

# Fertility Intentions and Effective Factors at a Glance: A Systematic Review

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## Research article

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# Abstract

**Background:** Persistence of low fertility in many countries has been a research concern during the last two decades. Childbearing decision-making is a complex process, involving many social, economic, political, and personal factors. We aim to provide comprehensive information about the core determinants of fertility intentions

**Methods:** Ovid, MEDLINE, EMBASE, PsycINFO, CINAHL, Web of Science, SCOPUS, and GOOGLE SCHOLAR was searched for the relevant articles published from 1946 to December 2017. The current systematic review included the original and quantitative longitudinal and cross-sectional studies in English, The subjects of the studies were men and/or women in reproductive age (men aged 18-55 and women aged 18-45). Family planning methods were available in the reference country. Studies with less than 200 participants were excluded.

**Results:** 45 Studies included in the qualitative synthesis. 310727 participants included in the analysis. All effective factors in childbearing decision-making were classified into three main categories: Individual factors, Couple Puzzle, and Contextual factors. Factors such as age, religion, education, employment, and economic conditions were classified as individual factors. We also had a special focus on couples. As fertility is a dyadic process, for more emphasis we explained the couple relationship in case of the couple puzzle. Partnership Status, Gender Role Attitudes, Couple Desire, and Partnership Quality are the main aspects of couples puzzle Social network support (interaction within networks of family and friends) and family support environment are associated with childbearing intentions among couples.

**Conclusion:** Further collaborative efforts by researchers and funding agencies will enable us to reveal fundamental mechanisms that affect and control fertility choices at different levels. As there are limited instances of interdisciplinary studies, studying fertility would highly benefit by crossing disciplinary and geographic boundaries. Although native scholars conduct fertility investigations in each country, the majority of research on fertility does not often communicate with one another.

## 1. Background

Today, contraception use has changed the prospect of parenthood to personal choice (1). In the early 19th century, the modern fertility transition began in France and the United States. (2, 3) and quickly expanded across Europe (3). The European pattern quickly became popular in developed Asian and American societies (4, 5, 6, 7). At the same time, the childbearing rate among less developed countries showed a significant reduction (8, 9).

Low fertility and population aging in most European countries (10) have attracted researchers' and policymakers' attention. Factors that build fertility intentions can explain variations in fertility changes cross-nationally and over time (11).

A large body of research explains possible reasons for low fertility, such as economic situation, child-rearing costs, women's education, and employment (12, 13,14). Although increasing female labor force participation was initially related to the negative effect on fertility rate in developed countries, the expansion of modernity and men's participation in family chores turned it to positive since the 1990s. Some recent studies have tried to explain fertility levels through gender (15).

The literature suggests that childbearing decision-making is a complex process involving many social, economic, political, and individual factors. These include the availability of qualified and affordable childcare support, cultural norms, individual beliefs, and partner suitability (1, 16, 17, 18, 19).

There are several reviews conducted about fertility (1, 20, 21, 22, 23, 24) that provide important views. Some of these studies have focused on specific aspects or geographical areas. As the predictors of fertility intentions are similar to the predictors of actual births (11, 25), our study focuses on the determinants of childbearing plans to provide a lens for understanding fertility behavior. This study is special as it contains the latest works conducted to study low fertility societies in different aspects. We categorized all the aspects in three domains including individual factors, couple puzzle, and contextual factors. We also had a special focus on couples. As fertility is a dyadic process, for more emphasis we explained the couple relationship in case of the couple puzzle.

## **2. Methods**

The components of this research include the Search Strategy, Inclusion and Exclusion criteria, Screening, Quality Assessment, and Data Extraction. The process conducted according to the PRISMA pattern.

### **2.1 Search strategy**

This systematic literature review was performed using electronic databases such as Ovid, MEDLINE, EMBASE, PsycINFO, CINAHL, Web of Science, SCOPUS, and GOOGLE SCHOLAR. Article search was performed with an alternate combination (and/or) of these search terms: "fertility", "desire", "intention", "childbearing", and "reproductive decision making". The search was conducted from 1946 to December 2017 (see Appendix 1). Also, the reference section of systematic reviews and meta-analyses were manually checked to distinguish the related studies missed by electronic databases search. Two authors independently searched and screened studies for the inclusion criteria. First of all, the authors independently extracted data and then checked it together. All discrepancies were resolved through discussion. The PRISMA systematic reporting system was used in all stages of this study. Note that PRISMA is an evidence-based minimum set of items for reporting in systematic reviews and meta-analyses (For more information, see: ). In most articles, several Factors were examined simultaneously. The selection process is outlined in Fig. 1

### **2.2 Inclusion and exclusion criteria**

The inclusion criteria for entering the evidence in the current systematic review included the original and quantitative longitudinal and cross-sectional studies in English, with adequate information about factors, which affect childbearing intentions and also published in peer-reviewed journals. The subjects of the studies were men and/or women in reproductive age (men aged 18–55 and women aged 18–45). Family planning methods were available in the reference country, so articles that focused specifically on Sub-Saharan Africa or non-industrialized societies were excluded. Also, studies attributed to China were excluded due to child restricting national laws. We also did not include studies with less than 200 participants. All types of reviews and qualitative studies were excluded, as well.

