

MEDICAL AND NON-MEDICAL FACULTY STUDENTS' ATTITUDES TO *IN VITRO* FERTILISATION

Izabela Czerwińska-Romańska^{1A,B,C,D}, Patrycja Ostrogórska-Gonszewska^{2C,D}, Dorota Matuszyk^{3E,F},
Marta Makara-Studzińska^{4A,E,F}

¹Midwifery graduate, Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

²Department of Mother and Child Health, Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

³Laboratory of Midwifery Care Fundamentals, Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

⁴Department of Health Psychology, Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

Address for correspondence:

Patrycja Ostrogórska-Gonszewska
Department of Mother and Child Health
Institute of Nursing and Midwifery
Faculty of Health Sciences
Jagiellonian University Medical College
Krakow, Poland
e-mail: patrycja.ostrogorska@uj.edu.pl

Authors' contribution:

A. Study design/planning • B. Data collection/entry • C. Data analysis/statistics • D. Data interpretation • E. Preparation of manuscript • F. Literature analysis/search • G. Funds collection

SUBMITTED: 10.02.2024

ACCEPTED: 5.03.2024

DOI: <https://doi.org/10.5114/ppiel.2024.139132>

ABSTRACT

Introduction: An increased need for methods of assisted reproduction associated with an ever more frequent problem of infertility in Poland sparks controversies in society. Infertility is a condition more and more frequently affecting couples of different ages trying to have a baby. According to international statistics, infertility affects 10-15% of couples of reproductive age.

The aim of the study was to analyse beliefs of students regarding *in vitro* fertilisation in the treatment of infertility and how these attitudes are affected by the faculty (medical or non-medical), family status, religious denomination, society, and individual system of values.

Material and methods: 282 female and 43 male students of both medical and non-medical faculties in Poland, aged over 19 years, were enrolled in the study. The study was conducted with the use of a survey questionnaire collected in the period of 6 months (between November 2022 and April 2023). A standardised tool in the form of the list of personal values was also used to examine the correlation between the respondents' system of values and their attitude to the method of *in vitro* fertilisation.

Results: A positive attitude to *in vitro* fertilisation was dominant in the study group. No statistically significant associations were shown regarding marital status and faculty versus acceptance of *in vitro* fertilisation. Greater acceptance of *in vitro* fertilisation was observed among women (92.6%) than among men (76.7%). The subjects' values had no effect on the level of acceptance of this method of fertilisation. A considerable impact on the respondents' attitudes to the issues in the questions was exerted by the views of family and friends.

Conclusions: The analysed population of Polish students shows a positive attitude towards the use of *in vitro* fertilisation. The authors' own studies could be used as a base to develop a health education programme.

Key words: attitudes, *in vitro* fertilisation, list of personal values.

INTRODUCTION

Infertility is a condition that increasingly affects couples of different ages trying to have a baby. This issue attracts much interest of researchers, who direct their activities towards finding the causes and mechanisms underlying the inability to conceive a child. The World Health Organization (WHO) defines infertility as the failure to achieve a pregnancy after 12 months of regular unprotected sexual intercourse. The frequency of sexual intercourse must be 3-4 times a week to be considered regular. The WHO classifies infertility as a social disease, which may be treated thanks to the achievements of medicine [1, 2]. According to international statistics, infertility affects

10-15% of couples of reproductive age. In Poland, according to estimates, the problem may affect about a million couples [3].

In vitro fertilisation is allowed in Poland, and the principles of its use are specified in the Act of 25 June 2015 on the treatment of infertility, which came into effect on 1 November 2015. The method of *in vitro* fertilisation may be used in Poland when other methods of infertility treatment, used for at least 12 months, have failed to bring a desired effect. An exception to this rule includes cases of patients who, according to current medical knowledge, cannot be brought to conceive a child by methods other than *in vitro* fertilisation. Fertilisation of a maximum of 6 egg cells is allowed using the method of *in vitro* fertilisation.

Exceptional situations are patients over 35 years old or with diseases coexisting with infertility, or previous, twice-repeated, ineffective *in vitro* fertilisation treatment, which justifies fertilisation of a higher number of oocytes. Each of the specific causes should be recorded in the medical documentation [4].

