Iran J Public Health, Vol. 54, No.8, Aug 2025, pp.1689-1700

Review Article

Determinants of Childbearing: Behavioral Change Models and Theories: A Systematic Review

Tayebeh Mokhtari Sorkhani [1], ***Mahshid Bokaie*** [2], ***Farzan Madadizadeh*** [3], ***Manoj Sharma*** [4,5], ***Bendaoud Nadif*** [6], ****Seyed Saeed Mazloomy Mahmoodabad*** [1]

1. *Social Determinants of Health Research Center, Non-Communicable Diseases Research Institute, Department of Health Education and Promotion, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran*
2. *Research Center for Nursing and Midwifery Care, Department of Midwifery, School of Nursing and Midwifery, Shahid Sadoughi University of Medical Sciences, Yazd, Iran*
3. *Center for Healthcare Data Modeling, Departments of Biostatistics and Epidemiology, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran*
4. *Department of Social and Behavioral Health, School of Public Health, University of Nevada (UNLV), Las Vegas, United States*
5. *Department of Internal Medicine, Kirk Kerkorian School of Medicine at UNLV, Las Vegas, United States*
6. *ESEF, Sultan Moulay Slimane University, Beni Mellal, Morocco*

***Corresponding Author:** Email: Mazloomy.mm@gmail.com

(Received 20 Jan 2025; accepted 09 Apr 2025)

Abstract

The decline in total fertility rate (TFR) below replacement levels has significant implications for public health. This comprehensive narrative review aimed to examine behavioral change models and theories pertinent to childbearing decisions. Articles published between 1977 and 2024 were retrieved from from domestic databases (Magiran, SID) and international databases (Web of Science, Scopus, ProQuest, PubMed, MEDLINE), as well as Google Scholar using relevant keywords. Out of 90 articles initially identified, 36 met the inclusion criteria and were selected for analysis. Existing behavioral change models in health education have limitations in motivating couples to increase childbearing. These models do not fully address complex and multifaceted factors such as socio-economic and cultural influences. Furthermore, there is a need for more rigorous and comprehensive evaluations of the effectiveness of interventions based on these models. Evidence-based educational programs, tailored incentive policies, and rigorous model evaluation are essential to promote positive attitudes towards parenthood. Future interventions should assess the applicability of novel theories to optimize fertility program outcomes, with a particular focus on the role of public health. Further research is needed to investigate innovative models for explaining and changing childbearing behaviors.

Keywords: Behavior change models; Behavioral theories; Childbearing; Health education; Health promotion

Introduction

The total fertility rate (TFR) in Iran has demonstrated a fluctuating pattern, initially increasing from 1.8 children per woman in the early 2010s to 2.01 in the mid-decade, before declining to 1.7

by the decade's end (1, 2). Several factors have been identified as key contributors to this decline in population growth, including the implementation of birth control policies, the removal of socio-economic benefits for large families, legislative changes that previously encouraged population growth, and economic inflation. The latter has led to an increase in the average marriage age and higher costs associated with raising children (3). Over the past few decades, Iran has undergone significant demographic transformations. Life expectancy increased from 57.2 yr (1980-1990) to 67.8 yr (1991-2000) and further to 71.6 yr (2001-2011). However, the TFR has remained below the replacement level for the past two decades (4, 5).

Delays in childbearing are often due to women's insufficient knowledge of their biological capabilities or misconceptions regarding their reproductive potential. Many women are either unaware of the decline in fertility with age or overestimate their chances of conceiving naturally or with assisted reproductive technologies (6). In Sweden, 44% of Swedish men and women aged 36-40 reported that the reason for delaying childbearing was their desire to wait until they reached a certain age (7). Moreover, as the demographic pyramid increasingly favors an aging population, addressing the needs of this vulnerable group—ensuring their well-being, comfort, and overall quality of life—has become one of the country's most pressing challenges, necessitating targeted social development plans. Similar demographic shifts, including declining marriage rates, increased life expectancy, and reduced birth rates, are observed in both Western and Southeast Asian countries (8).

Attitudes toward childbearing are influenced by various factors, and positive beliefs are crucial for timely childbirth (9). To promote favorable attitudes toward childbearing, updated educational interventions tailored to societal needs are essential (10). Health education and health promotion models serve as valuable frameworks for guiding educational activities aimed at behavior change (11).