## **2.3 Screening**

A total number of 7440 articles were identified and imported to Endnote X8. Next, we removed 2640 duplicate articles and screened titles and abstracts of the 4795 articles. After evaluating the inclusion criteria, texts of 467 relevant articles were fully assessed for more screening. We evaluated the eligibility of these articles and, finally, 45 studies were included in the current systematic review. Any disagreements between the two authors were discussed until consensus was reached. Table 1 provides the information of included studies

## **2.4 Quality assessment**

We used the STROBE checklist, which consisted of 22 items and a maximum score of 30, to assess the quality of the studies. Studies that received more than 23 total points were considered as high quality and those with less than 16 points were considered as low quality. Studies that received a total point between 16 and 23 were considered as medium quality. Among 45 studies, 40 (89 were classified as high and 5 (11%) were classified as moderate. So, all the studies were included in our review. Appendix 1 provides the quality assessment of included studies.

## **2.5 Data extraction**

For each study, we extracted the necessary data according to a predefined checklist. The first author, published year, country, study-design, sample-size, specifications of the population, statistical analysis method, scale, and main findings of each study were reported in the checklist.

## **3. Results**

45 Studies included in the qualitative synthesis.310727 participants included in the analysis. You can see the characteristics of the included studies in Table 1. In table.2 you can see a summary of each study.

Table 1  
Study characteristic

<b>STUDY CHARACTERISTIC Study Numbers (%)</b>	
study design	
longitudinal	19 (42%)
cross-sectional	26 (58%)
Sample Size Variation	
200–1000	9 (20%)
1000–4000	19 (42%)
4000–10000	10 (22%)
10000–50000	7 (16%)
Targets	
Men	2 (4%)
Women	21(48%)
Men & women	11(24.5%)
Couples	11(24.5%)
Region	
Europe	29 (64%)
America	7 (16%)
Asia	7 (16%)
Australia	3 (4%)

Table 2  
Information of included studies

AUTHOR	YEAR	COUNTRY	TARGET	SAMPLE	METHOD	DEPENDENT VARRIBLES
Aassve, A. Arpino Bruno. Balbo Nicoletta	2016	Britain	Women & Men living in a couple	1463	Longitudinal	Subjective wellbeing Happiness
Averett, S. L.	2001	US	Women	4679	Longitudinal	Age maternity leave
Bernhardt, E., et al	2016	Sweden	Men	2273	longitudinal	Gender roll attitude Partnership status
Berninger, I. Weiß, B.Wagner, M	2011	Germany	Married Men &women	641	Cross- sectional	Age Employment & Income partner-ship quality
Bühler, C. and E. Fratczak	2007	Poland	Married Men &women	758	Cross- sectional	Network partners
Brauner-Otto, S. R. and C. Geist	2017	US	Men &Women	1465	Longitudinal	Economic insecurity Education Employment & Income Race Gender
Cranney, S.	2015	Slovenia & Czech Republic	Women	5453	Cross- sectional	Religion Belief in God
De Wachter, D. and K. Neels,	2011	Belgium	Women	957	Cross- sectional	Marital Status Parity Education Employment
Dommermuth. Hohmann M Bryndl. Lappegård Trude.	2015	Norweg	Men &Women living in a couple	1537	Cross- sectional	
Fan, E. and P. Maitra	2012	Australia	Men &women Living In couple	19914	Longitudinal	Men &women Desire effect Baby bonus

AUTHOR	YEAR	COUNTRY	TARGET	SAMPLE	METHOD	DEPENDENT VARRIBLES
Fahlén, S	2013	10 European countries	Women	3184	Cross-sectional	Job security Family Support policies
Fiori F	2011	Italy	Women	5143	Cross-sectional	Income effect Job characteristic Division of domestic work
Fiori F, et al	2013	Italy	Women	15870	Cross-sectional	Age Marital status Employment Education Family network Area Economic insecurity
Goldscheider, F., et al.	2013	Sweden	Men & Women	1096	Longitudinal	Marital status Gender roll attitude Division of domestic work Sharing child care tasks
Hanappi, D, et al	2017	Swiss	Women & Men	1634	longitudinal	Employment
Harknett, K. Billari, F. C. Medalia, C	2014	20 European countries	Women	7436	Cross-sectional	Labor market Division of domestic work Family support Policies
Kaufman, G.	2000	US				Gender roll attitude
Hayford, S. R. and S. P. Morgan	2008	US	Women	1354	Cross-sectional	Religion
Kjerulff H. Kristen	2013	us	Women	3006	Longitudinal	Mode of First Delivery

AUTHOR	YEAR	COUNTRY	TARGET	SAMPLE	METHOD	DEPENDENT VARRIBLES
Kim, E. H. W.	2017	Korea	Women living in a couple	2239	Longitudinal	Division of domestic work Informal & formal help in domestic labor
Kuhnt, A. K. and H. Trappe	2016	Germany	Women & Men	4881	longitudinal	Relationship Stability Employment Religion
Kulu Hill. Vikat Andres	2007	Finland	Women	35391	Longitudinal	Housing type
Meggiolaro, S.	2011	Italy	Women	790	Cross-sectional	Age Parity Marital length context
Miettinen, A., et al	2011	Finland	Men & Women	2143	Cross-sectional	Gender roll attitude Education
Metcalfe, A., et al	2014	Canada	Women	835	Cross-sectional	Work place support
Mills M, Mencarini L, Tanturri ML, Begall K	2008	Dutch	Men & Women living in a couple	3458	Cross-sectional	Education Employment Division of domestic work
Modena, F. and F. Sabatini	2012	Italy	Men & Women living in a couple	19551	Cross-sectional	Age Parity Education Employment
Neyer, G., et al.	2013	10 European countries	Men & Women	44630	Cross-sectional	Employment Division of household & care (Gender Equity) Couple Satisfaction
Park, S. M., et al	2008	Korea	Married women	2211	Cross-sectional	Age Parity Employment Social group Network Housing type