The aim of the study was to analyse the beliefs of students regarding *in vitro* fertilisation in the treatment of infertility and how these attitudes are affected by the faculty (medical or non-medical), family status, religious denomination, society, and the individual system of values.

MATERIAL AND METHODS

The study was conducted with the use of a statistical method and the CAWI (Computer-Assisted Web Interviewing) technique. An online survey questionnaire was shared with the respondents and filled in by them with the use of GoogleForms software. This research technique was selected due to low costs and the possibility to gather a larger group of respondents from a wider geographical region of Poland. Demographic data and information on the respondents' religious denomination was collected. The level of knowledge and opinions of the respondents on *in vitro* fertilisation were analysed.

The survey questionnaire used a standardised research tool in the form of the list of personal values (LWO – Lista Wartości Osobistych) to examine the correlation between the respondents' system of values and their attitude to the method of *in vitro* fertilisation.

As well as the standardised tool, an original socio-demographic survey was used, including questions on sex, age, faculty, place of residence, religious denomination, practising of faith, marital status, having children, having siblings, general knowledge of the *in vitro* fertilisation method, and relatives' opinions on *in vitro* fertilisation.

The list of personal values (LWO) is a tool intended primarily for children and adolescents, but it also finds use in studies conducted among adults. The LWO enables observation of changes occurring with respect to evaluating health. Such changes develop in the course of health education and promotion. The tool is divided into 2 parts. The first part contains a description of 9 symbols of happiness, which illustrate various forms of human values. The second part contains 10 categories of personal values. The purpose of the LWO is to assess the importance attached to particular values. The tool may be used to examine both individuals and groups of people. In the first part of the study, the respondents select the 5 most important symbols of happiness, then order them from 1 to 5, with 1 being the least important and 5 the most important. The same principle applies to the second part of the

LWO containing a set of 10 value categories. The LWO enables us to assess the value of health for humans in relation to other values and personal rights [5].

The achieved results were subjected to statistical analysis. Values of the analysed quantitative variables are presented with the use of a mean, median, and standard deviation, and values of the qualitative variables are shown with the use of size and proportion. The chi-square test was used for qualitative features to detect correlations between the analysed variables. The Mann-Whitney-*U* test was used to analyse differences in quantitative variables between the compared groups. The level of significance indicating statistically significant differences or correlations was set at $p < 0.05$. The database and statistical analyses were conducted with the use of Statistica 9.1 software (StatSoft, Poland).

The study was conducted online with the use of GoogleForms software. It was directed to students of medical and non-medical faculties across Poland. The survey questionnaire was conducted fully anonymously. The respondents' answers were collected online over a period of 6 months, between November 2022 and April 2023. The criteria of inclusion for respondents in the study group were being a student and at least 19 years of age.

RESULTS

In total, 325 subjects (282 women and 43 men) took part in the study. The socio-demographic characteristics of the study group are presented in Table 1. It should be noted that the gender disproportion of respondents may have influenced the results.

The study group showed a moderate level of knowledge on the treatment of infertility and the method of *in vitro* fertilisation. A decisive majority of the respondents declared knowing the concepts of fertility (91.7%) and infertility (96.9%). Almost the entire group pointed to *in vitro* fertilisation as a method of assisted reproduction (95.1%). The least known method was micromanipulation with the use of sperm cells obtained during epididymal biopsy (18.2%). 96.9% of the respondents declared knowing the definition of *in vitro* fertilisation. The question regarding *in vitro* fertilisation effectiveness was answered by 318 subjects, and the mean effectiveness indicated by the respondents was 52.48%. The most frequently selected indication for *in vitro* fertilisation was "infertility while using other treatment methods which have not been effective so far" (86.8%) and "idiopathic infertility in both partners – despite good test results, the couple still fail to conceive a baby" (76.3%). As determinants of successful *in vitro* fertilisation, most of the group indicated "woman's age and her ovary reserve" (84.9%) and "semen quality" (80.9%). "Multiple gestation, miscarriage, and preterm delivery" were the

