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Social Disparities Across Different Stages of Medical Help-Seeking to Have a Child in Germany

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Abstract

Delayed childbearing has led more individuals and couples to seek medical help for conception in many European countries. In accordance with a stratified reproduction perspective, there is evidence of social disparities concerning who seeks medical help to become pregnant. However, it remains unclear whether and how disparities vary across different stages of the help-seeking process. This article provides novel evidence on the degree of disparities and associated factors involved in the process of medical help-seeking to have a child by stage, distinguishing between consulting a doctor, receiving medication, and getting more advanced treatments such as in vitro fertilization. Using wave 1 of the German Family Demographic Panel Study (FReDA), a novel and large data source, we examine women and men aged 18–50 using partial proportional odds models. Women reported a higher lifetime prevalence of help-seeking (12.3%) than men (8.0%), primarily due to greater use of medication. We found that two of four indicators of social stratification were associated with help-seeking (income and marital status, but not education and migration background). Women and men with higher household income and those who were married were more likely to seek medical help. Less-intensive infertility treatment is free, but advanced treatments are expensive, and only married couples are eligible for partial reimbursement. We had therefore expected to find stronger associations for both variables for advanced treatments, which was not the case. This suggests that, even though financial considerations were important, selection into treatment may also be related to other factors, including cultural and knowledge-based factors.

Keywords

assisted reproductive technologies (ART); FReDA survey; Germany; infertility help-seeking; medically assisted reproduction (MAR); social inequalities

1. Introduction

Fertility problems can occur at any age, but delayed childbearing has resulted in an increased risk of experiencing age-related infertility and, therefore, an increased need for medical help to conceive in many developed countries. Assisted reproductive technologies (ART), such as in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI), are now broadly available in high-income countries. Usage of ART treatments in Europe is rising (Smeenk et al., 2023). Reasons for this increase include improvements in medical technology, improved access to these treatments due to increased financial support of patients, and the opening of access to subgroups that have been excluded previously, such as same-sex couples or single women (Calhaz-Jorge et al., 2020).

Assurance of universal access to sexual and reproductive health care is an important part of the sustainable development agenda of the United Nations. Although infertility treatment is not explicitly mentioned in the SDGs themselves, there appears to be some agreement that these goals should include "access [to] services for prevention, management, and treatment of infertility" (Starrs et al., 2018, p. 2645). Despite improvement in access, studies continue to show social disparities in the use of ART across high-income countries, particularly concerning income, social deprivation, educational background, and race/ethnicity (Brautsch et al., 2023; Chambers et al., 2013; Goisis et al., 2024; Messaoud et al., 2023; Seifer et al., 2022; Tierney et al., 2024). These findings suggest the existence of "stratified reproduction" (Colen, 1986) in the use of ART, where "the role of access and costs is key" (Riley, 2018, p. 126). Employing a stratified reproduction perspective adds to our understanding of how reproduction via medical help is embedded in social structural and country contexts.

To ensure equitable access to fertility care, it is essential to identify the mechanisms through which disparities arise and the points at which they occur. This requires an understanding of help-seeking as a process, recognizing that medical help-seeking is not limited to ART. Typically, the help-seeking process begins with consulting a doctor about difficulties conceiving, followed by less invasive interventions such as receiving medication, and possibly leading to surgery and/or ART. Most existing research, however, has reduced the complexity of this process to a simple dichotomy of help-seeking versus not help-seeking. Furthermore, studies have varied as to what threshold they established to divide *not seeking help* from *help-seeking* (e.g., consulting a doctor or having had IVF/ICSI), sometimes leaving it up to the respondent to determine what counts as help-seeking (Passet-Wittig & Greil, 2021).

This binary approach to measuring medical help-seeking hides potential differences in social disparities at different help-seeking stages. People frequently drop out of treatment before starting ART (Messaoud et al., 2024). We expect that the relevance of various social stratification variables will depend upon the stage of treatment examined. There is reason to expect access to care to become increasingly unequal as the treatment process progresses, particularly as interventions grow more expensive, invasive, and time-consuming. It is therefore likely that the role of economic, social, and cultural resources will become more important in determining who receives treatment at later stages of help-seeking. In this study, we therefore distinguish between four stages of medical help-seeking: no help-seeking, consulting a doctor, receiving medication, and undergoing advanced treatments such as artificial insemination, IVF, and ICSI.

Studies documenting disparities across different treatment stages have come almost exclusively from the US (e.g., Crawford et al., 2017; Greil et al., 2011; Janitz et al., 2019; Tierney et al., 2024), with a few exceptions from European countries (e.g., Brautsch et al., 2023; Köppen et al., 2021; Oakley et al., 2008; Terävä et al., 2008). This is problematic because country context matters for understanding social determinants of the use of medical help to conceive. Policies regulating the delivery of services and access to these services vary by country (Passet-Wittig & Bujard, 2021). Differences in use of medical help to conceive also reflect variation in cultural acceptance of assisted reproduction and patterns of fertility behaviors (Präg & Mills, 2017). The variation among countries reinforces the need for country-specific analyses and for interpreting findings on the associations between social characteristics and help-seeking stages within the country context.

In this study, we investigated the lifetime prevalence of medical help-seeking to conceive a child and the role of various social determinants in producing disparities. Specifically, we studied whether social determinants (especially education, migrant status, household income, and marital status) differ in their association with help-seeking across different stages of treatment. For this purpose, we used data from wave 1 of the German Family Demographic Panel Study (FReDA), a novel survey with a large sample size (over 20,000 respondents), which is necessary for the analysis of uncommon outcomes. We used a general population sample of women and men of reproductive age because we aimed to provide a comprehensive picture of those seeking medical help to have a child in this population. We consider Germany to be an example of a country with a high need for treatment, a rather restrictive regulation of access to ART, and high out-of-pocket expenses for many users.

