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Fertility intentions among medical students in war-torn Ukraine: a cross-sectional survey

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Abstract

Background Ukraine's total fertility rate was 0.9 in 2022, among the lowest in Europe. Amid the ongoing full-scale invasion, understanding reproductive intentions is important for informing future pronatalist policies. This study assessed fertility intentions and attitudes toward parenthood, with a focus on sex differences, and subjective determinants of reproductive decision-making among undergraduate medical students in wartime Ukraine.

Methods A cross-sectional, confidential, online survey was conducted among students at Odesa National Medical University in May 2024. The Swedish Fertility Awareness Questionnaire was used, supplemented with a question on contraceptive use. Data were analysed using descriptive statistics, univariable, multivariable and stepwise logistic regression.

Results The mean age was 20 years among the participants: 655 women and 191 men. Overall, 75% intended to have children, with a preferred family size of two children. Women preferred to have their first child at a younger age than men (26.1 vs. 28.1 years; $p < 0.001$). No sex differences were observed in the perceived importance of having children. Oral and long-acting reversible contraceptive use was relatively low. Furthermore 62% of participants indicated that they would support a hypothetical pregnancy to birth, mainly for moral or religious reasons. Among those opting for abortion, the most commonly cited reasons were financial constraints and war-related concerns. In the case of infertility, more women than men were willing to consider IVF or adoption ($p < 0.001$). Key prerequisites for parenthood included adequate housing (93%) and financial stability (92%). Women were more likely to anticipate emotional benefits of parenthood (OR 1.66), whereas men were more likely to anticipate negative impacts on personal time (OR 1.91) and finances (OR 1.72). Intention to have children was associated with psychological readiness, emotional fulfilment, life priorities, and perceived housing adequacy (aOR 3.02), as a key independent predictor of overall readiness for parenthood.

Conclusions Despite the ongoing war, fertility intentions among medical students remain relatively optimistic, equally for women and men. As adequate housing was an important prerequisite for parenthood, post-war pronatalist policies may benefit from integrating housing support into broader family well-being strategies, while also addressing sexuality education and cultural influences on family formation and parenthood decisions.

Keywords Fertility intention, Associated factor, War-torn, Ukraine

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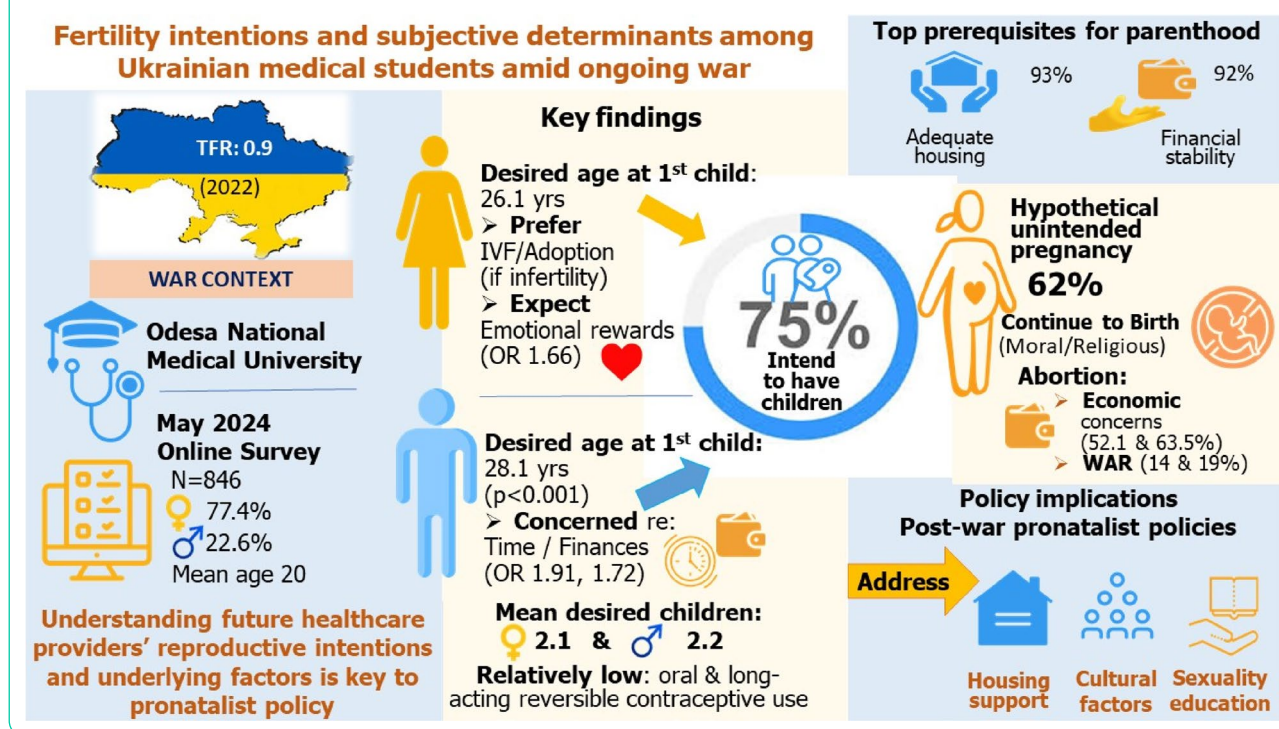
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Graphical Abstract



Background

War has complex and often contradictory effects on fertility intentions. It can lead to migration, family separation, uncertainty about the future, and economic insecurity—all factors known to influence reproductive decision-making [1–3]. Total fertility rates (TFR), defined as the average number of children a woman is expected to have over her lifetime, have shown varying patterns during and after armed conflicts across countries. During the Iraq war (2003–2011), the TFR remained relatively stable at approximately 4.5 between 1997 and 2010 [4]. In contrast, Bangladesh experienced a marked decline in fertility following the 1971 war, with the TFR decreasing from 7.3 in 1971 to 5.9 in 1972 [5]. Similarly, fertility declined substantially in Bosnia and Herzegovina and Croatia during the Yugoslav Wars, reflecting insecurity, displacement, and economic disruption. In Bosnia and Herzegovina, the TFR decreased from 1.71 in 1990 to 1.63 in 2010, while in Croatia it fell from 1.63 in 1990 to 1.42 in 2000 [6]. Conversely, post-war France and Britain experienced a compensatory “baby boom” following World War II. In 1946 alone, the TFR increased from 2.30 to 2.98 in France and from 2.05 to 2.47 in Britain [7].

Ukraine had already experienced a substantial and prolonged decline in fertility before the full-scale Russian invasion in 2022. According to World Bank data, Ukraine’s TFR fell from 1.53 in 2012 to 0.9 in 2022, one of the lowest levels in Europe [8]. Similar trends have been

observed across Europe, where economic uncertainty, social transformation, and delayed family formation have contributed to declining fertility rates [9, 10].

In Ukraine, the declining childbearing has been evident since 2014. It has been associated with several factors, including political instability, the Russian occupation of Ukrainian territories, the armed conflict in eastern Ukraine that began in 2014 [11], the COVID-19 pandemic, and the ongoing full-scale war since 2022 [12].

Both objective and subjective factors shape reproductive decision-making. Objective factors include economic conditions, educational attainment, housing, labour market opportunities, family support, and access to healthcare. Subjective factors encompass individual values, expectations, perceptions, and lived experiences. Subjective perceptions mediate the interpretation of objective circumstances and may exert a decisive influence on childbearing decisions [13].