Table 1. Socio-demographic characteristics of the study group

Socio-demographic characteristics	n	%
Sex		
Female	282	86.8
Male	43	13.2
Age		
19-21	60	18.5
22-23	135	41.5
24-26	90	27.7
> 26	40	12.3
Place of residence		
Country	74	22.8
City of up to 50,000 inhabitants	38	11.7
City of 50,000-100,000 inhabitants	44	13.5
City > 100,000 inhabitants	169	52.0
Marital status		
Spinster/bachelor in a non-marital relationship	172	52.9
Married	55	17.0
Widow/widower	1	0.3
Divorced	4	1.2
Single	93	28.6
Number of children		
None	287	88.3
1 child	21	6.5
2 children	11	3.4
3 children	5	1.5
4 children	1	0.3
Planning to have children		
Yes	260	80.0
No	65	20.0
Number of siblings		
Only child	57	17.5
1 brother/sister	146	45
2 or more	122	37.5
Religious denomination		
Christianity	267	82.2
Non-believer	55	16.9
Other	3	0.9
Faculty		
Medical	216	66.50
Non-medical	109	33.50

most frequent complications after the use of *in vitro* fertilisation, according to the respondents (64.3%).

Almost all respondents in the study group (93.5%) selected “good health” as one of the 5 most important statements determining life happiness. A decisive majority of respondents also selected “good family life” (84%) and “practising one’s favourite

job/occupation” (81.2%), as well as “good financial conditions” (70.2%). Almost half of the respondents included “being needed by others” (42.2%). “Fame/popularity” was definitely the least frequently chosen determinant of happiness (1.2%). Similarly, the most frequently selected determinants of happiness had higher positions in the system of values. The highest rank was given to “good health” ($M = 4.63$) and the lowest to “fame/popularity” ($M = 1.67$).

Out of 10 defined values, almost the whole study group selected “love, friendship” (92.6%) and “good health, physical and mental fitness” (92.3%) as the most important for them. Most people selected “intelligence, brightness” (69.9%). More than half of the respondents selected “joy, satisfaction” (59.9%) and “knowledge, wisdom” (50.8%). “Gentle appearance, looks” was the least frequent (8%). The highest scores were given to “love and friendship” ($M = 4.73$), while the lowest were given to “wealth, fortune” ($M = 2.98$) and “gentle appearance, looks” ($M = 2.89$).

No statistically significant differences were shown between students of medical vs. non-medical faculties regarding acceptance of *in vitro* fertilisation ($p = 0.066$). In the group of women, 92.6% stated that the *in vitro* fertilisation method was moral and should be used, while only 7.4% women expressed an opposite opinion. In the group of men, 76.7% of the respondents gave a positive answer, while almost a quarter of the group (23.3%) gave a negative answer. A statistically significant association was observed ($p = 0.003$). There were statistically significantly more respondents opting for the use of *in vitro* fertilisation in the female than in the male group. A statistically significant association ($p = 0.00$) was shown between the views of the study subjects and their parents regarding the use of *in vitro* fertilisation. Among the subjects whose parents showed positive attitudes towards *in vitro* fertilisation, almost all study subjects repeated such attitudes. However, more subjects whose parents showed negative attitudes opted against the use of *in vitro* fertilisation. A statistically significant association ($p = 0.00$) was shown between the views of the study subjects and their friends regarding the use of *in vitro* fertilisation. Among the subjects whose friends showed positive attitudes towards *in vitro* fertilisation, almost all study subjects repeated such attitudes. The results are presented in Table 2.

There was a statistically significant association between choosing the happiness determinants “good health” ($p = 0.007$), “being needed by others” ($p = 0.0002$) and “good financial conditions” ($p = 0.01$), and showing positive attitudes towards the *in vitro* fertilisation method. The other determinants of happiness and values favoured positive attitudes towards the use of *in vitro* fertilisation; however, no statistically significant association was observed between selecting them and positive attitudes in the

