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Postponing parenthood – the midwife's role
in overcoming the factors

DISSERTATION SUMMARY

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Doctor of Philosophy
in
Healthcare Management

Supervisor
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The thesis is presented on 182 pages and is structured in five chapters. Contains 12 tables, 50 figures and 6 appendices.

The bibliography includes 209 literature sources, 108 of which are in Cyrillic and 79 in Latin, internet – 22.

The dissertation was discussed at a meeting of the extended departmental council of the Department of "Social Medicine and Health Care Organization" at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna and referred for defense before a Scientific Jury.

The defense of the dissertation work will be held on 28.04.2023, in 14:00 h.

The defense materials are available in the library of the Medical University "Prof. Dr. P. Stoyanov" - Varna, as well as on the official website of the university.

CONTENT

1.1. Aim and objectives	8
1.2. Working hypotheses:	9
1.3. Organization, time and place of the thesis research	10
1.3.1. Subject of the study	10
The role of the midwife in overcoming the causal factors leading to the postponement of parenthood.	10
1.3.2. Object of the study	10
1.3.3. Scope of the study	11
1.3.4. Respondents	12
1.3.5. Locations of the research	13
1.3.6. Inclusion Criteria	14
1.4. Organisation of the study	15
1.4.1. Data collectors	18
2.4. Methods of the study	25
2. RESULTS AND DISCUSSION	29
2.1. Socio-demographic characteristics of the groups	29
2.2. Patient awareness of reproductive health	40
2.2. Medical and socio-economic reasons for postponing parenthood	44
2.3. Trust in midwives - a prerequisite for successful counseling activities at the CRM	48

2.4. Competencies of the midwife to overcome the reasons for delaying parenthood..... 50

"Yes, reproductive medicine has long been imposed in our country. It is mandatory! This is one of the reasons why there is high turnover of midwives in our clinics, as they find it difficult to adapt to the high specificity of the work." (R1)..... 56

"Rather, specialization in this area for midwives who have decided to work in an in vitro center." (R2)..... 56

"Of course it is mandatory!" (R3)..... 56

"By extending the training period for midwives and the educational qualification level, it should have been imposed in the curriculum." (R4)..... 56

"Categorically yes!" (R7)..... 56

The experts' opinion on the need to increase midwives' knowledge in the direction of reproductive health is categorical. 56

2.5. Motivation and demotivation of senior and regular midwives/nurses for their work in a CRM..... 56

Dealing with these challenging moments requires a high level of professionalism and a good psychological approach on the part of healthcare professionals. 60

2.7. Shift in the direction of medical services demanded by patients in CRM - opinion of gynecologists..... 60

Fig.20. The role of religion in the decision to use donor material..... 63

Patients who profess Islam and Catholicism are categorical in their opinion that they do not want donor material (46.15%: 50%), which is a prerequisite for a clinical problem, especially on the part of the male, and the chances for the couple to become biological parents are impossible. 63

2.8. The impact of COVID-19 on fertility	63
2.9. The attitudes and readiness of female students with children in the Bachelor's programmes "Nursing" and "Midwifery" for Reproductive health prevention (RHP).....	67
<i>Figure 25. Students' awareness regarding the increase in the average age for giving birth to a first child in Bulgaria.....</i>	<i>70</i>
According to data from the NSI, the average age for giving birth to a first child in the country in 2021 was 27 years, with the highest rate being in Sofia at 30.1 years. The majority of those surveyed were aware that the average age for giving birth to a first child in the country is increasing and that there is a growing trend among young people to delay parenthood (78.3%).....	70
3. A practical approach to preventing postponed parenthood in the context of reproductive health prevention...	70
3.1. Model of a Midwifery Support Centre for Future Parents (MSCFP).....	70
3.2. Auxiliary resources of the MSCFP.....	77
4. Conclusions, proposals and recommendations	85
4.1. Conclusion.....	85

Abbreviations

CRM	Center for Reproductive Medicine
HF	Health Facility

APT	Assisted Reproductive Technology
NHIF	National Health Insurance Fund
MH	Ministry of Health
MES	Ministry of Education and Science
BAHCPs	Bulgarian Association of Healthcare Professionals
NSI	National Statistical Institute
DPP	Department of Pathological Pregnancy
MW	Maternity Ward
MSCFP	Midwifery Support Center for Future Parents

INTRODUCTION

Family and parenthood are fundamental aspects of human life. In recent decades, social pressures to conform to traditional family norms have decreased, resulting in changes in perceptions of marriage and family formation. Cohabitation without marriage is increasingly replacing traditional families, and established marriages are becoming shorter-lived.

Parenthood represents a new and unknown phase of life for every person. It requires mutual agreement and consensus between partners on current and future events and goals. Although there are generally accepted norms for the optimum age to plan parenthood, the desire for career advancement and financial independence often shifts priorities for future parents.

Parenthood is a biological process that is also socially influenced by various factors, such as economics, demographics, politics, and physiology.

Increased career opportunities and the desire for independence can affect the timing of childbearing in many ways. However, the desire for personal fulfillment often has a negative impact on birth rates in industrialized societies, as more women prioritize their careers over having children. Given the high mortality rate and aging population in our country, this trend will worsen our demographic situation, threatening our nation's future economic and political independence.

Methodology and organisation of the scientific study

1.1. Aim and objectives

Aim: The aim of this study is to analyze the reasons behind the postponement of parenthood and determine the role of midwives in overcoming these reasons by introducing a **Model of a Midwifery Support Center for Future Parents**.

In order to achieve our goal, we have set the following **objectives:**

1. To review demographic documents regarding birth rates and other relevant characteristics in Bulgaria.
2. To analyse the factors associated with the postponement of parenthood in both men and women of fertile age in the cities of Shumen, Varna, Plovdiv, Sofia, and Tutrakan.
3. To analyze the awareness of men and women of fertile age about the risks to maternal and fetal health associated with postponing parenthood.
4. To investigate and analyze the attitudes towards the optimal age for having a first child.
5. Investigating the willingness of medical professionals to implement midwifery care when managing patients with reproductive disorders.
6. To investigate the views of physicians and other healthcare professionals on the role of midwives in overcoming the factors

that lead to delayed parenthood in both women and men of fertile age.

7. The development of a **Model of a Midwifery Support Center for Future Parents (MSCFP)** in order to limit the postponement of parenthood.

1.2. Working hypotheses:

- Midwives have the skills and to provide encouragement, counseling, and motivation to men and women who have postponed childbearing, as well as to work in centers and organizations with various types of reproductive activities.
- The qualifications of the midwife to provide encouragement, counseling, and motivation to men and women who have postponed childbearing, as well as to work in centers and organizations with reproductive activities of different types.
- An increased awareness of the associated health risks of delaying parenthood will contribute significantly to identifying and addressing the underlying factors.

1.3. Organization, time and place of the thesis research

1.3.1. Subject of the study

The role of the midwife in overcoming the causal factors leading to the postponement of parenthood.

1.3.2. Object of the study

The defined objects of the study are:

- ❖ **Patients** hospitalised in the Department of Pathological Pregnancy or Maternity Ward in the cities of Varna, Shumen, Plovdiv, and Veliko Tarnovo;
- ❖ **Patients** (women/men) in centers of reproductive medicine in Varna, Shumen, Plovdiv, Sofia, and Tutrakan;
- ❖ **Experts** - obstetricians and gynecologists, embryologists, and senior midwives/nurses from centers of reproductive medicine in Varna, Shumen, Plovdiv, Sofia, and Tutrakan;
- ❖ **Midwives/Nurses** working in centers of reproductive medicine in Varna, Shumen, Plovdiv, Sofia, and Tutrakan;
- ❖ **Female students** with children in the Bachelor's programmes in "Nursing" and "Midwifery" (1st, 2nd, 3rd and 4th year) studying in the Medical University-Varna affiliates - Shumen, Veliko Tarnovo and Sliven;

1.3.3. Scope of the study

The study included 405 people divided into five groups:

Group 1 – Patients hospitalized in the Department of Pathological Pregnancy and Maternity ward of USHOGAT “Selena” - Plovdiv; SHOGAT “Prof. Dr. Dimitar Stamatov” – Varna; "MHAT - Shumen" - Shumen; MHAT "Dr. Stefan Cherkezov" - Veliko Tarnovo; Medical Complex "Maichin Dom" - Varna (**n= 200**).

Group 2 – Patients (women/men) scheduled for examinations/hospitalized in centers for reproductive medicine: Medical Center "St. Ivan Rilski" - Shumen; USHOGAT "Selena" - Plovdiv; Medical Complex "Maichin Dom" - Varna; Medical Complex "Dr. Shterev" - Sofia; and Medical Center "St. Ivan Rilski - Tutrakan (n = 100).

Group 3 – Medical specialists (obstetricians/gynecologists, embryologists, and midwives/nurses) were selected to determine their opinions about the postponement of parenthood in men and women at fertile ages, and how midwives can address the causes. The selected experts are from the following centers of reproductive medicine: Medical Center "St. Ivan Rilski" – Shumen; USHOGAT "Selena" - Plovdiv; Medical Complex "Maichin Dom" - Varna; Medical Complex "Dr. Shterev" - Sofia; Medical Center "St. Ivan Rilski” - Tutrakan (**n= 20**)

Group 4 – Midwives/Nurses working in the following centers of reproductive medicine: Medical Center "St. Ivan Rilski" – Shumen; USHOGAT "Selena" - Plovdiv; Medical Complex "Maichin Dom" - Varna; Medical Complex "Dr. Shterev" - Sofia; Medical Center "St. Ivan Rilski" - Tutrakan (**n= 25**)

Group 5 – Female students with children in the Bachelor's programmes in "Nursing" and "Midwifery" (1st, 2nd, 3rd and 4th year) studying in the Medical University-Varna affiliates - Shumen, Veliko Tarnovo and Sliven; (**n=60**).

1.3.4. Respondents

- **Respondent group I**– every female patient over 26 years of age hospitalised in the Department of Pathological Pregnancy and Maternity Ward of medical facilities in the cities of Shumen, Varna, Plovdiv, and Veliko Tarnovo.
- **Respondent group II**– every patient (woman/man) in the centers of reproductive medicine in Shumen, Varna, Plovdiv, Sofia, and Tutrakan.
- **Respondent group III**– every obstetrician, gynecologist, embryologist, and senior midwife/nurse working in the centers of reproductive medicine in Shumen, Varna, Plovdiv, Sofia, and Tutrakan.

- **Respondent group IV** – every midwife/nurse working in the centers of reproductive medicine in Shumen, Varna, Plovdiv, Sofia, and Tutrakan.
 - **Respondent group V**–every female students with children in the Bachelor's programmes "Nursing" and "Midwifery" studying in the Medical University-Varna affiliates - Shumen, Veliko Tarnovo and Sliven

1.3.5. Locations of the research

Multiprofile Hospitals

- "MHAT - Shumen" – Shumen
- "MHAT "Dr. Stefan Cherkezov" - Veliko Tarnovo

University Hospitals

- USHOGAT "Selena" - Plovdiv

Specialized Hospital

- SHOGAT “Prof. Dr. Dimitar Stamatov” – Varna

Medical Complexes/Centres

- Medical Complex "Maichin Dom"
- Medical Complex "Dr. Shterev" - Sofia
- Medical Center "St. Ivan Rilski" - Tutrakan
- Medical Center "St. Ivan Rilski" - Shumen

Affiliates of MU-Varna

- Shumen
- Veliko Tarnovo

- Sliven

1.3.6. Inclusion Criteria

Group 1 – Female Patients

- age over 26 (Based on the mother's mean age at first birth in Bulgaria)
- Hospitalised in Department of Pathological Pregnancy
- Hospitalised in Maternity Ward
- Have signed a declaration of Informed Consent

Group 2 – Patients (women/men)

- Patients with reproductive disorders
- Patients of CRM
- Have signed a declaration of Informed Consent

Group 3 – Healthcare Professionals

- Obstetricians and Gynaecologists working in CRM
- Embryologists working in CRM
- Senior Midwives/Nurses working in CRM
- Have signed a declaration of Informed Consent

Group 4 – midwife/nurse

- Bachelor's degree in "nursing" or "midwifery"
- working in CRM
- Have signed a declaration of Informed Consent

Group 5 – Female students

- Enrolled in the Bachelor's programmes in "Nursing" and "Midwifery"
- Mothers
- 1st, 2nd, 3rd and 4th year student
- Have signed a declaration of Informed Consent

1.4. Organisation of the study

The study was conducted in five phases, defining the methods and materials, location, and period. (Table 1).

