

The Opinions of Midwives of the Future on the Effects of Climate Change on Women's Health: A Qualitative Study

Geleceğin Ebelerinin İklim Değişikliğinin Kadın Sağlığına Etkisine İlişkin Görüşleri: Nitel Bir Çalışma

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ABSTRACT Objective: Climate change adversely affects the air we breathe, the water we drink, the food we consume, and the conditions of shelter, threatening global health. Health professionals are increasingly concerned about the health impacts of climate change and the challenges they face in providing health services. The study aims to evaluate the knowledge and opinions of future midwives about the effects of climate change, which poses a global health threat, on women's health. The study was conducted qualitatively with last-year midwifery students of a state university. **Material and Methods:** The number of samples was determined by criterion sampling method, one of the purposeful sampling types, and the saturation point was reached with 18 students. Data were collected through in-depth interviews using a questionnaire prepared by the researchers. The content analysis method was used to analyze the data. **Results:** The data obtained were collected under three main themes: "students' awareness of climate change," "the effects of climate change on women's health," and "the responsibilities of midwives in protecting women's health against climate change." In the study, it was observed that while students had knowledge and awareness about the effects of climate change on women's health, some did not take measures against climate change. **Conclusion:** Midwives have important responsibilities to protect women's health from the negative effects of climate change. It is recommended to increase the knowledge and awareness of student midwives about climate change, which threatens global and human health, by integrating the subject into the undergraduate education curriculum.

Keywords: Midwifery; student; women health; climate change

ÖZET Amaç: İklim değişikliği soluduğumuz havayı, içtiğimiz suyu, tükettiğimiz yiyecekleri ve barınma koşullarını olumsuz etkileyerek küresel sağlığı tehdit etmektedir. Sağlık profesyonelleri, iklim değişikliğinin sağlığa etkileri ve iklim değişikliği nedeniyle sağlık hizmetlerini sağlamada karşılaştıkları zorluklar konusunda giderek daha fazla endişe duymaktadır. Çalışma, küresel bir sağlık tehdidi oluşturan iklim değişikliğinin kadın sağlığı üzerindeki etkileri konusunda geleceğin ebelerinin bilgi ve görüşlerini değerlendirmeyi amaçlamaktadır. Çalışma, bir devlet üniversitesinin son sınıf ebelik öğrencileri ile niteliksel olarak yürütülmüştür. **Gereç ve Yöntemler:** Örneklem sayısı amaçlı örnekleme türlerinden ölçüt örnekleme yöntemi ile belirlenmiş ve 18 öğrenci ile doyma noktasına ulaşılmıştır. Veriler, araştırmacılar tarafından hazırlanan bir anket kullanılarak derinlemesine görüşmeler yoluyla toplanmıştır. Verilerin analizinde içerik analizi yöntemi kullanılmıştır. **Bulgular:** Elde edilen veriler "öğrencilerin iklim değişikliğine karşı farkındalığı", "iklim değişikliğinin kadın sağlığına etkileri" ve "ebelerin kadın sağlığını iklim değişikliğine karşı korumadaki sorumlulukları" olmak üzere 3 ana tema altında toplanmıştır. Çalışmada, bazı öğrenciler iklim değişikliğinin kadın sağlığı üzerindeki etkileri hakkında bilgi ve farkındalığa sahip olduğu, bazılarının ise iklim değişikliğine karşı önlem almadığı gözlemlenmiştir. **Sonuç:** Ebelerin, kadın sağlığını iklim değişikliğinin olumsuz etkilerinden korumak için önemli sorumlulukları vardır. İklim değişikliği konusunun lisans eğitim müfredatına entegre edilmesi öğrenci ebelerin küresel ve insan sağlığını tehdit eden iklim değişikliği konusundaki bilgi ve farkındalıklarının artırılması önerilmektedir.