Table 2. Acceptance of *in vitro* fertilisation depending on the feature studied

Study features	Acceptance of <i>in vitro</i>		χ^2 , df, p
	Yes	No	
Faculty, n (%)			$\chi^2 = 3.39$ df = 1 p = 0.066
Medical	200 (92.60)	16 (7.40)	
Non-medical	94 (86.20)	15 (13.80)	
Sex, n (%)			$\chi^2 = 9.052$ df = 1 p = 0.003
Female	261 (92.60)	21 (7.40)	
Male	33 (76.70)	10 (23.30)	
Marital status, n (%)			$\chi^2 = 3.39$ df = 1 p = 0.066
Single, divorced and widow/widower	87 (88.80)	11 (11.20)	
Married	47 (85.50)	8 (14.50)	
Spinster/bachelor in a non-marital relationship	160 (93.00)	12 (7.00)	
Having children, n (%)			$\chi^2 = 0.005$ df = 1 p = 0.942
Having children	35 (92.10)	3 (7.90)	
Not having children	259 (90.20)	28 (9.80)	
Religious denomination, n (%)			$\chi^2 = 2.236$ df = 1 p = 0.135
Christianity	238 (89.10)	29 (10.90)	
Other and non-believer	56 (96.50)	2 (3.50)	
Parents' opinions, n (%)			$\chi^2 = 77.577$ df = 2 p = 0.00
Positive opinions	172 (97.20)	5 (2.80)	
Mixed opinions	104 (90.40)	11 (9.60)	
Negative opinions	11 (42.30)	15 (57.70)	
Parents' opinions, n (%)			$\chi^2 = 38.659$ df = 1 p = 0.00
Positive opinions	245 (95.70)	11 (4.30)	
Mixed and negative opinions	45 (69.20)	20 (30.80)	

χ^2 – conformity test result, df – degree of freedom, p – statistical significance

study group. No statistically significant association was observed between the occurrence of particular determinants of happiness and values versus negative attitudes towards the method of *in vitro* fertilisation (Tables 3 and 4).

A statistically significant difference was observed in assessing the importance of the determinant “being needed by others” (subsection 4.8) and “good health” ($p = 0.045$) and of the value “good health, physical and mental fitness” ($p < 0.001$). The respondents who gave a positive opinion on *in vitro* fertilisation attached a statistically significantly higher importance to the happiness determinant “good health” (the mean score of this determinant of happiness in this groups was $M = 4.65$ with median $Me = 5$) than the respondents with a negative attitude to *in vitro* fertilisation (mean score of the importance of “good health” in this group was $M = 4.45$ with median $Me = 5$). The respondents who gave a positive opinion on extracorporeal fertilisation attached a statistically significantly higher importance to the value of “good health, physical and mental fitness” (mean score of this value in this groups was $M = 4.76$ with median $Me = 5$) than the respondents with a negative atti-

tude to *in vitro* fertilisation (mean score of the importance of the “good health” determinant in this group was $M = 4.26$ with median $Me = 4$). There was a statistically significant difference in the assessment of the importance of “being needed by others” between subjects expressing a positive vs. negative opinion on the method of *in vitro* fertilisation ($p = 0.016$). The respondents expressing a positive opinion on *in vitro* fertilisation attached a statistically significantly lower importance to the value of “being needed by others” (the mean score of this value in this groups was $M = 3.68$ with median $Me = 4$) than the respondents with a negative attitude to *in vitro* fertilisation (mean score of the importance in this group was $M = 4.14$ with median $Me = 4$). Results regarding the opinion on *in vitro* fertilisation in relation to determinants of happiness, values, and their importance are presented in Tables 5 and 6.

DISCUSSION

In this day and age, with the more and more common problem of infertility, researchers take a greater interest in methods of assisted reproduction, includ-

Table 3. Opinions on *in vitro* fertilisation in relation to determinants of happiness