Table 1. Phases of the study

<i>Phases</i>	<i>Methods</i>	<i>Location</i>	<i>Materials</i>	<i>Period</i>
Phase 1	Analysis of specialized literature regarding the relevance of the studied problem.	Shumen	Specialized literature; specialized databases.	January 2020 - September 2020
Phase 2	Defining the aim and objectives; selecting the methods;	Shumen	Survey №1 (Appendix 1) Questionnaire №1	October 2020 -

	developing the materials for conducting the research.		(Appendix 2) Questionnaire №2 (Appendix 3) Questionnaire №3 (Appendix 4) Questionnaire №4 (Appendix 5) Questionnaire №5 (Appendix 6)	April 2021
Phase 3	Analysis and assessment of the midwife's competencies regarding her role in overcoming the causes of postponement of parenthood Organization and initiation of the study after	Varna Shumen Sofia Plovdiv Tutrakan	Survey №1 (Appendix 1) Questionnaire №1 (Appendix 2) Questionnaire №2 (Appendix 3) Questionnaire №3 (Appendix 4)	May 2021 - June 2022

	assessment of the Research Ethics Committees MU-Varna		Questionnaire №4 (Appendix 5) Questionnaire №5 (Appendix 6)	
	Conducting an in-depth interview	Varna Shumen Sofia Tutrakan	Survey №1 (Appendix 1)	July 2022 - August 2022
Phase 4	Statistical processing and analysis of results.	Shumen	The data in the survey were processed with the statistical package IBM Statistics - SPSS for Windows, ver. 19 and MS Excel 2019	September 2022 - November 2022
Phase 5	Formulation of conclusions, contributions, and recommendations	Shumen		December 2022 - January 2023

	based on the dissertation.			
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1.4.1. Data collectors

The main part of the study was carried out independently in order to maximise accuracy. The collaboration of senior midwives from the Department of Pathological Pregnancy, the Maternity Unit, and those working in the centers of reproductive medicine was used.

1.4.2. Sources of information

- The opinion of obstetricians, gynaecologists and embryologists and senior midwives/nurses working in the centers of reproductive medicine - Medical Center "St. Ivan Rilski" – Shumen; USHOGAT "Selena" - Plovdiv; Medical Complex "Maichin Dom" – Varna; Medical Complex "Dr. Shterev" – Sofia; Medical Center "St. Ivan Rilski" – Tutrakan.
- The opinion of senior midwives/nurses and midwives/nurses working in the centers of reproductive medicine - Medical Center "St. Ivan Rilski" – Shumen; USHOGAT "Selena" - Plovdiv; Medical Complex "Maichin Dom" – Varna; Medical Complex "Dr. Shterev" – Sofia; Medical Center "St. Ivan Rilski" – Tutrakan.
- The opinion of mens and womens scheduled for examinations/hospitalized in the centers for reproductive medicine: Medical Center "St. Ivan Rilski" - Shumen; USHOGAT "Selena" -

Plovdiv; Medical Complex "Maichin Dom" - Varna; Medical Complex "Dr. Shterev" - Sofia; and Medical Center "St. Ivan Rilski – Tutrakan.

- The opinion of patients hospitalized in the Maternity Ward and the Department of Pathological Pregnancy in "MHAT - Shumen" – Shumen; “MHAT St. Anna” - Varna and USHOGAT "Selena" - Plovdiv.
- The opinion of female students with children in the Bachelor's programmes "Nursing" and "Midwifery” studying in the Medical University-Varna affiliates - Shumen, Veliko Tarnovo and Sliven.
- - Laws and regulations governing the state health policy, educational and professional activities performed by midwives.
 - ✓ Regulation No. 1 of 22 January 2015 on the acquisition of a specialty in the health care system.
 - ✓ Regulation No. 19 of 22.12.2014 on approval of the medical standard "Obstetrics and Gynaecology" Issued by the Minister of Health
 - ✓ Regulation No. 39 of 2004 on prophylactic medical examinations and survey
 - ✓ Regulation No. 40 of 2004 on the determination of the basic package of health services guaranteed by the NHIF budget.
 - ✓ Directive 2005/36/EC on the recognition of professional qualifications.

1.4.3. Survey Instruments

In order to achieve the research objectives and solve the previously formulated tasks, a proprietary survey instrument was developed for the six groups of respondents (Table 2).

Table 2. Survey Instruments

<i>Survey Instrument</i>	Questions		
	Total number	Closed-ended	Open-ended
1. Questionnaire №1 For men and women scheduled for examinations/hospitalized in the centers for reproductive medicine.	33	25 <i>For question №33, a scale of 1 to 10 was used.</i>	8 <i>Combination of Closed-ended and Open-ended questions</i>
2. Questionnaire №2 For patients hospitalized in the Maternity Ward and the Department of Pathological Pregnancy	26	18 <i>For questions №25 and №26 a scale from 1 to 10 was used.</i>	8

<p>3. Questionnaire №3 <i>For Healthcare Professionals</i></p>	<p>3</p>	<p>10 <i>For question №25 a scale from 1 to 10 was used;</i> <i>Question №1 used a ranking of patient age groups;</i> Question №4 offers the option of ranking cases according to their frequency.</p>	<p>15</p>
<p>4. Questionnaire №4 For Midwives/Nurses working in the centers of reproductive medicine</p>	<p>22</p>	<p>11 <i>For question №22 a scale from 1 to 10 was used;</i></p>	<p>11</p>

5. Questionnaire №5 <i>For students</i>	25	13 <i>For question №36 a scale from 1 to 10 was used;</i>	12
7. Questionnaire №1 <i>For obstetricians and gynaecologists</i>	5		6 <i>In-depth interview</i>

- *Questionnaire for patients of the centers for reproductive medicine*
- *Questionnaire №1 (Appendix №2) consists of 33 questions, targeting men and women scheduled for examinations/hospitalized in the centers for reproductive medicine. Questionnaire №2 (Appendix №3) consists of 33 questions, targeting patients hospitalized in the Pathological Pregnancy and Maternity Wards in Plovdiv, Varna, Shumen, and Veliko Tarnovo who are over the age of 26.*
- ❖ *Questionnaire for Healthcare Professionals*
- *Questionnaire №3 (Appendix №4) consists of 25 questions, targeting obstetricians, gynaecologists, embryologists ,and*

senior midwives/nurses working in the centers for reproductive medicine.

- ***Questionnaire №4 (Appendix №5), consists of 22 questions,*** targeting Midwives/Nurses working in the centers of reproductive medicine in Sofia, Plovdiv, Varna, Shumen and Tutrakan.
- ❖ ***Questionnaire for female students with children***
 1. ***Questionnaire №5 (Appendix №6),*** targeting female students with children in the Bachelor's programmes "Nursing" and "Midwifery" studying in the Medical University-Varna affiliates.
- ❖ ***Questionnaire №1 for conducting an in-depth interview (Appendix №1).***

The method has been applied on renowned experts in the field of reproductive medicine (obstetrician-gynecologists) working in centers for reproductive medicine.

The method was applied according to the methodology defined by

Information gathering was conducted through informal conversation at their workplace.

There were 8 respondents in the current study. A total of two respondents were included from each of the four centers of reproductive medicine located in Varna, Sofia, Shumen, and Tutrakan. For the purpose of the in-depth interview a specific research instrument was designed:

- One main question focused on the aim of the current study - determining the role of the midwife in overcoming the factors contributing to the postponement of parenthood.
- Sub-questions focus on the professional competencies of the midwife and the leading causes of reproductive disorders among men and women, without following their strict sequence.
- The final question to each respondent was: „In which unit of preventive and therapeutic activities (health education, family planning unit, IVF centre) does the midwife have competencies to influence on overcoming the reasons for postponing parenthood".

The interviews took place between July and August of 2022. Respondents were invited personally by the researcher. Respondents were informed that the interview would be recorded. The average duration of an interview was about 60 minutes.

❖ **Declaration of Informed Consent; Privacy notice and information about the study** were provided to each of the respondents who voluntarily participated in the study to inform them of the purpose of the study, the confidentiality of the subjects, and their voluntary consent to participate.

❖ *Auxiliary materials*

- **A textbook** that is designed to increase and test the knowledge of adolescents regarding the anatomical and physiological

characteristics of men and women, as well as the protection of reproductive health.

2.4. Methods of the study

❖ Sociological methods:

- *Documentary-methods* – research of medical documentation, regulations, and medical standards
- Conducting **in-depth interviews** with experts in assisted reproduction, using a pre-prepared questionnaire containing six questions about the midwife's competency and role in supporting men and women with reproductive problems.
- *Questionnaire* – Hand-delivered surveys were used to collect and analyze data for the purposes of this study. In order to survey the opinions of the respondents from the different groups, six questionnaires were prepared.

❖ Statistical Methods:

- **The data in the survey were processed** using IBM Statistics - SPSS for Windows, ver. 19 and MS Excel 2019. As all variables were qualitative, they were presented as relative proportions in the descriptive analysis, and a non-parametric chi-square test was used to test the hypothesis. Results with $P > 0.05$ are considered significant. The following methods were used in data processing:
- **Comparative analysis** – to compare changes in the performance of the variables;

- **Parametric and non-parametric tests** - to evaluate hypotheses - statistical comparison χ^2 analysis to test hypotheses of association between qualitative variables. The significance level in the studies was $p = 0.05$.
- **Analysis of Variance** - used to compare variances across the means (or average) of different groups. Measurement of the indicators mean (\bar{x}), mode and median of the statistical series, and the mean square deviation.
- **Correlation analysis** - to determine the degree of correlation between two variables. Measurement of the Pearson correlation coefficient (r) to find out and determine the magnitude of a linear correlation between quantitative variables and Cramer's coefficient (V) or Student's for qualitative variables;
- **Graphical analysis** - displays the data processed from the survey graphically. MS Excel 2019 and IBM Statistics 19 were used for the graphical analysis.

❖ *Statistical analyses*

The material was processed statistically with the computer program IBM SPSS Statistics, version 19, using the following methods:

- **Descriptive statistics:** mean, standard deviation, minimum-maximum, median, percentiles, confidence interval, relative proportion;
- **Graphical analysis;**

- Procedure for calculating scale reliability (**Cronbach's Alpha**);
- **Parametric analysis:** Student's T-test (two-tailed), correlation analysis (calculation of Pearson's correlation coefficient);
- **Nonparametric test (Mann–Whitney U test):** Statistical significance was assumed at the two-sided probability level of $p < 0.05$.
- **p-value**, i.e. the probability that the relationship between the two variables is random. The smaller the p-value, the higher the statistical significance (reliability) of the relationship between the two variables and $p = 0.000$, which is quoted as $p < 0.001$ and is written as follows: $\chi^2 (6, 541) 83.75 N =, p < 0.001$. Since the p-value is less than 0.05 the null hypothesis H_0 is rejected.

When measuring the relationship between variables represented on nominal or combined nominal and ordinal scales, correlation coefficients, whose formula uses the χ^2 characteristic, are primarily applied. The Kramer coefficient is considered the most universal, since it is standardized within [0; 1] and is interpreted as a simple correlation coefficient. Coefficients of association are widely used in relationships between variables represented on dichotomous scales. Coefficients of concordance and others are also known (Table 3).

Table 3. Correlation coefficient value and relationship between variables.