Anahtar Kelimeler: Ebelik; öğrenci; kadın sağlığı; iklim değişikliği

Climate change and the global temperature increase pave the way for rainfall, fires, storms, and vector-borne diseases. Climate change threatens

global health by negatively affecting every aspect of our lives, from the water we drink, the air we breathe, the food we consume, and housing conditions. Ac-

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According to the United Nations Framework Convention on Climate Change, climate change is defined as “change in climate as a result of direct or indirect human activities and deterioration of the atmosphere composition, in addition to the natural change observed in a comparable time”.¹ Climate change can also be defined as slower changes in average temperature, sea level and precipitation patterns in the coming decades. This global change is a situation that has been felt more and more over the years and has the potential to cause significant consequences for human health. Considering today’s conditions, it is seen that human health is increasingly affected by this situation. While natural disasters caused by climate change cause forced migrations, the increasing spread of temperature, water and vector-borne diseases and malnutrition can reach a level that threatens physical health.² Healthcare providers are increasingly concerned about the health impacts of climate change and the challenges they face in delivering healthcare services. The potential impacts of a changing climate on health have been proven by research. Climate change and disasters are reported to cause many problems, especially for women who are among disadvantaged groups. Water-borne diseases, malnutrition, anxiety, mental disorders and depression are important impacts on women.³ Climate change is reported to have a negative impact especially on developing countries. Obstetricians and gynecologists predict that these factors may have serious and long-lasting effects on women’s health, including indirect effects that may affect future generations.⁴ Research on the reproductive health consequences of climate change is limited. Existing results suggest that high temperatures associated with climate change may have adverse effects on the fertility of women and men. Reported adverse perinatal outcomes associated with exposure to extreme temperatures include abortion, stillbirth, preterm birth, fetal growth retardation, low birth weight, gestational diabetes, placental abruption, premature rupture of membranes, pre-eclampsia, congenital anomalies and decreasing prenatal and postnatal care and immunization rates in some regions.⁵⁻⁷

The results of the study have been reached that midwives working in the clinic against such negative effects of climate change encourage mothers to

breastfeed and direct them to environmentally friendly nutrition, provide counseling to increase women’s awareness of issues such as adequate and balanced nutrition, shopping and travel in the regulation of fertility.^{8,9} The impact of climate change on women’s and community health is becoming increasingly important by national and international organizations and midwives working in the field. The International Confederation of Midwives has determined this year’s theme as “Midwives: A Vital Climate Solution”. In the theme, it was emphasized that midwives provide safe and environmentally sustainable health services, and midwives are the first responders in disasters such as natural disasters caused by climate change.¹⁰

Protecting and promoting public health is important to improve global health. In particular, protecting women’s health is of particular importance to protect the health of present and future generations. Midwives are critical health workers at the point of sustainable health, where midwives provide care in the light of current developments in constantly developing and advancing care services, improve their knowledge and experience in order to prevent and manage global crises such as climate change. Midwives have important duties to protect and promote women’s health. In this direction, our study aimed to evaluate the knowledge and opinions of future midwives about the effects of climate change, which poses a global health threat, on women’s health.

Highlights

What is current knowledge?

■ It is known that extreme temperatures, water, and food insecurity due to climate change, a global health threat, have serious effects on women’s health, such as abortion, premature birth, stillbirth, and infertility.

What is new here?

■ It is important to increase the knowledge and awareness of midwives, who have important roles in protecting and improving public health, about climate change.

■ It is recommended that the issue of climate change should be included in the education curricula

of future midwives in order to improve the global health level.

MATERIAL AND METHODS

RESEARCH DESIGN

The current research is a case study, one of the qualitative research designs, to examine midwifery students' knowledge and views on the effects of climate change on women's health. Case studies are research conducted using one or more than one person or event to understand better a particular concept, event, phenomenon, and problem. Case studies focus on cause-effect relationships through a situation, event, group, or even a person.¹¹

ETHICS COMMITTEE STATEMENT

Before the data collection process started, ethical approval permission was obtained from the Non-Interventional Clinical Research Ethics Committee of Kütahya University of Health Science (date: April 5, 2023; no: 2023/04-11). Before the interview, the students were informed about the purpose of the study and how it would be conducted, and their consent was obtained. While writing the data, the names of the students were not used and each student was given a number in order (S1, S2, ..., S18). The study was conducted in alignment with the principles of the Declaration of Helsinki.