Analysed variable	Opinion on <i>in vitro</i>		χ^2 , <i>p</i>
	Positive	Negative	
Large circle of friends, <i>n</i> (%)			
Not important	213 (91.00)	21 (9.00)	$\chi^2 = 0.119$ <i>p</i> = 0.730
Important	81 (89.00)	10 (11.00)	
Happy family life, <i>n</i> (%)			
Not important	45 (86.50)	7 (13.50)	$\chi^2 = 0.629$ <i>p</i> = 0.428
Important	249 (91.20)	24 (8.80)	
Practising one's favourite job/occupation, <i>n</i> (%)			
Not important	58 (95.10)	3 (4.90)	$\chi^2 = 1.257$ <i>p</i> = 0.262
Important	236 (89.40)	28 (10.60)	
Successes at school/work, <i>n</i> (%)			
Not important	148 (89.20)	18 (10.80)	$\chi^2 = 0.67$ <i>p</i> = 0.413
Important	146 (91.80)	13 (8.20)	
Good health, <i>n</i> (%)			
Not important	15 (71.40)	6 (28.60)	$\chi^2 = 7.215$ <i>p</i> = 0.007
Important	279 (91.80)	31 (8.20)	
Being needed by others, <i>n</i> (%)			
Not important	159 (96.40)	6 (3.60)	$\chi^2 = 13.531$ <i>p</i> = 0.000
Important	135 (84.40)	25 (15.60)	
Good financial conditions, <i>n</i> (%)			
Not important	81 (83.50)	16 (16.50)	$\chi^2 = 6.648$ <i>p</i> = 0.01
Important	213 (93.40)	15 (6.60)	
Life full of adventure/travel, <i>n</i> (%)			
Not important	199 (89.70)	23 (10.40)	$\chi^2 = 0.289$ <i>p</i> = 0.591
Important	95 (92.20)	8 (7.80)	
Fame/popularity, <i>n</i> (%)			
Not important	291 (90.70)	30 (9.30)	$\chi^2 = 0.041$ <i>p</i> = 0.413
Important	3 (75.00)	1 (25.00)	
Total (<i>N</i>)	294	31	–

χ^2 – conformity test result, *p* – statistical significance

ing *in vitro* fertilisation, especially their psychological and social aspects. It seems legitimate to conduct regular studies confronting public opinion and knowledge of this issue. The literature offers numerous publications on the subject of *in vitro* fertilisation. There is literature focusing on attitudes of various social groups from different regions of the world, but no publications have been found that discuss a correlation between attitudes and system of values versus acceptance of *in vitro* fertilisation.

Belonging to a given religion, to a greater or lesser extent, determines undertaking certain actions, which are often controversial in a specific society. Most world religions, especially major monotheistic religions, like Judaism, Christianity, and Islam, impose numerous orders and prohibitions related to sexual life and reproduction on their followers. These rules are usually regulated in details within holy books and

refer to every aspect of having offspring. As for religions such as Hinduism or Buddhism, i.e. Far East religions, they do not impose such detailed rules [6]. According to the Central Statistical Office, the dominant religion in Poland is Roman Catholicism, the followers of which represent more than 90% of Polish citizens. The next largest group are followers of Eastern Orthodoxy, at approx. 0.9%. Followers of other major world religions, i.e. Judaism, Islam, Buddhism, or Hinduism, represent a small group. Approx. 2.9% of Polish society declare no affiliation [7, 8]. The most restrictive views regarding the use of *in vitro* fertilisation are presented by the Catholic Church and Eastern Orthodoxy, whereas other world religions allow its use, either entirely or in justified cases.

Attitudes represented by society are related to acceptance or lack of acceptance of methods of assisted reproduction. Definitions of attitudes are highly di-