Стойност на коефициента на корелация Value of the correlation coefficient	Степен на зависимост Degree of dependence
до 0,3	слаба/roor
над 0,3 до 0,5	умерена/moderate
над 0,5 до 0,7	значителна/significant
над 0,7 до 0,9	голяма/high
над 0,9	много голяма/very high

2. RESULTS AND DISCUSSION

2.1. Socio-demographic characteristics of the groups

- Socio-demographic characteristics of the patients in CRM

A study of patients (n=100), women and men, scheduled for examinations/hospitalised in the Medical Center "St. Ivan Rilski"- Shumen; USHOGAT "Selena" - Plovdiv; Medical Complex "Maichin Dom" - Varna; Medical Complex "Dr. Shterev" - Sofia; Medical Center "St. Ivan Rilski – Tutrakan on identifying the underlying factors for postponing parenthood. Table 4.

Табл. 4 Socio-demographic characteristics of the patients from CRM

Demographic characteristics	n (Number)	%
Age		
20-25	8	8%
26-30	18	18%
31-35	33	33%

36-40	19	19%
Over 41	22	22%
Gender		
Men	17	17%
Women	83	83%
Ethnicity		
Bulgarians	85	85%
Bulgarian-Mohammedans	2	2%
Gypsies	2	2%
Turks	6	6%
Non-response	5	5%
Education		
Tertiary education	64	64%
Secondary education	18	18%

Elementary education	8	8%
Religion		
Orthodox Christianity	69	69%
Islam	13	13%
Catholicism	2	2%
Protestantism	0	0
Non-response	9	9%
Atheism	7	7%
Children in the family		
Without children	67	67.0%
Child from a previous relationship	9	9.0%
The partner has a child from a previous relationship	10	10.0%

Both partners have children from a previous relationship	4	4.0%
Secondary infertility in the family	8	8.0%
Non-response	2	2%
Income		
Less than 1000 BGN	0	0
1000-1500 BGN	24	24%
1600-2000 BGN	22	22%
2100-2500 BGN	15	15%
2600-3000 BGN	12	12%
3100-3500 BGN	6	6%
3600-4000 BGN	4	4%
More than 4100 BGN	15	15%

Non-response	2	2%
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According to the distribution of patients by age group, the highest proportion of patients were in the age group 31–35 years (33%), followed by those over 41 years (22%). In terms of percentage, there was a marginal difference between those aged 36–40 (19%) and those aged 26–30 (18%).

The analysis of ethnicity reveals that the majority are Bulgarians (85%). Significantly fewer are the Turks (6%).

Many demographers consider education to be a determinant in family planning. The survey results demonstrate this. A higher proportion of respondents (64%) had a tertiary education, suggesting better knowledge of reproductive health and family planning.

The majority indicated that they had no children (67%). The percentage of respondents whose partners had a child from a previous relationship differed slightly from those with both partners having a child from a previous relationship (9%). The postponement of parenthood is a prerequisite for a family with only one child.

For the purposes of the study, the main group of respondents were female patients hospitalized in the Department of Pathological Pregnancy and Maternity Unit (n=200) of USHOGAT "Selena" – Plovdiv; SHOGAT "Prof. Dr. Dimitar Stamatov" – Varna; "MHAT - Shumen" – Shumen; "MHAT "Dr. Stefan Cherkezov" - Veliko Tarnovo; Medical Complex "Maichin Dom" – Varna (Department of

Pathological Pregnancy). According to the inclusion criteria of the survey, the patients were over 26 years of age (based on the mother's mean age at first birth in Bulgaria).

Table 5. Socio-demographic characteristics of patients in the Department of Pathological Pregnancy and Maternity Ward

<i>Demographic characteristics</i>	n (Number)	%
Age		
26-30	99	49,5%
31-35	51	25,5%
36-40	31	15,5%
Over 41	19	9,5%
Ethnicity		
Bulgarians	127	63,5%
Turks	38	19%
Armenians	1	0,5%

Gypsies	12	6,0%
Other	9	4,5%
Non-response	13	6,5%
Religion		
Orthodox Christianity	117	58,8%
Islam	36	18,0%
Catholicism	1	0,5%
Protestantism	7	3,5%
Atheism	13	6,5%
Other	7	3,5%
Non-response	19	9,5%
Education		
Uneducated	9	4,5%
Primary education	3	1,5%

Elementary education	17	8,5%
Secondary education	73	36,5%
Tertiary education	98	49,0%
Income		
Less than 1000 BGN	41	20,5%
1000-1500 BGN	48	24,0%
1600-2000 BGN	48	24,0%
2100-2500 BGN	30	15%
2600-3000 BGN	17	8,5%
3100-3500 BGN	4	2,0%
3600-4000 BGN	8	4,0%
More than 4100 BGN	1	0,5%

Non-response	3	1,5%
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In order to validate the results concerning the ethnic composition of the CRM group, we sought the input of the experts working there. (Fig. 1).

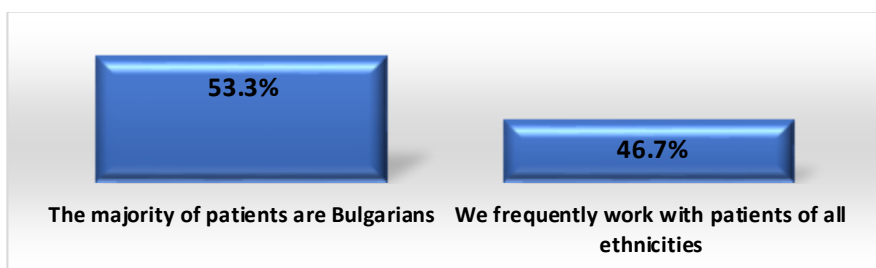


Fig.1. Ethnicity of the patients in CRM /expert opinion/

Most of the experts indicated that the majority of patients are Bulgarians (53.3%), but they often work with patients of all ethnicities (46.7%). The socio-demographic characteristics of this group of respondents confirm that patients of Bulgarian ethnicity predominate in the CRP.

The age profile of patients in the Departments of Pathological Pregnancy and Maternity Wards was significantly different from that of patients in the CRM. The respondents aged 26-30 (49.5%) were followed by those aged 31-35 (25.5%). The proportion of female

patients aged 36-40 years was lower (15.5%), and only 9.5% of respondents were over the age of 41 years.

In terms of educational level, those with higher education predominated (49.0%) among patients in Pathological Pregnancy and Maternity Wards, followed by respondents with secondary education (36.5%). Substantially fewer were those who indicated that they had primary education (8.5%). Those with no education (4.5%) or a primary education (1.5%) had significantly lower rates.

Prevalence of first pregnancies in old age confirms the relationship between career, high income, and late parenthood.

- ***Socio-demographic characteristics of the female students.***
- The survey includes female students with children (n=60) in the Bachelor's programmes "Nursing" and "Midwifery" studying in the Medical University-Varna affiliates - Shumen, Veliko Tarnovo and Sliven (Table 6).

Table 6. Socio-demographic characteristics of the female students

<i>Demographic characteristics</i>	n (Number)	%
Age		
20-25	13	21,7%

26-30	6	10,0%
31-35	13	21,7%
36-40	10	16,7%
Over 41	18	30,0%
Bachelor's programme		
Nursing	32	53,3%
Midwifery	28	47,7%
Affiliates of Medical Universities Varna		
Shumen	32	53,3%
Veliko Tarnovo	14	23.35%
Sliven	14	23.35%

In terms of age, the majority of them were over 41 (30%), followed by those in the age groups of 20–25 and 31–35 (21.7%). Relatively few respondents were between the ages of 36–40 (16.7%) and 26–30 (10%).

There is a slight predominance of students in the Bachelor's programme "Nursing" over those in "Midwifery".

2.2. Patient awareness of reproductive health

A number of medical publications and studies on population health awareness and early childhood health promotion demonstrate that there is a gap in these areas. During the past few decades, the health of the population has ranked highest in negative statistics for cardiovascular disease, cancer, tobacco use in early adolescence, etc.

In addition, the experts were asked for their opinion on patients' health awareness. (Fig.2).

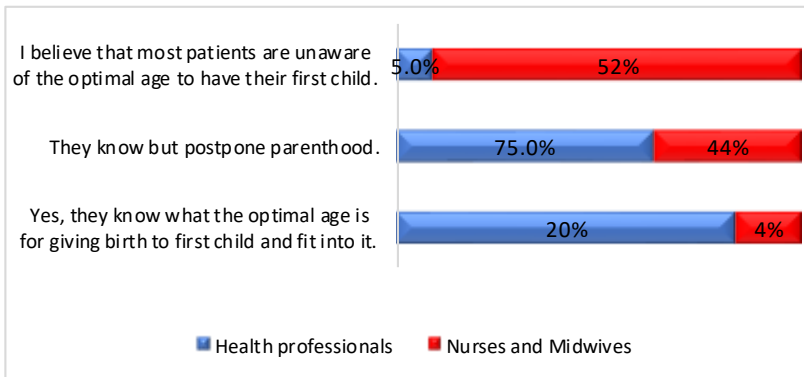


Fig.2. Awareness among the patients regarding the optimal age for giving birth to first child.

(Opinion of health professionals, nurses, and midwives)

Experts confidently express the opinion that patients are aware of the optimal age for giving birth to first child but postpone it (75.0%). However, midwives are of the opposite opinion - they believe that there is a deficit in patients' awareness and knowledge in this regard, which is a potential cause of health risk.

We sought the opinion of experts and midwives regarding patients' awareness of the risks of complications in pregnancy after the age of 35 (Fig. 3).

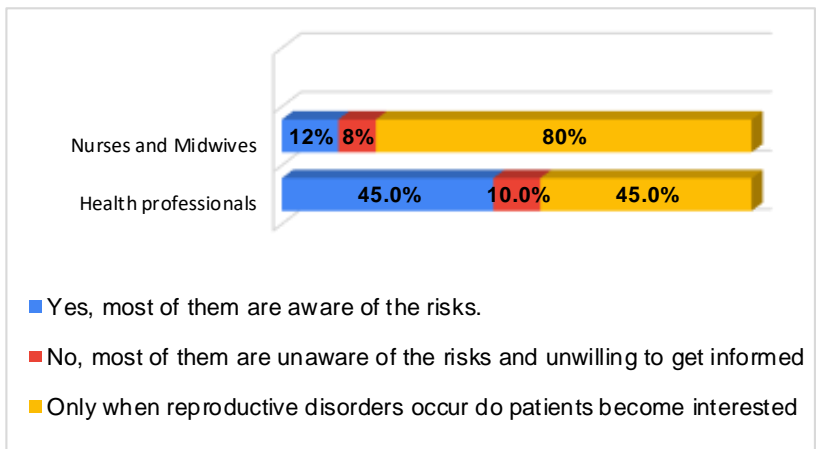


Fig.3. Patients' awareness of the risks of complications in pregnancy after the age of 35 (Opinion of health professionals and midwives)

Postponement of parenthood can be defined as a health risk in terms of pregnancy and the newborn. The majority of midwives and nurses were of the opinion that patients became interested in that only when reproductive disorders occurred (80%). In contrast, approximately ½ of the experts shared the same opinion (45%), and the same proportion indicated that patients are aware of the risks (45%).

Awareness of the population about the potential risks during pregnancy and labor after the age of 35 is a priority for every society. Patients need to be aware of the wide range of activities that a midwife could perform in order to increase their confidence in them. The midwife is qualified to work in family planning and with patients at the CRM.

We examined respondents' awareness (from CRM, DPP, and MR) of the risk of pregnancy and labor after the age of 35 (Figure 4).