In response to shifts in childbearing behaviors and declining fertility rates—particularly over the last decade in several countries—there has been increasing discourse on revising past policies and implementing new strategies to address low fertility rates. This demographic shift is anticipated to pose significant challenges in the future. Numerous studies have identified various factors contributing to reduced fertility, carefully considered in policy-making and strategic planning. Additionally, multiple predictors of fertility behaviors warrant close attention to effectively address this issue.

This narrative review aimed to explore the factors influencing childbearing as well as the behavioral change models and theories related to childbearing.

Materials and Methods

Information sources and search strategy

This comprehensive narrative review, conducted in 2024, aimed to analyze studies that have utilized health education and health promotion models, as well as to examine the factors influencing childbearing, in order to identify the factors that address behavior change in childbearing. To identify Persian-language studies conducted in Iran and other research published internationally, we focused on childbearing, behavior change models in health education, and fertility rates. The search covered studies published between 1977 and 2024 using the following keywords: behavior change models, behavioral theories, childbearing, health education, and health promotion. Articles were retrieved from domestic databases (Magiran, SID) and international databases (Web of Science, Scopus, ProQuest, PubMed, MEDLINE), as well as Google Scholar

To minimize bias, two independent researchers conducted the article selection, qualitative assessment, and data extraction. In case of any disagreement, a third researcher resolved the conflict.

Inclusion and Exclusion Criteria

The inclusion criteria included both quantitative and qualitative research articles published in English or Persian. Conference abstracts and studies without full-text access were excluded.

Search Results and Screening

The initial search identified 90 studies. After removing duplicates, 58 articles remained. The research team screened titles and abstracts, leading to the exclusion of 8 irrelevant studies. The full text of the remaining 50 articles was thoroughly reviewed, and after eliminating irrelevant or inaccessible studies, a final set of 36 articles was selected for inclusion.

The selected studies were categorized and analyzed based on their topics and objectives to ensure alignment with the main aim of this review.

Ethics approval

This study was approved by The Ethics Committee of the Shahid Sadoughi University of Medical Sciences in Yazd, Iran. (number: IR.SSU.SPH.REC.1403.069).

Results

The review of the selected articles categorized the factors influencing childbearing into several key areas (Table 1).

Table 1: Distribution of reviewed articles based on the categories of factors affecting childbearing

Number of Articles	Factors Influencing Childbearing
18	**Social Factors & Social Networks** (social support: family, friends, community; government policies, financial assistance; access to health services; education level, maternity leave, social networks, mass media, ...)
5	**Cultural and Religious Factors** (importance of children in different cultures; role of family in preserving traditions; religious influences on childbearing and contraception,
7	**Individual Factors** (personal attitudes and values; physical and mental health; education; financial independence; recreation and travel,... .)
6	**Economic Factors** (costs of pregnancy, childbirth, and childcare; economic uncertainty; employment status of couples, ...)

Social Factors Influencing Childbearing

In general, reproductive behavior is a social behavior that occurs within a social environment and is influenced by both individual and environmental factors, in addition to the decisions of couples (12). The social-cognitive view of humans posits that people do not learn only from their own direct experiences but also by observing the behavior of others; learning occurs through observation and imitation (13). Bandura's social cognitive theory includes factors used to predict social behavior. This theory is commonly used in studies of individual behavior to clarify the interaction between individual factors, environmental factors, and behavior. Individual factors include attitudes and motivations related to parenting, self-regulation, and self-efficacy (14). In addition to individual factors, the actual process of reproduction is also influenced by economic, social, cultural, and environmental factors (15). Environmental factors include peer pressure, socio-cultural norms ruling society, broad access to family planning services (16), gaining assurance of the durability of shared life before having children, high participation of women in social activities, social support, and an understanding of the empowerment process (17). "Significant others" refers to the network of relatives and non-relatives, especially friends and peers. Friends with children are an effective source of social pressure. In a study, women had a stronger preference to have children three years after their friends had children (18).

A person's informal relationships with family and peers, considered social resources, play an important role in providing emotional and material support in childbearing planning. In Germany, access to informal child care (through relatives) significantly increases the likelihood of pregnancy and childbirth (19).

Social Networks and Childbearing

The theories surrounding fertility include a combination of models and frameworks that help understand behavior change in childbearing decisions. For instance, mass media, particularly television, are thought to be linked to fertility decline. Cultural globalization, including advancements in technology and communication, as well as shifts toward individualism, has been shown to negatively influence childbearing intentions (20).

