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Research Article

Implementation of Online Antenatal Classes and Education of First-Time Mothers During the COVID-19 Pandemic: The Experience of a Tertiary University Hospital in Nothern Greece

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Abstract

Introduction: The COVID-19 pandemic and measures taken worldwide to ensure public health have limited pregnant women's ability to attend antenatal childbirth education classes within traditional structures.

Methods: The program of online antenatal classes in a Tertiary University Hospital in Greece and preliminary results of the participants' assessment.

Results: Two hundred forty-eight primiparas pregnant women participated in the program of online antenatal classes. Each lesson comprised theoretical and practical components, culminating in allocated time for open discourse at its conclusion. Out of 248 participants, 160 completed the program's online evaluation form. The vast majority of respondents rated the four dimensions of the program as a) planning and technical support, b) content, c) trainers, and d) fulfilment of participants' expectations as "Very good/ Excellent. Additionally, 56 participants responded to an open-ended question, expressing gratitude, feedback about the instructors, and sharing their experiences and emotions throughout the program.

Conclusions: The participants highly received and assessed online antenatal classes, and the midwives acknowledged the possibilities of online antenatal education in the post-COVID era.

Keywords: Education; Antenatal Classes; Pregnancy; COVID-19; Online; Midwifery

Introduction

Antenatal classes and childbirth education have a long history in midwifery. They play a significant role in the adjustment to parenthood and are a valuable tool for promoting the health of pregnant women and their families [1]. They also provide essential practical assistance in preparation for childbirth, breastfeeding, delivery, and care of the newborn [2].

Antenatal classes in Greece are provided mainly by healthcare structures (hospitals, maternity hospitals, health centres, private clinics, professional spaces of freelancers, etc.), in specially designed rooms, in-person, and with the use of appropriate equipment (manikins, birthing balls, mattresses, electronic equipment and software such as power point presentations etc.).

However, the COVID-19 pandemic and measures taken worldwide to ensure public health have limited pregnant women's ability to attend antenatal education classes within traditional structures [3]. Globally, initiatives have been developed to reach out and provide counselling to the pregnant population through the Internet and its modern and asynchronous education applications [4,5].

In February 2020, the pandemic suspended various medical and educational interventions, including antenatal educational classes in Greece following the local quarantine. With maternal health and wellbeing as a moving force, the midwives of a tertiary university hospital organised and started implementing synchronous online antenatal sessions.

This study aims to present a) the online antenatal sessions in a tertiary university hospital and b) the assessment and reception by the expected mothers.

Materials and Methods

Design

The program's primary objective was to serve as an effective tool by offering comprehensive knowledge, emotional support, and empowerment to pregnant women based on the midwives' skills, knowledge, and practices during a pandemic. The project complied with all the relevant national regulations and institutional policies and followed the tenets of the Helsinki Declaration. The institutional ethics committee approved the program's protocol (assessment included).

Announcements and publications in the local press, media, the official hospital website and social media accounts were used to advertise and promote the program. Initially, the interested parties communicated by phone, and after joining a course, the communication took place via e-mail. The electronic platform "Zoom" was used to implement the courses.

The Zoom Meeting application was used for synchronous video conferencing. This application has experienced an increase in usage during the pandemic. The Greek population was familiar with this application, and the program's course implementation could have been more successful.

Every course consisted of three synchronous online meetings, lasting 2 hours each. The pregnant women attending each course were a small group of 4-5 persons maximum. This was implemented intentionally to ensure that the topics to be developed could be adapted to participants' wishes, educational needs, and requirements.

Each course consisted of the theoretical and the practical parts, concluding with a dedicated period for discussion. In Table 1, the topics developed in each meeting are presented. The effort was made to provide cutting-edge, up-to-date knowledge about the pandemic (safety, COVID-19 vaccination, infection, etc.) and elicit relevant participant inquiries.