Several theoretical frameworks have sought to explain how individuals decide whether to have children. Drawing on the Theory of Planned Behaviour [14], Ajzen and Klobas highlighted the importance of attitudes, subjective norms and perceived behavioural control in shaping fertility intentions [15]. More recently, demographers have emphasised uncertainty as a fundamental determinant of fertility intentions [16]. Fertility intentions differ from fertility desires, which reflect an intrinsic wish to have children. While fertility desires are relatively

stable, fertility intentions are fully conscious and more directly influenced by external circumstances [17]. Under conditions of uncertainty, individuals often postpone childbearing [18–20]. Prospective parents construct “narratives of the future” [20], imagining their own future lives and those of their potential children, and evaluating whether future conditions appear favourable for parenthood and childbearing [21]. Experimental evidence indicates that fertility intentions are strongly influenced by subjective expectations regarding future economic conditions [22]. Armed conflict generates unique forms of uncertainty that interact with existing economic and social challenges, thereby shaping reproductive intentions [23]. During periods of profound uncertainty and societal disruption, such as war, subjective perceptions and expectations may become particularly influential in decisions about childbearing [13].

In the Ukrainian context, understanding the subjective factors that influence fertility intentions is essential for informing family and pronatalist policies.

In 2021, the university education enrolment rate in Ukraine reached 83% [24], making university students a large and socially influential population whose reproductive intentions may have important demographic implications. Young adults, particularly university students, therefore, represent a population of special interest. As they are often in the process of establishing their educational and professional careers, parenthood may be postponed to a later stage of life [18]. We were particularly interested in students enrolled in longer degree programmes [20], such as medicine, whose educational trajectories, career planning and reproductive timing may differ from those of other student groups and their non-student peers. The rationale for focusing on medical students was that they constitute a specific subgroup and their fertility intentions may have broader demographic relevance because they are future members of a highly educated and socially influential segment of the population. Medical students are especially relevant because they are future healthcare professionals who will play an important role in reproductive health promotion,

including fertility counselling and education [20]. Their attitudes towards parenthood may both reflect and influence broader societal trends. However, no studies have examined how the ongoing war has affected fertility intentions among medical students. Importantly, a study addressing similar research questions in a comparable population was conducted in Ukraine in 2012 [25], prior to the onset of Russian military aggression. The present study, therefore, provides an opportunity to generate new insights into fertility intentions under profoundly altered wartime conditions.

This study aimed to assess fertility intentions, attitudes towards parenthood, and subjective determinants of reproductive decision-making among medical students in wartime Ukraine. Specifically, the study addressed the following specific research questions:

- (1) What are the fertility intentions and attitudes towards parenthood among medical students, and do these differ between female and male students?
- (2) Do students who intend to have children differ from those who do not, with respect to what factors are considered important in the decision to become a parent, and what are the perceptions of how parenthood may affect future life circumstances?

Methods

Study design and setting

A cross-sectional, confidential, pseudonymous online survey was conducted among students at Odesa National Medical University between 6 and 30 May 2024. All data were anonymised after collection.

Odesa, Ukraine’s third-largest city and principal seaport, is a major educational centre with approximately 17 higher education institutions. In Ukraine, students typically enter university at 16–17 years of age. Medical education comprises a 5–6-year undergraduate programme entered directly after secondary education, followed by a 1–3-year internship depending on the chosen speciality.

Participants

Of the 2844 students enrolled at the university, 649 international students were excluded. The study population, therefore, consisted of 2195 Ukrainian-speaking medical students (74% women and 26% men).

The required sample size was estimated using G*Power 3.1.9.6. Based on a logistic regression model designed to detect sex differences and informed by data from a previous study [25], the minimum required sample size was 719 participants.

A total of 914 students accessed the survey, of whom 47 declined to participate. The final study sample comprised 867 participants, corresponding to 39.5% of the eligible student population (Table 1).

Table 1 Total number of medical students in 2024 and number of participants in the online survey

Year of undergraduate program at the University	No. of students per undergraduate program year	Final sample	
		N	%
1	393	206	52.4
2	457	229	50.1
3	398	152	38.2
4	294	81	27.6
5	281	104	37.0
6	372	95	25.5
Total	2195	867	39.5

Among participating students, 21 either declined to answer the question on sex or identified their sex as “other.” These respondents were excluded from the analyses. Consequently, 846 questionnaires were included in the final analysis, comprising 655 (77.4%) females and 191 (22.6%) males.

Questionnaire

Most questionnaire items were originally developed for the Swedish Fertility Awareness Questionnaire and were first used among Swedish university students [26]. These items were subsequently used in a survey of Ukrainian university students, with the addition of a question on contraceptive use [25].

The questionnaire was translated from the Swedish/English and Russian versions previously used into Ukrainian, then back-translated to ensure linguistic accuracy. The instrument and study procedures were pilot-tested with 15 Ukrainian students, leading to the rephrasing of two items.

The 28-item questionnaire consisted predominantly of fixed-choice, single-response questions. Information was collected on demographic characteristics, personal pregnancy history, and contraceptive methods used during the most recent sexual relation.

Four items assessed future childbearing intentions. Participants also responded to open-ended questions concerning their reasons for not intending to have children in the future and their rationale for continuing or terminating a hypothetical pregnancy in their own words.

The perceived importance of having children in the future and the likelihood of taking action in the event of hypothetical infertility were assessed using visual analogue scales ranging from 0 (“not important at all” or “very unlikely”) to 10 (“very important” or “very likely”) [27].

Two Likert-type scales were used to assess factors influencing the decision to become a parent (13 items, Cronbach’s $\alpha = 0.77$) [26] and anticipated (or experienced) life changes associated with parenthood (16 items, Cronbach’s $\alpha = 0.75$) [26]. The first scale ranged from “unimportant” (1) to “very important” (5), with an additional “no opinion” option. The second scale ranged from “disagree” (1) to “entirely agree” (5), also including a “no opinion” option. These items assessed subjective factors related to parenthood decisions.

Procedure

Data collection was initially planned using REDCap. However, frequent cyberattacks and recurring disruptions to electricity and internet infrastructure resulting from missile and drone attacks led to power outages and temporary server shutdowns. Consequently, Google Forms was adopted as the survey platform to improve accessibility and uninterrupted participation.

Data were collected using Google Forms, which ensured standardised presentation of single-choice, Likert-scale, and visual analogue scale items, while allowing participants to provide open-ended responses. The survey instrument was pre-tested for clarity and usability. A pseudonymous data collection protocol was implemented to maintain data quality and limit each individual to a single response. Survey data were exported directly to Google Sheets for subsequent analysis. All personal identifiers, including email addresses, were removed prior to analysis, resulting in a fully anonymised dataset.

Bulk email invitations containing a brief description of the study and a hyperlink to an online survey, including the informed consent form and questionnaire, were distributed to all students via their university email addresses. This followed a university-wide informational campaign and an announcement published on the university website. An automated mailing system distributed the invitations and sent three reminder emails at 8-day intervals to maximise participation.

Statistical analysis

Descriptive statistics, including proportions, means, and standard deviations, were calculated utilising all data available ($N = 846$). For analytical purposes, selected variables were categorised. Age was dichotomised into ≤ 20 and > 20 years; sex into men and women; current living arrangements into living with parents and other living arrangements; having a steady partner into yes and no; and intended action in the event of a hypothetical pregnancy into have an abortion or have a child. Factors influencing the decision to become a parent and perceptions of the impact of parenthood on life were dichotomised as *crucial* (“important” or “very important” and “strongly agree” or “entirely agree”) versus *not important* (all other responses, respectively).