One of the basic questions raised in the field of childbearing is: through what mechanisms do social networks influence people's intention to have children? Age variables, the number of children currently alive, women's education and employment, as well as mechanism and network variables, have an important effect on women's reproductive intentions. The mechanisms of social pressure, social contagion, and social support have a positive impact, while the variable of negative social learning negatively affects the fertility intentions of the women studied. The mechanisms of social networks are changing based on the characteristics of modern life, studying them over time and in different places is essential for adopting appropriate policies in the field of fertility (18, 21).

Economic Factors Impacting Childbearing

Some theorists and researchers have attempted to explain fertility reduction in different countries, especially in European countries. This initially led to the development of economic, structural, and material theories to explain the phenomenon. These theories emphasize factors such as the cost of children, women's employment, and the increased education of people as key reasons for reducing fertility rates. According to neoclassical economic theory, delays in marriage, a decrease in the ratio of married to single people, and an increase in divorce reflect a reduction in the benefits of marriage and an increase in the costs of parenthood for many women (22).

Policies such as parental leave, flexible working hours, the possibility of breastfeeding at work, increased childcare services, and prenatal health care reduce this problem and make it easier for women to continue working. Women emphasize the importance of creating supportive work environments to enhance the welfare of women and families. Increased maternity leave and government-organized daycare systems in China enable couples to remain in the labor market and reduce the pressure on grandparents to care for grandchildren (23).

For mothers who are studying or working, having children may result in lost opportunities. Motherhood entails two important opportunity costs: the short-term opportunity cost, which is the loss of earnings due to leaving the workplace for childbirth, and the long-term opportunity cost, which is reduced future wages due to the effect of a career break on work experience. If a mother did not leave her job to take care of the child, she would receive a higher salary due to her work experience and increased job skills (24-27).

Young people believe that high costs are a barrier to having children. Therefore, if they are vulnerable in terms of economic resources, they may decide to postpone childbearing until they can meet the expenses. In one study, young people who believed they had a better financial situation were more optimistic about becoming parents (25, 26).

Cultural and Religious Influences on Fertility

Cultural changes encompass a broad range of shifts, with four aspects appearing to be more significant than others. These four aspects are: the expansion of individualism, the weakening of family values, the decline of religiosity, and the growth of secularism. Theorists such as Weber and Durkheim have emphasized the importance and role of religion in social action (28). Religion plays a crucial role in family life by legitimizing and promoting family values. Fertility rates tend

to be higher in families whose children attend Islamic schools and among Sunni Muslims compared to Shiite Muslims. Additionally, men generally exhibit stronger fertility intentions than women. Factors such as life satisfaction and the quality of marital relationships also significantly influence individuals' desires to have children (4,21).

Cultural factors in fertility trends have been notably explored through the work of Vandaka and Lesthaeghe under the "second demographic transition" theory. They proposed that changes in family patterns are a direct result of shifting values in postmodern societies. These changes are not solely attributed to economic and institutional transformations but also stem from a broader shift in values and traditions (29). The preference theory emphasizes the role of cultural factors in explaining recent changes in fertility and family structures in industrialized nations (30).

Individual Factors Influencing Childbearing Decisions

During the initial stage of the demographic transition, declines in mortality and fertility lead to greater independence for women and a reduction in gender inequality, as women spend a smaller portion of their lives bearing children. Since fertility decline is a global phenomenon, most women in different societies, regardless of their economic or social status, choose to have fewer children. In this period, the likelihood of marriage decreases, and if marriage does occur, it tends to happen at older ages, with a higher probability of separation before the death of one of the spouses. After this stage, women have more time and motivation to engage in activities outside the home, and with reduced fertility, their occupational and social mobility increases. These trends and consequences gradually emerged in twentieth-century societies, although many of the actors and agents involved were unaware of the main driving forces. Overall, the demographic transition has transformed the position of women in society, and the further a country advances in this process, the higher the level of gender equality—an effect that is stronger in the later stages of the demographic transition (31). For men, their wife's interest or willingness to have children is an important factor in determining when to have children (32).

Individualism also emphasizes reducing childbearing by focusing on the individual and diminishing the importance of the collective. Many theorists have identified individualism as a key driver of social change in this century. The concept of "institutionalized individualism," introduced by Parsons and applied to American society, describes an individual as "a personality with a system of separate and coherent normative tendencies, possessing responsible ethics, who moves creatively, critically, and constructively toward both individual and collective interests." According to Parsons, individualism is analyzed through the structural variables of action, meaning that in the modern era, certain components of the traditional era give way to new circumstances (33).