Table 4. Opinions on *in vitro* fertilisation in relation to values

Analysed variable	Opinion on <i>in vitro</i>		χ^2, p
	Positive	Negative	
Love, friendship, <i>n</i> (%)			$\chi^2 = 2.548$ $p = 0.110$
Not important	19 (79.20)	5 (20.80)	
Important	275 (91.40)	26 (8.60)	
Good health, physical and mental fitness, <i>n</i> (%)			$\chi^2 = 0.007$ $p = 0.935$
Not important	22 (88.00)	3 (12.00)	
Important	272 (90.70)	28 (9.30)	
Sense of humour, wit, <i>n</i> (%)			$\chi^2 = 0.065$ $p = 0.883$
Not important	187 (90.80)	19 (9.20)	
Important	236 (89.40)	28 (10.60)	
Intelligence, brightness, <i>n</i> (%)			$\chi^2 = 2.919$ $p = 0.088$
Not important	84 (85.70)	14 (14.30)	
Important	210 (92.50)	17 (7.50)	
Knowledge, wisdom, <i>n</i> (%)			$\chi^2 = 0.098$ $p = 0.921$
Not important	145 (90.60)	15 (9.40)	
Important	149 (90.30)	16 (9.70)	
Joy, satisfaction, <i>n</i> (%)			$\chi^2 = 0.038$ $p = 0.846$
Not important	118 (90.10)	13 (9.90)	
Important	176 (90.70)	18 (9.30)	
Courage, sturdiness, <i>n</i> (%)			$\chi^2 = 2.589$ $p = 0.108$
Not important	203 (92.30)	17 (7.70)	
Important	91 (86.70)	14 (13.30)	
Kindness, gentleness, <i>n</i> (%)			$\chi^2 = 0.585$ $p = 0.444$
Not important	154 (91.70)	14 (8.30)	
Important	140 (89.20)	17 (10.80)	
Gentle appearance, looks, <i>n</i> (%)			$\chi^2 = 0.504$ $p = 0.478$
Not important	272 (91.00)	27 (9.00)	
Important	22 (84.60)	4.00 (15.40)	
Wealth, fortune, <i>n</i> (%)			$\chi^2 = 0.02$ $p = 0.888$
Not important	248 (90.20)	27 (9.80)	
Important	46 (92.00)	4 (8.00)	
Total (<i>N</i>)	294	31	-

χ^2 – conformity test result, *p* – statistical significance

verified in the literature, which stems from the fact that they are of interest to numerous fields of study, e.g. psychology and sociology [9].

In terms of psychology, one can distinguish several elements that characterise attitudes. In this aspect, attitude is understood as follows: a product of human experience and reflection of reality, a product created in a neurophysiological record, a state of selective mental readiness, direction to a specific object, a state stimulating action and including assessment, a state including social forms of reaction and setting the direction of activity, and a state expressed in opinions and closely related to beliefs [10].

In sociology, attitude is defined as a situation when a person undertakes interaction directed to

another person. There is also a definition of attitude as an element of personality, which is understood as the readiness to undertake specific actions towards a given subject of attitude. According to sociological definitions, attitude is always directed at somebody or something, e.g. a material object, and is also an individual phenomenon occurring in the human psyche [10].

As well as attitudes, values also play an important role in human life. They affect a person's behaviour and functioning within society. Human values are strongly correlated with personality. While referring to what is needed in human life, they form a constant hierarchy system. According to researchers, the number of values guiding people is small, but the difference

Table 5. Opinions on *in vitro* fertilisation in relation to the assessment of importance of happiness determinants

Analysed variable	Positive assessment of <i>in vitro</i>			Negative assessment of <i>in vitro</i>			Z	p
	M	Me	SD	M	Me	SD		
Large circle of friends	2.87	3	1.24	3.16	3	1.42	-1.175	0.24
Happy family life	4.44	5	0.89	4.13	5	1.09	1.725	0.085
Practising one's favourite job/occupation	4.27	4	0.83	4.16	4	0.82	0.882	0.378
Successes at school/work	3.82	4	0.98	3.77	4	0.96	0.34	0.734
Good health	4.65	5	0.74	4.45	5	0.81	2.009	0.045
Being needed by others	3.68	4	1.06	4.16	4	0.86	-2.404	0.016
Good financial conditions	4.04	4	0.91	3.94	4	0.81	1.022	0.307
Life full of adventure/travel	3.15	3	1.15	3.16	3	1.07	0.236	0.813
Fame/popularity	1.66	1	0.96	1.81	1	1.14	-0.553	0.581

Z – Mann-Whitney-U test result, p – statistical significance

Table 6. Opinions on *in vitro* fertilisation in relation to the assessment of importance of values

Analysed variable	Positive assessment of <i>in vitro</i>			Negative assessment of <i>in vitro</i>			Z	p
	M	Me	SD	M	Me	SD		
Love, friendship	4.74	5	0.60	4.58	5	0.72	1.402	0.161
Good health, physical and mental fitness	4.76	5	0.51	4.26	4	0.89	4.018	< 0.001
Sense of humour, wit	3.57	4	0.99	3.48	3	1.03	0.652	0.514
Intelligence, brightness	4.22	4	0.82	4.00	4	0.89	1.416	0.157
Knowledge, wisdom	4.09	4	0.83	4.00	4	0.89	0.453	0.651
Joy, satisfaction	4.30	4	0.73	4.26	4	0.86	-0.034	0.973
Courage, sturdiness	3.62	4	0.95	3.74	4	1.00	-0.892	0.372
Kindness, gentleness	3.79	4	1.01	3.90	4	1.04	-0.770	0.442
Gentle appearance, looks	2.87	3	1.02	3.06	3	1.06	-1.084	0.279
Wealth, fortune	3.01	3	1.16	2.77	3	1.33	1.14	0.254

