

# Acceptance of diagnostic and therapeutic methods by married couples treated due to infertility

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**Abstract** **Objective:** The objective of the study was evaluation of acceptance of diagnostic and therapeutic methods by married couples treated due to infertility.

**Method:** The study covered 50 married couples beginning treatment and those in the course of diagnosing and treatment of infertility. The research instrument used in the presented study was a questionnaire form designed according to own project. The results obtained were subjected to statistical analysis.

**Results:** Males who had university or secondary school education level significantly more often accepted individual diagnostic and therapeutic methods for their wives, compared to males with elementary and elementary vocational education. This concerned the procedures such as: laparoscopy, *in vitro* fertilization, and egg cell donation. A similar relationship was observed among the females examined. *In vitro* fertilization was more frequently accepted by respondents with higher income. The respondents' place of residence also exerted an effect on the acceptance of the methods of treatment and diagnostics. Females aged over 35, and those in the age group 30-35, considerably more often accepted treatment with gonadotropins, compared to those aged under 30.

**Conclusions.** Age and education level are of great importance with respect to the acceptance of individual diagnostic-therapeutic methods by couples treated for infertility.

Income obtained by the respondents exerted an effect on their acceptance of selected methods of infertility treatment.

**Key words** infertility, diagnosis, treatment, social attitudes

## INTRODUCTION

The inability to conceive after one year of unprotected sexual intercourse indicates the existence of the cause making procreation impossible. This year-long waiting to get pregnant is a kind of trial of biological functioning of the reproductive system of spouses or partners. If after this period, pregnancy is not achieved this is an indication to start infertility diagnostics, which should always concern both partners.

The diagnostic methods most frequently used in cases of infertility are: hormonal tests, ultrasonographic procedure, histerosalphingography, laparoscopy, prenatal tests, postcoital test (PCT), hysteroscopy, and genetic examinations.

Three basic groups of infertility treatment methods may be distinguished: pharmacological and surgical treatment, as well as medically assisted reproduction techniques. Pharmacological treatment covers the use of anti-estrogen drugs, gonadotropins and steroid hormones, gonadoliberin analogues, antibiotics, thyroid hormones and other drugs. This treatment is of primary importance in the regulation of impaired function of the hypothalamic-pituitary-ovarian axis, and to a lesser degree corrects the impaired function of the uterine mucosa and the cervical glands. Surgical

treatment – (most frequently surgical endoscopy) consists in the correction of ovarian and oviductal disorders (e.g. opening of the oviducts and plastic reconstructive microsurgery of the oviductal fimbriae, release of the oviducts from adhesions – salpingolysis, removal of uterine fibroids and intrauterine adhesions, cyst removal (mainly endometrial cysts), resection of intrauterine septa [1-3]. Medically assisted reproduction techniques cover: intrauterine insemination, intracervical insemination, donor sperm insemination, classic fertilization – transferring the embryo into the uterus, *in vitro* fertilization – intracytoplasmic sperm injection, collection of epididymal sperm, collection of sperm from the testicles by extraction or aspiration, various techniques for disturbing the integrity of the transparent covering of the ovum (laser, mechanical, chemical), collection of the egg cell from the donor, genetic diagnostics prior to implantation [4,5].

The objective of the study was evaluation of acceptance of diagnostic-therapeutic methods by married couples treated due to infertility.

## MATERIAL AND METHODS

The study covered 50 married couples beginning treatment or in the course of diagnosing and treatment for infertility.

The research instrument used in the presented study was a questionnaire form designed according to own project. The questionnaire form was completed by the respondents

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independently, without the presence of the investigator, after former explanation of the method of questionnaires. Married couples participating in the study were informed concerning its goal, anonymous character, and application of the data obtained in this way exclusively for scientific purposes. The questionnaire contained 10 items concerning personal data, and 34 proper questions, pertaining to the acceptance of individual methods applied in the diagnostics and treatment of infertility. These questions were of an open, semi-open and closed character. The results obtained were subjected to statistical analysis. The values of measurable parameters analyzed were presented by means of mean value and standard deviation, and for non-measurable parameters – by means of numbers and percentage. For measurable variables the normality of distribution of the parameters analyzed was evaluated by means of W Shapiro-Wilk test. In order to compare two independent groups t-Student test was applied, and for the comparison of more than two groups the analysis of variance (ANOVA) was applied. For unconnected qualitative variables  $\chi^2$  test for uniformity was used to detect the differences between the groups compared. The presence of the relationship between the variables analyzed  $\chi^2$  test for independence was used, while the relationship between the variables was measured by means of R Spearman's correlation. The p values  $p < 0.05$  were considered as statistically significant. The database and statistical analyses were performed based on computer software STATISTICA 8.0 (StatSoft, Poland).