All analyses were conducted using Jamovi version 2.6.26. In the bivariate analyses, chi-square tests were used for categorical variables and t-tests for continuous variables. Statistical significance was defined as $p < 0.05$.

Univariable logistic regression analyses were performed to examine crude associations between background characteristics (independent variables) and the intention to have children (dependent variable). All independent variables were entered as dummy variables. Variables were then entered into a multivariable logistic regression model to estimate adjusted associations. The reference category consisted of males aged ≤ 20 years who were living with their parents, did not have a steady partner, would choose abortion in the event of a hypothetical pregnancy, and rated all parenthood-related factors as not important. Results are presented as Odds Ratios (ORs) and adjusted Odds Ratios (aORs), with corresponding 95% confidence intervals (95% CIs). This

model, which included all relevant variables, was treated as the primary inferential model.

Given the large number of subjective variables ($n = 34$) considered for inclusion in the multivariable model, a stepwise logistic regression procedure was performed as a secondary, exploratory analysis to assess the robustness of the findings and identify a more parsimonious model.

All independent variables were entered sequentially into the model as dummy variables. Model development was guided by the likelihood ratio test, Akaike Information Criterion (AIC), and Nagelkerke's R^2 (R^2_N). Variables were retained only if they remained statistically significant ($p < 0.05$) and improved overall model fit, as indicated by a reduction in AIC and an increase in explained variance (R^2_N). The overall significance of the final model was evaluated using the Overall Model Test (Omnibus likelihood ratio chi-square test). Effect sizes of the final stepwise model are reported as aORs with 95% CIs.

Univariable, multivariable and stepwise logistic regression analyses were restricted to participants with complete records ($N = 844$) and performed using a complete-case approach. Two participants (0.24%) were excluded due to missing data on age.

Model discrimination was assessed using the area under the receiver operating characteristic curve (AUC). AUC values were used descriptively to compare the predictive accuracy of the models and were not used for inferential purposes. As the stepwise procedure was data-driven and based on statistical selection criteria, results were interpreted cautiously and were not used as the primary basis for inference.

Internal consistency of the Ukrainian version of the scales assessing subjective factors influencing the decision to become a parent and perceived life changes related to parenthood was evaluated using Cronbach's alpha.

Responses to the open-ended questions were summarised descriptively. Similar statements were grouped into thematic categories. Responses relevant to more than one category were assigned to all applicable themes.

Ethics approval

Institutional approval was obtained from the university administration, and ethical approval was granted by the Ethics Review Committee of Odesa National Medical University (Protocol No. 20, 7 February 2024). Informed consent was obtained from all participants prior to enrolment. Participants received information regarding the study objectives and procedures and provided consent for data collection and reporting of aggregated findings. All identifying information was permanently removed from the database to ensure participant confidentiality and privacy.

Results

As shown in Table 2, women constituted the majority of participants. A significantly higher proportion of women than men reported being in a stable relationship. Overall, very few participants had children, and approximately half were living with their parents.

Nearly three-quarters of the students reported using contraception during their most recent sexual relation, with condoms being the most commonly used method, followed by oral contraceptives.

Intentions regarding childbearing

Approximately three-quarters of both women and men reported intending to have children (Table 3).

Among participants who intended to have children, the mean preferred number of children was 2.1 (SD 0.9) among women and 2.2 (SD 1.1) among men ($p = 0.292$). The mean preferred age at first childbirth was 26.1 years (SD 2.6) for women and 28.1 years (SD 3.3) for men ($p < 0.001$). Women and men also differed in the age at which they intended to complete childbearing, with a mean age of 31.5 years (SD 3.9) and 34.5 years (SD 6.6), respectively ($p < 0.001$).

Intended actions in the event of a hypothetical pregnancy

If faced with a hypothetical pregnancy at present, most participants indicated that they would continue the pregnancy to birth (Table 3).

Among these respondents, 329 women and 94 men provided comments explaining their decision (open-ended question, multiple responses permitted). Responses were grouped into several categories. The most frequently reported reason among both women and men was the belief that abortion is morally unacceptable and that terminating a life is wrong (43.8% of women and 50.0% of men). Other commonly cited reasons included having sufficient financial resources (19.5% of women and 18.1% of men) and concerns about potential adverse health consequences or future infertility following abortion (17.9% of women vs. 5.3% of men; $p = 0.003$).

A minority of respondents reported that they would choose abortion. Among these participants, 219 women and 63 men provided comments regarding their reasons. Poor economic circumstances were the most frequently reported reason among both women and men (52.1% and 63.5%, respectively; $p = 0.108$). Other common reasons among women included completing education and establishing a career (24.2% vs. 11.1% among men; $p = 0.025$), feeling too young for parenthood (20.1% vs. 11.1%), and not feeling ready for becoming a parent (15.5% vs. 1.6%; $p = 0.003$). Among men, the second most frequently cited reason was the ongoing war in Ukraine (19.0% vs. 13.7% among women), followed by concerns about providing a secure and promising future for the child (17.5% vs. 10.5%).

Table 2 Background characteristics of medical students participating in the online survey

	Total N=846	Women N=655	Men N=191	p
Age (years), mean (SD), N=844 (women=653, men=191)*	20.5 (3.1)	20.6 (3.3)	20.4 (2.4)	0.375
Years until degree obtained, mean (SD)	2.8 (1.7)	2.8 (1.7)	2.9 (1.7)	0.384
Birth country				
Born in Ukraine	818 (96.7)	633 (96.6)	185 (96.9)	0.883
Type of living arrangements				0.002
Campus location, dormitory	24 (2.8)	12 (1.8)	12 (6.3)	
Tenant, renting	187 (22.1)	149 (22.7)	38 (19.9)	
Lodger	18 (2.1)	15 (2.3)	3 (1.6)	
Own apartment/house	150 (17.7)	118 (18)	32 (16.8)	
Living with parents	425 (50.2)	332 (50.7)	93 (48.7)	
Other	42 (5.0)	29 (4.4)	13 (6.8)	
Have a steady partner	400 (47.3)	335 (51.1)	65 (34.0)	< 0.001
Reproduction experience (either self or partner)				
Have children	33 (3.9)	31 (4.7)	2 (1.0)	0.021
Current pregnancy	3 (0.4)	2 (0.3)	1 (0.5)	0.655
Had abortion	9 (1.1)	6 (0.9)	3 (1.6)	0.438
Experienced miscarriage	15 (1.8)	11 (1.7)	4 (2.1)	0.702
Ectopic pregnancy	3 (0.5)	2 (0.3)	1 (0.5)	0.655
Had problem with getting pregnant*	16/666 (2.4)	12/513 (2.3)	4/153 (2.6)	0.845
Use of contraception at last sexual relation, either self or partner	608 (71.9)	466 (71.2)	142 (74.4)	0.387
Type of contraception used at the last sexual relation (more than one method can be reported)				
Condom	387 (45.7)	295 (45.0)	92 (48.2)	0.445
Oral contraceptives	110 (13.0)	92 (14.1)	18 (9.4)	0.095
Intrauterine device use	3 (0.4)	3 (0.5)	0 (0)	0.349
Spermicides	5 (0.6)	3 (0.5)	2 (1.1)	0.350
Coitus interruptus	13 (1.5)	11 (1.7)	2 (1.1)	0.532
Not specified	111 (13.1)	81 (12.4)	30 (15.7)	0.229
Never had sexual relations	201 (23.8)	161 (24.6)	40 (20.9)	0.296

*Denominators are provided where they vary from the sample size due to response rates for individual questions

Reasons for not wanting to have children

A total of 126 women and 42 men responded to the open-ended question regarding reasons for not wanting to have children (Table 3). Responses were grouped into six main themes, consistent with the framework proposed by Obern et al. [28]. The first theme was no desire for children and to become a parent, reflected in statements such as “I do not want children at all”, “I simply do not want to be a parent”, and “I do not want to take on such a great responsibility”. The second theme concerned war and life uncertainty, including comments such as: “The war and uncertainty make parenthood unrealistic”, “Unstable conditions for the birth and upbringing of children”, and “There is no stability, ... security”. The third theme related to career development, for example: “I want to finish my studies and establish my career”. The fourth theme encompassed economic and social reasons (“It is too expensive to raise a child, and I do not have my

own accommodation and a reliable partner”). The fifth theme reflected a desire to maintain personal freedom (“I value independence and wish to pursue my own interests”. Finally, the sixth theme related to health concerns and the potential impact of pregnancy and parenthood on physical well-being (“I do not want to jeopardise my health”).