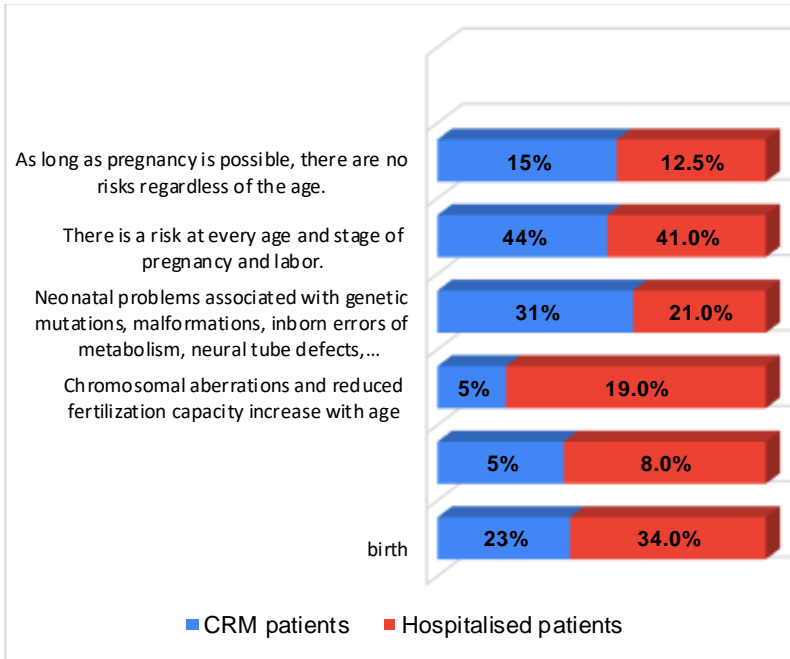


Fig.4. Patients' awareness of the risks of complications in pregnancy after the age of 35

****% exceeds 100, as respondents have indicated more than one answer.***

Analysis of the results confirmed the generally accepted notion that all pregnancies and births carry risk. Approximately the same proportion of respondents from the CRM (44%) and hospitalised patients in the PPD and MW (41%) indicated that pregnancy and labor can be risky at any age.

In the CRM group, genetic mutations, anomalies, and neural tube defects (31%) were identified as the most significant risks

associated with maternal age. Similar risks were reported by the group of patients hospitalised in DPP/MW (21%).

Both respondent groups were unaware of the risks associated with risky reproductive behaviors. The midwife's role in ACPBR may mitigate it.

2.2. Medical and socio-economic reasons for postponing parenthood

We investigated the clinical reasons for postponing parenthood among women with reproductive problems in CRM (Fig. 5).

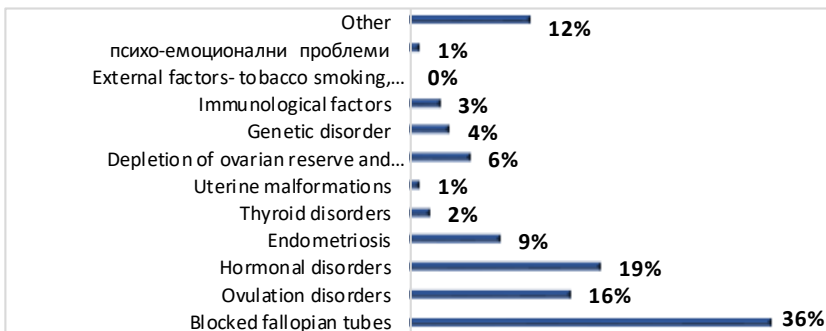


Fig.5. Clinical reasons for postponing parenthood among women with reproductive problems in CRM

**% exceeds 100, as respondents have indicated more than one answer.*

Respondents indicated that the diagnosed cause of infertility was blocked fallopian tubes (36%), followed by hormonal disorders (19%), ovulation disorders (16%) and endometriosis (9%).

In cases of infertility, it is imperative to determine the cause of the problem in both partners. Fig. 6 presents data on the causes of male infertility.

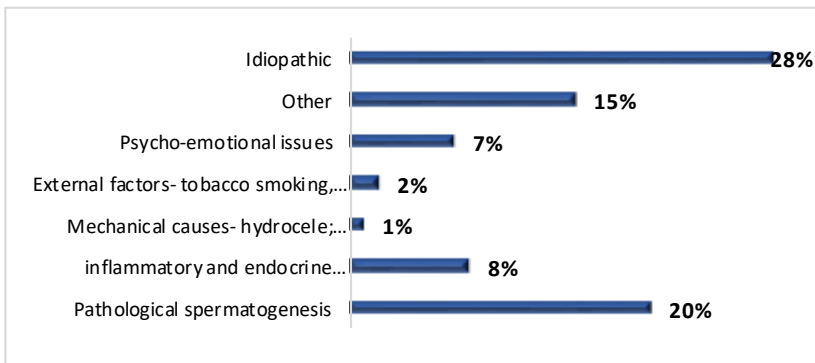


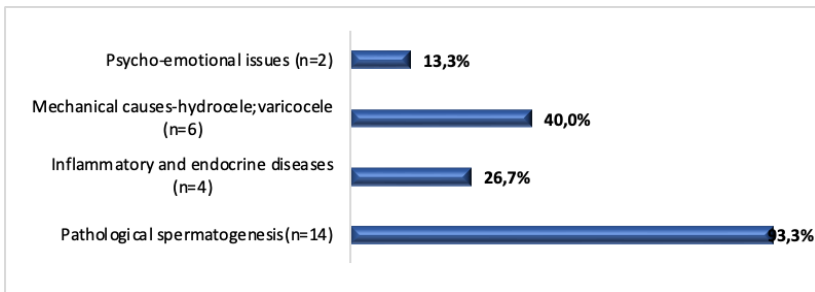
Fig.6. Clinical causes of reproductive disorders in men in the CRM group

****% exceeds 100, as respondents have indicated more than one answer.***

In about 1/3 (28%) of our respondents, the reason was unknown. Pathological spermatogenesis was the leading cause of infertility (20%), followed by inflammatory and endocrine diseases (8%) and psycho-emotional problems (7%).

It is thought that the absence of symptoms of a disturbance in sexual function and general health is one of the reasons why men are indifferent to the process of looking for the cause of infertility.

Respondents (n=15) indicated more than one response, ranking them by frequency of occurrence (Figure 7).

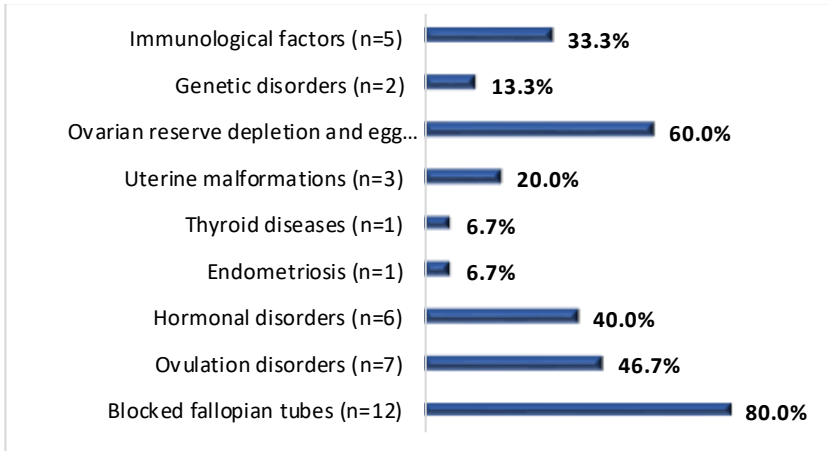


***Fig.7. Clinical causes of reproductive disorders in men
(Experts' opinions from CRM)***

****% exceeds 100, as respondents have indicated more than one answer.***

According to experts, pathological spermatogenesis is the most common cause of infertility among men (93.3%). Next in frequency are mechanical causes - hydrocele; varicocele (40%). Relatively fewer are inflammatory and endocrine diseases (26.7%). The psycho-emotional problems represent the smallest share (13.3%), but they should not be ignored.

According to the experts, the causes of infertility in women are much more diverse. Respondents (n=15) gave more than one cause of female infertility, ranking them by frequency (Fig.8).



***Fig. 8. Clinical causes of infertility among women
(Experts' opinions from CRM)***

****% exceeds 100, as respondents have indicated more than one answer.***

After analyzing the results, we discovered that blocked fallopian tubes are the leading cause of infertility among women in the CRM, accounting for 80% of cases. The depletion of ovarian reserve and the deterioration in egg cell quality are the next most common reasons, making up 60% of infertility cases.

2.3. Trust in midwives - a prerequisite for successful counseling activities at the CRM

Regarding education level, patients from CRM are distributed into three groups: with higher education, secondary education, and primary education (Fig. 9).

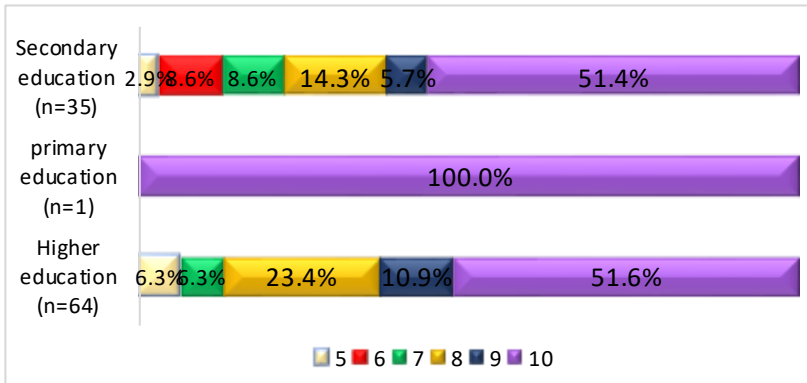


Fig.9. The influence of education on trust towards midwives (patients from CRM)

Midwives from CRM receive unwavering trust (rated 10/10) from patients with higher education (51.6%) and those with secondary education (51.4%). A relatively smaller percentage of patients with higher education (23.4%) and secondary education (14.3%) share a satisfactory rating (8/10) for their trust in midwives. Low education levels indicate a lower overall and health culture.

It was important for us to establish the trust of experts from CRM toward midwives (Fig.10).

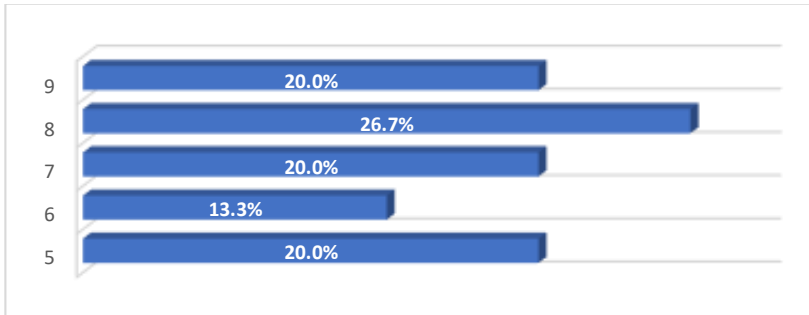


Fig.10. Rating of trust towards midwives by experts.

Experts' trust in midwives is rated with scores of 8 (26.7%), 9, 7, and 5 (20.0%) in almost equal proportions.

These results provide evidence of the high level of trust in midwifery activities among experts from CRM.

The experts' opinions on the most common reason for delaying parenthood among people of reproductive age were also investigated through in-depth interviews, with the answers presented anonymously as R1 to R8.

In the conducted interview, the experts pointed out the need for further education of midwives to work towards reproductive health prevention.

"Participating in training and seminars at least twice a year"
(R2)

"Most midwives neglect continuing education, but it is a fundamental criterion for increasing the authority of the profession and achieving the long-desired autonomy" (R3)

"Midwives should participate in specializations and training" (R4)

"I believe that only midwives with experience in the profession are ready for this" (R6)

"Continuing education is mandatory if a midwife has decided to work in this direction" (R8)

The drive to enhance the qualifications and postgraduate education of midwives remains lackluster, most likely stemming from inadequate financial incentives for pursuing additional credentials, specializations, and advanced studies in the healthcare field.

2.4. Competencies of the midwife to overcome the reasons for delaying parenthood.

We sought the opinions of respondents (experts, healthcare professionals, and students) regarding the professional opportunities and competencies of midwives to assist people of reproductive age in

overcoming the reasons for delaying parenthood (Fig. 11).