From a feminist perspective, Simone de Beauvoir considered motherhood a form of slavery for women and encouraged them to avoid marriage and especially motherhood in order to end the patriarchal system (34). However, contemporary feminist thought allows for motherhood to be reconceived—not as a restrictive identity, but as a potentially creative, ambiguous, and liberating experience—provided that social and organizational structures support it. Drawing on Beauvoir's notion of the erotic, this perspective presents motherhood as an existential project through which women can exercise freedom and even achieve moments of transcendence, rather than merely embodying immanence under patriarchal norms (35). At the same time, balancing motherhood and professional engagement constitutes a multifaceted and complex challenge for contemporary women. Evidence indicates that comprehensive supportive policies and institutional frameworks within social and workplace contexts are essential in enabling women—particularly those who are pregnant or caring for dependent children—to effectively manage family responsibilities while simultaneously advancing their personal, academic, and career trajectories

(36). In addition, some couples consider the relationship between personality traits and the timing of the first child's birth as influential in understanding the costs and benefits of childbearing. Individuals with higher levels of openness to experience seek self-awareness and perceive the mental costs of childbearing as high. Consequently, they may not hold a positive attitude toward having children (24).

The Role of Developmental Idealism

Thornton proposed a theory stating that developmental idealism has become a significant force driving family and population changes worldwide (37). Developmental idealism refers to a set of cultural beliefs and values regarding development and its relationship to family and population behaviors. This idealism, as an extension of the modernity framework, incorporates the belief that social characteristics defined as modern are inherently positive. These characteristics include urban life, industrial production, and high levels of education and wealth.

Additionally, developmental idealism associates modern families with certain features, such as individualism, the autonomy of children, arranged marriages during puberty, romantic love, nuclear families, gender equality, and low planned fertility. In recent decades, several aspects of personal and family life, including divorce, non-marital sex, non-marital cohabitation, and non-marital childbearing, have also been linked with modernity.

Furthermore, developmental idealism includes reciprocal causal processes, which suggest that modern families contribute to the development of society. Many proponents of developmental idealism believe that development drives changes in family structures. They argue that reducing fertility rates and increasing the age of marriage contribute to societal growth and align with the trend toward modernization in countries like Iran (38).

Theory of planned behavior and Childbearing

Some models of health education have also been widely used in explaining fertility behavior or intention. For example, one of the most effective models of health education in explaining fertility intention is the theory of planned behavior. According to this theory, the most important factor determining a person's behavior is behavioral intention, followed by a combination of attitude towards performing the behavior, abstract norms, and perceived behavioral control, which can lead to performing a behavior (9). The results of some intervention studies based on the planned behavior pattern indicate a significant increase in women's attitude score on fertility intention (39).

Health Belief Model and Childbearing

Another well-known model in the field of health promotion that helps explain a range of health behaviors is the Health Belief Model. This model serves as a framework for increasing understanding of how personal beliefs and perceptions relate to performing health behaviors. In Gorman et al.'s study, which investigated the relationship between the theoretical constructs of the Health Belief Model and fertility counseling status after cancer, the results showed that the Health Belief Model is useful for understanding factors related to fertility counseling. It is also helpful in reducing financial barriers and improving patient-centered assessment for family development. The study found that, in the context of using infertility counseling for childbearing, the cost and difficulty of accessing counseling services are significantly related to the likelihood of not utilizing fertility counseling (40).

Discussion

The decision to remain childless or have only one child is influenced by a combination of personal, marital, family, and environmental factors. This decision results from the interaction of factors such as individual attitudes, emotions, personal capabilities, an unsupportive environment, challenges in marital interactions related to childbearing, and societal and family settings that may not encourage fertility. Therefore, interventions in this area should be designed and implemented while considering the complexity of this decision

and behavior. These interventions could include improving women's job security, enhancing the quality of childcare centers, fostering a culture that supports childbearing, increasing families' sense of social and economic security, and strengthening family relationships (41). A study conducted in China on the impact of the one-child policy revealed that many young people raised under this policy experienced loneliness and believed that having a sibling could have provided them with better conditions (42).