AUTHOR	YEAR	COUNTRY	TARGET	SAMPLE	METHOD	DEPENDENT VARRIABLES
Park, S. M. and S. I. Cho	2011	Korea	Married Women	723	Cross-sectional	Age Education value of child Family Support policies
Raymo, J. M., et al	2010	Japan & Italy	Married Women	8299	Cross-sectional	
Rijken Æ Arieke J. Liefbroer Aart C	2009	Netherlands	Men & women Living In couple	669	Longitudinal	Age Married status parity Partner relationship Quality
Risse, L	2010	Australia	Women	13969	longitudinal	Educational level Parity Employment Income Baby bonus
Rosina, A. and M. R. Testa	2009	Italy	Women & Men living in a couple	1083	Cross-sectional	Marital status Religion Couple agreement Division of domestic work
Schaffnit, S. B. and R. Sear	2017	Netherlands	Men & Women	2288	Longitudinal	Family support Environment
Spéder, Z. and B. Kapitány	2009	Hungary	Men & Women	4471	Longitudinal	Age Marital status Parity Education Employment Religion Couple Satisfaction
Sinyavskaya Oxana. Billingsley Sunnee	2013	Russia	Women	5622	Cross-sectional	Employment
Testa, M. R., et al	2011	Italy	Men & women living in a couple	2356	Longitudinal	Age Couple agreement

AUTHOR	YEAR	COUNTRY	TARGET	SAMPLE	METHOD	DEPENDENT VARRIBLES
Testa, M. R., et al.	2012	Australia	Women living in a couple	3402	Cross-sectional	Couple agreement
Testa, M. R	2014	27 European countries	Women living in a couple	9452	Longitudinal	Education
Vignoli, D., et al	2012	Italy	Women living in a couple	50000	Cross-sectional	Age Partnership status Religiosity Region Educational level Economy & Employment Housing condition
Vitali, A., et al.	2009	11 European countries	Women	5529	Cross-sectional	Family orientation Work orientation
Wesolowski, K.	2015	Ukraine	Married Women	749	Cross-sectional	Age Education Partnership status Individual value Availability of child care Importance of Environmental Pollution & health concerns
Yoon, S. Y	2016	Korea	Married women	235	Longitudinal	Gender equality Division of house work & child care
Yu, W. H. and J. C. L. Kuo	2017	Japan	Women & Men	1964	Cross-sectional	Employment Economic condition Job security

All effective factors in childbearing decision-making were classified into three main categories of Individual factors, Couple Puzzle, and Contextual factors. This division provides a better view of the variables affecting fertility.

## 3.1 Individual factors

A rich body of research has studied the link between Individual factors (such as age, religion, education, employment, and economic conditions) and fertility behavior. In this section, we try to describe these factors according to the included studies.

### 3.1.1 Age

Age is one of the main factors that affect fertility. Undoubtedly, the age of the woman has an essential role in fertility intention (26, 27, 28, 29).

According to Rijken (2009), the older the woman is at the beginning of the cohabitations, the sooner the couple has their first child. For the second and third children, the age of the woman has a negative influence. In the Netherlands, younger women at the birth of the previous child prefer to have the next child sooner. There is no evidence that the age of the men plays a role in childbearing intentions.

Planning for the next child had declined among women aged 35 or older (32, 33, 34, 35). In Italy, among women who intend to have two children, older ones are more likely to have their child in the short-term compared with younger ones (35, 36).

### 3.1.2 Education

In most developed countries, the educational level of couples has a positive influence on their fertility intentions. This result is similar in different age groups (26, 35, 37, 38, 35, 40, 41).

In contrast with Australian women, low educated individuals in Germany have more intentions to become a parent and even have more children (25).

An analysis based on the 2006 and 2011 EB (Eurobarometer) data revealed that unlike developing countries, educated women in European countries have higher lifetime fertility intentions. High-level educated women more frequently choose “two-child” and “no-child” options, although the two-child family is the most preferred size among all three groups of educational level (42).

### 3.1.3 Employment and Financial situation

The pattern of employment effect varies by gender and parity in Europe. Full-time work is a key factor for childless men and women to become a parent shortly. For the second child, full-time employment loses its positive influence on mothers (43).

Better career prospects increase childbearing desire in both men and women (15, 25, 44, 45). It is of note that Japanese men working long hours during the day show a stronger desire to become a parent. However, long hours working means have less time available for child-rearing (15).

When the father is employed, both mother and father are more likely to have the second and third child in the next three years (40, 43). The status of the mother's employment is important neither for mothers nor for fathers. So, for the second and higher parities, the father's employment status is more significant (43). However, in Bulgaria, the activity status of men showed no significant effect on fertility intention among couples (38).

Household income plays a key role in childbearing intentions (28). In Germany, men with higher incomes are more likely to have a first child (46). In Italy, the intention of the second child is lower among families with limited income (32).