Z – Mann-Whitney-U test result, p – statistical significance

lies in how individual people group them in systems, i.e. what is more important for them. Human freedom is manifested in selecting and recognising these values, and intellectual processes that direct a person to achieve particular values create the environment and situation in which they live. In the process of the creation of one's own system of values, a human is subconsciously guided to achieve specific and desired goals [11, 12]. A person evaluates one's own and others' behaviour and attitudes against a specific system of values created by him/herself [12].

It seems legitimate to conduct regular studies confronting public opinion and knowledge of the methods of assisted reproduction. The literature offers numerous publications on the subject of *in vitro* fertilisation. Researchers concentrate on studying attitudes of various social groups from different regions of the world, but there are few publications discussing the correlation between attitudes and a system of values versus acceptance of *in vitro* fertilisation. Studies conducted by students of the Jagiellonian University in Cracow concerning attitudes of soci-

ety to the method of *in vitro* fertilisation presented a variety of conclusions. Two studies showed a high level of acceptance in the general society, while the third study, referring to students at Cracow universities, showed a low level of acceptance and a high influence of religious denomination on creating these attitudes. The study presents an opposing image of a student community to the image presented in our own studies. A comparison of the above studies conducted in 2014-2015 with our own studies suggests an increasing acceptance of the *in vitro* fertilisation method and a decreasing role of the church in creating attitudes of the young generation. Over 9 years, the level of acceptance of *in vitro* fertilisation among Polish students increased from approx. 50% to 90% [13-15]. Studies conducted by Baniak on a group of university and secondary school students showed, similarly to our own studies, considerable resistance to the teachings of the church regarding methods of assisted reproduction, and thus a high acceptance of laboratory solutions to the problem of infertility [16]. A high level of acceptance of bioethical issues was

revealed by a compilation of studies including university and secondary school students performed by Mariański. It showed resistance to the church teachings; however, a considerable impact of the church on making decisions regarding one's own life was observed [17]. In studies conducted by Arhin *et al.*, a group of women of childbearing age showed a high level of acceptance of the *in vitro* fertilisation method. Most respondents considered children conceived by *in vitro* fertilisation as normal, but opinions on their naturalness varied [18]. Studies conducted by Fauser *et al.* in 6 European countries (United Kingdom, France, Germany, Italy, Spain, and Sweden) showed that a high proportion of respondents opted for the use of *in vitro* fertilisation in treating infertility. After comparing answers from all the study countries, the highest scores were given to beliefs and attitudes from France and Germany, and the lowest to the ones from Sweden. Interestingly, the results revealed that positive attitudes were more often shown by males, as well as by homosexual or bisexual subjects [19]. Studies conducted by Bello *et al.* in a group of women attending a fertility clinic in Ibadan, Nigeria, showed that most of them accepted *in vitro* fertilisation. Moreover, a lower proportion of the study women expected acceptance also on the part of their partners

CONCLUSIONS

The high acceptance of *in vitro* fertilisation among Polish students indicates a direction of attitude formation in the young generation regarding the use of *in vitro* fertilisation. It is probable that Polish society will change to a more tolerant one when the young generation starts families, and with a continuous trend, as shown in the study, of high impact of families and a decreasing impact of religion on creating attitudes to the use of methods of assisted reproduction. The authors' own studies could be used as a base to develop a health education programme.

Disclosures

The authors declare no conflict of interest.
This research received no external funding.
Institutional review board statement: Not applicable.