Importance of having children and presumed behaviour in hypothetical infertility

No significant sex differences were observed in the perceived importance of having children, as measured on a 0–10 visual analogue scale (Table 4).

In the event of hypothetical infertility, women were significantly more likely than men to consider in vitro fertilisation (IVF) or adoption. By contrast, the likelihood of remaining childless was relatively low among both women and men.

Table 3 Intentions related to future parenthood among medical students in Ukraine, 2024

	Total N=846	Women N=655	Men N=191	p
Reported intention to have children “at some point in life”, n (%)	629 (74.4)	488 (74.6)	141 (73.8)	0.924
Preferred number of children, n (%)				0.180
0	217 (25.7)	167 (25.5)	50 (26.2)	
1	102 (12.1)	83 (12.7)	19 (10.0)	
2	306 (36.2)	245 (37.4)	61 (31.9)	
≥3	105 (12.4)	79 (12.1)	26 (13.6)	
Not specified	116 (13.7)	81 (12.4)	35 (18.3)	
Preferred age at first child (years), n (%)*	N=629	N=488	N=141	< 0.001
Up to 24	96 (15.3)	86 (17.6)	10 (7.1)	
25–29	324 (51.5)	269 (55.1)	55 (39.0)	
≥30	82 (13.0)	43 (8.8)	39 (27.7)	
No answer	127 (20.2)	90 (18.4)	37 (26.2)	
Preferred age at last child (years), n (%)*	N=629	N=488	N=141	< 0.001
Up to 29	112 (17.8)	99 (20.3)	13 (9.2)	
30–35	306 (48.6)	249 (51.0)	57 (40.4)	
≥36	66 (10.5)	36 (7.4)	30 (21.3)	
No answer	145 (23.1)	104 (21.3)	41 (29.1)	
Actions in the event of a hypothetical pregnancy				0.586
Have an abortion	318 (37.6)	243 (37.1)	75 (39.3)	
Have the child	528 (62.4)	412 (62.9)	116 (60.7)	
Reasons for not wanting children*	N=168	N=126	N=42	
No desire for children and to become a parent, n (%)	69 (41.1)	53 (42.1)	16 (38.1)	0.651
War and life uncertainty, n (%)	38 (22.6)	31 (24.6)	7 (16.7)	0.287
Career development, n (%)	38 (22.6)	31 (24.6)	7 (16.7)	0.287
Economic and social reasons, n (%)	37 (22.0)	30 (23.8)	7 (16.7)	0.333
Freedom, n (%)	11 (6.6)	9 (7.1)	2 (4.8)	0.589
Health concerns, n (%)	4 (2.4)	4 (3.2)	0	0.243

* Denominators are provided where they vary from the sample size due to response rates for individual questions

Table 4 Importance of having children and presumed behaviour in hypothetical infertility^a

	Total N=846	Women N=655	Men N=191	p
Perceived importance of having a child	6.66 (3.24)	6.76 (3.19)	6.34 (3.42)	0.132
Likelihood of actions in case of unsuccessfully trying to get pregnant				
Undergoing IVF	5.09 (3.63)	5.37 (3.58)	4.09 (3.66)	< 0.001
Adopting a child	4.31 (3.21)	4.51 (3.18)	3.60 (3.19)	< 0.001
Deciding not to have children at all	3.33 (3.30)	3.24 (3.28)	3.62 (3.34)	0.173

^aData from visual analogue scale (0-point=entirely unlikely, 10-points=highly likely) were compared using independent t-test. Values are means. Standard deviations are shown in parentheses. IVF - In vitro fertilisation

Conditions for parenthood and anticipated (or experienced) effects of parenthood

The Ukrainian versions of the scales assessing factors influencing the decision to become a parent and anticipated life changes associated with parenthood demonstrated acceptable internal consistency, with Cronbach's alphas of 0.79 and 0.73, respectively.

Figure 1 presents participants' ratings of factors influencing the decision to become a parent and their opinions on the impact of parenthood on life. The most frequently endorsed prerequisites for becoming a parent were adequate housing (93%) and a stable financial

situation (92%). Both factors were rated as significantly more important by women than by men.

Approximately 42% of participants considered age an important factor and agreed that childbearing should occur before becoming “too old”, with no significant sex differences observed. Similarly, there were no sex differences regarding the importance of completing education, establishing a career, or having access to childcare support.

Having employment that could be combined with raising children was rated as more important by women than by men. Women were also more likely than men