Mitigating the effects of secularism, individualism, and other values that challenge family structures is crucial for supporting childbearing. However, this task has become increasingly difficult due to the dominance of media that export anti-family values. However, such an act has become much more difficult today due to the dominance of media in countries that export anti-family values. Therefore, reinforcing religious propositions that emphasize the strength and continuity of the family, while taking individuality, freedom, and human values into account, along with the promotion of authentic family values—values that were once strongly promoted by the media but have been undermined in recent decades—could be a measure to prevent the growing and excessive spread of individualism, secularism, and the change in family values. This could partly mean a return to the ancient traditions of Iranian society, which, in recent years and decades, has undergone changes and transformations in some of its characteristics, particularly around the family (29). Moreover, religious beliefs, as an important cultural factor, have a positive impact on increasing the desire for childbearing (43, 44). Stronger religious beliefs are associated with greater fertility intentions (45). However, in contrast to these findings, the decline in religious beliefs in some societies has been identified as one of the reasons for childlessness or choosing to have only one child (46).

Health education and promotion are guided by models and theories that help design health interventions in a professional and precise manner. The application of these models and theories significantly increases the likelihood of successful and effective interventions (11).

Modifying couples' beliefs and attitudes is crucial in the decision-making process regarding childbearing and the reinforcement of fertility intentions. Models that focus on changing beliefs and perceived needs can be both effective and beneficial in influencing childbearing decisions. The Health Belief Model is particularly useful for understanding the factors influencing fertility decisions and counseling. However, while this model helps reduce barriers and supports family development, it is important to also consider the Theory of Planned Behavior. This theory can further influence fertility intentions by fostering a positive mental attitude, reinforcing social norms, and enhancing perceived behavioral control (9, 40).

Educational interventions based on the Theory of Planned Behavior can also influence fertility intentions by providing essential information to couples. Such interventions are effective in empowering families to make informed decisions about childbearing. By fostering a positive mental attitude, reinforcing social norms, and increasing perceived behavioral control, individuals' intentions to have children can be enhanced. Therefore, the Theory of Planned Behavior should be incorporated into educational programs related to population growth policies and intervention designs (9).

Although models like the Transtheoretical Model have been effective in improving women's attitudes toward childbearing in certain studies, progressing through different stages of childbearing behavior using this framework is not highly likely. Additionally, various factors—economic, social, cultural, and environmental—play fundamental roles in shaping actual fertility behavior and should be integrated into intervention strategies (11). Childbearing does not necessarily improve women's material well-being. In countries with social-democratic welfare systems, women experience fewer economic disadvantages due to childbearing, whereas in conservative and Mediterranean welfare regimes, they face greater financial and social challenges. In liberal welfare

systems, the impact of childbearing on material well-being varies depending on the definition of well-being (47). Therefore, addressing low fertility rates requires policies that provide comprehensive support for families and help individuals achieve their fertility goals (48).

In the field of health education and promotion, an ideal behavior change theory should focus specifically on health behaviors, possess strong predictive capabilities, and be cost-effective, adaptable, and applicable across various contexts. The Multi-Theory Model (MTM) of health behavior change emerges as a promising approach, integrating cognitive, volitional, and environmental components, all based on empirical evidence. The MTM has proven effective across different levels and cultures, even in resource-limited settings, and comprises two key components: "Intention of initiating behavior" and "Sustaining behavior".

The three primary concepts in this model related to the initiation phase of behavior change are participatory dialogue, behavioral confidence, and changes in the physical environment. On the other hand, maintaining behavior involves concepts such as emotional transformation (turning feelings into behavior change goals), practice for change (creating new habits that support health behavior change), and modifications in the social environment (social support for maintaining health behavior change) (20).

Having children is seen as an investment influenced by various factors such as costs, benefits, and, importantly, the risks and conditions associated with the mother. While numerous health education models have been applied to the field of fertility, the Multi-Theory Model has only been discussed in a few studies (49-51). Given the novelty of the MTM, its application in promoting fertility among couples. Future research should focus on exploring its potential and assessing its effectiveness in different cultural and social contexts.

This review study underscores that childbearing is a multifaceted and complex decision, influenced by a combination of individual, social, economic, and cultural factors. Economic theories, particularly neoclassical economics, explain this phenomenon by focusing on the material costs of childbearing and the opportunity costs for working women.

Conversely, cultural theories such as the Second Demographic Transition and developmental idealism identify value and cultural shifts—such as individualism, the weakening of family values, and secularism—as key factors contributing to declining fertility rates. Public health models, such as the Theory of Planned Behavior and the Health Belief Model, are crucial in understanding childbearing intentions and designing effective educational interventions. However, these models have limitations in addressing the complexities of childbearing behavior, particularly in the context of environmental and social factors.