Dommermuth (2015) revealed that job security has no significant impact on child intention among men and women in Germany. His compatriot Kuhnt (2016) showed that job insecurity could affect childbearing intention negatively. In Switzerland, job instability in low and medium educated people is less responsive compared with highly educated ones (28). Fiori (2013) revealed that job insecurity is more associated with short-term intentions, and the number of children intended by couples is less affected by it.

Women's employment and income have a different effect on childbearing intention in different societies. In Australia (262) and Russia (46), employed women with higher income have stronger childbearing intentions. But, in Germany (27, 40) and Italy (35), the association of income and childbearing intentions is not significant among women. Among Korean women, manual workers are less likely to have an additional child when compared with non-manual workers (29).

In Bulgaria, fertility intention is higher among unemployed women. Lower fertility intention is common among full-time female workers aged > 35. The negative influence of full-time work gradually fades among younger age groups (44). In Italy and Denmark, working for long hours (> 30 hours/week) has shown a declining effect on women's fertility intentions (12). Female ordinary workers also have less intention to have children (47).

### **3.1.4 Parity**

Parity is an important criterion in childbearing decision-making (28, 29). The effect mechanism seems to be linear such that people with more children are more likely to abandon their intentions (26, 31, 37, 38, 47).

### **3.1.5 Religiosity**

Religiosity also plays an important role in childbearing decision-making. Religious couples are more likely to become parents (25, 48). Religious women are more likely to realize their fertility intentions (34, 37, 49).

But, the religiousness of only one of the two partners will cause conflict between couples. The results showed that when the woman wants a child but the man does not, male religiosity increases the opposition. In contrast, when the man wants a child but the woman does not, women's religiosity decreases opposition between the couple (48).

Belief in God is independently associated with fertility desires. At least some of the connection between religiosity and fertility is attributed to metaphysical beliefs – and not just traditional and institutional religiosity (50).

### **3.1.6 Child Value**

The value placed on having children can motivate fertility intentions psychological benefits (e.g., comfort and paternal and maternal feelings) of the child show a greater preference for a second child's intention. Instrumental values (e.g., current economic support and in the elderly years, a continuation of the family line, and social duty) of children are not significantly associated with the intentions to have a child (51, 52).

### **3.1.7 Individualism**

Self-realization is a predictor that affects childbearing intentions negatively (41).

### **3.1.8 Physical conditions**

Health concerns are associated with second child intentions among women (41).

The mode of the first delivery can affect childbearing intention in women. The tendency to have two or three children is less in women who had a cesarean delivery (CD) compared with those who had a vaginal delivery (53).

### **3.1.9 Subjective wellbeing and Happiness**

Happier men and women prefer to become parents sooner for the first time. But, the probability of the second child's intention decreases in happier men and women (37). In couples that the woman's happiness is higher or lower than usual but the man's happiness is normal, the probability of the second child decreases. There is no significant difference in couple happiness in higher-order transitions (54).

### **3.1.10 Housing condition**

Housing type is associated with childbearing intention. Homeowners and couples living in single-family houses are significantly more likely to have their first child sooner (29, 34, 55).

## **3.2 couples Puzzle**

Because of the dyadic nature of fertility, the couple is the most important context for investigating fertility decision-making (37). Partnership Status, Gender Role Attitudes, Couple Desire, and Partnership Quality are the main aspects of couples Puzzle.

### **3.2.1 Partnership status**

Partnership stability has a clear significant role in the realization of childbearing intentions (26, 34, 37, 38, 39, 47, 48).

Men preferred not to be alone and thus being cohabitant or married increases their intentions to have a child. However, partnership type (cohabitation or legal marriage) is especially important for women (37). Legal married women are more likely to realize their childbearing intentions in a short time (26, 34, 37, 38, 48).

In Sweden, (39) Italy (47), and Germany (25) married couples are more likely to have childbearing intention. But, in the Netherlands, there is no difference among married or cohabiting un-married couples to plan for the first birth (31).

So, partnership status is an important factor in the transition to parenthood in most countries.

## **3.2.2 Gender-Role Attitudes**

Gender-role attitudes – including traditional and egalitarian attitudes (51, 56, 57, 58), division of housework (11, 12, 15, 32, 48, 58, 59, 60), childcare tasks (32, 58), and perception of the division (38, 35) – play major roles in childbearing decision-making among couples. Partner involvement in home chores and childcare tasks increases the attention of working women to have a second child (11, 32).

Traditional gender role attitude in Swedish men is positively related to childbearing such that it increases the hazard ratio to 1.41, compared to about 1.20 in egalitarian men. It is interesting to know that, egalitarian men seem to partner to a great extent than traditional men. So, controlling partnering behavior reduces the differences (59).

In the US, egalitarian men are more likely to enter unions (84% versus 79%) while traditional women are more likely to have a child (90% versus 79%). These findings showed that gender role attitudes have a different impact on fertility intentions among men and women (56).

In Finland, the gender role attitude is not associated with the first child intention because Finish parents prefer to have a sister or brother to the first child. The association of gender equity with men and women fertility intentions is slightly U-shaped as most egalitarian childless men and mothers of one child expect to have two children. Although traditional women have high fertility desire, they have more limited numbers of children (51).