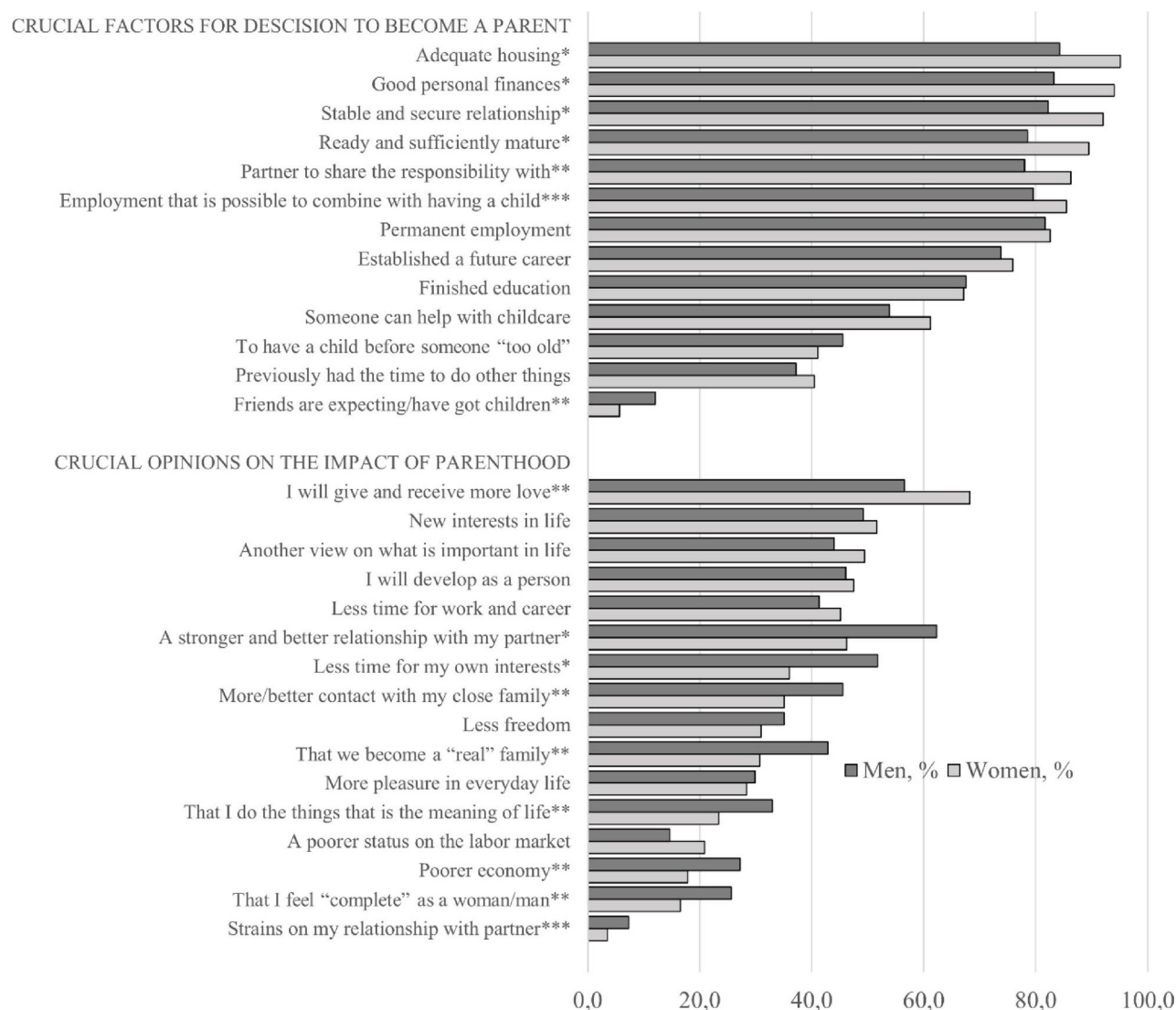


Fig. 1 Crucial factors influencing the decision to become a parent and crucial opinions on the perceived impacts of parenthood (a 100 per cent scale). Bar graphs comparing the importance of factors influencing the decision to become a parent and the perceived life changes associated with parenthood, stratified by women and men, with statistical values included. To illustrate the participants' crucial responses, the total percentages for responses 'important' and 'very important', and 'strongly agree' and 'entirely agree', respectively, are presented. Women = 655. Men = 191. Differences between women and men, p : * <0.001 ; ** <0.01 ; *** <0.05

to anticipate positive emotional aspects of parenthood, including giving and receiving love (OR 1.66, 95% CI 1.19–2.30).

In contrast, men were more likely to anticipate negative consequences associated with parenthood, including reduced personal time (OR 1.91, 95% CI 1.38–2.65), financial strain (OR 1.72, 95% CI 1.18–2.51), and increased relationship difficulties (OR 2.17, 95% CI 1.10–4.31).

Factors associated with medical students' intentions to have children

As shown in Tables 5 and 6, no significant differences were observed between participants who intended to

have children and those who did not with respect to age group, sex, current living arrangements or relationship status.

In the univariable analyses, the perceived importance of completing education, establishing a career, obtaining stable employment, and having access to childcare support did not differ according to childbearing intentions. However, participants who intended to have children were less likely to consider potential parenthood constraints important. Specifically, they were less likely to anticipate reduced time for personal activities or work, relationship strain, loss of personal freedom, or financial difficulties than participants who did not intend to have children.

Table 5 Comparisons of some potentially impactful characteristics by childbearing intentions among students

	Expressed intention to have children N = 629		Expressed no intention to have children N = 217		p-value
	N	%	N	%	
Age (N = 844, expressed intention = 627, expressed no intention = 217)*					
≤ 20	377/627	60.1	132/217	60.8	0.855
> 20	250/627	39.9	85/217	39.2	
Sex					
Men	141	22.4	50	23.0	0.849
Women	488	77.6	167	77.0	
Current living arrangements					
Living with parents	308	49.0	117	53.9	0.209
Other living arrangements	321	51.0	100	46.1	
Having a steady partner					
No	325	51.7	121	55.8	0.298
Yes	304	48.3	96	44.2	
In the event of a hypothetical pregnancy					
Have an abortion	208	33.1	110	50.7	< 0.001
Have the child	421	66.9	107	49.3	
Crucial factors for decision to become a parent ^a					
Partner to share the responsibility with					
Crucial	551	87.6	163	75.1	< 0.001
Not important	78	12.4	54	24.9	
Ready and sufficiently mature					
Crucial	569	90.5	167	77.0	< 0.001
Not important	60	9.5	50	23.0	
Stable and secure relationship					
Crucial	584	92.9	176	81.1	< 0.001
Not important	45	7.2	41	18.9	
To have a child before someone "too old"					
Crucial	295	42.1	61	28.1	< 0.001
Not important	334	53.1	156	71.9	
Employment that is possible to combine with having a child					
Crucial	545	86.7	167	77.0	< 0.001
Not important	84	13.3	50	23.0	
Finished education					
Crucial	419	66.6	150	69.1	0.497
Not important	210	33.4	67	30.9	
Established a future career					
Crucial	478	76.0	160	73.7	0.505
Not important	151	24.0	57	26.3	
Permanent employment					
Crucial	520	82.7	177	81.6	0.713
Not important	109	17.3	40	18.4	
Someone can help with childcare					
Crucial	376	59.8	128	59.0	0.838
Not important	253	40.2	89	41.0	
Good personal finances					
Crucial	587	93.3	188	86.6	0.003
Not important	42	6.7	29	13.4	
Adequate housing					
Crucial	597	94.9	187	86.2	< 0.001
Not important	32	5.1	30	13.8	
Friends are expecting/have got children					
Crucial	45	7.1	15	6.9	0.905
Not important	584	92.9	202	93.1	
Previously had the time to do other things					

Table 5 (continued)

	Expressed intention to have children <i>N</i> = 629		Expressed no intention to have children <i>N</i> = 217		<i>p</i> -value
	<i>N</i>	%	<i>N</i>	%	
Crucial	234	37.2	102	47.0	0.011
Not important	395	62.8	115	53.0	
Opinions on the impact of parenthood ^a					
Will be developed as a person					
Crucial	306	48.7	93	42.9	0.141
Not important	323	51.3	124	57.1	
Less time for work and career					
Crucial	257	40.9	118	54.4	< 0.001
Not important	372	59.1	99	45.6	
New interests in life					
Crucial	343	54.5	89	41.0	< 0.001
Not important	286	45.5	128	59.0	
Worse position in the labor market					
Crucial	111	17.6	54	24.9	0.021
Not important	518	82.4	163	75.1	
Give and receive more love					
Crucial	448	71.2	107	49.3	< 0.001
Not important	181	28.8	110	50.7	
A stronger relationship with partner					
Crucial	350	55.6	72	33.2	< 0.001
Not important	279	44.4	145	66.8	
Less time for own interests					
Crucial	220	35.0	115	53.0	< 0.001
Not important	409	65.0	102	47.0	
More/better contact with closest family					
Crucial	252	40.0	65	30.0	0.008
Not important	377	60.0	152	70.0	
Become/became a “real” family					
Crucial	233	37.0	50	23.0	< 0.001
Not important	396	63.0	167	77.0	
Strain on relationship with partner					
Crucial	21	3.3	16	7.4	0.012
Not important	608	96.7	201	92.6	
Re-evaluation of what is important in life					
Crucial	312	49.6	96	44.2	0.173
Not important	317	50.4	121	55.8	
Less freedom					
Crucial	176	28.0	94	43.3	< 0.001
Not important	453	72.0	123	56.7	
More pleasure in everyday life					
Crucial	207	32.9	36	16.6	< 0.001
Not important	422	67.1	181	83.4	
Worse personal finances					
Crucial	108	17.2	61	28.1	< 0.001
Not important	521	82.8	156	71.9	
Feel “complete” as a real woman/man					
Crucial	129	20.5	28	12.9	0.013
Not important	500	79.5	189	87.1	
Doing something that is the meaning of life					
Crucial	177	28.1	39	18.0	0.003
Not important	452	71.9	178	82.0	