In this regard, MTM, as an emerging approach, offers significant potential for designing comprehensive and effective interventions in the field of childbearing. By integrating cognitive, volitional, and environmental dimensions, MTM emphasizes participatory dialogue, behavioral confidence, and environmental changes, all of which can contribute to creating and maintaining desired behaviors related to childbearing.

Ultimately, successful shifts in population policies aimed at increasing fertility rates must adopt a multi-sectoral and coordinated approach that integrates theoretical models and supports policies designed to strengthen family values, create supportive work environments for parents, and improve access to counseling and educational services. This approach should consider the complexities of childbearing behavior and incorporate appropriate theoretical models to design effective educational interventions and supportive policies. Strengthening family values, creating supportive work environments for parents, and enhancing access to counseling and educational services are essential steps in increasing fertility rates and achieving the goals of population policies.

Implications

The use of theories to identify and explain factors related to fertility behaviors can lead to a broader and deeper understanding of these factors, facilitating the design of effective interven-

tions aimed at increasing childbearing. Additionally, by focusing on these factors, fertility behavior can be directed in alignment with the current population policies of countries. These theories can also be applied to analyze intervals between subsequent births, identify the factors influencing these intervals, and develop effective programs.
These programs should begin by identifying regional priorities through both quantitative and qualitative needs assessments. Following this, a specific timeline should be established to address and resolve these obstacles and issues systematically. Based on the identified priorities, solutions should be formulated.
The goal of these programs should be to identify the causes and reasons for reduced childbearing, prioritize them, plan interventions for each priority, and design model interventions to reduce or control any challenges. Additionally, appropriate policies should be implemented to attract broad support for these programs from stakeholders and relevant officials in the region.
The necessary resources and budgets for these programs can be allocated based on the designed interventions and models, with project approvals obtained from the research and technology departments of regional universities, as well as the budgets allocated to provincial governments.
Attracting inter-departmental support, along with support from donors and sponsors, can further aid in achieving the program's goals. Ultimately, success in shifting the country's population policy towards growth, much like in health, is a political matter that requires full inter-sectoral coordination and cooperation among various institutions and organizations within the country.
This research aimed to make a meaningful contribution to improving fertility attitudes and behaviors by introducing models used in health education and promotion, as well as by proposing a new theory. If successful, this program could lay the foundation for health policies and programs that help increase fertility in the country.

Conclusion

Ultimately, childbearing decisions are influenced by a combination of individual, social, economic, and cultural factors. Health education and promotion models, such as the Health Belief Model and the Theory of Planned Behavior, are effective in understanding and influencing these decisions. However, a more comprehensive approach is required to address childbearing behavior, one that also takes into account environmental, cultural, and social contexts.
This research suggests that interventions should not only focus on changing individual attitudes but also address systemic challenges, such as improving access to childcare services, supporting parents in the workplace, and promoting policies that support family growth. Educational programs should emphasize appropriate timing for childbearing and work toward shifting social attitudes toward larger families.
For future studies, it is essential to evaluate the effectiveness of interventions based on new health education models in real-world settings. Furthermore, population policies aimed at increasing fertility rates should incorporate multisectoral efforts, strengthen family values, and improve access to services. This coordinated approach is crucial for achieving sustainable fertility rate increases and enhancing social well-being.

Journalism Ethical considerations

Ethical issues (Including plagiarism, informed consent misconduct, data fabrication and/or falsification, double publication and/or submission redundancy, etc) have been completely observed by the authors.

Acknowledgements

We thereby appreciate all researchers whose studies were used in the present study. We would like to thank the Vice-Chancellor for Research of Yazd University of Medical Sciences.

This article extracted from Ph.D. thesis. (Tayebeh Mokhtari Sorkhani) Registration ID in IRCT: IRCT20170802035446N3, Registration date 2024-10-18 and Last update 2025-04-02

Conflict of interest

The authors declare that there is no conflict of interests.