Unlike Korea (15), in Italy and Denmark (12), the participation of men in a large share of household declines intention of women to have the second child. In Italy (48), Sweden (39), and Norway (40), women's satisfaction with sharing the home chores increases the probability of her agreement to have a child. Satisfaction with sharing the childcare tasks is associated with the second childbirth in Norway (40).

## **3.2.3 Couple desired effect**

Couple fertility preference is an important predicting factor for childbearing intentions. The possibility for an additional child is 83% higher when the wife's desire is higher and 48% lower when her desire is lower (61). So, in predicting the birth outcomes, the wife's tendency has a higher effect (33, 61).

## 3.2.4 Partner-ship quality

Positive partnership quality is associated with childbearing intention (27, 31).

However, highly positive and negative couple interaction has a negative effect on the first birth rate as well as the rate of the second and third childbirths (31).

## 3.3 Contextual component

The contextual component can affect childbearing intentions. Social network support (i.e., interaction within networks of family and friends) and family support environment are associated with childbearing intentions among couples (15, 25, 32, 35). Community characteristic is another factor that can influence childbearing intention (36).

### 3.3.1 Social network supporting

Interaction within networks of family and friends is a major component in childbearing decision-making (25). Informal family help can positively increase childbearing intention among women (15, 29, 32, 35). In this regard, social pressure influences personal goals formation. Moreover, the pressure exerted from parents is more effective than friends (25).

Japanese and Italian women are more likely to have a/another child while they are living with or near parents (in-law). Also, this behavior is established among those who are not working or whose husbands work relatively long hours or have relatively low educational attainment (62).

However, frequent intergeneration exchange and co-residence decrease intentions to have an extra child. One increase in standard deviation leads to the 20% decrease in odds of higher-order birth intentions (11).

In Korea, social network affects childbearing intentions among women. Women participating in social groups are less likely to have additional children (29) while in Italy social group participation affects childbearing intention positively among women (36).

### 3.3.2 Family support environment

A large body of fertility literature has concentrated on specific family policies and the degree of availability of childcare services (15, 32, 35, 52). Yu (2017) declared that expensive formal care and private education have negative effects on second child intentions among women in Korea. But, childcare supports are not associated with higher fertility intentions in Ukraine (41) and Italy (36).

Countries with family policies – as a part of their labor-market policies, care policies, and gender policies – seem to keep fertility above the lowest-low levels. Availability of childcare services and part-time work increase both the probability of working and having a child for women at the same time (32).

It is noteworthy that satisfaction in three dimensions of government, education, and health services is positively associated with higher-order birth intentions among mothers.

Satisfaction with the government is more effective in increasing the willingness of the child. One unit increase in satisfaction point means a 30% increase in the odds of a tendency to have another child (11).

Although maternity leave is not associated with the first child intentions in the US, it is associated with second and third child intentions (30).

Baby bonuses can increase childbearing intention among women particularly in women with the lowest level of education and also non-working ones. Implementation of baby bonus can lift childbearing intention in overall (26).

### **3.3.3 Residential context**

Women living in districts characterized by some forms of unease have less childbearing intention (36).

## **4. Discussion**

The findings of this review study extend knowledge about factors affecting childbearing intentions and indicate that childbearing decision-making is a multifactorial issue governed by biological, psychological, financial, and social factors.

Childbearing intentions are not always voluntary and are often influenced by actual and perceived circumstances (63). Intention to give birth to a first child varies by some key elements such as age and civil status. First-birth intentions are closely related to the wish of establishing a family and more influenced by normative pressure than the economic situation. Second-birth and higher birth orders are also governed by age but often influenced by various circumstances (41).

As one grows older, his/her time left for childbearing decreases. However, the biological limits known for women's social constraints apply to both men and women in childbearing decision-making (37).

Education can simultaneously impress economic and cultural effect mechanisms. A variety of lifestyles and cultural resources are tied up with education (35, 37).

Higher education level is positively associated with higher fertility intention. It could be due to a lack of resources among those with lower education (12, 45), as well as higher advantageous positions among high level educated ones (40, 41).

Nevertheless, the education level of couples affects short-term fertility intention in the opposite direction, which means lower educated couples actualize their intentions sooner. Perhaps, they cannot cope with the student-parent roles or they may want more time to reach a sustainable economic status after finishing school and before starting a family (35, 45).

Education increases women's power in the couple childbearing decision-making (48). The analysis, based on the 2006 and 2011 EB (Eurobarometer) data, revealed that unlike developing countries, in Europe the highly educated women have higher fertility intentions. In countries where there are more opportunities for women to reach high levels of education, other structural circumstances affecting fertility are also available; e.g., life satisfaction, sense of well-being, and levels of trust. Besides, policies can successfully combine work and family life for highly educated women in these countries. Undoubtedly, the marriage market has also an important role in this regard. As highly educated women have more opportunities to marry and have a better-educated partner, they can plan to have larger families (42).

Childbirth requires access to financial resources (15, 25, 43, 44, 45). Job stability plays an important role in childbearing decision-making (25, 28, 35).

There is an indirect effect of satisfaction with job security on childbearing intention. More satisfaction with job security may lead to fewer conflicts in the couple relationship. Hence, it may lead the satisfaction within a partnership and a higher intention to have a first child (40).

Improved women employment condition means more options and resources to achieve fertility goals. Besides, strong involvement in the labor market with high income in women can compete with raising children (28).