^aCrucial factors for decision to become a parent and opinions on the impact of parenthood (total for responses ‘important’ and ‘very important’, and ‘entirely agree’ and ‘strongly agree’, respectively). Not important (all other responses). *Denominators are provided where they vary from the sample size due to response rates for individual questions

Table 6 Determinants of the intention to have children among medical students in war-torn Ukraine

	Univariable analyses N = 844	Multivariable analyses N = 844	p-value	Stepwise logical regression analyses N = 844	p-value
	OR (95%CI)	aOR (95%CI)		aOR (95%CI)	
Age					
≤ 20 (Ref.)	1	1	0.514		
> 20	1.03 (0.75–1.41)	0.88 (0.61–1.29)			
Sex					
Men (Ref.)	1	1	0.341		
Women	1.05 (0.73–1.52)	0.80 (0.51–1.26)			
Current living arrangements					
Living with parents (Ref.)	1	1	0.087		
Other living arrangements	1.21 (0.89–1.65)	1.38 (0.95–2.00)			
Having a steady partner					
No (Ref.)	1	1	0.962		
Yes	1.19 (0.87–1.62)	0.99 (0.68–1.43)			
In the event of a hypothetical pregnancy					
Have an abortion (Ref.)	1	1	0.173		
Have the child	2.09 (1.52–2.86)*	1.31 (0.89–1.95)			
Crucial factors for decision to become a parent ^a					
Partner to share the responsibility with					
Crucial	2.33 (1.58–3.44)*	1.20 (0.72–2.00)	0.491		
Not important (Ref.)	1	1			
Ready and sufficiently mature					
Crucial	2.88 (1.90–4.36)*	1.93 (1.06–3.50)*	0.031	1.99 (1.23–3.24)*	0.005
Not important (Ref.)	1	1		1	
Stable and secure relationship					
Crucial	3.09 (1.95–4.88)*	1.37 (0.69–2.72)	0.371		
Not important (Ref.)	1	1			
To have a child before someone “too old”					
Crucial	2.26 (1.62–3.16)*	1.58 (1.06–2.36)*	0.026	1.66 (1.16–2.38)*	0.005
Not important (Ref.)	1	1		1	
Employment that is possible to combine with having a child					
Crucial	1.96 (1.33–2.90)*	1.60 (0.89–2.84)	0.113		
Not important (Ref.)	1	1			
Finished education					
Crucial	0.89 (0.64–1.25)	0.87 (0.55–1.37)	0.539		
Not important (Ref.)	1	1			
Established a future career					
Crucial	1.13 (0.80–1.61)	0.87 (0.52–1.47)	0.606		
Not important (Ref.)	1	1			
Permanent employment					
Crucial	1.09 (0.73–1.62)	0.64 (0.34–1.21)	0.169		
Not important (Ref.)	1	1			
Someone can help with childcare					
Crucial	1.04 (0.76–1.43)	1.01 (0.69–1.49)	0.952		
Not important (Ref.)	1	1			
Good personal finances					
Crucial	2.20 (1.33–3.65)*	0.72 (0.24–2.11)	0.548		
Not important (Ref.)	1	1			
Adequate housing					
Crucial	3.08 (1.82–5.23)*	3.02 (1.03–8.83)*	0.044	2.15 (1.13–4.06)*	0.019
Not important (Ref.)	1	1		1	
Friends are expecting/have got children					
Crucial	1.02 (0.55–1.87)	0.80 (0.39–1.65)	0.544		
Not important (Ref.)	1	1			

Table 6 (continued)

	Univariable analyses N = 844	Multivariable analyses N = 844	p-value	Stepwise logical regression analyses N = 844	p-value
	OR (95%CI)	aOR (95%CI)		aOR (95%CI)	
Previously had the time to do other things					
Crucial	0.67 (0.49–0.91)*	0.71 (0.48–1.05)	0.088	0.60 (0.42–0.85)*	0.004
Not important (Ref.)	1	1		1	
Opinions on the impact of parenthood ^a					
Will be developed as a person					
Crucial	1.25 (0.92–1.71)	0.77 (0.53–1.13)	0.184		
Not important (Ref.)	1	1			
Less time for work and career					
Crucial	0.58 (0.42–0.79)*	0.78 (0.52–1.17)	0.227		
Not important (Ref.)	1	1			
New interests in life					
Crucial	1.73 (1.26–2.36)*	1.06 (0.72–1.58)	0.761		
Not important (Ref.)	1	1			
Worse position in the labor market					
Crucial	0.64 (0.44–0.93)*	1.36 (0.83–2.23)	0.229		
Not important (Ref.)	1	1			
Give and receive more love					
Crucial	2.55 (1.86–3.51)*	1.57 (1.06–2.33)*	0.025	1.64 (1.14–2.34)*	0.007
Not important (Ref.)	1	1		1	
A stronger relationship with partner					
Crucial	2.53 (1.83–3.49)*	1.61 (1.04–2.50)*	0.034	1.76 (1.23–2.53)*	0.002
Not important (Ref.)	1	1		1	
Less time for own interests					
Crucial	0.48 (0.35–0.65)*	0.75 (0.47–1.19)	0.220	0.57 (0.41–0.80)*	0.001
Not important (Ref.)	1	1		1	
More/better contact with closest family					
Crucial	1.56 (1.12–2.17)*	0.91 (0.59–1.40)	0.659		
Not important (Ref.)	1	1			
Become/became a “real” family					
Crucial	1.96 (1.38–2.80)*	1.20 (0.74–1.93)	0.458		
Not important (Ref.)	1	1			
Strain on relationship with partner					
Crucial	0.44 (0.22–0.85)*	0.49 (0.21–1.12)	0.091		
Not important (Ref.)	1	1			
Re-evaluation of what is important in life					
Crucial	1.24 (0.91–1.69)	1.00 (0.68–0.47)	0.981		
Not important (Ref.)	1	1			
Less freedom					
Crucial	0.51 (0.37–0.70)*	0.80 (0.49–1.30)	0.363		
Not important (Ref.)	1	1			
More pleasure in everyday life					
Crucial	2.44 (1.65–3.62)*	1.40 (0.85–2.33)	0.188		
Not important (Ref.)	1	1			
Worse personal finances					
Crucial	0.53 (0.37–0.76)*	1.01 (0.60–1.70)	0.966		
Not important (Ref.)	1	1			
Feel “complete” as a real woman/man					
Crucial	1.73 (1.11–2.69)*	1.21 (0.66–2.20)	0.533		
Not important (Ref.)	1	1			
Doing something that is the meaning of life					
Crucial	1.78 (1.21–2.63)	0.79 (0.45–1.41)	0.428		
Not important (Ref.)	1	1			
R ² _N (Nagelkerke's R ²)		0.21		0.16	

Table 6 (continued)

	Univariable analyses N = 844	Multivariable analyses N = 844	p-value	Stepwise logical regression analyses N = 844	p-value
	OR (95%CI)	aOR (95%CI)		aOR (95%CI)	
AIC (Akaike Information Criterion)		905.46		878.17	
Overall model test, p		< 0.001		< 0.001	
AUC (area under the receiver operating characteristic curve)		0.74		0.70	

Univariable, multivariable and stepwise logistic regression analyses of factors associated with the intention to have children. *Crucial factors for decision to become a parent and opinions on the impact of parenthood (total for responses ‘important’ and ‘very important’, and ‘strongly agree’ and ‘entirely agree’, respectively). Not important (all other responses). *Significant associations

In the multivariable logistic regression model, adjusted for 34 factors, five variables remained significantly and positively associated with the intention to have children. These included adequate housing, feeling sufficiently mature and ready for parenthood, wanting to have children before becoming “too old”, perceiving parenthood as involving mutual love, and anticipating a stronger relationship with one’s partner.