STUDY POPULATION AND SAMPLE

The population of the study consisted of 78 students in the fourth year of the midwifery department of the faculty of health sciences of a university. Eighteen students were included in the study with the criterion-based sampling technique, one of the purposeful sampling types.¹² The literature states that the calculation of sample size in qualitative research is based on the saturation point (repetition) of the answers given to the research questions and that generally 5-25 participants are sufficient.¹³ The inclusion criteria of the research; successfully completing the women's health and diseases course, being open to cooperation and communication, agreeing to participate in the research. Because they had to be able to reflect on how climate change could affect women's health.

PROCESSES

Data Collection Tool

In the current study, the researchers prepared a semi-structured interview form in light of the literature review on the subject.^{5,14,15} In preparing the semi-structured interview form, attention was paid to principles such as easy understanding of the questions, not being multidimensional, and not directing the participant. The interview form included a total of 10 questions inquiring about some sociodemographic characteristics of the students (age, place of residence, income status), the causes and effects of climate change, how it will affect women's health and what should be done against the effects of climate change. In order to ensure the content validity of the semi-structured interview form, expert opinions were obtained from 2 faculty members conducting qualitative research in the field of midwifery and women's health and diseases, and a suggested edit has been made to improve the clarity of a question. In addition, a pre-application was made with two students to evaluate the comprehensibility and applicability of the interview form. Students who were pre-interviewed were not included in the study.

Data Collection Process

As a result of the earthquake in our country, online education caused limitations in the data collection phase of the current study and online method was used in the research. The research data were collected between April-May 2023 by the first researcher, who has qualitative researches experience, through in-depth individual interview method, voice recording on Google Meet (Google & Alphabet, ABD) and note-taking technique. Before the data collection, two students were pre-applied with the same method on Google Meet, and the questions were not changed.

Before starting the interview, the students were informed about the purpose of the current research, that the interview would be audio-recorded if they consented, and that notes would be taken if they did not consent, information about the purpose for which the recordings used in the interview would be used was explained verbally and verbal consent was obtained from the participants. In order to verify the ac-

curacy of the information provided, the statements of the participants were repeated and summarized to check whether they were understood correctly. Each interview lasted approximately 15-25 minutes.

DATA ANALYSIS

In the analysis of the data obtained, the technique of deductive content analysis was used. Content analysis is one of the analysis methods of qualitative research design. Through content analysis, it is aimed to define the data and reveal the facts hidden in the data.¹⁶ In analyzing the data in the current study, the following processes were followed respectively. First of all, in-depth interviews were conducted with the students. The voice recordings of the students were listened to repeatedly and transcribed in the Microsoft Word (Microsoft Office Professional Plus 2010, ABD) program. In the analysis of the data obtained, the voice recordings of the students were turned into a text word by word, a raw data draft was created in Microsoft Word environment, and the descriptive data obtained were reported numerically. Responses with similar characteristics were coded next to the data sets, and then these codes formed the theme. After the theme, the findings were interpreted and reported. In reporting, both direct quotations and codes were written within the framework of codes and themes. In addition, direct quotations (without changing the students' expressions) were included in the text, and a limited number of opinions on the subject could be included considering the page limitation.

VALIDITY AND RELIABILITY OF THE STUDY

In the literature, it is reported that validity (accuracy of scientific findings) and reliability (reproducibility of findings) issues are very important in qualitative research, especially in case studies, and should be handled carefully.¹⁷ Therefore, in the process of this study, reliability, construct validity, internal and external validity were taken into consideration in order to increase the validity and reliability of the research, and what was done in each area is presented below.