References

1. Szamatowicz M. Niepłodność. In: Bręborowicz GH (Ed.). Położnictwo i ginekologia. Vol. 2. Ginekologia. Wydawnictwo Lekarskie PZWL, Warszawa 2019; 141-155.
2. World Health Organization. Infertility (online). <https://www.who.int/news-room/fact-sheets/detail/infertility> (accessed on: 04.02.2024).
3. Polskie Towarzystwo Medycyny Rozrodu i Embriologii oraz Polskie Towarzystwo Ginekologii i Położników. Diagnostyka i leczenie niepłodności – rekomendacje Polskiego Towarzystwa Medycyny Rozrodu i Embriologii (PTMRIe) oraz Polskiego Towarzystwa Ginekologów i Położników (PTGP). Ginekologia i Perinatologia Praktyczna 2018; 3: 112-140.
4. Act of 25 June 2015 on Infertility Treatment (Polish Journal of Laws Dz.U. of 2015, item 1087).
5. Juczyński Z. NPPZ – Narzędzia Pomiaru w Promocji i Psychologii Zdrowia. Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego, 2012; 131-133.
6. Szczepankiewicz-Battek J. Religie świata wobec problemów reprodukcji. In: Szlagowska A (Ed.). Problemy zdrowia reprodukcyjnego kobiet. Vol. 3. Zdrowie reprodukcyjne w kontekście zmian społeczno-kulturowych na przestrzeni wieków. Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu, Wrocław 2020; 23-56.
7. Główny Urząd Statystyczny. Wyznania religijne w Polsce w latach 2015–2018. Warszawa 2019. <https://www.stat.gov.pl/> (accessed: 04.02.2024).
8. Główny Urząd Statystyczny. Mały Rocznik Statystyczny Polski 2022. Warszawa 2022. <https://www.stat.gov.pl/> (accessed on: 04.02.2024).
9. Nawalana A, Majda A. Postawy społeczeństwa wobec osób niepełnosprawnych ze szczególnym uwzględnieniem osób z zespołem Downa. Pielęgniarstwo XXI wieku 2013; 2: 47-51.
10. Piąt-Borcuch M. Pomiędzy tożsamością osobową a postawą społeczną. Zeszyty Naukowe Politechniki Śląskiej 2013; 65: 317-327.
11. Rogozińska-Pawetczyk A. Kształtowanie postawy zaangażowania organizacyjnego. Zarządzanie Zasobami Ludzkimi 2014; 2: 27-38.
12. Nowak BM. Hierarchia wartości osób wykluczonych społecznie. Pedagogika Społeczna 2017; 1: 139-159.
13. Policht J, Galbarczyk A, Jasińska G. Leczenie niepłodności metodą *in vitro* w opinii osób w wieku reprodukcyjnym (Master's thesis). Uniwersytet Jagielloński w Krakowie, Kraków 2014.
14. Kortyna M, Huras H, Prażmowska B. Zapłodnienie *in vitro* w opinii społecznej (Master's thesis). Uniwersytet Jagielloński w Krakowie, Kraków 2015.
15. Ogorzatek K, Wojciechowski F, Gawel A. Postawy studentów wobec zapłodnienia *in vitro* (Master's thesis). Uniwersytet Jagielloński w Krakowie, Kraków 2014.
16. Baniak J. Między nakazem a wyborem. Zapłodnienie pozaustrojowe metodą *in vitro* w opinii licealistów i studentów. Na podstawie własnych badań socjologicznych. Konteksty Społeczne 2018; 6: 7-25.
17. Mariański J. Nowe problemy bioetyczne w narracji społecznej. Chowanna 2022; 1: 1-41.
18. Arhin SK, Tang R, Hamid A, et al. Knowledge, attitude and perceptions about *in vitro* fertilization (IVF) among women of childbearing age in Cape Coast, Ghana. Obstet. Gynecol Int 2022; 2022: 5129199.
19. Fauser BCJM, Boivin J, Barri PN, et al. Beliefs, attitudes and funding of assisted reproductive technology: Public perception of over 6,000 respondents from 6 European countries. PLoS One 2019; 14: e0211150.
20. Bello FA, Akinajo OR, Olayemi O. In-vitro fertilization, gamete donation and surrogacy: Perceptions of women attending an infertility clinic in Ibadan, Nigeria. Afr J Reprod Health 2014; 18: 127-133.