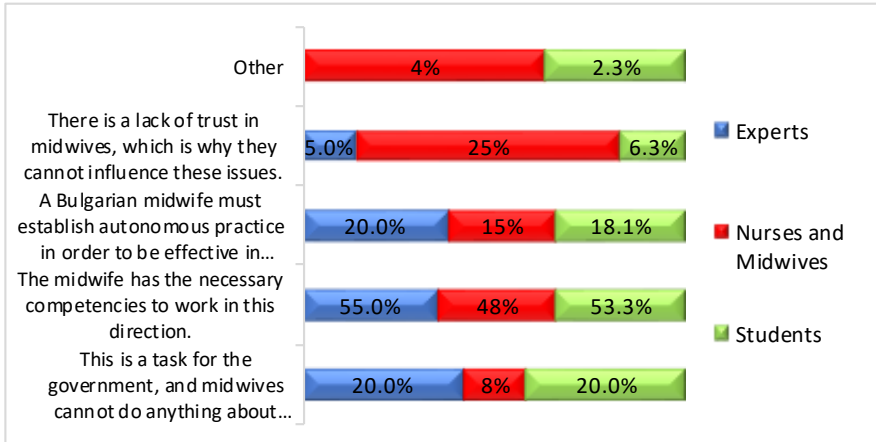


Fig.11. Competencies of the midwife for overcoming the reasons for postponing parenthood

The prevailing opinion of the respondents is that midwives have the competencies to work towards overcoming the reasons for delaying parenthood. The experts (55%), students (53.3%), and healthcare professionals (48%) are positively categorical in this regard.

The activities that fall within the midwifery competency framework can be implemented through various healthcare practices, all of which are aimed at overcoming the reasons for delaying parenthood (Fig. 12).

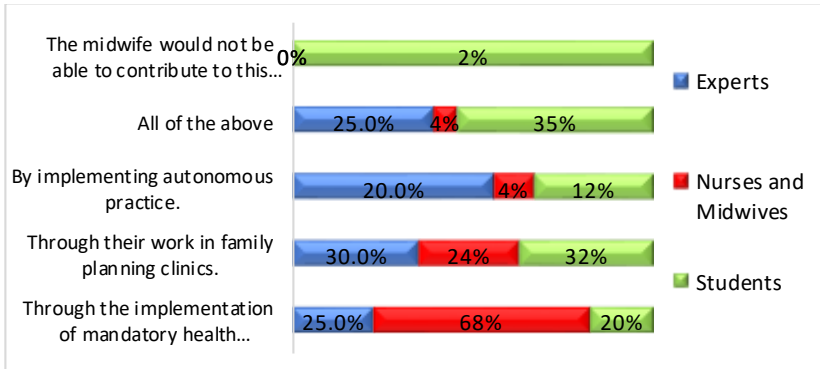


Fig.12. Illustrates the activities that midwives can perform to address the reasons for delaying parenthood.

Promoting and preventing reproductive health issues is a process that should start in early childhood and continue throughout the entire fertile period. This is also the view of healthcare professionals, who believe that mandatory health education in schools is the way in which midwives can influence the overcoming of reasons for delaying parenthood (68%). This can be achieved through the proposed model for MMSCFP.

The opinions of experts were valuable to us - they believe that midwives can influence the reasons for delaying parenthood in several directions - family planning clinics (30%), increasing health education (25%). Some students share the same opinion (35%).

The role of midwives in overcoming the reasons for delaying parenthood was clarified in a in-depth interview conducted with experts from CRM.

"The main role of midwives is expressed in raising health education among young people. Without health education and gaining health knowledge, we cannot achieve good results in this area." (R2)

"Young people do not have health education, and therefore midwives can make a high contribution because when a patient comes to the clinic, it is not right for me to start explaining things to them for which they have gaps of years regarding reproductive health." (R4)

"Prevention, which is carried out by increasing knowledge among students about sexual maturity, sexually transmitted diseases, protection against unintended pregnancy, and introducing girls to reproductive opportunities for women." (R4)

"Perhaps the most useful place for midwives would be to increase activities in family planning clinics." (R6)

The competencies and skills of midwives, as evaluated by experts from CRM, identify the role of midwives in overcoming the reasons for delaying parenthood. We also explored the opinions of regular midwives/nurses from CRM regarding health-regulated opportunities for promotional activities that enhance reproductive culture among young people (Fig. 13).

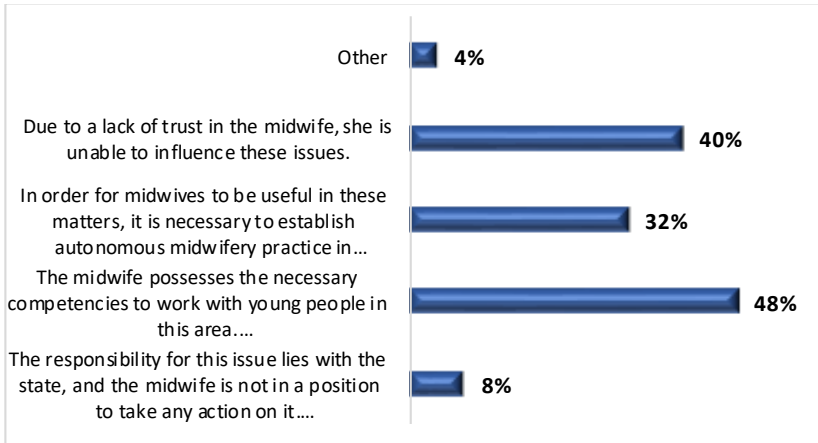


Fig.13. Competencies of midwives for promotional activities.

Nearly half of the surveyed regular midwives/nurses have firmly confirmed that midwives have the competence to carry out promotional activities (48%), but there are also many who believe that trust in midwives is weak and that they would not be able to influence issues that promote reproductive culture (40%).

At this stage, the legal regulation of autonomous midwifery practice (Decree No. 248 of the Council of Ministers from 2005) in the country has not been implemented due to unclear financing.

The experts were given the opportunity to express their opinion on the role of midwives in overcoming the reasons for delaying parenthood (Fig.14).

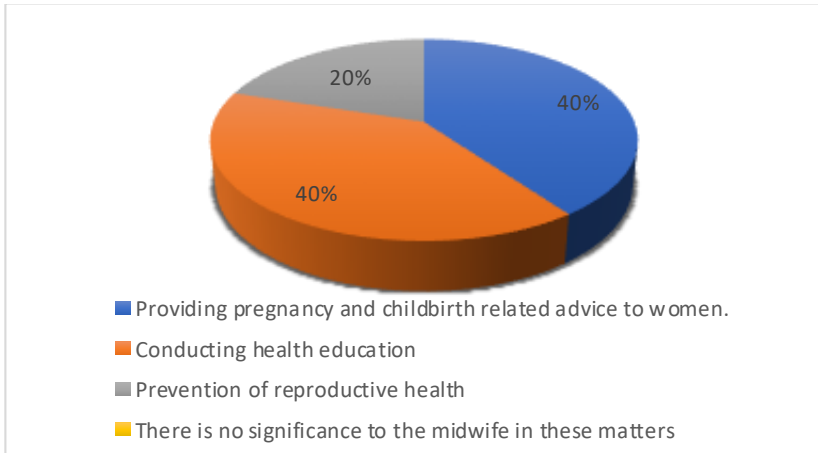


Fig.14. The role of the midwife in overcoming the reasons for postponing parenthood.

Among the respondents, 40% believe that the role of the midwife is to act as a consultant to women regarding pregnancy and childbirth, as well as to provide health education. In contrast, a smaller proportion of respondents, about 20%, think that midwives will make the greatest contribution to preventing reproductive health issues.

In-depth interviews were conducted with experts regarding the curriculum for students in the "Midwifery" specialty. We asked experts whether specific knowledge and practical skills are needed for work in a CRM, which should be included in their curriculum. So far, such a discipline has not been included in the four-year training course for this specialty.

"Yes, reproductive medicine has long been imposed in our country. It is mandatory! This is one of the reasons why there is high turnover of midwives in our clinics, as they find it difficult to adapt to the high specificity of the work." (R1)

"Rather, specialization in this area for midwives who have decided to work in an in vitro center." (R2)

"Of course it is mandatory!" (R3)

"By extending the training period for midwives and the educational qualification level, it should have been imposed in the curriculum." (R4)

"Categorically yes!" (R7)

The experts' opinion on the need to increase midwives' knowledge in the direction of reproductive health is categorical.

2.5. Motivation and demotivation of senior and regular midwives/nurses for their work in a CRM

The specific work in the CRM requires as a requirement an upgrade of basic knowledge and acquisition of knowledge for high-tech and complex treatment, which guarantees successful results in reproductive practice.

Given the specifics of working in the CRM, we provided the opportunity for midwives to share the factors that motivate them to work in this environment (Fig.15).

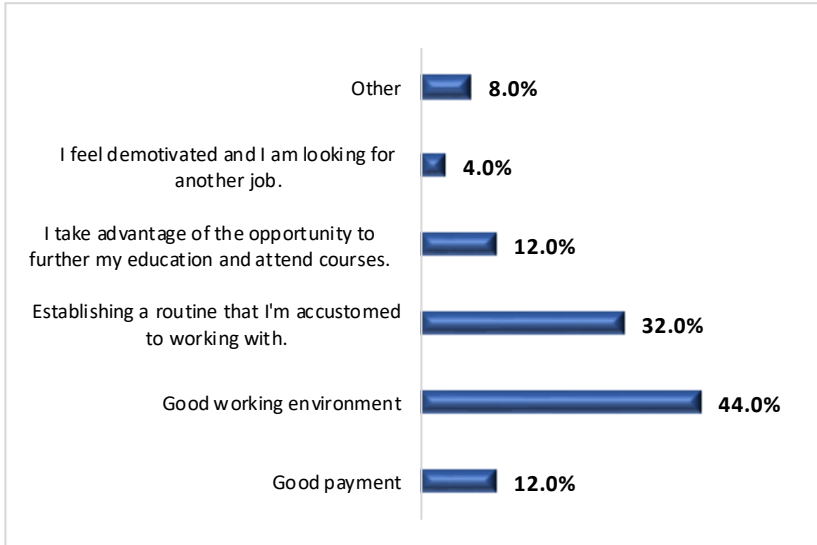


Figure 15. Factors motivating midwives to work in CRM.

Working in the CRM is dynamic and specific, which is associated with the need for adaptation and motivation of all senior and regular midwives/nurses with professional realization in this field.

2.6. The challenges of working with patients at CRM

The specificity of the work in reproductive medicine centers is accompanied by various challenges. In addition to carrying out duties that require high technology, precision, and knowledge of their

specificities, medical specialists in reproductive medicine centers must have a well-established psychological approach when working with women and men with reproductive problems.

One of the challenges faced by patients is the limitation imposed by *the Regulation 28 of the Ministry of Health, Article 27, para. 1, pt. 3 and para. 2*, according to which women over the age of 43 are not entitled to receive funding from the state for in vitro fertilization procedures. We sought the opinions of experts and regular midwives/nurses on the legitimacy of introducing an age limit (Fig. 16).

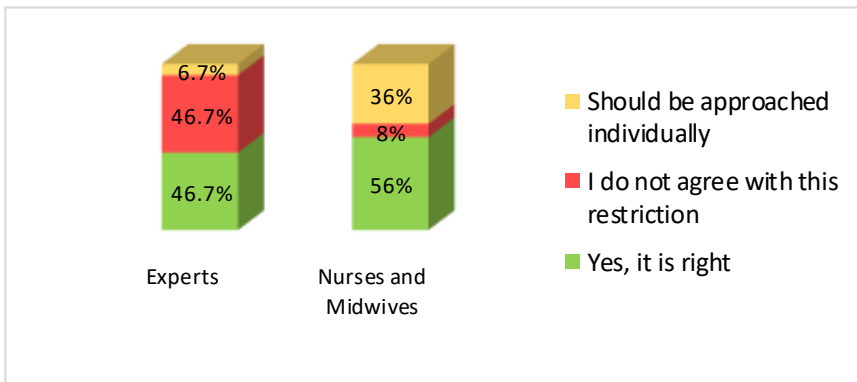


Fig.16. Age limit for state-funded in vitro fertilization procedure.