References

1. Khani S, Mohammadzade H, Abbasi-Shavazi MJ (2019). The intergenerational comparison of marriage and childbearing ideals with emphasis on background characteristics in Sanandaj district. *Social Problems of Iran,* 9 (2):49-76.
2. Amar (2024). https://amar.org.ir/
3. Nejati M, Shakibaei A, Gholami M (2023). Investigating the Relationship between Population Structure and Poverty. *refahj,* 22 (87):35-72.
4. Bagi M, Sadeghi R, Hatami A (2022). Fertility intentions in Iran: Determinants and limitations. *Strategic Studies of Culture,* 1 (4):59-80.
5. Delavari S ZH, Rezaei S, Moradinazar M, et al (2016). Life expectancy and its socioeconomic determinants in Iran. *Electronic Physician,* 8 (10):3062-3068.
6. Sørensen NO, Marcussen S, Backhausen MG, et al (2016). Fertility awareness and attitudes towards parenthood among Danish university college students. *Reprod Health,* 13 (1):146.
7. Schytt E, Nilsen A, Bernhardt E (2014). Still childless at the age of 28 to 40 years: A cross-sectional study of Swedish women's and men's reproductive intentions. *Sex Reprod Healthc,* 5 (1):23-9.
8. Mahmoudzadeh H, Aghayari Hir T, Hatami D (2022). Study and Analysis of the Elderly Population of the Iran. *GeoRes,* 37 (1):111-125.
9. Alami A, Esmailzade M, Esmaeili R, et al (2020). Effectiveness of an educational intervention based on the theory of planned behavior on fertility intention of single-child women: A field trial study. *Internal Medicine Today,* 26 (3):212-227.
10. Kashefi F, Bakhtiari A, Pasha H, et al (2021). Student attitudes about reproductive health in public universities: a cross-sectional study. *Int Q Community Health Educ,* 41 (2):133-142.
11. 11.Ansari Majd M, Khalajabadi Farahani F, et al (2019). Effect of transtheoretical model-based education on women attitudes and stages of change toward childbearing behavior. *J Mazandaran Univ Med Sci,* 29 (174):134-147.
12. Kavas S, De Jong J (2020). Exploring the mechanisms through which social ties affect fertility decisions in Turkey. *J Marriage Fam,* 82 (4):1250-1269.
13. Bandura A (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev,* 84 (2):191-215.
14. Chen M-F, Wang R-H, Hung S-L (2015). Predicting health-promoting self-care behaviors in people with pre-diabetes by applying Bandura social learning theory. *Appl Nurs Res,* 28 (4):299-304.
15. Skakkebæk NE, Lindahl-Jacobsen R, Levine H, et al (2022). Environmental factors in declining human fertility. *Nat Rev Endocrinol,* 18 (3):139-157.
16. Rahmati R, Khadivzadeh T, Esmaily H, et al (2017). Evaluation of the performance of the health care workers in giving consultation about the fertility promotion. *Journal of Midwifery and Reproductive Health,* 5 (2):911-918.
17. Ranjbar F, Shirzad M, Kamali K, et al (2015). Fertility behaviour of Iranian women: a community-based, cross-sectional study. *Arch Iran Med,* 18 (1): 2–5.
18. Bäckström C LT, Thorstensson S (2021). How partners of pregnant women use their social networks when preparing for childbirth and parenthood: a qualitative study. *Nord J Nurs Res,* 41 (1):25-33.
19. Horwood C, Hinton R, Haskins L, et al (2021). 'I can no longer do my work like how I used to': a mixed methods longitudinal cohort study exploring how informal working mothers balance the requirements of livelihood and safe childcare in South Africa. *BMC Womens Health,* 21(1):288.
20. Gonzalez C, Morawska A, Haslam DM (2021). A model of intention to participate in parenting interventions: The role of parent