## RESULTS

The study group were 50 couples treated due to infertility. Among the women examined the largest group according to age were respondents aged 30-35 (48%), whereas the smallest – those aged over 40 (4%). The most numerous group of males were those aged 35-40, (34%), while the lowest percentage of male respondents were aged 20-25, (4%). The highest percentage of females and males were married (94% and 96%, respectively), while only 6% of females and 4% of males were unmarried. The majority of respondents were rural inhabitants (66%), 14% of females and 16% of males lived in the capital city of the region, whereas 20% of females and 22% of males lived in other towns. The greatest number of respondents had a good material standard (84% vs. 88%), only few of them had poor or very good living conditions. The majority of females in the study had secondary education level (50%), followed by university education (24%), elementary vocational – 8%, elementary school and licentiate education level – 2% each. Among males 38% of respondents had an elementary vocational education, followed by secondary education – 34%, university education – 24% and licentiate – 4% (Table 1).

While making the diagnosis and during treatment for infertility the women in the study most often had hormonal tests performed (90%), and USG (98%), followed by hysterosalpingography (62%), postcoital test (38%), laparoscopy (36%), and most rarely – hysteroscopy (12%).

The mean duration of treatment due to infertility reported by females was 2.38, and according to evaluations by males – 2.17. The shortest duration of treatment was 3 months, whereas the maximum time – 8 years.

The greatest number of women in the survey were treated due to infertility by 2 physicians (44%), while 28% – by 1 physician, 26% – by 3, and 2,00% by 5 physicians. The majority of males

**Table 1** Characteristics of the group examined.

|   | Females |       | Males |       |
|---|---------|-------|-------|-------|
|   | n       | %     | n     | %     |
| <b>Age</b>  |         |       |       |       |
| 20-25   | 5       | 10.00 | 2     | 4.00  |
| 25-30   | 15      | 30.00 | 12    | 24.00 |
| 30-35   | 24      | 48.00 | 15    | 30.00 |
| 35-40   | 4       | 8.00  | 17    | 34.00 |
| over 40   | 2       | 4.00  | 4     | 8.00  |
| <b>Marital status</b>   |         |       |       |       |
| single  | 3       | 6.00  | 2     | 4.00  |
| married   | 47      | 94.00 | 48    | 96.00 |
| <b>Place of residence</b>                                     |         |       |       |       |
| capital city of the region<br>or former capital of the region | 7       | 14.00 | 6     | 12.00 |
| other town  | 10      | 20.00 | 11    | 22.00 |
| rural area  | 33      | 66.00 | 33    | 66.00 |
| <b>Material standard</b>                                      |         |       |       |       |
| very good   | 5       | 10.00 | 4     | 8.00  |
| good  | 42      | 84.00 | 44    | 88.00 |
| poor  | 3       | 6.00  | 2     | 4.00  |
| <b>Education</b>  |         |       |       |       |
| elementary  | 1       | 2.00  | 0     | 0.00  |
| elementary vocational   | 4       | 8.00  | 19    | 38.00 |
| secondary school  | 25      | 50.00 | 17    | 34.00 |
| higher occupational (licentiate)                              | 8       | 16.00 | 2     | 4.00  |
| university  | 12      | 24.00 | 12    | 24.00 |

received treatment from 1 physician (58%), 32% – from 2 physicians 8% – from 3, and 2% from 5 physicians.

The subsequent items of the questionnaire concerned the acceptance of individual diagnostic-therapeutic methods. As many as 72% of females and 64% of males in the survey accepted treatment with gonadotropins. The statistical analysis did not show any significant differences in the acceptance of treatment with gonadotropins between males and females, ( $p=0.49$ ). Similarly, no statistical difference was observed in the acceptance of performance of hysterosalpingography ( $p=0.34$ ). The performance of laparoscopy was accepted by 82% of females and 78% of males.

As many as 90% of males in the study would express their permission for examination of their semen, 4% of them would not express such a consent, while 6% had no opinion.

As many as 96% of women in the survey accepted intrauterine insemination with their husband's semen; 90% of males examined accepted intrauterine insemination with their own sperm. Statistical analysis did not show any significant differences in the acceptance of intrauterine insemination with semen between males and females ( $p=0.32$ ).