The majority of respondents, including experts and regular midwives/nurses, support the introduction of an age limit (46.7%: 56%), which is professionally responsible regarding the risks

associated with late pregnancy. There is a much broader range of opposing opinions (46.7%: 8%). Relatively few believe that the approach to such decisions should be individual (6.7%: 36%).

The age limit for assisted reproductive technologies (ART) varies among countries with developed procedures around the world.:

- *Germany, Spain, the United States, Israel, and Turkey - there is no legal age limit for privately-funded ART procedures.;*

However, another challenge that may arise for regular midwives/nurses during their work is the patients' reactions following unsuccessful in vitro fertilization (IVF) procedures (Fig. 17).

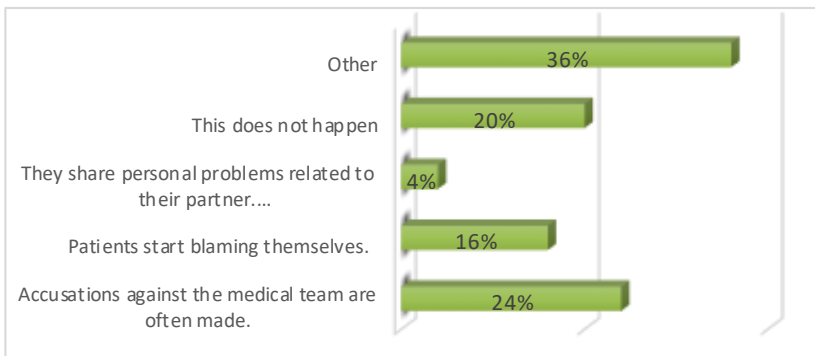


Fig.17. Opinion of regular midwives/nurses on patient reactions after unsuccessful procedures.

Approximately 1/4 of the respondents indicate that patient accusations at fertility clinics are directed towards the medical team (24%). A small portion of the reactions are self-accusatory (16%).

Dealing with these challenging moments requires a high level of professionalism and a good psychological approach on the part of healthcare professionals.

2.7. Shift in the direction of medical services demanded by patients in CRM- opinion of gynecologists

The in vitro technology was initiated in 1978 in England by Dr. Robert Edwards and Patrick Steptoe, and this achievement gave hope to millions of childless couples around the world. Dr. Edwards was awarded the Nobel Prize in Medicine in 2010 for his contribution.

In Bulgaria, the method was introduced in 1987, and the first children conceived through in vitro fertilization were born in early 1988. In 2009, the Council of Ministers established a Fund for Assisted Reproduction, which provides financial support for the treatment of infertile couples in Bulgaria.

To confirm the claim that there is a noticeable change in the users of reproductive services compared to 10-15 years ago, we sought the opinion of experts (Figure 18).

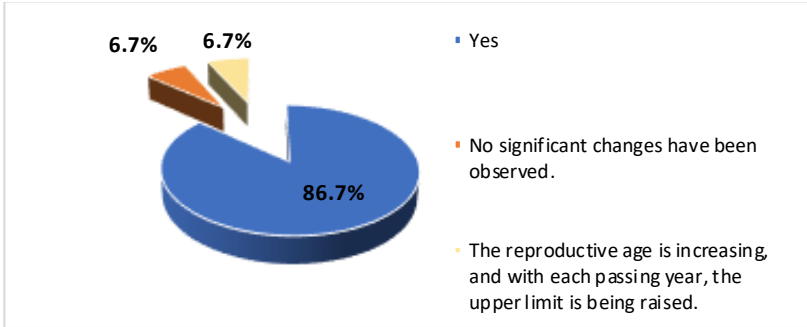


Figure 18: Change in users of reproductive services compared to 10–15 years ago (opinion of experts)

The experts almost unanimously agreed that there is a change in the users of reproductive services (86.7%). The percentage of those who said that there is no change was minimal, and some respondents pointed out that the upper age limit for reproductive age is increasing every year (6.7%).

In connection with these data, we were interested to know whether experts are observing changes among the sought-after services in the CRM. The question was specified regarding the demand for a reproductive procedure using donor material in women without a partner (Figure 19).



Fig.19. In vitro procedure with donor material in women without a partner.

A little over half of the experts confirmed that such individual cases exist (53.3%), and among them, there are also homosexual couple (13.3%).

While this practice has begun, it may establish a model for young people with offspring but without a partner. Although small, the share indicated for assisted reproduction in homosexual couple solves the problem of infertility among homosexual cohabitants.

The influence of religion on the decision to use donor material is statistically significant ($\chi^2 = 20.718$, $p < 0.05$), and the dependence is weakly expressed ($V = 0.263$) (Fig.20).

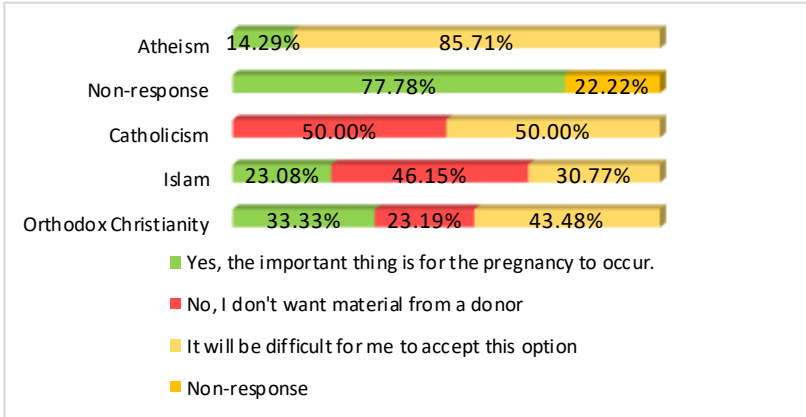


Fig.20. The role of religion in the decision to use donor material.

Patients who profess Islam and Catholicism are categorical in their opinion that they do not want donor material (46.15%: 50%), which is a prerequisite for a clinical problem, especially on the part of the male, and the chances for the couple to become biological parents are impossible.

2.8. The impact of COVID-19 on fertility

There are many ways in which Covid-19 has influenced society. In terms of public health, the virus prevented planned treatments and surgeries from taking place. As a result, global economic insecurity increased, and people with reproductive problems

were unable to receive treatment or receive assisted reproductive treatment.

It has been found that the higher the age in the respective group, the greater the impact of delayed in vitro procedures for 6 months and 1 year. The longer the delay period, the lower the percentage of live births (Table 7).

Table 7. Distribution of age groups among women with postponed in vitro procedures.

Groups	Age	Reduction in live births in % (when delayed by 6 months)	Reduction in live births in % (when delayed by 1 year).
Group I	women up to 30 years of age	0,6%	0,9%
Group II	women between 30 and 35 years	2,4%	4,9%

Group III	women between 36 and 37 years	5,7%	11,9%
Group IV	women between 38 and 39 years	9,5%	18,8%
Group V	women between 40 and 42 years	11,8%	22,4%

In connection with the presented data, we were interested to know whether, according to the respondents, the COVID pandemic would have an impact on birth rates (Fig.21).

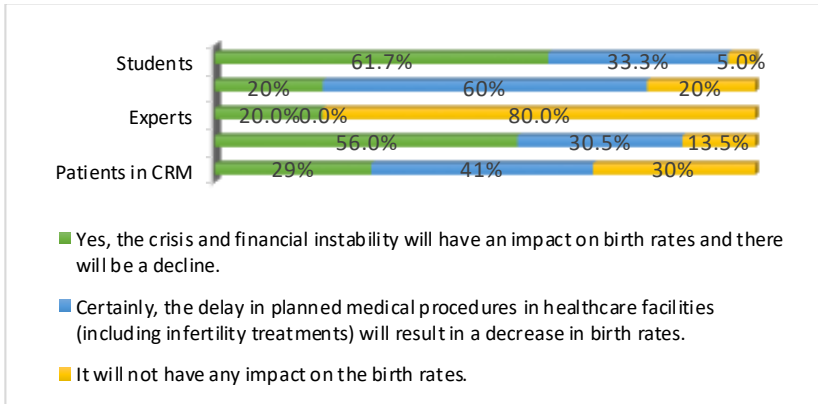


Fig. 21. Survey respondents' opinions on the impact of the pandemic on birth rates.

According to the comparative analysis of respondents regarding the impact of the pandemic on birth rates, the highest percentage of patients from the CRM stated that "the postponement of planned activities in reproductive medicine will result in a decline in birth rates" (41%), followed by regular nurses and midwives (60%). The majority of surveyed students (61%) and hospitalized patients (56%) believe that the crisis and financial instability will have an impact on birth rates. Notably, the percentage of surveyed experts who believe that the pandemic will not have an impact on birth rates is high (80%), perhaps due to their knowledge of the history of past pandemics that have affected humanity.

2.9. The attitudes and readiness of female students with children in the Bachelor's programmes "Nursing" and "Midwifery" for Reproductive health prevention (RHP)

The role of a midwife in reproductive health prevention is different from the standard duties performed in maternity wards, where everything follows a predetermined algorithm and the final outcome is achieved after several hours. Midwives are always ready to respond to emergencies.

In connection with this, we asked student-mothers studying in the specialties of midwifery and nursing about their attitudes and willingness to participate in reproductive health prevention (Fig. 22).

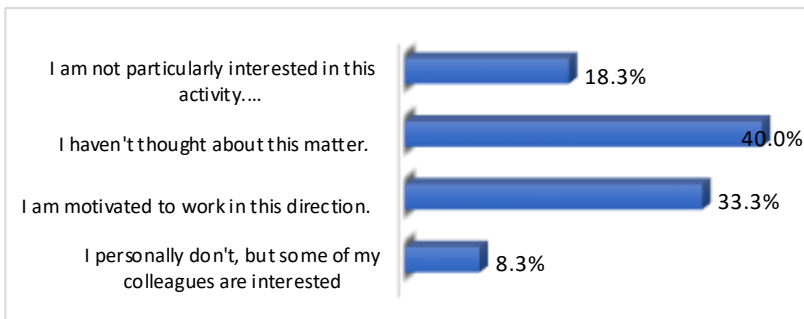


Fig.22. Readiness of student-mothers to participate in reproductive health prevention.

The majority of those surveyed shared that they had not previously considered this question (40%), while 1/3 confirmed that they were motivated to work in this area (33.3%). Less than 1/5 of respondents expressed no interest in this activity.

We were interested in understanding whether student-mothers feel confident in the knowledge, skills, and practical training they receive during their studies to work in CRM (Fig. 23).

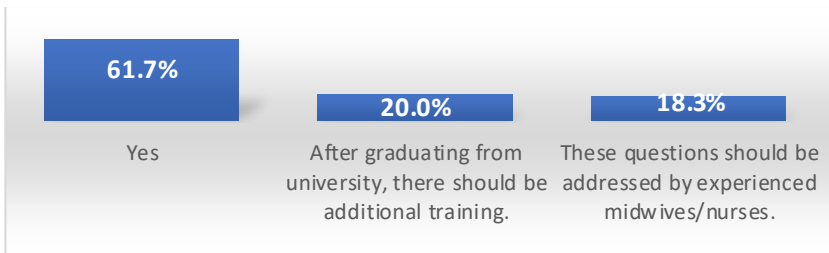


Fig.23. Having confidence in the knowledge gained during the study in order to work in the field of RHP.

More than half of the respondents were absolutely convinced that healthcare professionals are prepared to participate in reproductive health prevention upon graduation (61.7%). Respondents who emphasized the need for additional training in RHP accounted for 20% of the total, while 18.3% believed that experienced healthcare professionals should work in the field of reproductive health.

We also asked students whether, in light of the difficulties they face, parenthood should be postponed until after completing their education (Fig. 24).

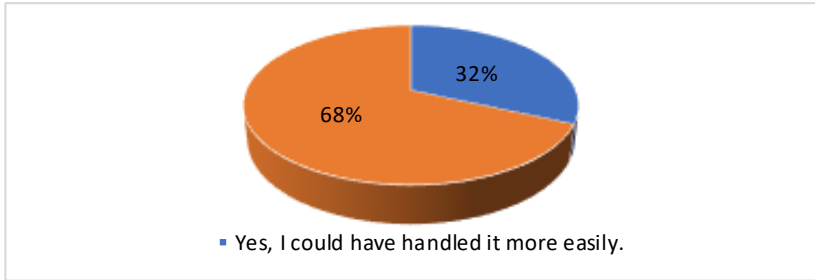


Fig.24. Education as a factor for delaying parenthood.