Although non-working women have enough time to raise children, lack of personal investments in non-working women, it may let them enjoy less fortunate conditions and also receive less support from their partner and family and institutions. As a result, it may limit their intentions to have a child (32). Female atypical workers also have less intention to have children, because they cannot enjoy any parental benefits such as sick leave and other childbirth privileges. Therefore, pregnancy means discontinuing their work and financial problems as a result (47).

Employed women have stronger decision power in childbearing (48). Women's employment and income have significant effects on childbearing intentions in different societies (26). In Sweden, Denmark, and Hungary, countries with efficient work-family policies, working women have a stronger tendency to have a/another child than working women in countries with weaker policy support. Women with low education in countries with weaker work-family combination policies, such as Germany, Netherlands, UK, Poland, and Finland, prefer to use their spare time by raising children (10).

Religion and family make up a large proportion of shaping personal identity. Higher fertility intention among religious people is related to family beliefs and values, including schemas about the importance of marriage and parenthood, and gender roles in families. Fertility differentials are a part of a widespread association between religiosity and family behavior (49).

The psychological value of children, such as providing comfort during old age, is associated with higher intentions to have a second child among stay-at-home mothers. Non-working mothers may be more dependent on their children for emotional support during their elderly years compared with employed

women and even fathers. The labor force participation of women may provide an alternative source of satisfaction, achievement, and stimulation, which can decrease the psychological advantages of children (52).

Individualism can affect second child intentions among women. Nowadays, women believe that more children cannot increase their social esteem enough to take charge of raising a child. Among women, health concerns can seriously affect second child intentions, as they believe poor health threatens childbirth and may compromise the health of both mother and child (41).

It is noteworthy that the mode of the first delivery is associated with subsequent childbearing intentions. Women whose first delivery is by cesarean delivery (CD) are less likely to have large families. Women with difficulty in conceiving or delivering are more exposed to a CD. Therefore, they intend to have fewer children. Also, the risk for CD increases with age while the likelihood of subsequent childbirth decreases with age (53).

Happiness has different effects on childbearing intentions. Women's happiness seems to matter more for second child decision making. Women with a low level of happiness might not have a positive experience with the first child while women with a high level of happiness may not want to change the positive status they live; so both prefer to limit their childbearing intentions (54). Also, optimistic people who are most satisfied with their life course and their prospects are more likely to realize their fertility intentions (37).

Types of occupancy have a significant effect on fertility intentions. No need to mention, a couple who owns the house in which they live feel more secure about housing conditions than a couple living in tenured houses. In countries with no government regulation in the house renting market, the couples face a difficult housing regime (34, 55).

Living in single-family houses is highly associated with higher intention to have a first child compared with living in apartments. This result may be due to the impossibility of expanding an apartment space or living in crowded apartments; however, the exact reasons are unclear (29, 55).

Partnership stability is an important factor in the transition to parenthood for both men and women. So, single men and women have less tendency to have a child; however, differences between legally married couples and co-habitant couples depend on the norms of each society.

Gender role attitudes have an important effect on how men and women view parenthood.

In the US and Sweden, traditional men are more likely to have a child (56, 59). Traditional men are more likely to partner with traditional women. Women's admiration for the benefits of parenthood may be strongly related to the couple's fertility decision. In comparison, egalitarian men might prefer to partner with egalitarian women who are considerably less fascinated by the benefits of motherhood. Thus, it is the dominant attitude that determines the transition to parenthood (59). Most women prefer men who share in the responsibilities of the household (56). Accordingly, man's participation in home chores

increases women's intention to have a second child (15, 58). Egalitarian women need the support of egalitarian men in the household task to work outside the home. In this case, they are more likely to want more children (56). Although traditional women have high personal fertility ideals, they plan to have a lower number of children (51, 59).

Although holding a traditional gender role attitude is positively related to childbearing, they show a little difference in practice (40, 59). In comparison, egalitarian men are more likely to partner and remain partnered (59). It seems that they are more attractive to their partners as they share more equally with them. Having less conflict with their wives leads to a happier marital relationship and may encourage these couples to plan to have a child (56). On the other hand, it seems that men with more traditional views are more concerned about the cost of parenthood than egalitarian ones but they express more desire to have a child (59).

Male participation in the household task is more important than in childcare in most societies (15, 56, 58, 59), probably due to the following reasons. First, childcare, in general, can be viewed as more pleasant and fulfilling than housework. Thus, in some societies, it is common that youngest children attend kindergarten so most of the parents' childcare is done in the evenings and at the weekends. A very important issue in this regard is the people's perceptions about what is fair and satisfactory, which may be more important than the actual division (39, 48, 59). Increasing female labor force participation in developed countries around the world was initially associated with a decline in fertility rate. However, the negative relationship between women's labor force participation and childbearing has turned positive since the 1990s, because of men's more involvement in family tasks. Gender inequality and the difficulty of combining work and family are possible explanations for this (12, 59).

Countries with high national-level gender equality also need household-level equity and equality to see an increase in fertility (40, 59, 64).

In zero parity, couple agreement or disagreement has the same outcome. As childlessness is not a norm in most countries, under the pressure of the society they will experience a birth almost as often as the same (65). The possibility for an additional child is associated with couples' desire. As parenthood is more related to women's lives, it seems that the female partner's opinion plays an essential role in childbirth decision-making (59, 61). When a man wants to have a child but his wife does not, he prefers to express negative or uncertain childbearing intention. It indicates that women have a stronger influence on short-term childbearing intentions (59). Stein (2014) introduced a fertility decision-making model in which the male partner has the greatest influence on childbearing decisions but it is the female partner who exerts veto power in the couple's final decision. It is undeniable that the man's active involvement in childcare duties turns disagreement more toward childbearing in higher parities (65).