2. Background

2.1. The German Context

We begin with a brief discussion of the German context surrounding help-seeking to conceive a child. With total fertility rates between 1.2 and 1.6 since German unification in 1990 (1.38 in 2023), Germany can be characterized as a country with very low fertility (Destatis, 2024c). This low fertility rate partly reflects the high share of women who remain childless (21%) and the steadily increasing age at first birth (30.2 years in 2023) (Destatis, 2024a). Delays in the first birth contribute to an increased risk of experiencing infertility, which is reflected in the increasing age of women and men who make use of ART (Bartnitzky et al., 2024).

The rate of ART use in Germany has increased considerably since 1990 (Bartnitzky et al., 2024). The first legal regulation of ART was implemented in 1990 in the Embryo Protection Law (*Embryonenschutzgesetz*), which is still in place. Germany lags behind countries like Austria and Switzerland in updating regulations to accommodate technological advancements, cultural change, and increasing ART use. German laws now allow heterosexual and lesbian couples, as well as single women, to use ART. Because surrogacy is not allowed in Germany, gay men were excluded as potential users by law. Egg donation is also not allowed in Germany.

Germany presents an interesting case for the study of medical help-seeking because reimbursement of costs for advanced treatment is only partial for the majority of Germans who have statutory health insurance (88% of the workforce in Germany; Destatis, 2024b). Fertility treatments are performed at specialized fertility clinics. Before going to a specialized clinic, it is common for female patients to see a gynecologist and male patients a urologist. Medical advice, diagnostics, and less invasive treatments, including medication, are offered by these physicians, and these treatments are typically free of cost for the patient. Reimbursement

for medical help-seeking to conceive in Germany is limited by statute to couples consisting of married different-sex partners. Women must be between 25 and 39 years old, and men between 25 and 49 years old. Only 50% of costs for a treatment cycle of ART and artificial inseminations are reimbursed for a maximum of three cycles per child. Treatments with donor sperm are not covered. An IVF cycle can cost up to 3000 EUR, resulting in considerable out-of-pocket expenses. Private health insurance is often more generous in cases where the insured partner has an infertility diagnosis. Based on its legislation, Germany can be characterized as more on the restrictive side with regard to access and reimbursement of treatment costs compared to other European countries (Calhaz-Jorge et al., 2020).

2.2. State of Research

In this section, we review the scattered empirical evidence on social disparities in the use of medical help-seeking to have a child. A recent review on medical help-seeking in developed countries covering the period from 1990 to 2019 identified five categories of determinants of persons or couples seeking medical help to get pregnant: socio-demographic, socio-economic, reproductive history, attitudes, and psychological factors (Passet-Wittig & Greil, 2021). From this review, it is evident that most research has centred on socio-demographic, socio-economic, and reproductive history variables, focusing on a few specific variables, including age, number of children, race/ethnicity, and indicators of socio-economic status such as education, income, and health insurance. Fewer studies explored the role of relationship status or gender in help-seeking, in part because analytical samples usually included only women. As we took a stratified reproduction perspective in this study, we focused on conventional social stratification variables such as education, income, and migrant status. We also considered relationship status because it defines access to reimbursement of treatment costs. We first summarize existing evidence regarding stratified reproduction among those seeking medical help for infertility with an emphasis on recent studies.

We argued in the introduction that costs and affordability were important for understanding how patterns of use of ART and other medical treatments were shaped. Another, more indirect selection mechanism relates to differences in knowledge and health behaviours between social, cultural, or ethnic groups, which were also important for accessing and using medical help. While income is mostly concerned with affordability, education and migrant status relate more to the second mechanism, but of course, both are closely intertwined.

Evidence from a variety of countries has revealed an educational gradient in medical help-seeking, with more highly educated women (Brautsch et al., 2023; Chandra et al., 2014) and men (Datta et al., 2016) being more likely to seek medical help. There is inconclusive evidence, mostly from US studies of women, about the association of education with the utilization of specific treatment types (Greil et al., 2011; Tierney et al., 2024).

There is evidence from US studies among women of an association between racial and ethnic minority status (e.g., those identifying as Black, Hispanic, and Native American) and lower rates of medical help-seeking compared to people who identify as White (e.g., Crawford et al., 2017; Janitz et al., 2019; Tierney et al., 2024). Some US studies, however, did not find such an association (e.g., Kelley et al., 2019; Weller, 2015). There is less quantitative research available on European samples, and the results have differed by study and country. A Danish study provided descriptive evidence that migrants were less likely to use ART as their first treatment (Brautsch et al., 2023). Similarly, a German study showed that migrants

were less likely to seek medical help, controlling for self-perceived infertility status (Milewski et al., 2025), while another German study found no difference by migrant status (Köppen et al., 2021). One US study examined treatment stages and found differences among ethnic groups for ART but not for lower treatment stages, even when controlling for income, education, and other socio-demographic variables. It is very likely that the association between race/ethnicity or migration background and help-seeking is mediated by other socio-economic factors (Greil et al., 2011), including income and education, which likely contribute to the conflicting evidence.

Many studies show that higher household income is associated with higher odds of help-seeking. Several US studies of women found a link between income and help-seeking, with stronger associations at more advanced treatment stages (Farland et al., 2016; Kelley et al., 2019; Kessler et al., 2013). Nevertheless, even in countries with partial or full coverage of treatment costs—such as Denmark (Brautsch et al., 2023), France (Messaoud et al., 2023), and Germany (Köppen et al., 2021)—income-based disparities in medical help-seeking have persisted. The availability of health insurance that covers infertility treatment, more common among those with higher incomes, also has strong associations with help-seeking in the US (Passet-Wittig & Greil, 2021).

Relationship status is not typically viewed as an indicator of social stratification, but it is highly relevant in the German context due to regulations on reimbursement. There is evidence from studies on help-seeking in different countries such as the U.S., United Kingdom, Australia, Canada, and Germany showing that married women and men were more likely to seek medical help (Bushnik et al., 2012; Chandra et al., 2014; Datta et al., 2016; Köppen et al., 2021; Marino et al., 2011). The few studies from the US that include a measure of relationship status indicated that those who were married have higher odds of undergoing more invasive treatments, including ART, insemination, and surgery (Chandra & Stephen, 2010; Greil et al., 2011).