In order to improve the construct validity of the research, while preparing the data collection tool, the opinions of experts experienced in qualitative research were taken and rearrangements were made in

line with the suggestions made. In addition, a pre-application was conducted to determine whether the data collection tool measured the characteristics to be measured.

- In the current study, internal validity was ensured by using the method of defining the structure (clearly stating how the themes and sub-themes were reached) in the analysis of the data.

- In order to improve external validity, the research design, where and how the data were obtained and the analysis process were presented in detail.

- In order to increase the internal reliability of the research, the initial codes were created by the first researcher and checked by the second researcher. The agreement between the first and second researcher in determining the initial codes was examined with two qualitative questions and the agreement rate was found to be 87%.

- To increase the external reliability of the study, the Standards for Reporting Qualitative Research-A Synthesis of Recommendations was followed in obtaining the data and preparing the research report.¹⁸

RESULTS

The students who agreed to participate in the study were between the ages of 21 and 23, with a mean age of 22.16 ± 0.78 years. A total of 18 students taking the women's health and diseases course were interviewed. In the current research, 3 categories and 15 subcategories were elicited. These categories are (1) climate change awareness (2) effects of climate change on women's health (3) responsibilities of midwives (Figure 1).

CATEGORY 1: CLIMATE CHANGE AWARENESS

Subcategory 1: Accept the Existence of Climate Change

In order to combat climate change, it is first necessary to believe in the problem. The majority of the students in our study believe in climate change. They especially stated that the extreme increase in air temperatures and the change in seasonal characteristics that they witnessed with climate change led to these beliefs.

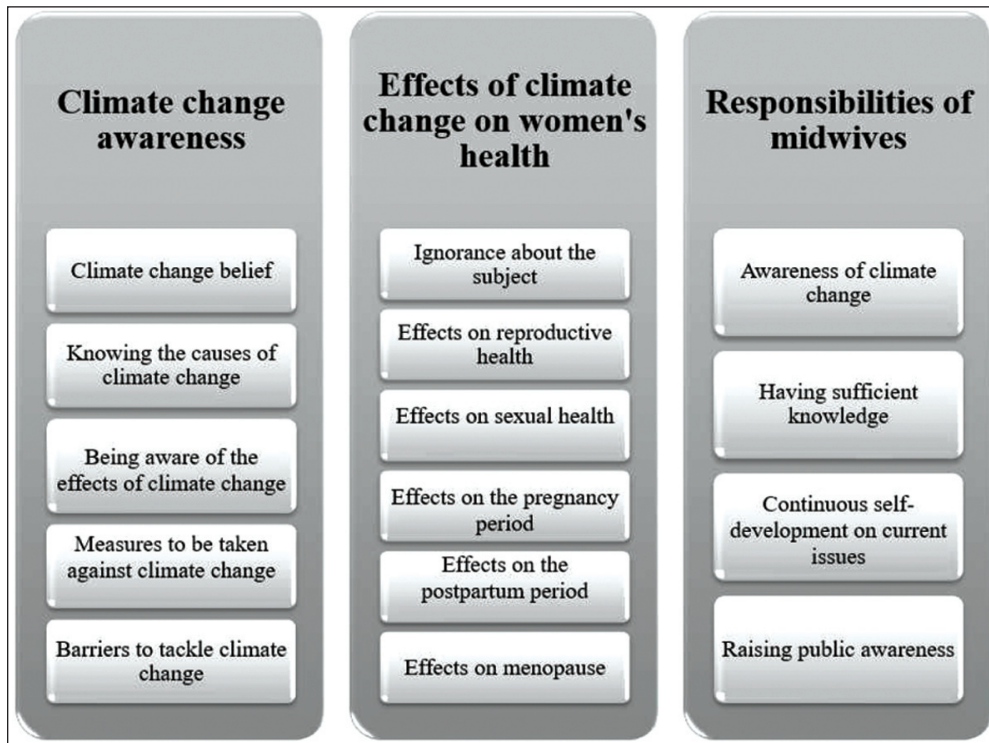


FIGURE 1: Categories and sub-categories.