Although a state of satisfactory partnerships is required to have a child (33), both highly positive and highly negative interactions between couples have a significant negative influence on the rates of the first and subsequent births. A great deal of satisfaction means partners are happy with their current family situation so having another child may threaten their satisfactory condition. Unsatisfactory relationships

between couples disturb a suitable pre-condition for child-rearing. Thus, they may imagine an additional child may face their life with a new challenge. Nevertheless, effective aspects of relationship quality and their mechanisms are still unknown (31).

Individual behaviors are noticeably connected to the context in which they belong (32). It seems that participation in social groups makes a sense of security, protection, and trust in the future, which provides a proper opportunity for childbearing (37).

Social pressure has more influence on personal goals formation (25, 36). Parents are the main part of the communication network (25, 44).

Childless couples are influenced by network partners and their family size. Unlike one-child peers, peers with two or more children have a negative influence on the intentions of childless couples.

This behavior largely depends on the characteristics and ability of individuals to communicate experiences and information (44). Influential communication networks show reproductive planning and decision-making in Italy and Germany (25, 61). However, further empirical insights from different countries are needed to describe fertility-related interpersonal influence because of the variety of social and cultural contexts (44). Kuhnt (2016) mentions that those perceived social pressure to have a child are the most likely to have positive fertility intentions and vice versa. Therefore, it seems that the meaning of social pressure has not yet been fully clarified. This may reflect the willingness of individuals to comply with norms. Future research should then be conducted to provide a better understanding of what social pressure means and how it is related to fertility decisions.

Women receive more parental help with their first child than with their later children. It suggests that first-time mothers are more in need of help. Women at parity zero and one are more likely to have a/another child while they are living with or near parents (in-law). Besides, it is more common among women whose husbands either work relatively long hours or have relatively low educational attainment. Social network support may reduce the high physical/psychological and economic costs of childrearing (62).

As grandparents are often more available to support their adult children in household tasks and child care, the inadequacy of welfare may lead working mothers to be more dependent on their parents' support (25). Family responsibility and household care still fall on women's shoulders. So, when kindergarten coverage is low and crowded and private kindergartens costs are high, the solution to the almost total absence of institutional help is intergenerational support (15).

Although strong extended family ties are expected to encourage higher levels of fertility, the generation of middle-aged adults (so-called, "sandwich generation") may face concurrent commitment to support elderly parents and dependent children (66). Therefore, they may limit their family size to limit their support obligations (11).

In another way, couples from large families have experiences of having probable problems related to a large number of siblings. Also, their parents may evaluate their own high fertility experiences negatively,

leading them to limit their fertility intentions (44).

In developed societies, higher-order births are likely to be more responsive to policy and environmental changes compared with the first births (23).

Formal help for childcare increases childbearing intention among women with one child (15, 32, 35, 67, 68, 69). It frees mothers from childcare responsibilities during this time (69, 70, 71) and reduces the financial burden of children (32). It seems that the availability of care centers and the quality of services provided are important factors to encourage mothers to fulfill their childbearing intentions (41).

Workplace support influences women's childbearing intentions. Labor market policies are expected to change the labor market so that both women and men can maintain their employment and income, even with young children (32, 43).

The baby bonus also can rise childbearing intention among women especially with financial problems (26).

A context that allows women to feel assured about the future and has the least unease may allow them to fulfill childbirth intentions (36).

## 5. Conclusion

The intention of fertility depends on several key elements especially age and civil status. First-birth intentions are closely related to the tendency of establishing a family and more influenced by normative pressure than the economic situation. Second-birth intentions are also managed by age, educational level, childcare support, and labor market situations for working mothers with small children. Second and higher-order births are more responsive to policy and other environmental influences.

Although women's participation in the labor market may increase economic resources and security to perform childbearing decision-making, the difficulties faced by women in balancing work and family life can limit childbirth among working mothers. Changes in various institutions, including the family, the workplace, and the government, can lift the heavy burdens from the shoulders of women and make childbearing more desirable for them.

Health situation and improved gender equality, both inside and outside the home, have a positive effect on the couples' childbearing decisions. Countries with low national-level gender equality may require improved gender equality at both national and family levels to prevent fertility from falling too far.

A growing interest in self-realization and a lower preference given to fertility intentions are the main aspects of the value changes (41).

Further collaborative efforts by researchers and funding agencies will enable us to reveal fundamental mechanisms that affect and control fertility choices at different levels.

As there are limited instances of interdisciplinary studies, studying fertility would highly benefit by crossing disciplinary and geographic boundaries. Although native scholars conduct fertility investigations in each country, the majority of research on fertility does not often communicate with one another.

We have already cited some studies that adopt a cross-country approach. Fahlén (2013) and Harknett (2014) showed how institutional and family support environment along workplace policies affect childbearing intentions among women. Neyer (2013) and Vitali (2009) revealed how gender role attitude and gender equality are associated with childbearing decision-making. Testa (2014) studied the role of education in fertility intentions.