Previous studies have used different analytic samples, often without explicitly justifying their choice (Passet-Wittig & Greil, 2021). For example, many studies have used samples of people who were in need for treatment, i.e., those who were infertile, thereby potentially excluding certain groups such as same-sex couples, single women, people who know they have a reproductive barrier and skip the required twelve months of trying, as well as people with non-reproductive health barriers to having children (Andersen, 2017; Passet-Wittig & Greil, 2021). A stratified reproduction framework therefore suggests the value of a broadly inclusive sample to more fully understand the help-seeking experiences of those who seek medical help to have a child, but who would likely not be classified as infertile.

Most research on medical help-seeking to have a child has focused on women, but men also may have reproductive impairments, and a thorough clinical evaluation will usually involve both partners in a couple. The comparative lack of research including men is likely related to the fact that reproduction is often regarded as a woman's issue (Almeling, 2020; Barnes, 2014). The few studies of help-seeking that included both women and men have discovered that women were more likely to seek help than men (Belgherbi & de La Rochebrochard, 2018; Chandra et al., 2014).

Overall, prior research has suggested that reproduction through medical help-seeking is socially stratified. However, evidence on variation across treatment types remains limited. Conflicting findings across studies may partly result from differences in model specifications, such as which variables were controlled for.

Additionally, country-specific contexts likely play a key role, but these have rarely been considered when results have been interpreted and compared across studies.

2.3. Theoretical Framework and Working Hypotheses

We were guided theoretically by the Stratified Reproduction and Life-Course perspectives. The stratified reproduction perspective focuses on the ways in which reproduction is structured across social and cultural boundaries, empowering privileged women and disempowering less privileged women (Colen, 1986). The Life-Course perspective draws our attention to the ways in which social behavior, norms, and social interaction evolve across time (Elder et al., 2003). We draw more specifically from the Help-Seeking Model for Infertility by White et al. (2006). This model conceptualizes the help-seeking process as being determined by symptom salience, life course cues, attitudes, predisposing factors, and enabling conditions. In this study our focus is on enabling and predisposing conditions and life course cues. Enabling conditions focus on the (primarily economic) resources needed to seek medical help to have a child, while predisposing conditions were characteristics that influence inclinations to use health care services. Life course cues were factors that signal normatively appropriate times for life transitions, that make childbearing—and, thus, infertility and help-seeking—salient (Elder et al., 2003). These categories should be seen as heuristic tools; the model does not claim that a variable necessarily fits neatly into only one category.

Level of education is a fundamental social determinant of health (Mirowsky & Ross, 2017), linked to higher health literacy and greater health care utilization (Nutbeam & Lloyd, 2021; Zajacova & Lawrence, 2018). Understanding and navigating the treatment process and understanding complex reimbursement rules may be easier for those with higher education. Also, those with higher education may be more likely to have more educated friends and may receive more encouragement to pursue treatment. Furthermore, individuals with lower levels of education may face class-based discrimination by physicians and/or may come to feel that fertility treatments were not appropriate for people like them. In the help-seeking model, education is considered an enabling factor, though it could also be seen as a predisposing condition. We expect that more educated women and men were more likely to seek medical help, especially at advanced treatment stages.

Like education, migration background can be considered both as an enabling factor and as a predisposing condition. Some migrants, especially those from low- or middle-income countries, may have lower health literacy and knowledge about ART and how to access it in the German context. Additionally, some migrants may have different attitudes toward ART, which could be related to religious beliefs discouraging or defining norms for the seeking of medical help. Furthermore, some migrants may face bias and institutional barriers that serve to limit their ability to access healthcare institutions (Hardeman et al., 2018). We assume that, overall, migrants were less likely to seek medical help compared to those born in Germany.

MAR treatments were costly, and not everybody can afford them, particularly in contexts where there is no or only partial public support. Household income might also be associated with additional dimensions of social inequality in the seeking of medical help to have a child. For example, it is more difficult for couples in lower-income jobs to reconcile time-consuming treatments with their work schedules. In this study, we categorized household income as an enabling condition mainly because financial support for advanced treatments is only partial and patients have to pay out-of-pocket for at least a part of treatment costs. Given

that medical advice and medication were typically free of cost, we expected that the association with help-seeking would be strongest for advanced treatments.

Marital status is typically considered to be a cultural or life course cue to have a baby making help-seeking to have a child more likely for those who were married. Despite declining marriage rates in many societies, including Germany, the majority of children continued to be born to married couples—particularly in West Germany—indicating the continued, though weakening, influence of social norms favoring marital childbearing. In the German context, marital status can also be considered to be an enabling factor. This is because it is directly related to financial resources available to patients, as those not married when pursing advanced treatment have to pay the full treatment costs themselves. Whether marital status is considered as a cultural or life course cue or as an enabling condition, we would expect larger coefficients at the advanced treatment stage. This is because higher levels of treatment involve more economic and emotional cost; thus, it may require higher levels of security and commitment to overcome those costs.

3. Data and Methods

3.1. Data

In this study, we use data from the first wave of the new FReDA (Family Research and Demographic Analysis) panel, release v2.0.0 (Bujard et al., 2023; Schneider et al., 2021). FReDA is a large-scale representative survey of German residents 18 to 49 years with over 20,000 respondents. Wave 1 consists of three sub-waves: W1R, W1A and W1B. W1R is the recruitment wave and consists of basic socio-demographic information for 37,777 respondents of which 26,725 provided consent for participation in the FReDA panel. The content of one survey wave is divided into two complementary sub-waves with different questionnaires, waves W1A and W1B (for more details see the FReDA Data Manual). We used data from the recruitment wave W1R and wave W1A, which contains the fertility module and other variables of interest in this study; 22,048 women and men participated, giving us a response rate of 83%. Data for W1R and W1A was collected in 2021 using mainly self-administered web-based interviews and paper questionnaires. 23 cases could not be matched across sub-waves. The successfully matched data set (W1R and W1A) consists of 22,025 respondents.