“Temperatures have risen sharply and the climate has undergone unexpected changes.” (S3)

Subcategory 2: Knowing the Causes of Climate Change

The vast majority of students cited human activities as the cause of climate change. It was determined that people’s unconscious consumption without thinking about the consequences, damaging nature and industrialization are the main causes of climate change.

“There are many reasons and the biggest reason is that we are human beings. We do a lot of so-called innovation and fast consumption without thinking about the consequences. We consume fast and we are both weak and unconscious in production.” (S4)

Subcategory 3: Causes of Climate Change

“There are many reasons, and the biggest reason is us humans. We do Many so-called innovations without thinking about the consequences and the work we do for fast consumption. The fact is that we consume fast, and yet we are both weak and unconscious in production.” (S4)

Subcategory 4: Being Aware of the Effects of Climate Change

Students stated that as a result of climate change, problems such as drought, food shortages, health problems, risk of infectious diseases, and increased violence could be seen. It was found that students’ answers were concentrated on drought and food shortage.

“The biggest impact of climate change is drought. Without water, there is no life. Hygiene cannot be ensured and many diseases occur.” (S17)

Subcategory 5: Measures to be Taken Against Climate Change

Students stated that people have a great responsibility to reduce the impact of climate change. Reducing environmental pollution, giving importance to recycling, increasing green areas, limiting the rate of energy consumption, using renewable energy sources, and creating awareness in the society are among the frequently given answers.

"I think that sharing on social media, which is the best communication network in our time, is important. I try to inform people about this issue as much as I can." (S17)

Subcategory 6: Barriers to Tackle Climate Change

Almost all of the students stated that they had no idea about the obstacles to tackling climate change. However, some students stated that the biggest obstacles are lack of education and lack of strict rules of the state.

"I think the government should set strict rules on this issue and punish citizens who do not comply. The climate problem continues to increase because of insufficient supervision and investments." (S9)

CATEGORY 2: IMPACTS OF CLIMATE CHANGE ON WOMEN'S HEALTH

Subcategory 1: Ignorance About The Subject

Some students stated that they had no idea how climate change could affect women's health. They stated that they did not receive any information about this issue in school lessons.

".....We did not have a topic about the effect of climate change. So I have no knowledge." (S2)

Subcategory 2: Effects on Reproductive Health

Some of the students stated that women may experience changes in the reproductive cycle, infertility problems and infectious diseases as a result of climate change.

"... air pollution can lead to changes in the reproductive cycle, infertility and infectious diseases." (T16)

Subcategory 3: Effects on Sexual Health

Some of the students stated that climate change may affect sexual health. It was stated that the consequences of climate change may cause stress in women and problems such as sexual reluctance and inability to orgasm may be seen.

"... It may cause depression, stress and lack of sexual life." (S3)

Subcategory 4: Effects on the Pregnancy Period

The majority of students think that climate change will have a great impact on the pregnancy period as

it will affect both maternal and fetal health. Students' responses focused on stress, malnutrition, fetal growth retardation, low birth weight and preterm labor.

"Preterm labor can cause psychological depression in pregnant women. Pregnant women may experience preterm labor, baby anomalies, extra nausea and dizziness etc." (S9)

Subcategory 5: Effects on the Postpartum Period

Most of the students stated that food shortage and drought as a result of climate change would affect the postpartum period. It was stated that breast milk production would be affected as a result of stress and malnutrition of the mother.

"Difficulty in the psychological process of women ... she cannot give enough milk to her baby because she cannot feed enough due to scarcity..." (S18)

Subcategory 6: Effects on Menopause

Some of the students stated that climate change may exacerbate the problems experienced by women during menopause. In addition, early menopause and decreased quality of life in women are among the answers given.