The exploratory forward stepwise logistic regression analysis identified seven variables independently associated with the intention to have children (Table 6, Supplementary Table S1). The positive predictors were the same as those identified in the multivariable model. Two additional variables were negatively associated with childbearing intentions: anticipating reduced personal time and perceiving a need to prioritise other life goals before becoming a parent.

The difference in AUC between the models was modest, and both the full and reduced models demonstrated acceptable discriminatory performance.

Discussion

Intentions regarding childbearing

The main finding of this study was a lower proportion of female medical students in Ukraine who intended to have children than in a similar survey conducted in 2012 (75% vs. 84%) [25]. This observation is consistent with reports from other countries suggesting a change in reproductive intentions over recent decades.

A similar decline in childbearing intentions was observed in a repeated cross-sectional survey of women attending a gynaecology clinic in Sweden, where approximately one-quarter were either uncertain or did not wish to have children, despite the country’s extensive family-support policies [28]. Although the most commonly reported reason—“no desire for children or parenthood”—was similar in both Ukraine and Sweden, the other reasons differed. In Ukraine, respondents most frequently cited “war and life uncertainty”, “career development”, and “economic and social reasons”, whereas in Sweden the most common reasons were “health concerns”, “freedom”, “economic and social reasons”, and

“climate changes and overpopulation” [28]. Given the ongoing decline in TFR in many countries [29], further research is needed to understand better the factors associated with reproductive intentions across diverse settings.

Ukraine has also experienced a prolonged period of uncertainty since the onset of Russian aggression in 2014 [11]. However, the lower intention to have children observed in our study should be interpreted cautiously. The difference between the present study and the 2012 survey may partly reflect variations in study design and response rates. The 2012 study used a classroom-based survey with randomly selected student groups, whereas wartime conditions made such an approach infeasible in the present study. Direct replication was also impossible because Donetsk, where the earlier study was conducted, has been under Russian occupation since 2014. Nevertheless, both Donetsk in 2012 and Odesa in 2024 were major economic and educational centres located within Ukraine’s “Orthodox belt” and characterised by religious pluralism. Moreover, as data were collected at a single university in one region of Ukraine, which may differ culturally and demographically from other parts of the country, the findings should also be interpreted with caution. Overall, Ukrainian medical students reported the same preferred number of children—two—as students surveyed 12 years earlier [25]. This figure was lower than that reported in several studies from other countries [20, 26, 30]. One possible explanation is the younger age of the Ukrainian sample, reflecting earlier university admission ages in Ukraine. However, studies involving age-matched cohorts have also reported a preference for large families among students in the United States [31]. Ukrainian students also reported plans to have children at younger ages than those described in several other cohorts [26, 31]. This pattern may reflect cultural norms that place greater emphasis on early family formation [32]. However, it remains unclear whether patterns observed among medical students are representative of young adults in Ukraine more broadly.

No significant difference was observed between female and male students in the perceived importance of having

children. This contrasts with findings from several previous studies, which showed that women generally assigned greater importance to parenthood than men [26, 30, 31].

Approximately six in ten participants indicated that they would continue a hypothetical pregnancy if faced with such a situation at present. This proportion was lower than that reported in a previous Ukrainian study [25]. The ongoing war, concerns about future living conditions for a child, financial insecurity, and young age may all contribute to decisions regarding pregnancy continuation or termination.

Notably, Ukrainian students most often cited moral considerations as barriers to abortion, with ethical and religious reasons reported more often than in studies from Sweden, Greece, and Belgium [20]. Although abortion has historically been widely accepted in Ukraine and often used as a method of family planning [33], the prominence of moral objections in the present study may indicate a growing influence of religious or ethical perspectives. It is also possible that the wartime context has shaped attitudes toward the value and preservation of human life.

Fear of health complications and infertility following abortion was another commonly reported reason for avoiding abortion, despite evidence [34] that legal and safe abortion does not impair future fertility. This concern may reflect persistent misinformation about abortion and the continued use of the curettage procedure in some settings in Ukraine [35].

Approximately three-quarters of the students reported using contraception, which represented a higher proportion than that observed in 2012 [25] and exceeded recent national estimates reported by UNFPA [29]. However, it remains unclear whether contraceptive practices among medical students are representative of young adults in Ukraine more broadly. At the same time, contraceptive use among medical students appears to remain lower than that reported among Ukrainian women with previous pregnancy experience [36], and they rarely use oral and long-acting contraceptives, suggesting that gaps in sexuality and reproductive health education and contraceptive counselling may persist. Further research is needed to better understand these factors.

Fertility intentions may also be influenced by concerns about infertility, which affects an estimated 17.5% of people globally [37] and has been reported in 24.3% of individuals in Ukraine [35]. Compared with the 2012 survey [25], willingness to pursue infertility treatment—particularly IVF—appeared lower and remained relatively limited, especially among male students. Ukrainian students were also less likely to consider IVF than students in several European countries and the USA [20, 26, 30, 31, 38]. Factors such as treatment cost, accessibility, and

cultural attitudes may contribute to these differences. In hypothetical infertility scenarios, female respondents in Ukraine were more likely than Danish students to report that they might remain childless [30], although their responses were broadly similar to those reported in other European studies [20].

Adoption was considered less often by Ukrainian students than by participants in European and U.S. studies [20, 31]. Despite recent public awareness campaigns in Ukraine, barriers such as limited cultural acceptance, bureaucratic challenges, financial constraints, and insufficient information may continue to discourage adoption [39]. Given the increasing number of children affected by the war, a better understanding of these barriers may be important. However, it remains unclear whether the attitudes observed among medical students are representative of young adults in Ukraine more generally with respect to adoption and IVF as responses to hypothetical infertility.

Conditions for parenthood and anticipated (or experienced) effects of parenthood

Our data suggest differences in the attitudes to parenthood of Ukrainian medical students during wartime compared with those reported among their pre-war and international peers. Compared with findings from Ukraine in 2012 [25], the present study found that socio-economic considerations appeared to play a more prominent role in attitudes towards parenthood. While students in several Western studies [25, 29, 30] often viewed parenthood in relation to individual readiness, including relationship stability and career progression, Ukrainian students appeared to place greater emphasis on broader socio-economic circumstances.

In the present study, concerns about career consequences and the availability of childcare support were reported by both female and male students, unlike patterns observed in the 2012 Ukrainian study and in some contemporary Western cohorts [25, 26]. Among female students, the importance of employment that could be combined with childbearing appeared greater than previously reported in Ukraine [25], a finding broadly consistent with observations from other countries [26, 30].

For both female and male students, having children before becoming “too old” remained an important consideration, with no sex differences observed in either the present study or the earlier Ukrainian survey. This contrasts with findings from several other studies, where such concerns were reported more frequently by women than by men [26, 30].

Looking ahead to parenthood, female students were more likely than male students to anticipate emotional rewards, such as love and personal fulfilment. This pattern is consistent with previous findings from Ukraine [25] but

differs from observations reported in some international studies [26, 30]. In contrast, male students expressed greater concern about the potential financial demands of raising children and the possible reduction in personal time associated with parenthood. This pattern differs from that reported in several previous studies [25, 26, 30], although the reasons for these differences remain unclear.