Encouragingly, despite the increased challenges that student-mothers face, the majority of them believe that childbirth should not be postponed (68%). We assume that as a result of their studies, the respondents are well aware of the risks associated with delaying parenthood and pregnancy at an advanced age.

Lastly, we were interested in determining to what extent student-mothers are informed about demographic data related to childbirth rates (Fig. 25).

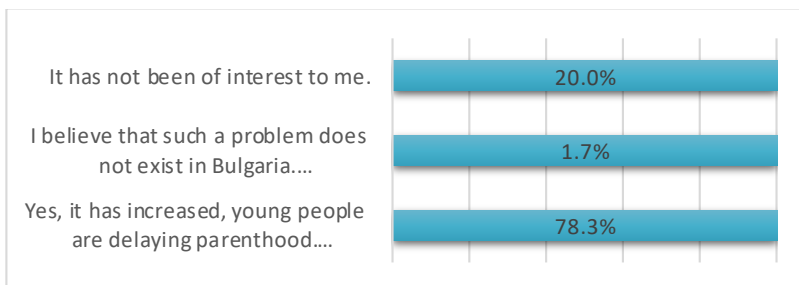


Figure 25. Students' awareness regarding the increase in the average age for giving birth to a first child in Bulgaria.

According to data from the NSI, the average age for giving birth to a first child in the country in 2021 was 27 years, with the highest rate being in Sofia at 30.1 years. The majority of those surveyed were aware that the average age for giving birth to a first child in the country is increasing and that there is a growing trend among young people to delay parenthood (78.3%).

3. A practical approach to preventing postponed parenthood in the context of reproductive health prevention

3.1. Model of a Midwifery Support Centre for Future Parents (MSCFP)

To overcome the reasons for postponing parenthood, there is a need to involve midwives in various levels of reproductive health prevention.

The establishment and activities of the MSCFP aim to achieve:

- ❖ **Health education** - reproductive health prevention, targeting boys and girls from the moment of puberty at age 11-12 until its completion at 18 years old.
- ❖ **Working with couples with reproductive problems**
 - the team becomes familiar with the case, analyzes the data, and prepares a work plan for the couple based on identified needs. **Health education and training will be carried out in two stages:**

Stage I - the target group is aged 11-14

The midwife's activities will be related to increasing health education, through the mandatory study of the discipline "Health Education," and improving health knowledge about:

- Structure and characteristics of the reproductive organs;
- Puberty in boys and girls;
- Primary and secondary sexual characteristics;
- First appearance of menstruation;
- Hygiene - care for the body, face, oral cavity, eyes, proper nutrition, sports, and health;

- Prevention of violence - physical and psychological aspects, sexual violence. Recognition of violence and the abuser - in others and oneself. Domestic and school violence;
- Risky sexual behavior;
- Use of narcotics, alcohol, and excessive use of tobacco products.

Stage II - the target group is aged 15-18 years old.

The activities of the midwife will be focused on increasing awareness on various topics related to family planning, including:

- Methods of contraception and prevention of unintended pregnancies
- Protection against sexually transmitted infections
- Family planning
- The use of drugs and alcohol and their impact on reproductive functions
- Identifying risks associated with maintaining multiple sexual relationships and short-term partnerships
- Recognizing individuals and events involved in sex trafficking and taking protective measures
- Factors and behaviors contributing to clinical and psychological infertility
- Building relationships between men and women based on responsibility, trust, and equal respect

- Promoting hygiene in sexual practices.

The goal of the program for couples with reproductive problems is to increase health knowledge, promote a healthy lifestyle, and support men and women with reproductive issues.

Psychological and Emotional Support:

- Provide services for mental health and psychological support.

Assistance for Couples undergoing Reproductive Procedures:

- Provide explanations regarding the tests and procedures that are to be undertaken;
- Perform manipulations within the scope of obstetric competencies related to ovarian stimulation;
- Provide psychological preparation for follicular puncture;
- Prepare the man psychologically for the upcoming fertilization of the separated egg cell and explain the need for semen separation and sexual abstinence;
- Provide explanations regarding the upcoming embryo transfer;
- Offer psychological support to the couple throughout the process;

- Monitor pregnancy;
- Provide a 24-hour continuous communication service with a midwife through a mobile application for online correspondence.

Public Consultation and Support:

- Provide consultations to women and men facing reproductive problems, as well as prenatal care services for pregnant women who have used reproductive techniques;
- Support for financing in-vitro procedures from the business sector, in case of refusal for state funding.

The activities carried out in the MSCFP are presented in Fig.26.

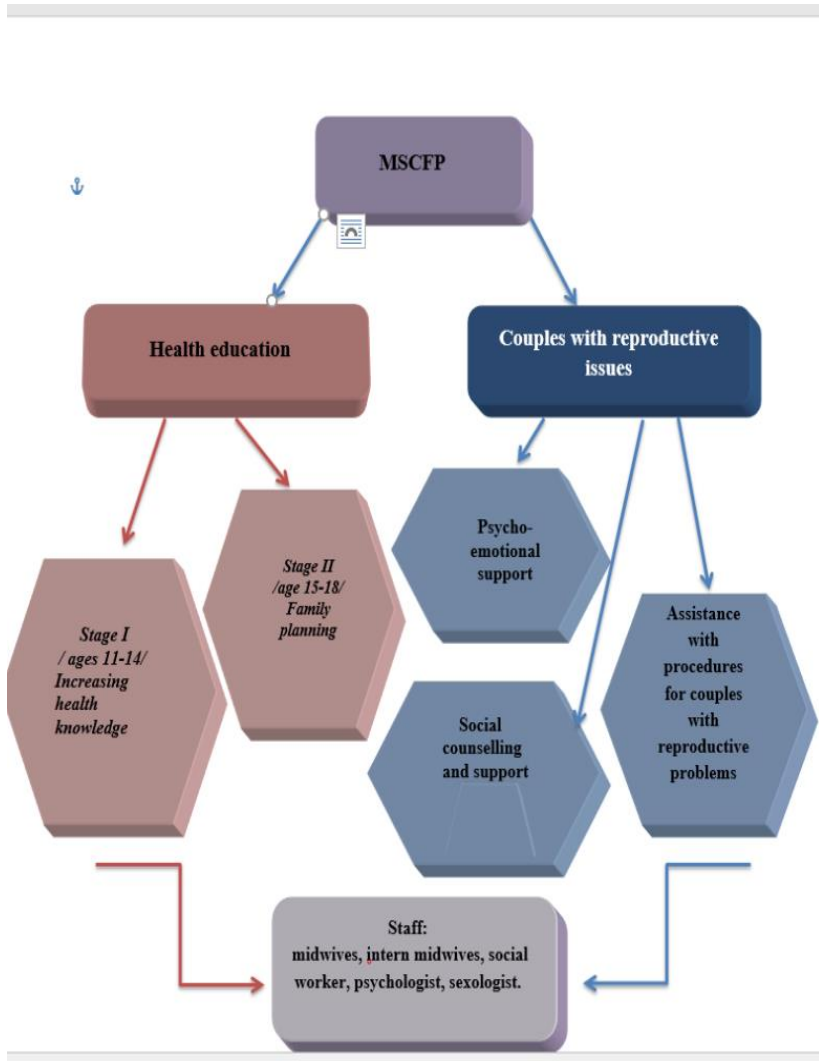


Fig.26. Model of a MSCFP

The funding and oversight of the MSCFP will be provided by the MH, the NHIF, the MES, the Municipality, and the business sector.

The team will include:

- A midwife-manager with at least 5 years of experience and a Master's degree in Healthcare Management.
- Two midwives.
- A psychologist.
- A social worker.
- A sexologist.
- Intern midwives.

The MSCFP will collaborate with CRM, obstetrician-gynecologists, family psychotherapists, dieticians, governmental and non-governmental organizations combating violence, the Directorate of Social Inclusion, businesses as a donation source, and employers.

Monitoring mechanisms

The activities of the CPNRA should be publicly presented and monitored. Control functions can be carried out by:

- The MH;
- Municipalities - Directorate "Social Policy and Healthcare", Directorate "Education, Science and

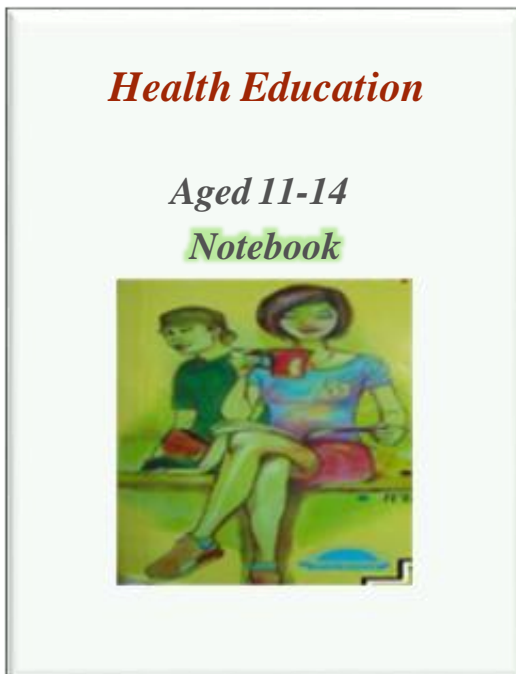
Culture", Directorate "Economy, Municipal Property and European Programs"

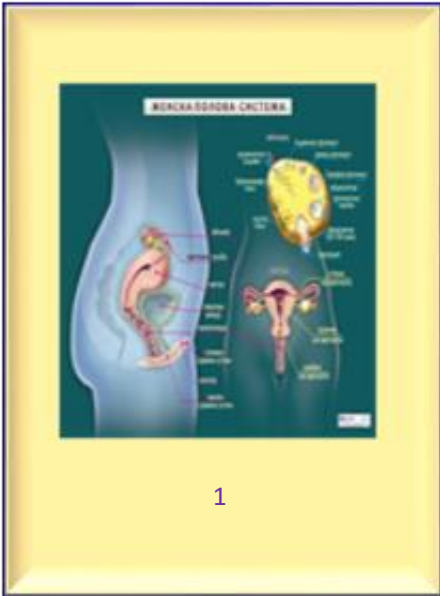
- The BAHCPs
- NHIF
- Businesses

The operation of the MSCFP and its activities will compensate for the missing links in healthcare education, family planning, and reproductive health.

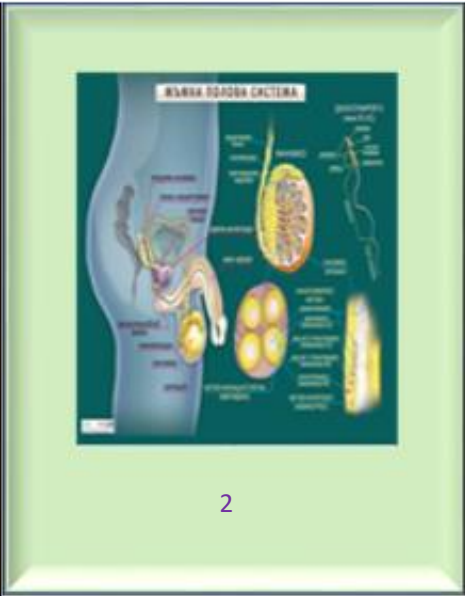
3.2. Auxiliary resources of the MSCFP

"Health Education Notebook" for students aged 11-14 years old.





1



2

Fertilization Fig.1, Fig.2, Fig.3

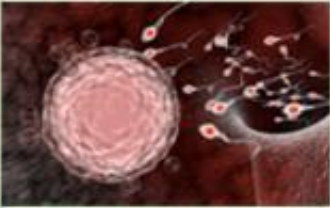


Fig.1.