Of these 22,025 respondents, 23 respondents were dropped either because information on their age was not available or because they were older than 50 years. 70 respondents were dropped either because no information was available on their gender or because they were categorized as "diverse," the category FReDA used to denote sexual identities other than "woman" or "man." There were too few diverse respondents to retain them as a separate category. From the remaining 21,932 observations, those with missing values on the dependent variable were dropped (291 people), leaving 21,641 observations. We would have preferred to treat missing values on explanatory variables as a separate category, but, with the exception of household income, these variables did not have enough missing cases to allow them to be treated in this way. Therefore another 373 observations (1.7%) were dropped because of missing values on any explanatory variables. The indicator for household income did include a category for item non-response, which accounts for 13.7% (n = 2,922) of the cases in the final data set. The final analytical sample consisted of 11,805 women and 9,463 men.

3.2. Variables

3.2.1. Dependent Variable

The dependent variable was based on a lifetime indicator for seeking medical help to have a child. The question asked to people about their own personal help-seeking was: Have you ever done any of these things to help you have a child? Please select all that apply. The question was followed by a list of treatments. The wording was exactly the same for women and men. Table 1 shows the dependent variable with all categories. The most common types of help-seeking were calculating fertile window and consulting a doctor, followed by receiving medication. For our final indicator of medical help-seeking, respondents were grouped into one of four categories based on the highest category of help-seeking mentioned: (0) *no help-seeking*, (1) *consulted a doctor*, (2) *received medication*, (4) *advanced treatment*. Respondents who only mentioned "other, none of the above" were grouped together with *none* as not having received medical treatment because it is unclear whether this category even refers to a medical treatment. Similarly, respondents who only mentioned "calculating fertile window" were grouped in the no-help-seeking category because it is not clear whether this refers to a diagnostic method or to the use of easily accessible online tools or apps to determine the fertile window, which we would not consider as medical help-seeking. We assume ordinality of these categories, which implies, for example, that people who had advanced treatments or received medication have also talked to a doctor. Note that the assumption of ordinality cannot be tested with the available data because we used a lifetime indicator for medical help-seeking so that combinations of treatment types may not be informative about specific treatment pathways.

Table 1. Lifetime indicator of medical help-seeking to have a child, all categories (in percentages).

	Types of medical help-seeking	Women	Men
0)	No help-seeking		
	None	75.6	83.9
	Other, none of the above	1.4	1.1
	Calculating fertile window	18.1	9.9
1)	Consulted doctor	9.6	6.6
2)	Received medication	7.5	3.6
3)	Advanced treatments		
	Surgery	1.3	0.5
	Artificial insemination	2.3	1.6
	In Vitro/micro-fertilization	3.3	2.6
	Other medical treatment	1.6	0.9

Notes: Shares add up to >100% because multiple responses were allowed in the original question. Source: FReDA W1: 11,805 women, 9,463 men.

3.2.2. Independent Variables

Our main explanatory variables were the social stratification variables education, migrant status, household income, and marital status. For the level of education, we used information on the highest general school-leaving certificate acquired in Wave W1R. General higher education entrance qualification (*Abitur*) or an entrance qualification for universities of applied science (*Fachabitur*) were considered as higher education,

whereas all other certificates were treated as lower education. Because only a few respondents were currently enrolled in education, we grouped them in the lower education category. Information on migrant status was taken from wave W1R. The binary indicator differentiates between migrants (1) and non-migrants (0), where migrants were those born abroad. We grouped answers to the monthly net *household income* (W1A) into four categories: ≤ 2000€, > 2000–3000€, > 3000€, and a separate category for respondents with missing information to retain cases. Marital status is a categorial indicator reflecting whether a person has ever been married to a partner of the same or other sex (2), ever had a partner but has never been married (1), or never had a partner (0). In FReDA, retrospective information is available for partnerships that lasted three months or more. Thus, people may have had short relationships that were not represented here.

We controlled for two variables known to be associated with seeking medical help to have a child and with the social stratification variables above: age and number of children. The risk of infertility increases with age, particularly for women; we therefore expected medical help-seeking to increase with age, accelerating in women's mid-thirties (Passet-Wittig & Greil, 2021). Regulations in different countries concerning access to treatment and reimbursement of costs were likely to affect the relevance of age for help-seeking. We treated age at interview (W1A) as a categorical measure to allow for non-linear associations between age and help-seeking across treatment stages. We used three categories: ≤ 34 years, 35–39 years, 40+ years. The age category 40+ years is particularly relevant because couples in which the woman is above 40 were not eligible for reimbursement in Germany.

Parity is also important to consider, as infertility experience and treatment use differ between those with and without children (Weller, 2015). Number of biological children at time of interview (W1A) contains three categories: no children, 1 child, 2+ children. We could assess parity only at the time of interview; in most cases, the interview would take place after the period of help-seeking. We also control for experience of infertility. The binary lifetime indicator of infertility refers to whether an individual ever experienced twelve months of trying to get pregnant without success, following the medical definition of infertility (Zegers-Hochschild et al., 2017). It was based on the question: Was there ever a time when you and *a partner* were trying to get pregnant but did not conceive within at least 12 months? To this question, respondents could reply "yes" or "no."

