Maternal Health* 49: 602–611.
15. Nagamatsu M, Ozaki I, Taketomi E, and Sato T (2007) Literature review on programs about HIV and sexuality for parents of adolescents. *The Journal of AIDS Research* 9: 158–166.
16. Furuta K, Yamada K, and Morioka I (2016) Relationship between explanation from guardians and preventive behaviors against uterine cervical cancer at the time of inoculation of HPV vaccine: A case involving junior high school girls. *Japanese Journal of Hygiene* 71: 69–75.
17. Yasuhi Y and Miyahara H (2013) Clinic-based sex education for adolescent girls using their visits for the purpose of HPV vaccination. *Journal of the Japanese Society of Sexology* 31: 89–95.
18. Ohira N, Fujita K, Honda M, Mori S, and Nakagaki A (2020) Current situation of knowledge about fertility among university students in the stage of creating their life plans. *Japanese Journal of Adolescentology* 38: 299–310.
19. Nagamatsu M and Hara K (2015) Sexual intercourse experience in early adolescence and how it relates to dating domestic violence as an influential factor. *Japanese Journal of Adolescentology* 33: 241–249.
20. Maeda H, Takamura H, Watanabe M, and Oishi T (2007) Evaluation of a new strategy for youth-to-youth sex education (1): Effects of peer counseling on high school students. *The South Kyusyu journal of nursing* 5: 11–18.
21. Nonoyama M, Nagamitsu S, and Hattori R (2018) Recognition of high school students' interpersonal relationships and concerns related to sexual issues. *Journal of the Japanese Society for Sexually Transmitted Infections* 29: 43–52.
22. Suzuki Y, Mori H, Ueno N, Suganuma N, Kiyakawa K, et al. (2022) Awareness and behavior of contraception; Sex education knowledge among university nursing students. *Japanese Journal of Maternal Health* 63: 483–491.
23. Takehara K, Misago C, and Honda Y (2006) Sexual behavior and sex education needs among high school students. *Japanese Journal of Health and Human Ecology* 72: 215–224.
24. Nagamatsu M, Sato T, Nakagawa A, and Saito H (2012) Family, school, and social factors associated with sexual experience and attitudes to sexual intercourse among Japanese adolescents aged 14 to 15 years. *Japanese Journal of Adolescentology* 30: 297–304.
25. Gunji N (2015) Creating Learning Environment for Sex Education Aimed at Expanding One's Self-Relevance. *Adolescentology* 33: 410–420.
26. Ikeda T, Suzuki Y, and Maeda T (2013) Relationships between menstrual symptoms, lifestyle habit, and cold sensitivity in high school students. *Japanese Journal of Maternal Health* 53: 487–496.
27. Saito W, Shibaki M, and Sasajima Y (2009) A study on the awareness of sexually transmitted diseases and sex education among university students. *Journal of Hokkaido University of Education (Education)* 60: 449–464.
28. Ueda K (2014) The influence that "sexual health psychology" of junior high student gives to "school life skill". *Showa University Journal of Health Sciences* 12: 90–99.
29. Watanabe J (2009) Research on intervention by peer supporters that urges changing behavior of youth. *Japanese Journal of Adolescentology* 27: 115–126.
30. Tomiyama M (2015) The study of the literature about hereafter coping with the sex education to high school students. *Bulletin of Nursing Research* 3: 1–10.
31. Hiraoka T (2010) Comparative study on the changes in sexual awareness of high school students over the six-year period. *Japanese Journal of Adolescentology* 28: 239–248.
32. Yao J, Ziapour A, Abbas J, Toraji R, NeJhaddadgar N (2022) Assessing puberty-related health needs among 10-15-year-old boys: A cross-sectional study approach. *Archives de pediatrie: organe officiel de la Societe francaise de pediatrie* 29: 307–311.
33. Nagamatsu M, Sato T, Nakagawa A, and Saito H (2012) Family, school, and social factors associated with sexual experience and attitudes to sexual intercourse among Japanese adolescents aged 14 to 15 years. *Adolescentology* 30: 297–304.
34. Singh DR, Shrestha S, Karki K, Sunuwar DR, Khadka DB, Maharjan D, Sah LK, Simkhada B, and Sah RK (2023) Parental knowledge and communication with their adolescent on sexual and reproductive health issues in Nepal. *PLoS one* 18: e0289116.
35. Vongsavanh V, Lan VTH, and Sychareun V (2020) Sexual and reproductive health communication between parents and high school adolescents in Vientiane Prefecture, Lao PDR. *Global health action* 13: 1785145.
36. Naghizadeh S and Mirghafourvand M (2022) Knowledge and attitudes of adolescent girls and their mothers about early pregnancy: a cross-sectional study. *BMC pregnancy and childbirth* 22: 205.
37. Tsuda S and Hidaka Y (2017) A study of teacher's cognition of sex education for junior high school students: Relationship between teacher's gender, learning experience, and sense of difficulty. *Japanese Journal of Adolescentology* 35: 305–320.
38. Morimoto M, Maehara H, and Sato M (2019) Trends of research on home sex education by Japanese parents: Evidence level of nursing related literature. *Journal of Japan Academy of Nursing Research* 42: 231–240.
39. Wada M and Ito T (2022) A Study of the Experiences of Sexual Minorities in Sex Education at School. *Adolescentology* 40: 232–243.
40. Asai H (2023) Sex education for all children: Integrating comprehensive sexuality education, the global standard, into school education. *Japanese Journal of Adolescentology* 41: 326–331.
41. Nagamune K and Matsumura K (2023) Literature review concerning "Sex Education for Adolescents" involving midwives. *Bulletin of Kansai University of Nursing and Health Sciences* 15: 14–25.
42. Leung H, Shek DTL, Leung E, and Shek EYW (2019) Development of Contextually-relevant Sexuality Education: Lessons from a Comprehensive Review of Adolescent Sexuality Education Across Cultures. *International journal of environmental research and public health* 16: 621.