cognitions and behaviors. *Behav Ther,* 52 (3):761-773.
21. Abbasi-Shavazi MJ, Dorahaki A (2018). The Effect of Social Networking Mechanisms on Fertility Intention of Women in Urban Areas of Bushehr Province. *Population Policy Research,* 4 (1):1-39.
22. Becker G (1981). A Treatise on the Family, Cambridge, MA: Harvard University Press.
23. Schwank SE, Gu C, Cao Z, et al (2018). China's child policy shift and its impact on Shanghai and Hangzhou women's decision-making. *Int J Womens Health,*10:639-648.
24. Tavares LP (2016). Who delays childbearing? The associations between time to first birth, personality traits and education. *Eur J Popul,* 32(4):575-597.
25. Martin LJ (2021). Delaying, debating and declining motherhood. *Cult Health Sex,* 23 (8):1034-1049.
26. Brauner-Otto SR, Geist C (2018). Uncertainty, doubts, and delays: Economic circumstances and childbearing expectations among emerging adults. *J Fam Econ Issues,* 39:88-102.
27. De la Croix D, Pommeret A (2021). Childbearing postponement, its option value, and the biological clock. *Journal of Economic Theory,* 193:105231.
28. Horii M (2019). Historicizing the category of "religion" in sociological theories: Max Weber and Emile Durkheim. *Critical Research on Religion,* 7 (1):24-37.
29. Mohammadi M, Rastergarkhaled A (2015). Cultural changes, and reduce fertility in Iran (Based on second analyze of data of Iranianâ s survey values and attitudes). *Journal of Applied Sociology,* 26 (2):159-180.
30. Rindfuss RR, Choe MK, Brauner-Otto SR (2016). The emergence of two distinct fertility regimes in economically advanced countries. *Popul Res Policy Rev,* 35(3):287-304.
31. Allendorf K (2015). Fertility decline, gender composition of families, and expectations of old age support. *Popul Res Policy Rev*, 34 (4):511-539.
32. Hammarberg K, Collins V, Holden C, et al (2017). Men's knowledge, attitudes and behaviours relating to fertility. *Hum Reprod Update,* 23 (4):458-480.
33. Chalabi M (2015). *Sociology of order: description and theoretical analysis of social order*. ed. Ney Tehran.
34. Bhatta DC (2023). Woman in Beauvoir's Concept: A Feminist Reading. *DMC Research Journal*, 5(01):1-7.
35. Shabot SC (2021). On motherhood as ambiguity and transcendence: reevaluating motherhood through the Beauvoirian erotic. *Comparative and Continental Philosophy*, 13(3):207-19.
36. Oliveira SC, de Faria ER, Sarriera JC, et al (2011). Maternidade e trabalho: Uma revisão da literatura. *Revista Interamericana de Psicología/Interamerican Journal of Psychology*, 45(2):271-280.
37. Thornton A (2001). The developmental paradigm, reading history sideways, and family change. *Demography,* 38(4):449–65.
38. Abbasi-Shavazi MJ, Askari-Nodoushan A (2012). Family life and developmental idealism in Yazd, Iran. *Demogr Res,* 26:207-238.
39. Hoseini Soorand A, Miri MR, Sharifzadeh G (2015). Effect of curriculum based on theory of planned behavior, on components of theory in patients with hypertension. *J Birjand Univ Med Sci,* 22 (3):199-208.
40. Gorman JR, Drizin JH, Mersereau JE, et al (2019). Applying behavioral theory to understand fertility consultation uptake after cancer. *Psychooncology,* 28 (4):822-829.
41. kgalajabadi farahani F, saraei H (2016). Exploration of underlying factors for single child intention and behavior in Tehran; a Qualitative Study. *Women's Strategic Studies,* 18 (71):29-58.
42. Zhang C, Yang AZ, won Kim S, et al (2021). How Chinese newlyweds' experiences as singletons or siblings affect their fertility desires. *The China Quarterly,* 247:835-854.
43. Ghaffari F, Motaghi Z (2021). Factors affecting childbearing based on women's perspectives: A Qualitative Study. *Navid No,* 23 (76):33-43.
44. Vahdani FG, Shariat M, Mohammadzadeh Y, et al (2017). Fertility style and its determinants in Iran and Islamic countries: a review study. *Medical History,* 9 (31):63-74.
45. Bein C, Gauthier AH, Mynarska M (2021). Religiosity and fertility intentions: can the gender regime explain cross-country differences? *Eur J Popul,* 37 (2):443-472.
46. Ahmadzadeh Tori N, Sharif-Nia H, Ghaffari F, et al (2023). Effective factors on voluntary childlessness and one-child tendency from

couples' perspective: Compulsory childlessness or child-avoidance? *Caspian J Intern Med,* 14 (4):656-667.
47. Aassve A, Mazzuco S, Mencarini L (2005). Childbearing and well-being: a comparative analysis of European welfare regimes. *J Eur Soc Policy,* 15 (4):283-299.
48. Gietel-Basten SA, Rotkirch A, Sobotka T (2022). Changing the perspective on low birth rates: why simplistic solutions won't work. *BMJ,* 379:e072670.
49. Bashirian S, Barati M, Sharma M, et al (2019). Water pipe smoking reduction in the male adolescent students: An educational intervention using multi-theory model. *J Res Health Sci,* 19 (1):e00438.
50. Mousali A, Moradveisi L, Barati M, et al (2020). Male addicts' experiences on predictors of relapse to drug use: a directed qualitative content analysis. *The Turkish Journal on Addictions,* 7 (3):166-173.
51. Bashirian S, Barati M, Sharma M, et al (2019). Predicting to reduce water pipe smoking in male adolescents: using multi theory model (MTM). *J Subst Use,* 25 (1):50-55.