As one aim of this study was to provide a comprehensive picture of all those seeking medical help to have a child among German women and men of reproductive age, we also included an indicator of sexual orientation. We included sexual preference for women only, because male couples cannot use MAR to have a child in Germany. We constructed this indicator by noting the sex of the current and previous partners (W1A). In FReDA, detailed information on previous partners (including their sex) is available only for up to ten previous partners with whom the respondent lived together or had been married. Thus, this variable may not cover the full partnership biography. It is, however, the best available way to identify sexual orientation. Women were categorized as "lesbian/diverse" if they ever reported a partner of the same sex or if they classified at least one of their partners as diverse. There were too few women with diverse partners to treat them as a separate category. The category "heterosexual" was used if a woman never had a same-sex or diverse partner. An additional category had to be added for women who ever had a partner but never lived with a partner or were never married to a partner because we did not know their partner's gender.

3.3. Methods

As noted above, the help-seeking variable consists of four ordered categories. For this type of variable, the ordered logit model would be a conventional choice, but the model violates the parallel lines assumption, which requires the coefficients to be the same for all categories of the dependent variable (Long & Freese, 2014). We explored a common alternative, the multinomial logit model, which estimates separate coefficients for all categories. Multinomial logit, however, completely ignores the ordering of the categories and may estimate more coefficients than necessary. Therefore, we used the partial proportional odds model (Williams, 2006). This model relaxes the parallel lines assumption only where needed, fixing some coefficients to be the same across treatment stages while allowing others to vary, making it a more parsimonious option than multinomial logistic regression (Williams, 2016).

To identify variables for which the parallel lines assumption is violated, we applied the Brant test to the fully specified models using the user-written command *brant* in Stata, which indicates whether or not the parallel lines assumption holds for each variable in a model (Long & Freese, 2014). Williams (2016) suggests that the Brant test should not be the only guide to making choices about how to treat specific variables. Therefore, we compared results from several different models (e.g., allowing no variables, only certain variables, and none of the variables to vary). In all cases, the variables for which the Brant test did not suggest a violation of the parallel lines assumption, the variation across treatment stages was negligible when we allowed for variation. Therefore, we followed the results from the Brant test, and estimated multiple coefficients only when warranted.

The partial proportional odds model was estimated using the user-written gologit2 command (Williams, 2006) using Stata/SE 18. We estimated three separate models for women and men: (a) unadjusted models for all variables; (b) a full model including main explanatory variables and controls; and (c) the full model plus the infertility variable. We introduced infertility experience in a separate model because we assume it is associated with both help-seeking and indicators of social stratification, and we wanted to assess unique and combined associations among variables. Additionally, we wanted to measure the extent to which the associations of social stratification indicators with help-seeking were measuring a higher risk of infertility rather than barriers to treatment. By including a measure of meeting medical criteria for infertility, we estimated the focal association, adjusted for whether or not an individual experienced infertility.

For variables in which the coefficients differ by help-seeking stage, we show three different coefficients, reflecting the following comparisons: (a) any help-seeking (regardless of stage) versus no help-seeking; (b) having sought treatment (medication or advanced) versus not having sought help or just talked to a doctor; and (c) having sought advanced treatment in contrast to all lower stages. For variables that meet the proportional odds assumption, we show only one coefficient across treatment stages in the first column because the coefficient is the same across stages.

4. Results

4.1. Descriptive Analyses

Figure 1 illustrates the weighted prevalence of each highest treatment type among women and men of reproductive age. For this ordinal indicator, respondents were grouped by the highest treatment type mentioned. Help-seeking was higher for women than for men, overall (women: 12.3%, men: 8.0%) and for all levels of treatment. While women were least likely to have consulted a doctor as their "highest treatment stage," for men, the category with the lowest prevalence rate was medication.

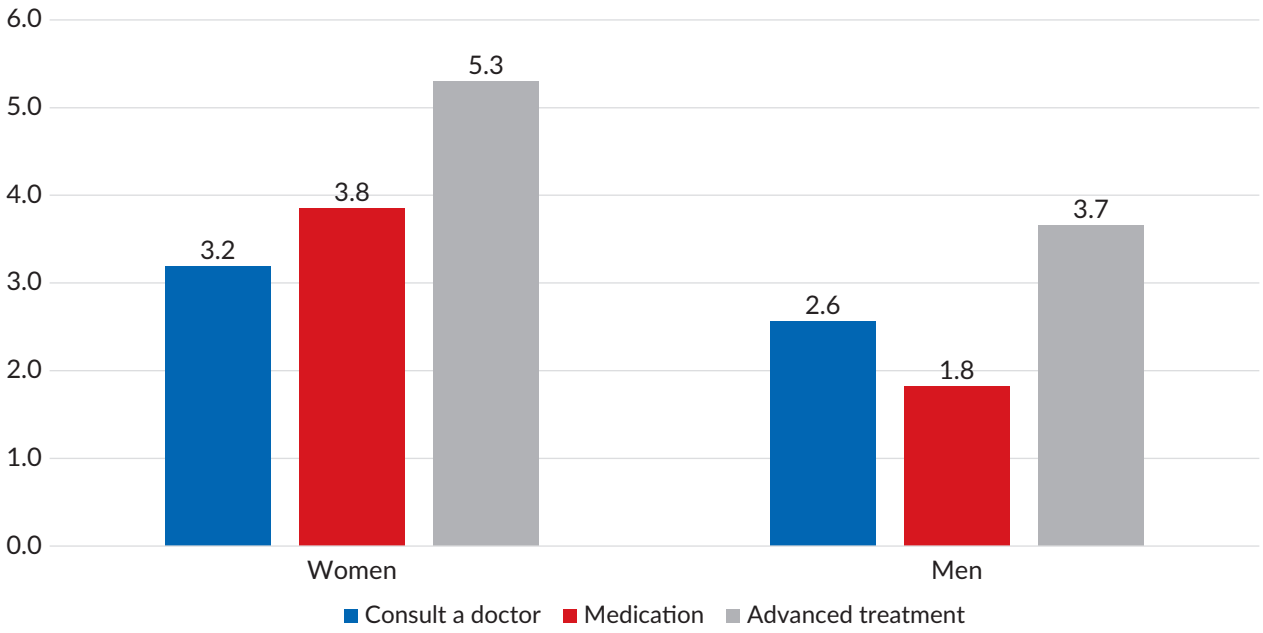

Figure 1. Prevalence rates for highest treatment type by sample and gender (in percentages). Source: FReDA W1: 11,805 women and 9,463 men, weighted using calibrated design weights.