The women in the survey slightly more often accepted *in vitro* fertilization (68%), compared to males (56%). This method was not accepted by 12% of females and 24% of males. Differences with respect to age were not statistically significant. Analysis of the data obtained indicates that males more frequently did not accept the techniques of assisted reproduction (70%) more often than females (52%). However, the differences noted were not statistically significant ( $p=0.18$ ). The study showed that females slightly more often than males accepted egg cell donation (42% and 36%, respectively); the differences observed were not statistically significant ( $p=0.58$ ). The majority of respondents would not express their consent to become egg cell donors - . 62% of males and 46% of females. Males equally as often as females did not accept embryo donation (42% vs. 36%). The respondents slightly more often mentioned that they

would express their consent to their husband being a sperm donor (56%), compared to the opinions by males, who more rarely would become semen donors (46%). The differences noted were not statistically significant ( $p=0.48$ ).

At the subsequent stage of the study, the effect of socio-economic factors was evaluated on the acceptance of individual diagnostic-therapeutic methods.

A statistically significant relationship was observed between the age of the women in the study and the acceptance by them of the treatment with gonadotropins ( $p=0.05$ ).

Female respondents aged over 35 (100%) and 30-35 (79.17%) significantly more often accepted treatment with gonadotropins, compared to respondents aged 30 and under 30, (55%). Also, the statistical analysis showed a significant relationship in the acceptance of gonadotropins by women according to their place of residence ( $p=0.005$ ). Urban women more frequently accepted treatment with gonadotropins (100%), compared to women living in the rural areas (57.58%).

The respondents who had tried to achieve pregnancy for more than 5 years slightly more often accepted treatment with gonadotropins (81.82%), compared to those who had received treatment for less than 5 years (72.73%) and up to 2 years (64.71%). However, this difference was not statistically significant ( $p=0.61$ ).

Female respondents aged 30-35 slightly more frequently accepted the performance of hysterosalpingography (83.33%), compared to those aged under 30 (65%), and over 35-35 (66.67%) ( $p=0.35$ ). A statistically significant relationship was confirmed between the consent to perform hysterosalpingography and the occurrence of spontaneous abortion – women who had experienced spontaneous abortion in the past significantly more often accepted the necessity to perform this examination ( $p=0.04$ ). The respondents who had tried to achieve pregnancy for less than 5 years slightly more frequently accepted the performance of hysterosalpingography (81.82%), compared to those respondents who had been waiting to become pregnant for less than 2 years (70.59%) or for over 5 years (63.64%). These differences, however, were not statistically significant.

The males in the survey aged 30-35 (100%), and over 35 (76.19%) statistically more frequently ( $p=0.02$ ) would accept the performance of laparoscopy in their wives, compared to those age under 30 (57.14%). In addition, a statistically significant relationship was observed between a husband's education level and his attitude towards the performance of laparoscopy in his wife ( $p=0.01$ ). It was found that males who had university or secondary school education level significantly more often accepted the laparoscopic procedure, compared to those with vocational or elementary education level. The relationship between the acceptance of laparoscopy and age of women in the survey was as follows: respondents aged under 30 and over 35 accepted laparoscopy (100%), whereas among those aged 30-35 the laparoscopic procedure was accepted by only 64% of the females examined. These differences were statistically significant ( $p=0.004$ ). No similar relationship was confirmed with respect to education level of the women examined and the acceptance by them of laparoscopy, as observed among males.

Intrauterine insemination in wives was accepted by males aged over 35 (100%), similar to the age group 30-35, while among male respondents aged under 30 intrauterine insemination in wives was accepted by 73.68% respondents.

Statistical analysis showed a significant relationship between the acceptance of intrauterine insemination and the age in males ( $p=0.01$ ).

The study conducted shows that *in vitro* fertilization was significantly more frequently accepted by males with secondary school education (82.35%) and university education level (78.57%), compared to respondents with elementary or elementary vocational level (15.79%). A statistically significant relationship was noted between the acceptance of *in vitro* fertilization and males' education level ( $p=0.00004$ ). As a result of statistical analysis conducted a significant relationship was found between the acceptance of *in vitro* fertilization and the evaluation of income among males ( $p=0.01$ ). The respondents with higher income more frequently accepted *in vitro* fertilization (100%), compared to those who evaluated their income as mediocre (51.52%) or low (33.33%). Males with congenital anomalies of the reproductive organs significantly more often accepted *in vitro* fertilization (64.10%), compared to those who had no such defects (27.27%) ( $p=0.03$ ). Females with university education significantly more often accepted *in vitro* fertilization (80%), compared to respondents who had secondary (68%) and elementary or elementary vocational education (20%). This difference was statistically significant ( $p=0.04$ ). The studies carried out showed that female respondents who used the Internet in order to expand their knowledge concerning health significantly more often accepted *in vitro* fertilization (80%), compared to those who used other sources (40%). The observed differences were statistically significant ( $p=0.005$ ). The results of the study showed that women who had had surgical procedures performed in the past significantly more often accepted *in vitro* fertilization (80.77%), compared to those who had not undergone such procedures (54.17%); the differences observed were statistically significant ( $p=0.04$ ).