".. it may cause more discomfort in people with hot flashes due to increasing temperatures..." (S1)

CATEGORY 3: RESPONSIBILITIES OF MIDWIVES

Subcategory 1: Awareness of Climate Change

The students stated that midwives, who have important roles in women's health care and counseling, have great responsibilities in combating the effects of climate change on women. It was determined that in order to be beneficial to women and society, they should first have knowledge and awareness about the issue.

"Midwives should first have enough knowledge about this issue and raise awareness of women." (S2)

Subcategory 2: Continuous Self-Development on Current Issues

Some of the students stated that midwives and midwifery students should constantly update their knowl-

edge and be aware of scientific developments in order to help women and society in every subject.

“... as midwives and even as students, I think we should discover new methods to solve problems and diseases. We should follow science and technology and try to reach every new information...” (S2)

Subcategory 3: Raising Public Awareness

Most of the students expressed that health professionals, especially midwives, have a great responsibility to raise awareness among women and their families about the impacts of climate change and how to combat it. It was determined that midwives should organize trainings/seminars, provide counseling, distribute brochures, and organize interesting activities for the society, especially for women, on climate change.

“Meetings can be organized to inform women, collective activities can be organized to draw attention to this issue.” (S11)

DISCUSSION

Climate change may have negative consequences at a level that will affect global health. At the point of improving the global health level, it is important to determine health professionals' awareness of climate change, the effects of climate change on health, and their roles in preventing climate change. In particular, it is necessary to evaluate the knowledge and opinions of midwives, who have responsibilities to protect and improve women's health. Our study aimed to examine future midwives' knowledge and opinions on the effects of climate change, which poses a global health threat, on women's health. As a result of the study, 3 themes were identified, and the discussion was framed around these 3 themes.

DISCUSSION OF THE FINDINGS RELATED TO STUDENTS' AWARENESS OF CLIMATE CHANGE

When the studies on global climate change are examined, it is concluded that climate change is generally defined with expressions such as change of seasons, temperature increase, and drought and that it is caused by human activities, factory and industrial wastes, population growth, and natural causes and

will cause situations such as extreme temperature, drought, and food pollution.¹⁹⁻²¹ Students' beliefs about climate change and their views on the causes and effects of climate change are in line with the literature. Although there are results in the literature that awareness about climate change varies according to sociodemographic characteristics, it is reported that no clear conclusion can be reached about which parameter affects which aspect.^{19,21,22}

Raising awareness among people is among the precautions that can be taken to prevent climate change, reducing energy consumption, afforestation, and use of public transportation, and there are study results indicating that municipalities or governments have great duties for such measures.^{21,23,24} The answers of most of the students in our study were found to be in parallel with the literature. However, it is seen that most of the students have no idea about what the obstacles are in combating climate change. When the literature is examined, it is seen that student and field nurses have similar level of knowledge about climate change prevention in some studies.^{25,26} In a current study, it was reported that midwives working in the clinic have knowledge about the causes, consequences and effects of climate change on maternal and child health.⁹ In this regard, it is thought that training should be organized to increase students' knowledge levels. In addition, considering the effects of climate change on human health and especially women's health, it was concluded that future midwives need to be more aware of this issue.

DISCUSSION OF FINDINGS ON THE EFFECTS OF CLIMATE CHANGE ON WOMEN'S HEALTH

When the previous studies in the literature on the effects of climate change on women's health are examined, it is found that climate change and global warming increase the risks of abortion, preeclampsia, anemia, placental abruption, premature birth, stillbirth, infertility, inadequate care, and decreased quality of life etc.⁵⁻⁷ Some of the students stated that they had no idea about the relationship between climate change, women and health. However, most students' answers were similar to findings in the literature. Midwives working in the field also offered

opinions that climate change negatively affects women's health.⁹ Climate change is a serious event that can significantly affect women's health. It is thought that increasing the knowledge and awareness of midwives, who have important duties in the field of women's health, about the effects of climate change on women's health will be a good premise for taking measures against this negative situation.