Table 2 provides an overview of the main explanatory variables and control variables and their distribution across highest treatment stages. Overall, patterns were very similar for women and men. Those with higher education were more likely to be represented at all stages of help-seeking. Higher household income was associated with higher shares of help-seekers at all treatment stages. Those ever married were more likely to seek medical help to have a child; however, the share increased across highest treatment stages. Among women and men who never had a partner, help-seeking to have a child was virtually non-existent, with only 1.3% of women and 1.5% of men having ever sought any kind of help to have a child. This is reasonable considering that people usually intend to and try to have children when they are in a relationship. The overall share of respondents who ever experienced infertility was 14.6% for women and 10.5% for men (not shown), with considerable differences among those *seeking help or not* and across highest treatment types. In the advanced treatment group, the share who experienced infertility was over 80% for women and men. That it was not 100% indicates that there is a substantial number of people or couples who use infertility treatments who never met the medical criteria for infertility.

Table 2. Summary statistics by highest treatment stage by gender.

	Women				Men			
	No help-seeking	Talk to doctor	Medication	Advanced treatment	No help-seeking	Talk to doctor	Medication	Advanced treatment
University entrance qualification (vs. lower)	7,214 (70.4%)	276 (69.5%)	294 (62.6%)	466 (67.4%)	5,675 (65.8%)	173 (64.3%)	113 (63.1%)	255 (66.1%)
Migrant (vs. non-migrant)	1,095 (10.7%)	59 (14.9%)	49 (10.4%)	88 (12.7%)	849 (9.8%)	36 (13.4%)	25 (14.0%)	42 (10.9%)
Household income (cat.)								
≤ 2000€	1,711 (16.7%)	28 (7.1%)	49 (10.4%)	41 (5.9%)	1,338 (15.5%)	12 (4.5%)	15 (8.4%)	24 (6.2%)
> 2000–3000€	1,709 (16.7%)	53 (13.4%)	66 (14.0%)	94 (13.6%)	1,453 (16.8%)	32 (11.9%)	24 (13.4%)	33 (8.5%)
> 3000€	5,111 (49.9%)	277 (69.8%)	299 (63.6%)	488 (70.6%)	4,839 (56.1%)	208 (77.3%)	130 (72.6%)	312 (80.8%)
Missing value	1,716 (16.7%)	39 (9.8%)	56 (11.9%)	68 (9.8%)	999 (11.6%)	17 (6.3%)	10 (5.6%)	17 (4.4%)
Marital status								
Never partner	743 (7.3%)	0 (0.0%)	2 (0.4%)	6 (0.9%)	1,077 (12.5%)	1 (0.4%)	1 (0.6%)	2 (0.5%)
Partner, never married	4,906 (47.9%)	89 (22.4%)	100 (21.3%)	90 (13.0%)	4,122 (47.8%)	50 (18.6%)	38 (21.2%)	48 (12.4%)
Partner, ever married	4,598 (44.9%)	308 (77.6%)	368 (78.3%)	595 (86.1%)	3,430 (39.7%)	218 (81.0%)	140 (78.2%)	336 (87.0%)
Age groups								
≤ 34 years	5,733 (55.9%)	110 (27.7%)	192 (40.9%)	144 (20.8%)	4,751 (55.1%)	58 (21.6%)	48 (26.8%)	47 (12.2%)
35–39 years	1,677 (16.4%)	112 (28.2%)	115 (24.5%)	171 (24.7%)	1,436 (16.6%)	81 (30.1%)	56 (31.3%)	93 (24.1%)
40+ years	2,837 (27.7%)	175 (44.1%)	163 (34.7%)	376 (54.4%)	2,442 (28.3%)	130 (48.3%)	75 (41.9%)	246 (63.7%)
Number of biological children								
No children	5,711 (55.7%)	111 (28.0%)	137 (29.1%)	234 (33.9%)	5,382 (62.4%)	69 (25.7%)	69 (38.5%)	113 (29.3%)
1 child	1,657 (16.2%)	124 (31.2%)	146 (31.1%)	213 (30.8%)	1,228 (14.2%)	92 (34.2%)	57 (31.8%)	122 (31.6%)
2+ children	2,879 (28.1%)	162 (40.8%)	187 (39.8%)	244 (35.3%)	2,019 (23.4%)	108 (40.1%)	53 (29.6%)	151 (39.1%)
Sexual orientation								
Heterosexual	8,505 (83.0%)	392 (98.7%)	467 (99.4%)	633 (91.6%)	n.a.	n.a.	n.a.	n.a.
Homosexual/diverse	195 (1.9%)	2 (0.5%)	1 (0.2%)	47 (6.8%)	n.a.	n.a.	n.a.	n.a.
Missing value	1,547 (15.1%)	3 (0.8%)	2 (0.4%)	11 (1.6%)	n.a.	n.a.	n.a.	n.a.
Ever infertile (vs. never infertile)	604 (5.9%)	261 (65.7%)	279 (59.4%)	582 (84.2%)	383 (4.4%)	173 (64.3%)	119 (66.5%)	322 (83.4%)

Note: n.a. = not available. Source: FReDA W1: 11,805 women, 9,463 men.

4.2. Multivariable Analyses

Table 3 displays results from the partial proportional odds models used to investigate social disparities across stages of medical help-seeking for women and men. The partial proportional odds model requires at least some variation at each treatment stage, but among persons who never had a partner, help-seeking to have a child was very uncommon, making it an almost perfect predictor of help-seeking (see Table 2). We therefore used a sample of women and men who ever had a partner, reducing the analytical samples from 11,805 to 11,054 women and from 9,463 to 8,382 men. The reduction was greater for men, reflecting a higher share of men who never had a partner. We did not include sexual orientation here because there were not enough cases at two of the four treatment stages. For unadjusted coefficients see the Supplementary File, Table S1.