Fig.2.




Fig.3.
Development of the fetus




Fig.4.

Exercise

№1. Please write down which internal genital organs of the female reproductive system are visible in the image?



№2. Which external female genital organs do you see in the image?



№3. In which part of the female reproductive system does fertilization occur?

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.....
.....

№4. Please fill in the blank spaces. The female sex cell is called _____, the male sex cell is called _____. After fertilization, the egg cell begins to _____ and is called _____.

№5. Please place the symbol >, < or = in the blank space of the statement:

The egg cell is _____ in size compared to the spermatozoon.

Changes during puberty

1. Primary sexual characteristics

Primary sexual characteristics are the reproductive organs in organisms that serve for copulation and reproduction. These include, for example, the vagina, ovaries, and uterus in female organisms, and the testes with their appendages, ejaculatory duct, seminal vesicles, prostate gland, bulbourethral gland, scrotum, and penis in male organisms.

2. Secondary sexual characteristics

Secondary sexual characteristics are the traits that distinguish the two sexes of a biological species but are not part of the reproductive system.

№1. List the secondary sex characteristics of women.

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№2. List the secondary sex characteristics of males.

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№3. Are there any emotional changes that occur in girls and boys during puberty, and what are they?


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- ❖ A handbook for couples with reproductive problems.



- осъществяване на сперматогенезата при висока температура – вследствие на повишена телесна температура, носене на неподходящо облекло, често и продължително седнало положение;
- въздействие на лекарства и токсини – химioterпевтици, анаболни стероиди, симетидин, спиронолактон и др.
- Нарушена функция на акцесорните жлези (простата, семенни мехурчета, бульoureтрални жлези).
- Непроходимост на семеprоводите фактори, затрудняващи достигането на сперматозоните до влагалището – аномалии на мъжките полови органи (хипоспадия), еректилна дисфункция, преждевременна еякулация и др.

3

 Женски фактор

1. Тубарен фактор (30-40% от случаите) – нарушена проходимост и/или транспортна функция (могилитет) на маточните тръби вследствие на:

- прекарани инфекции на тръбите (с причинители гонококи, хламидии, стрептококи, трихомонас и др.);
- сраствания в областта на маточните тръби поради прекаран възпалителен процес в съседство или претърпани операции;
- притискане на тръбите от туморни форми;
- ендометриоза.

2. Липса на овулация (ановулация) – 10-15% от случаите на стерилитет. Дължи се на ендокринни нарушения.

3. Цервикален фактор – нарушено взаимодействие между секретата на маточната шийка и еякулата;

4

- променена позиция на маточната шийка (проlaps, ретроверзия на матката);
- хронична инфекция, при която се променят характеристиките на цервикалния секрет;
- предхождащи манипулации върху маточната шийка и последваща стеноза на шийката;
- наличие на антисперматни антитела в цервикалния секрет.

4. Маточен фактор:

- вродени аномалии на матката – синдром на Рокитански (липса на матка и горната част на влагалището при наличие на функциониращи яйчници и развити вторични полови белези) или по-малки дефекти – овидна матка, аркуатна матка, двукрога, еднокрога матка;
- придобити дефекти – наличие на сраствания в маточната кухина (синдром на Айерман) вследствие вътрешноматочни манипулации възпазение;

5

- субмукозни миоми възли и др.

Фактори, имащи значение и при двата пола:

- напреднала възраст;
- тютюнопушене;
- алкохол;
- радиация.

За да бъде установена причината за Вашия стерилитет, предстоят редица изследвания. Те ще бъдат назначени, въз основа сво вашия здравен статус и начин и стил на живот. **Информацията ще бъде взета от двама Ви.**

За откриване на точната причина за стерилитет е необходимо на мъжа да бъде извършена оценка на мъжкия фактор чрез **спермограма**.

6

Как се извършва спермограмата?

Прякът се няколко спермограми в една и съща лаборатория, тъй като резултатите могат да варират в широки граници. Изследването се извършва след няколко дена на полово въздържание. Спермограмата дава информация за количеството и качеството на спермата и включва следните показатели:

- обем на еякулата;
- количество на сперматозоидите;
- подвижност на сперматозоидите;
- морфология на сперматозоидите;
- виталитет на сперматозоидите;
- рН на спермата;
- вискозитет;
- количество на фруктозата;
- брой левкоцити и др. Фиг. 1.



Фиг.1. Факторите, които се наблюдават при спермограма.

7

За да бъде установена причината при жената е необходимо:

1. да бъде установено наличието или липсата на овулация при жената чрез:

- **ехографско проследяване** *големината и нарастването на яйчниковите фоликули чрез серийни изследвания (фоликулометрия);*
- **измерване на базалната температура** – търси се **термогенният ефект на прогестерона**, който води до покачване на **базалната температура след овулация**. Провежда се за няколко последователни менструални цикъла. Температурата се мери сутрин след събуждане;
- **серумни нива на прогестерона** – изследва се през **лутеалната фаза**, около седем дена преди предполагаемото начало на следващата менструация. Например при 28-дневен цикъл **прогестеронът** се изследва на 21-вия ден;
- **ендометриална биопсия** – доказване на **секреторни промени в ендометриума** вследствие действието на **прогестерона** през **лутеалната фаза**.

8

2. Оценка на проходимостта на тръбите (тубарен фактор):

- **хистеросалпингография**;
- **хидротубация** *подултразвуков контрол* – **ултразвуково изследване с въвеждане на физиологичен разтвор в маточната кухина, играеш ролята на контрастно вещество, и проверяване проходимостта на тръбите;**

- **лапароскопия**.

3. Други изследвания:

- **изследване за полово-предавани болести** (хламидии, гонококи и др.);
- **хормонални изследвания** – **щитовидни хормони, пролактин**;
- **посткоитален тест** – изследване за **сперматозоиди в цервикален секрет, взет 2-12 часа след полов акт**;
- **генетични изследвания**.

9

След установяване на конкретната причина за стерилитет ще се пристъпи към лечение.

Съобразно причината за стерилитет **при мъжете**, се предприемат следните дейности:

- **оперативно** – напр. при **варикоцеле**;
- **медикаментозно** – при хормонални нарушения;
- **антибиотично** – при инфекции;
- **лечение на еректилната дисфункция** и преждевременната еякулация;
- **асистирана репродукция** – сперматозоидите могат да се получат след нормална еякулация или да се извлекат от тестисите или **надсеменниците**, както и да се използва донорска сперма.

10

След това може да се извърши вътрематочна инсеминация (IUI – intrauterine insemination), in vitro оплождане с трансфер на яйцеклетката или директно инжектиране на един сперматозоид в яйцеклетката (ICSI – intracytoplasmic sperm injection).

Съобразно причината за стерилитет **при жените**, ще се предприемат следните възможни дейности:

- хормонална заместителна терапия;
- медикаментозна стимулация на овулацията;
- антибиотично лечение;
- оперативно лечение – при непроходимост на тръбите (възстановяване на проходимостта или отстраняване на тръбите и последваща in vitro инсеминация), при някои аномалии на матката, сраствания в матката;
- асистирана репродукция – с използване на собствена или донорска яйцеклетка.
- при синдром на поликистозните яйчници – медикаментозно стимулиране на овулацията, съпътствано с лечение.



11

Какво Ви предстои при нас?

- ✓ Ние ще Ви предложим услуги за психическо здраве и психо-емоционална подкрепа:




Наш специалист ще Ви помогне да преодолеете съпътстващото Ви психо-емоционално неразположение. Ще работи индивидуално и в екип с двамата. Моля бъдете максимални откровени-това е от значение за подобрене на вашето емоционално здраве. Отбележете с тукже Вашите емоции, след всяка среща с нашия консултант.

Форма за жената

дата			
Място за лични бележки:			

12

Форма за мъжа

дата			
Място за лични бележки:			

В зависимост от това как сте водили Вашите бележки, нашият специалист ще предприеме допълнителни мерки за работа с Вас или ще приключи терапията, в случай, че Вие се чувствате добре.

- ✓ В зависимост от това какви изследвания предстоят на единият от вас (или двамата), при нас ще получите пълно пояснение, относно това какво представлява Вашето изследване, как се извършва и как трябва да сте подготвени за него.

13

- ✓ В случай, че на жената и предстои стимулация на яйчниците, ние ще извършим всички манипулации, които включва стимулацията и ще Ви дадем пълна информация какво представлява фоликуларната пункция.

- ✓ Ще получите пълни пояснения, относно - какво представлява предстоящия ембриотрансфер и относно него заедно ще обсъдим Вашите притеснения и въпрос.

- ✓ Ние Ви предлагаме 24 часа непрекъсната консултация. Можете да споделяте, промяна във Вашето състояние, и всичко, което Ви тревожи. Компетентна Акушерка ще прецени Вашето състояние и ще Ви насочи-дали е необходимо да посетите лекар, или всичко, което се случва с Вас е нормално.

- ✓ Непрекъснатата комуникация с нашия акушерки, можете да стартирате, като изтеглите приложението от google play.

14

Приложението ще изтеглите, като изпишете: АЦПБР. Ще го откриете със следния символ:



- ✓ При нас ще получите подкрепа за финансиране на инвитро процедура от бизнес сектора, при отказ за държавно финансиране.
- ✓ Следващата страница е прикрепена към наръчника с пунктир. Нейното предназначение е да бъде Вашето писмо, адресирано към нашият екип, в случай, че се затруднявате да говорите за вашите проблеми по чувствителни теми, като сексуално насилие, еректилна дисфункция и др.

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4. Conclusions, proposals and recommendations

4.1. Conclusion

1. A woman's health education and the preservation of her reproductive function are of paramount importance throughout her life cycle. A person with greater health

knowledge has a greater likelihood of making informed decisions, planning, and making responsible reproductive decisions.

2. The lack of knowledge about reproductive possibilities for women in different age groups is a reason for crossing the biological boundary for having a child.
3. Promoting health awareness is an important aspect of determining when to have your first child.
4. A deficit of information was found among respondents regarding the most appropriate time to give birth to a first child and the health and social consequences of delaying parenthood.
5. The main factors for delaying parenthood among young people of reproductive age are clinical (women - blocked fallopian tubes, hormonal disorders, ovulation disorders, endometriosis, and depletion of ovarian reserve; men - pathological spermatogenesis) and socio-economic (lack of a suitable partner, lack of sufficient financial means, career development, and continuing education).
6. Higher education is a predictor of a good level of health culture, guaranteeing informed choices regarding health and reproductive possibilities.
7. Expert opinion is highly valued, according to whom midwives can have a positive impact on overcoming the reasons for delaying parenthood through increased health education,

promoting reproductive health, and developing their practice as an independent midwifery practice.

8. An independent discipline that focuses on sexual health issues can be used as a means of providing health education in schools.
9. A midwife's professional competencies make her a valuable resource in a variety of areas, including health education, reproductive health prevention, and support and assistance during research and the implementation of various reproductive techniques.
10. The MSCFP will be able to fill in the gaps in health education, family planning, and sexual health through its activities.

4.2. Proposals and recommendations to institutions

➤ To the MES

- Introduce educational programs aimed at increasing the awareness of young people, providing consultations on sexual and reproductive health, responsible parenthood, and using reserves to reduce abortions by choice, and thereby limiting and reducing risks to the reproductive health of girls and women.

➤ To the NHIF

- Funding for the autonomous activities of midwives focused on reproductive health and valuing their activities.

➤ **To the Medical Universities and the BAHP**

- An elective discipline for the preparation of midwives as lecturers on health topics.

Providing short-term training for midwives in sexual and reproductive health counselling.

Publications and participation in scientific forums related to the dissertation.

1. Kyuleva, T., "Factors influencing the decision to give birth to a child", issue 2/2019 ISSN1312-2592, "Health Care".

2. Kyuleva, T., "Postponement of Parenthood-Causes and Consequences" - Second International Conference "Health Care-Contribution to Quality of Life" , 7-8 June, 2019, Sofia, Bulgaria. Varna (Proceedings 92-97pp.)