Fertility choices have been studied mostly from an individual view. The limited research and data existing on couples restrict our information about childbirth.

Developing comparable data collection in many countries will improve fertility researches. The lack of actual instruments such as the collection of quantitative data for the network-based approach is another key factor in infertility studies.

In the end, countries with supportive policy environments also have supportive labor markets and supportive male partners. Hence, it is not possible to separate the influence of one domain from another (Harknett 2014). To promote childbirth, it is essential to consider a multidimensional program according to the features of each regional and geographic area.

## **Declarations**

### **Ethics approval and consent to participate**

Not applicable.

### **Consent for publication**

Not applicable.

### **Availability of data and materials**

All data generated or analyzed during this study are included in this published article

### **Competing interests**

The author(s) declared no potential conflicts of interest to the research, authorship, and/or publication of this article

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## Authors' contributions

M-H performed the search, contributed to study selection, quality assessment, and grading and interpretation of the evidence, and wrote the first draft of the manuscript; M-Sh contributed to quality assessment, grading, and interpretation of the evidence and drafting of the manuscript;

A-N contributed to study selection and drafting of the manuscript, and A-K contributed to study selection and drafting of the manuscript. All authors reviewed and approved the final version.

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## Figures

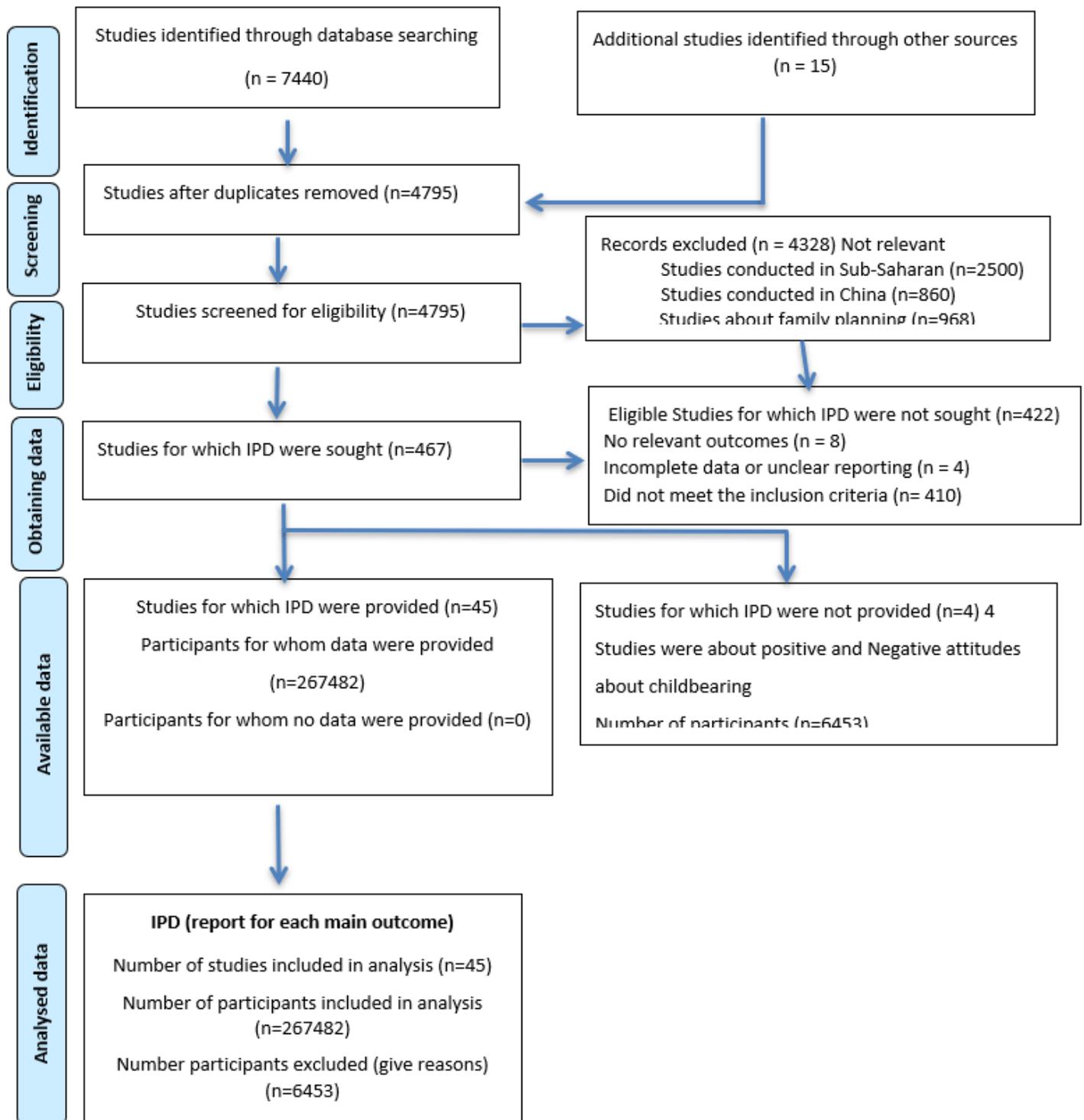


Figure 1

PRISMA search strategy

## Supplementary Files

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- [Appendix1.QualityAssessmentofIncludedStudies.docx](#)
- [searchstrategy.docx](#)
- [PRISMAIPDchecklist.docx](#)
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