Contrary to expectations, women and men with university entrance qualifications had lower odds of seeking medical help than those with lower education in the unadjusted models (see Supplementary File, Table S1), while there was no association in the full model or the full model with infertility (Table 3). Further analyses (not shown) indicated that introducing marital status, age, and number of children into the model independently and together were responsible for the change from significance to non-significance for education. Also, contrary to expectations, migrant status was not associated with help-seeking in any of the models for women or men. The results confirmed our expectation of the relevance of household income based on the stratified reproduction perspective: the odds of help-seeking increased as income increased. However, the degree of association was the same for all three comparisons. Marital status had a substantial association with medical help-seeking. Consistent with what the life course perspective suggests, women and men who had ever been married had much higher odds of ever seeking help compared to those who had never been married. For women, but not for men, the association varied by treatment stage, with the largest odds for the advanced treatment group in the full model. Controlling for infertility experiences reduced the variation in the associations across treatment stages. For understanding the latter finding, it is important to know that ever-married women have a higher risk of experiencing medical infertility (not shown) and that infertility is a particularly strong predictor of seeking advanced treatments.

Several of the control variables were associated with the stage of help-seeking. There was variation in the association between age and number of biological children, respectively, with medical help-seeking across treatment stages. Among both women and men in the middle age group and among men 40 years and older, there was a noticeable increase in the odds of help-seeking when we compared advanced treatments to all lower stages, including no help-seeking. When we controlled for infertility status, only the association for advanced treatment compared to any lower stage remained statistically significant.

Parity was associated with help-seeking differently by stage. Women and men who had one child at the time of interview had higher odds of any help-seeking (first comparison), but not for other highest treatment types. In contrast, the association was negative at all treatment stages for women and men with two or more children, indicating that those with two or more children were less likely to have sought medical help. The sign of the coefficient was different in the multi-variable model compared to the unadjusted model. The unadjusted coefficients (see Supplementary File, Table S1) were positive for women with 2+ children at all treatment stages. Further analyses for women (not shown) indicate that this change of sign occurred when the indicator for ever married, which was associated with a higher likelihood of help-seeking, was introduced. Further descriptive analyses showed that the overwhelming majority of those with larger

Table 3. Results from partial proportional odds models of medical help-seeking for women and men (odds ratios).

	Women						Men					
	Full model			Full model + infertility			Full model			Full model + infertility		
	0 vs. 1, 2, 3	0, 1 vs. 2, 3	0, 1, 2 vs. 3	0 vs. 1,2,3	0, 1 vs. 2, 3	0, 1, 2 vs. 3	0 vs. 1, 2, 3	0, 1 vs. 2, 3	0, 1, 2 vs. 3	0 vs. 1,2,3	0, 1 vs. 2, 3	0, 1, 2 vs. 3
University entrance qualification (ref. lower)	0.926			1.012			1.041			1.085		
Migrant (ref. non-migrant)	0.911			1.064			1.161			1.205		
Household net income (ref. > 3000€)												
≤ 2000€	0.592**			0.637**			0.641**			0.586**		
> 2000–3000€	0.759**			0.777*			0.629**			0.564**		
missing value	0.638**			0.740**			0.549**			0.503**		
Ever married (ref. never married)	3.912**	4.288**	5.362**	2.782**			3.945**			2.178**		
Age (ref. < 35 years)												
35–39 years	1.850**	1.703**	2.521**	1.205	1.079	1.591**	2.484**	2.634**	3.182**	1.527**	1.536**	1.864**
40+ years	1.813**	1.777**	3.017**	1.067	1.051	1.876**	2.738**	3.194**	4.783**	1.331*	1.506**	2.366**
Number of biological children (ref. no children)												
1 child	1.247**	1.154	1.001	1.227*	1.129	0.993	1.356**	1.162	1.204	1.854**	1.416*	1.436*
2+ children	0.644**	0.597**	0.466**	0.823*	0.755**	0.606**	0.685**	0.593**	0.656**	1.05	0.848	0.976
Ever infertile (ref. never infertile)				30.374**	23.697**	32.020**				39.216**		
Log-likelihood_0		−6141.5			−6141.5			−3579.8			−3579.8	
Log-likelihood		−5665.5			−4324.6			−3236.8			−2385.2	
N		11,054			11,054			8,382			8,382	

Notes: Only one set of coefficients is presented for explanatory variables that meet the proportional odds assumption, because the coefficient is the same for each level of help-seeking; categories of dependent variable: 0 = *no help-seeking*, 1 = *talk to doctor*, 2 = *medication*, 3 = *advanced treatment*; sample sizes deviate from Table 2 because for this analysis we include only women and men who ever had a partner; * $p < 0.05$, ** $p < .01$. Source: FReDA W1.

families had ever been married (≈90%). In conclusion, although the coefficients for those having two or more children were negative, those with larger families were still more likely to have sought advanced treatments.

Finally, lifetime experience of infertility had a particularly strong association with medical help-seeking among both women and men. There was variation across treatment stages for women only. The likelihood of seeking medication or advanced treatments was slightly lower (second comparison) than they were for seeking any help and seeking advanced treatments. These associations, however, should not be overinterpreted as the odds ratios were all very large as a result of small sample sizes.

5. Discussion

This study assessed social disparities in the seeking of medical help to have a child. By differentiating across stages of medical help-seeking (no help-seeking, consulted a doctor, received medication, and advanced treatments), this study contributes to understanding where in the process of help-seeking these disparities occur and offers some guidance as to the mechanisms involved. Employing a stratified reproduction perspective points to the embeddedness of use of medical help to have a child in broader social structural and specific institutional settings. Based on German survey data for 18-to-50-year-old women and men, we calculated prevalence rates of ever help-seeking for each stage and investigated social disparities across help-seeking stages.