DISCUSSION OF THE FINDINGS ON MIDWIVES' RESPONSIBILITIES IN PROTECTING WOMEN'S HEALTH AGAINST CLIMATE CHANGE

The students who participated in the study stated that midwives have a great responsibility in protecting women's health against climate change. The students stated that first of all, midwives should raise awareness about the issue, raise awareness of the society, and provide care and counseling to women. Nsen-giyumva et al. reported that very few nurses know their roles and responsibilities in climate change.²⁵ If we want to respond to the negative health impacts of climate change, there is a need to raise awareness about the roles and responsibilities of health professionals. The studies in the literature include actions that can be taken to eliminate the factors causing climate change and reduce its effects on women's health.^{8,27} Richardson et al. found that the active use of digital learning processes in midwifery education can prevent climate change by reducing the use of natural resources.²⁸ In another study, it was reported that midwives should encourage women to use environmentally friendly breastfeeding instead of formula to prevent the negative effects of climate change on women's health and to struggle against climate change.⁸ As a matter of fact, it is also observed that there are midwives who report that they include such practices in their care services in order to combat climate change.⁹

It is reported that health professionals have great duties to manage the negative effects of climate change on health, especially those working in the field of public health play a key role in raising public awareness and protecting public health.²⁷ In this direction, it has been stated that initiatives such as developing health policies, investing in technology, ex-

panding the training of health professionals on climate change and its effects on health, and determining the relationship of climate change with disease burden and health care through public health practices and regional studies should be carried out.²³ Studies in the literature and the results of our study indicate that students' knowledge and opinions on protecting women's health against climate change are limited, and they need more information and awareness-raising in this sense.

LIMITATIONS OF THE STUDY

A limitation of the research is that the data collection period of the research was collected online due to online education being conducted as a result of the earthquake in our country. The current research is limited to the data obtained from the students who agreed to participate in the study on the interview dates.

CONCLUSION

In this study, 3 main categories were identified. These categories are (1) climate change awareness, (2) effects of climate change on women's health and (3) responsibilities of midwives. When the literature is examined, it is seen that similar studies are limited. Taking the opinions of the midwives of the future about the subject offers a different perspective to the literature. When the research findings are interpreted, it is thought that very important and useful results have been obtained. While some of the students stated that they had no knowledge about the effects of climate change on women's health, most of the students stated that midwives have great responsibilities in this regard. Midwives play a key role in protecting and maintaining women's health. Our study results show that midwives of the future have a limited level of knowledge about the effects of climate change on women's health. Conducting such research is important for raising awareness among professionals working in the field. Although the link between climate change and health is known, this important information has not yet been systematically integrated into the midwifery curriculum. This situation has revealed the need for urgent action to prepare midwives for these emerging human health problems. In this sense

and in the light of the research results, it is thought that the issue of climate change and its effects on women's health should be further addressed in the training curricula of midwives of the future and the knowledge, awareness and skills of midwives should be increased.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Feyza Aktaş Reyhan, Ebru Ertaş, İmran Boylu Gülek; **Design:** Feyza Aktaş Reyhan, Ebru Ertaş, İmran Boylu Gülek; **Control/Supervision:** Feyza Aktaş Reyhan; **Data Collection and/or Processing:** Feyza Aktaş Reyhan; **Analysis and/or Interpretation:** Feyza Aktaş Reyhan; **Literature Review:** Feyza Aktaş Reyhan, Ebru Ertaş, İmran Boylu Gülek; **Writing the Article:** Feyza Aktaş Reyhan, Ebru Ertaş, İmran Boylu Gülek; **Critical Review:** Feyza Aktaş Reyhan, Ebru Ertaş, İmran Boylu Gülek.

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