	1st Meeting	2nd Meeting	3rd Meeting
Theoretical Part	Objectives and content of antenatal classes Hormonal and anatomical changes during pregnancy Lifestyle, hygiene, and self-care during pregnancy	Triggering and signs of the onset of labour, contractions, phases of normal delivery Anaesthesia Instrumental delivery and cesarean section Immediate postpartum	Breastfeeding: advantages, potential problems, steps to succeed Care of the newborn and warning signs
Practical Part	Breathing exercises: deep breathing, diaphragmatic breathing Bodywork: circulatory exercises, back exercises, and stretching	Breathing exercises: belly breathing, regular breathing, breathing for relaxation Bodywork: chest and arms exercises and stretching	Breathing exercises: for relaxation Bodywork: pelvic floor exercises
Discussion -Conclusions	√	√	√

Table 1: Topics developed in each online meeting.

√: facilitated by a midwife online at the end of each meeting.

The theoretical presentations were made using Microsoft PowerPoint software, and pelvic, breast, and newborn manikins were used when needed. Moreover, all participants received a file (in pdf version) by e-mail with valuable information about lifestyle modifications, exercise, and nutrition during pregnancy and breastfeeding. The approach used during sessions was based on small group discussion techniques, problem-based learning, and case-based learning.

Program assessment and evaluation and data analysis

The evaluation form was electronic and was shared via e-mail to the participants using a hyperlink immediately after the completion of the program. The evaluation form was formatted and distributed electronically through the "google forms" application. This way, the data were compiled into electronic tables with the help of Microsoft Excel, and descriptive statistical analysis and graphing were performed.

The participants were asked to evaluate four parameters of the program: a) the planning and the technical support, b) the content, c) the educators, and d) the degree of participants' expectations fulfilment. Each parameter could be rated using a 3-point Likert scale with the options "poor", "average", and "very good/excellent".

Regarding the evaluation, all participants were informed about the questionnaire's objective. It was well documented on the first page of the online evaluation form, and a "click-if-you-agree" button obtained informed consent.

Results and Discussion

From December 2020 until May 2022, 248 pregnant women, all primiparas, participated in the program of online antenatal classes. The participant's place of residence was from northern Greece.

Of the 248 pregnant women participating in the Online Antenatal Sessions, 160 completed the program's evaluation form (64.5% response rate).

Figure 1 presents the assessment of the participants regarding the planning and technical support. Four women evaluated the duration of the program as "poor", while two evaluated its compliance as "poor". Twenty-seven women assessed the duration as "moderate".

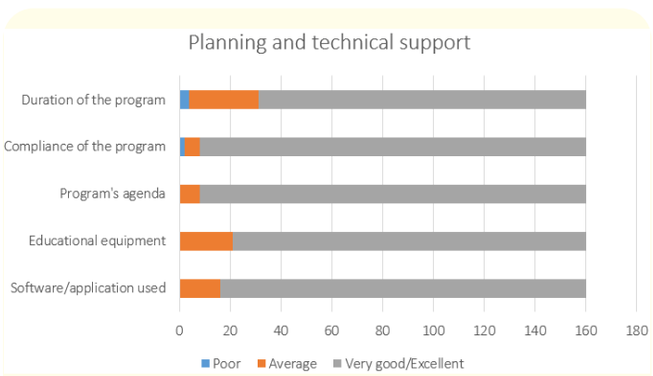

Figure 1: Assessment of the planning and the technical support of the program.

The assessment of the program's content is shown in Figure 2. The selection of the topics presented and their coverage were evaluated as "very good/excellent" by the vast majority of the sample (90.5% and 95.9%, respectively). The choice of audio-visual material used was also assessed as "very good/excellent" by 89% of the participants.

The midwives-instructors were evaluated (Figure 3) in terms of a) scientific completeness, b) level of preparation, c) skills in communication, and d) the opportunity they provided to the group for discussion and participation. There were no instances where participants evaluated the instructors as "Inadequate" across any of the criteria above. In contrast, 99.3% and 95.9% of the respondents appraised the program's instructors' communication skills and scientific thoroughness as "very good/excellent", respectively.

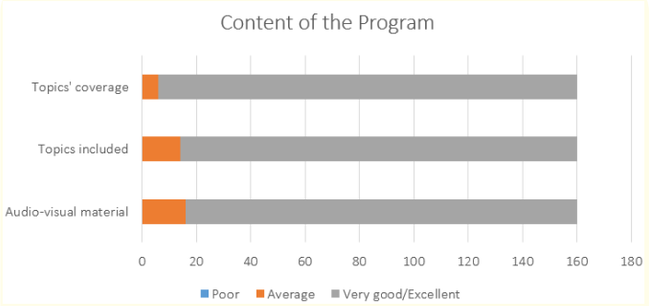

Figure 2: Assessment of the content of the program.