Medical help-seeking to have a child is not uncommon among women and men of reproductive age. The overall lifetime prevalence of help-seeking amounted to 12.3% for women; for men, it was considerably lower (8.0%). These figures were slightly lower than those reported in a recent French study, which also found higher help-seeking prevalence among couples reported by women compared to those reported by men (15% vs. 11%; see Belgherbi & de La Rochebrochard, 2018). Comparing the different treatment stages revealed that most of the differences came from women's more frequent experience with medication. Examining only talking to a doctor and advanced treatments would make women's and men's prevalence rates much more similar. These results then suggest that for talking to a doctor and advanced treatment, male partners might experience help-seeking by partners as happening also to them, even if they were asked about their personal treatment use rather than their experience in a couple. If this is the case, then for some reason, men were not applying the same logic when it came to their partner's use of medication. One explanation could be gender differences in the ability to recall the use of medication. Another explanation could be that women do not involve their partners as much in medication treatments and that, therefore, male partners might not even know about them.

Next, we investigated the role of social disparities in the seeking of medical help to have a child and the extent to which any social disparities varied across highest treatment stages. We were particularly interested in whether disparities were elevated for advanced, higher cost treatments, even when the differing risk of infertility experience of these groups was considered. We found evidence for social disparities in the seeking of medical help to have a child for two of four indicators. First, higher household income was associated with higher odds of seeking medical help in the full models. We assumed that higher household income would particularly enable the use of advanced treatments, which were the most expensive and which are not always reimbursed. The findings here raise the question: why were people with higher household income more likely to talk to a doctor and to have simple treatments than people with lower income, even though these actions

were typically not associated with any costs for the patients in Germany? One possible reason is that people with lower income might not bother with the initial steps of treatment because they anticipate that they will not be able to afford the full course of care. While direct evidence on this specific mechanism is limited, research on financial barriers to infertility care (e.g., Domar et al., 2012) supports the idea that anticipated costs can deter engagement with treatment. Further research is needed to better understand the observed pattern by household income.

Second, consistent with other research, we found that having ever been married was associated with higher probability of seeking treatment for both women and men (e.g., Köppen et al., 2021). We found an incremental increase in the odds across highest treatment stages for married women when we did not control for the higher prevalence of lifetime infertility in this group. If marital status were mainly an enabling condition, then there should be variation in the association across treatment stages, with elevated risk for the advanced treatment stage, even when infertility was controlled for. We did not see this pattern, even though only married couples with statutory health insurance were eligible for reimbursement of costs for advanced treatments in Germany. The findings in this study also supported considering marital status to be a cultural or life course cue. In Germany, childbearing remains more prevalent among married couples, despite the increasing incidence of non-marital births. The finding that married women were more likely to try to have a child and seek medical assistance is consistent with the broader, though gradually weakening, normative association between marriage and childbearing. It could also be that the topic of infertility and medical help-seeking to have a child is more likely to come up in doctor visits if a couple is married, which could contribute to selection into doctor consultation and medication as the highest treatment stage. Alternatively, it is possible that people anticipate that they can get reimbursed only if they were married and therefore only bother to seek medical help if they were married.

Furthermore, this study showed that focusing only on individuals with medical infertility would overlook an important part of the picture concerning who seeks medical help in a population. Notably, 15.8% of women and 16.1% of men in the advanced treatment group had never experienced infertility. Those seeking medical help without ever having experienced infertility could be people who turned to medical help before twelve months of trying, people with known conditions (e.g., endometriosis, polycystic ovary syndrome, or history of cancer) who did not try to have children, or other people who do not meet the criteria for the medical definition of infertility, such as single women and lesbian couples. While we could not identify most of these groups in our data, we can say something about patterns of help-seeking among lesbian women. Lesbian women were much less likely to seek any help, but if they sought help, they were most likely to be in the advanced treatment group. Recall that lesbian women are not eligible for reimbursement of treatment costs in Germany.

A limitation of this study is that it used a lifetime indicator of medical help-seeking to have a child. We therefore did not have specific information about when the help-seeking occurred. Some explanatory variables, such as household income and level of education, indicated status at the time of interview, which might be years after experiencing infertility and/or help-seeking. Other variables reflected whether people were ever married or ever had infertility, thus also providing information on lifetime experiences without information about timing. We assume that potential differential timing of social status, infertility, and help-seeking would result in underestimating the strength of associations of social status measures with medical help-seeking. For example, for household income and marital status, we would expect a stronger

association with help-seeking and potentially variation across highest treatment stages if the variables were measured at the time when the help-seeking occurred. Longitudinal research with explanatory variables measured before help-seeking is needed to test if this assumption is correct. Additionally, information about type of health insurance would have helped understand whether out-of-pocket expenses would be necessary or not.

In this study, we used Germany as an example of a country with high demand for treatment, relatively restrictive access regulations for ART, and substantial out-of-pocket costs for many users. We argue that findings from studies like this must be interpreted in light of the national context, which limits the extent to which they can be generalized to other settings. In addition, differences in analytic choices—such as sample selection, definitions of help-seeking, and the variables included—further complicate cross-national comparisons (Passet-Wittig & Greil, 2021). To conclude, our results support the conclusion that reproduction via medical assistance is socially stratified in Germany, particularly in relation to income, marital status, and sexual orientation. If economic resources were the predominant reason for help-seeking disparities, we would expect disparities to be highest for the advanced treatment stage. That we did not find this suggests that there are other dimensions to these variables, including cultural factors and knowledge, which contribute to the observed disparities.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

This article uses scientific use files from the FReDA survey, v2.0.0 release (Bujard et al., 2023; Schneider et al., 2021). Data are available here: https://search.gesis.org/research_data/ZA7777

LLMs Disclosure

The authors used ChatGPT during the writing process to improve the readability of the article. They thoroughly reviewed any content produced by AI and take full responsibility for the content of the article.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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