Taken together, these findings suggest that a combination of socio-economic conditions, cultural norms, and the broader wartime context may shape attitudes towards parenthood among Ukrainian medical students. This study did not include individual-level measures of war exposure, such as displacement, bereavement, injury, property loss, or direct economic disruption. As a result, it is not possible to attribute the observed findings to specific wartime experiences or to identify the mechanisms through which conflict-related factors may have influenced attitudes toward parenthood. Further research incorporating detailed measures of individual exposure to conflict would be needed to better understand how different dimensions of war-related experience may shape attitudes to parenthood. Moreover, further research is needed to determine the extent to which these patterns are specific to medical students or are also present among young adults in Ukraine more generally. Our findings emphasise the importance of addressing the cultural factors and social norms that may shape family formation in Ukraine.

Factors associated with medical students' intentions to have children

Although five variables were statistically significant in the full multivariable logistic regression model, the stepwise selection procedure retained seven predictors of the intention to have children. This discrepancy reflects differences between the full and reduced models. After removing variables that did not contribute to the final stepwise model, two additional predictors reached statistical significance: perceiving a need to prioritise other life goals before becoming a parent (aOR = 0.60) and concern about having less time for one's own interests as a result of parenthood (aOR = 0.58). Neither predictor was statistically significant in the full model. These findings suggest that the associations between these determinants and fertility intentions may have been obscured by correlations among variables in the full model. However, given the exploratory and data-driven nature of the stepwise procedure, these findings should be interpreted with caution. We therefore present the stepwise model as a supplementary exploratory analysis.

Notably, five variables remained significant in both the fully adjusted and stepwise models, supporting the robustness of these associations across different model specifications.

Overall, our findings suggest that intentions to have children are shaped by a combination of subjective factors: structural and material circumstances (e.g., perceived housing adequacy), psychological readiness (e.g., perceived maturity), emotional considerations (e.g., love and partner relationship), and individual life priorities (e.g., age-related timing).

Adequate housing (aOR 3.02) appeared to be the key independent positive predictor of fertility intentions among medical students, suggesting the importance of structural stability. The prominence of accommodation in our findings may be related to the study population's living circumstances. Approximately half of the respondents reported living with their parents, a proportion higher than that reported in Ukraine 12 years earlier [25] and substantially higher than that observed among Danish students [30]. In addition, the widespread housing disruption associated with the war—including damage to residential infrastructure, loss of housing in occupied territories, and large-scale internal displacement—has increased the salience of housing-related concerns in contemporary Ukraine. Housing uncertainty may influence young adults' perception of their readiness for parenthood and their ability to achieve responsible, planned parenthood, undermining the goals promoted in Ukraine through the Youth-Friendly Clinics system since 2009 [40].

While the study was conducted in a wartime setting, it did not capture participants' specific experiences of the conflict. Consequently, the potential influence of war-related factors on fertility intentions remains uncertain and warrants further investigation using detailed measures of individual exposure.

Practical implication of the findings

Our findings suggest that intentions to have children are shaped by multiple interrelated factors, including material, emotional, relational, and psychological considerations. Housing-related factors may merit consideration in future discussions of post-war demographic trends and family-support policies in Ukraine.

The sex differences observed in the study suggest that cultural factors and gender norms may influence reproductive attitudes. These findings should be interpreted cautiously and may inform future discussions on how such factors could be considered when developing pronatalist policies.

Although most Ukrainian medical students reported using contraception, uptake of highly effective methods, such as oral contraceptives and long-acting reversible contraception, remained relatively low. This may indicate a need for strengthened sexuality education in Ukraine, potentially aligned with the International Technical Guidance on Sexuality Education [41–43], while recognising that the present study does not assess educational interventions.

Strengths and limitations

To our knowledge, this is the first study to assess fertility intentions among medical students in a wartime setting. The study used the Swedish Fertility Awareness Questionnaire [26], previously applied in Ukraine [25], facilitating comparisons over time and across countries.

The sample size was relatively large, and, for the first time, subjective factors assessed through this questionnaire were examined as potential predictors of intentions to have children.

The response rate (39.5%) was relatively high compared with similar online studies [27, 31] and consistent with rates reported in a meta-analysis of online surveys [44].

The findings, however, should be interpreted in light of several limitations.

First, convenience sampling may have introduced self-selection bias, as students with a greater interest in fertility-related issues may have been more likely to participate.

Second, only two subjective-scale measures were psychometrically evaluated using Cronbach's alpha. The lack of more extensive questionnaire validation in the study population is a limitation, and the findings should be interpreted with this consideration in mind.

Women were overrepresented among respondents, reflecting the longstanding predominance of women among medical students and practising physicians in Ukraine and consistent with our previous study.

Because the survey was confidential and only anonymous data were analysed, no information was available on non-responders, preventing assessment of potential response bias.

Ten to twenty per cent of students did not report their preferred number of children or preferred age at first or last birth. Thus, some responses may have reflected fertility desire rather than clearly formed fertility intentions, although this distinction may be relatively small among young, childless individuals [17].

The survey collected limited socioeconomic information beyond age, sex and housing status. Given the established importance of socioeconomic factors for fertility intentions [45, 46], this limitation is significant, even though our study focused solely on subjective factors.

The results of the stepwise regression analysis should be interpreted cautiously. Stepwise procedures can increase the risk of false-positive findings. However, the consistency of key predictors across both the full multi-variable and stepwise models provides some support for the robustness of the main findings.

The findings should also be interpreted with caution because the data were collected at a single university in one region of Ukraine. At the same time, large-scale wartime displacement [47], the departure of many international students [48], and the widespread adoption

of online and hybrid learning formats [49] may have reduced some regional differences in student populations. Therefore, although the sample is geographically limited, some of the findings may have relevance to medical students in other parts of contemporary Ukraine. Although including multiple medical universities would have strengthened generalisability, this was not feasible due to practical and wartime constraints. Furthermore, the results cannot be generalised to students in other disciplines or to young adults in Ukraine more broadly.

Conclusion

This study found that reproductive intentions remain high among Ukrainian medical students, despite the ongoing war, and that the importance of having children did not differ between women and men. Intentions to have children were multidimensional and associated with psychological, emotional, relational, and age-related factors, and perceived housing adequacy as a key independent indicator of readiness for parenthood.

To mitigate the potential risk of long-term demographic decline in post-war Ukraine, pronatalist policies may benefit from considering housing support for family well-being initiatives, while also addressing sexuality education and the cultural factors influencing family formation and decisions about parenthood.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12889-026-28222-2>.

Supplementary Material 1.

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Authors' contributions

I.M., T.T., and M.O. conceptualised the study content and study design. I.M. and V.M. carried out the study and acquisition of data. I.M. and O.G. conducted the statistical analyses and interpretation of data. I.M. and O.G. wrote the first draft of the manuscript, while all authors critically reviewed the manuscript for important intellectual content and approved the final version of the manuscript. All authors agree to be accountable for all aspects of the work.

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Data availability

The datasets used and analysed during the current study are not publicly available due to the very sensitive topics related to the personal, sexual, and reproductive health experience of responders but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was conducted in strict accordance with the Declaration of Helsinki for Medical Research involving Human Subjects. Ethical clearance was granted

by the esteemed Ethics Review Committee of Odesa National Medical University (Reference: Protocol 20, dated February 7, 2024). Informed consent was obtained from participants prior to enrolment in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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