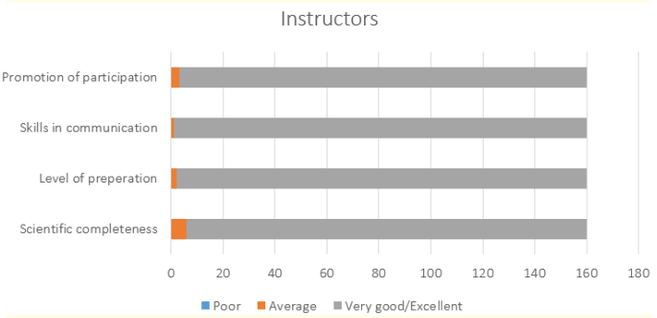

Figure 3: Assessment of the instructors of the program.

Finally, in Figure 4, the sample evaluation regarding the program's response to its expectations and needs is presented. The program met "moderately" the expectations of 17 pregnant women. One-hundred forty-three (89.7%) pregnant women evaluated the possibility of acquiring new knowledge as "very good/excellent" and 127 (77.7%) as "very good/Excellent" the possibility of developing new skills. Overall, the program was evaluated as "very good/excellent" by 147 (91.2%) women in the sample.

Figure 4: Assessment of the program's response to the participants' expectations and needs.

The last evaluation form's question was an open-ended one. Participants were asked to freely comment on their experience during the program and suggest how it could be improved. From the 160 participants, 56 filled in the open-ended question. None

of them rated the program as "poor" at any parameter. Their answers were grouped into four categories: a) thank-you statements, b) comments on the instructors, c) comments on the participants' experience and feelings during the program, and d) suggestions on the program's content and duration improvement. Table 2 presents the participants' suggestions and comments. In further detail, more than forty participants expressed their gratitude by writing "thank you" or "congratulations". Fifty participants commented positively on the instructors' attitude and communication. No negative comments were made. Moreover, 43 comments on the participants' experience and feelings during the program were recorded, including 32 that indicated a direct positive influence of the sessions on their psychological condition (stress management, less fear, more confidence, more trust, etc.). Finally, 9 participants suggested improving the program's content and duration (see Table 2).

Comment's category	Number of Comments	Examples of Comments
a) thank-you statements	42	"Congratulations to the public hospital that offers free online antenatal classes." "Thank you for the material on breastfeeding and exercise during pregnancy." "Thank you for the opportunity to participate in online antenatal classes. I wouldn't otherwise because it's not offered in my town."
b) comments on the instructors	50	"The instructor's encouragement and smile gave me strength and helped me psychologically to face my fears." "The instructor communicated effectively and gave feedback." "The instructor showed devotion to the procedure and willingness to answer all my questions. She was caring and showed empathy."
c) comments on the participants' experience and feelings during the program	43	"You helped me to manage my stress." "The meetings exceeded my expectations!" "I would choose online classes even after the pandemic! It saved me time!" "I feel that I can trust my body and the midwives." "I feel much more confident to give birth and breastfeed!"
d) suggestions on the program's content and duration improvement	9	"I suggest strengthening the interaction of pregnant women to share experiences and concerns." "More topics and advice for the postnatal period." "More meetings, please!"

Table 2: Comments' categories, counted comments, and examples of comments to the open-ended question.

Discussion

Implementing a synchronous online antenatal sessions program led by midwives serving in the public sector in Greece was desirable and feasible during the first phase of the pandemic era. Moreover, from the completed program's evaluation forms, most pregnant participants in the present study provided positive ratings for all assessed criteria.

One of the biggest challenges during the development and implementation of the online antenatal classes was the interaction between the instructors and the participants. Existing evidence suggests that based on natural interaction, antenatal classes and education are the best way to prepare pregnant women for childbirth [2]. It is generally accepted that in-person education includes and promotes communication and natural social chemistry between learners and educators. On the other hand, internet-based classes are expected to lack such supportive interactions. Therefore, during the implementation of the online antenatal sessions, educators demonstrated active involvement and provided substantial support to the participants, offering counselling, coaching, and question-and-answer sessions. Overall evaluation of this study indicates that selecting small and restricted groups and allocating time for discussion and inquiries resulted in positive comments on the instructors' demeanour and communication.