Males aged over 35 significantly more frequently ( $p=0.01$ ) accepted egg cell donation (52.38%), compared to respondents aged under 30 (21.43%) and 31-35 (26.67%). Similar results were obtained with respect to women.

The males in the survey who evaluated their income as higher than that of others significantly more often accepted egg cell donation (75%), compared to respondents with an average income (24.24%), as well as to those who obtained an income lower than the others (44.44%), ( $p=0.02$ ). Women in the study who were treated due to infertility by one physician significantly more often accepted egg cell donation (64.29%) than those who had been treated by several physicians (33.33%) ( $p=0.02$ ).

Statistical analysis showed that the women in the survey who had the cause of infertility diagnosed significantly more frequently accepted egg cell donation (58.82%) than respondents who had no such diagnosis (6.25%). The differences noted were statistically significant ( $p=0.002$ ).

Statistical analysis indicated that the males in the survey who had been treated due to infertility by several physicians significantly more often did not accept egg cell donation by the wife (80.95%), compared to those who used the services of only one physician (48.28%), ( $p=0.03$ ).

As a result of the studies conducted, it was confirmed that the women in the survey who expanded their knowledge concerning health based on sources other than the Internet significantly more frequently did not accept egg cell donation (53.33%), compared to the respondents who used the Internet (42.86%), ( $p=0.03$ ).



Statistical analysis showed that women in the study who received treatment from one physician significantly more often accepted embryo donation (50%) than those who were treated by several physicians (13.89%), ( $p=0.003$ ).

Males and females who had a higher income statistically more frequently accepted embryo donation (75%), compared to the respondents who obtained a lower income ( $p=0.005$ ). A similar relationship was observed among both males and females concerning the effect of education level on the acceptance of embryo donation, i.e. respondents with secondary school and university education significantly more often accepted this medical procedure, compared to respondents with elementary or elementary vocational education ( $p=0.001$ ).

## DISCUSSION

Natural conception, without medical intervention, is not always possible to achieve. According to the World Health Organization, every fifth couple has problems with conceiving offspring.

At present, the treatment of infertility is one of the most rapidly developing branches of medicine, and the methods applied are adjusted to the situations occurring in individual couples. The couples show a higher awareness concerning the possibilities of diagnosing and treatment of infertility; however, various factors exert an effect on the selection of these methods.

Currently, among the methods of infertility treatment, assisted reproductive techniques (ART), including, among others, *in vitro*, ICSI or insemination are gaining a great popularity. These methods are considered as relatively efficient and safe, therefore, many couples decide to accept such a solution, despite the fact that the application of this method is not legally regulated.

Several reports which have been published to-date, confirm that education level exerts an effect on the acceptance of assisted reproductive techniques, as well as on the selection of therapeutic methods [3,6]. In the presented study similar relationships were confirmed, i.e. males with university and secondary school education significantly more often accepted individual diagnostic-treatment methods in their wives, compared to those with elementary and elementary vocational education. This concerned such procedures as: laparoscopy, *in vitro* fertilization, and egg cell donation. A similar relationship was noted among females in the study. Women with university education significantly more often accepted *in vitro* fertilization and egg cell donation.

The presented study confirmed the effect of socio-economic factors on the process of treatment of infertility; similar results were obtained in other studies [7].

*In vitro* fertilization was more frequently accepted by respondents who obtained a higher income.

Place of residence also affected the acceptance of diagnostic-treatment methods – women living in the urban areas significantly more frequently accepted treatment with gonadotropins, compared to those who were rural inhabitants. A similar relationship was found with respect to embryo donation.

The study showed that female respondents aged over 35, and in the age group 30-35, significantly more often accepted treatment with gonadotropins, compared to those aged under 30.

Similar results were obtained with respect to other procedures applied in the diagnostics and treatment of infertility, which is probably related with the duration of infertility treatment, and simultaneously, with a decreasing fertile period, and therefore, a decreasing chance to possess offspring.

## CONCLUSIONS

1. Age and education level exert a significant effect on the acceptance of individual diagnostic-treatment methods in couples treated due to infertility.
2. Income obtained by the respondents affects the acceptance of the selected methods of infertility treatment.

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