Some participants rated the duration of the program as "poor", and others commented on the open-ended question by requesting more meetings. This request was impossible to meet due to a lack of personnel. During the pandemic, the hospital's midwives served as first-line healthcare providers and experienced a hefty workload in maternity care and other positions. Although some studies have shown that even shorter training sessions are practical in fulfilling some of the main goals of antenatal classes, such as reducing fear of childbirth and anxiety [16-18], the duration of our online program of antenatal sessions should be reevaluated in the future, especially during periods of isolation and health crisis.

The overall positive assessment could be linked to the updated knowledge about coronavirus and how it affects pregnancy. Research suggests that such knowledge forms a positive attitude, moderates anxiety and concerns, and promotes good preventive

strategies [6]. Although the present study did not aim to measure and evaluate the participants' stress and anxiety levels and the effect of the classes on them, a significant number of participants reported a direct positive influence of the sessions on their psychological condition. This result is consistent with studies conducted during the pandemic [5,7-11]. This evidence is essential, as numerous studies establish a direct association between perinatal stress and adverse perinatal outcomes. At the same time, additional research reveals elevated levels of anxiety and fear among pregnant women attributable to the impact of COVID-19 [12] or other adverse circumstances [13]. Finally, recent systematic reviews [14,15] concluded that internet-based antenatal educational interventions can moderate maternal postpartum depression and contribute to better maternal mental health.

Retrospectively, a literature review revealed that midwives worldwide have converted in-person antenatal classes or breastfeeding support to innovative internet-based sessions during the pandemic [5,9,19-23]. This highlights the importance of antenatal classes and midwives' urge to support pregnant women, especially in adverse circumstances.

Furthermore, the urge to implement online antenatal sessions during the pandemic revealed some of the method's advantages and offered a valuable asset for future use in Greece. More specifically, the process is an attractive alternative to overcome geographical health disparities and educate women prescribed bed rest during high-risk pregnancies. Although Greece has one of the highest caesarian section rates, there needs to be strategic planning on antenatal education according to WHO recommendations [24], and existing antenatal classes are believed to have low attendance rates. Greek online antenatal classes in the post-COVID era have the dynamics to play a significant role in solving problems of accessibility, affordability, and availability. However, implementing online antenatal education should aim to overcome the unintended inequalities of technical development, such as smart device availability and unhampered internet access [25,26,28].

Publications in the post-COVID era on the digitalisation of antenatal education suggest that online platforms alter how women experience maternity services and their reception of information, which requires attention [28,29]. Moreover, emphasis is recommended on enhancing caregivers' digital skills and training specialised "digital midwives". As online education becomes a new norm, inserting "digital care" components in undergraduate midwifery programs is required [30].

The study has certain limitations concerning the assessment and data collection time. The evaluation immediately after the completion of the program has the advantage of remembering the content. Still, developing new skills needs to be assessed, as it takes time between teaching and putting into practice [27]. Moreover, information collected on demographics and obstetrical or perinatal data would provide some cortex for further interpretation of the results. Finally, the program, the assessment presented in the study and the understanding of the results should be considered in the context of the limitations of the COVID-19 pandemic. Midwives and participants did not have an alternative due to local quarantine, which does not allow generalisation of the results to normal conditions.

Future research should assess the differences between in-person and online antenatal classes on the efficacy, the knowledge and skills attained, and the participants' overall satisfaction. More information and guidance regarding online antenatal educational sessions should be detailed [31]. Moreover, it should determine if and how increased knowledge and support from an online service translates into action and better perinatal outcomes. For now, pregnant women seem to appreciate the convenience and flexibility offered by the online modules, but they still seek communication and social connection [30].

Conclusion

Antenatal education classes provide essential information about pregnancy, childbirth, and postpartum care. Most of the participants positively assessed the program in every given parameter. Expectant mothers gained a deeper understanding of the changes they experienced during pregnancy and found the online program greatly supported during that time with the pandemic. Thus, midwives in the project acknowledged the potentiality and the vice versa dynamic of online antenatal education in the post-COVID era. For successful future development, the designing process is essential to include the collaboration of the digital space's end-users and consider the perspectives of women and midwives.

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