

# The Influence of Female's Education Level on Fertility Intention

Yue Lu<sup>1,\*</sup>

<sup>1</sup> Department of Life Science, University of Toronto, Ontario, Canada

\*Corresponding author. Email: lyudmila.lu@utoronto.ca

## ABSTRACT

Fertility is one of the key factors for countries use to measure economic progress. With the opening up and implementation of the two-child policy in China, population would increase largely according to the plan. However, people found that the fertility rate is still declining every year, and so is the desire to have children. In order to find why this situation happened in China, this article investigates the relationship between the education level of females and the fertility intention by analyzing the data from questionnaire, comparing the results between questionnaire and researches, and SWOT method to understand whether the education level would change or affect the willingness of females such as the higher education level of females, the lower desire to have children. After completing the analyze, this research gets the conclusions that the higher education level of females would decrease their willingness to have children because many different factors, such as economic level, the damage of body after birthing, and the focusing on job rather than fertility.

**Keywords:** education level of female, fertility intentions, woman of childbearing age

## 1. INTRODUCTION

### 1.1. Research Background

Fertility is a critical indicator of a country's economic success. This is because population growth is one of the most serious problems confronting any country or region. The population's changing demographics will have an effect on the development of society and the economy. Simultaneously, the professional staff would develop an appropriate fertility policy to address the issue of population growth in accordance with the population's development. Despite the fact that China implemented birth control in 1980 and saw positive results in population management, the country is now experiencing negative consequences as a result of birth control. Fertility rates are declining in a number of wealthy countries, and population growth is slowing in a number of others. They implement a two-child policy to address issues such as population aging, gender imbalance, and a declining fertility rate. The annual fertility rate has continued to decline since China's two-child policy was made public, as has the desire to have children. According to the National Bureau of Statistics' most recent data, China's newborn population will reach 10.62 million in 2021. The fertility rate will be 1.15 in 2021 [1].

Education experiences are becoming increasingly important in modern society as a result of the advancement of industrialization [2]. In addition, the condition of gender inequality has been declining for most countries during the last six decades [3]. This is particularly true in personal life. Simultaneously, the scope of woman's education has expanded as a result of social development, and their educational level has improved as a result of this expansion. Examine the relationship between a woman's educational attainment and her desire to have children, as well as the social consequences of that attainment.

### 1.2. Literature Review

Previously, academics established a negative correlation between a woman's educational attainment and her desire to conceive. The results of this experiment may also support this conclusion. Numerous studies have concluded that our country's population has been managed effectively for an extended period of time under the auspices of a one-birth policy. It affects the demographic structure while also affecting economic development. Its policies have had an outside direct effect on increasing the average level of education achieved by all girls, which is particularly remarkable (Barro et al.,

2013). Female graduates in higher educational disciplines reached 50.6 percent in 2016, up from 208 percent the previous year, according to National Bureau of Statistics research. Additionally, the achievement gap between males and females should be narrowed in high school. Among other factors, the percentage of women employed increased by 165600 thousand between 2010 and 2016. The proportion of people employed in professional technology increased to 47.8 percent in 2016, up from 47.8 percent in 2010. In most cases, demonstrating that increasing female educational attainment increases female labor force participation is straightforward. Women may gain social prestige as a result of this. The researchers demonstrate that female labor participation has a significant negative effect on fertility using a binary variable model that empirically analyses the relationship between female labor participation and fertility and looks for heterogeneity. On the other hand, male labor participation benefits impacted individuals. Yan (2021) conclude that a woman's job exacerbates the tension between family responsibilities and the desire to work for oneself [5]. Additionally, it causes people to drastically reduce their fertility goals as the window of opportunity for pregnancy narrows.

Female fertility intentions are being examined, but the research about why females do not want to have children and whether there is relationship between education level and willingness to have children. This research plans to investigate the relationship between education level of females and the willingness of having children via questionnaires, which will be collected and analyzed in order to reach a conclusive conclusion on the subject by collecting the true thinking of women. Future trends should be estimated using the conclusion as a guide.

### **1.3. Research Significance**

Females of childbearing age may be influenced in their personal decision to become pregnant or not by society, family, and other people in their lives. Numerous factors, including economic and cultural advancements and societal changes, will influence how people view having children. The fertility rate was also lower than expected during the implementation of the second-child policy. All at the same, female education levels keep rising. This paper is primarily interested in the relationship between a female's educational attainment and her desire to have children in this experiment.

Not only will questionnaire data be collected, but also data from the Chinese General Society Survey (CGSS) will be collected and analyzed. This research demonstrates the relationship between fertility intentions and female education levels by completing questionnaires, which range from positive to neutral to negative in nature. When examining the relationship between females' higher education levels and their

intention to conceive, the SWOT analysis is used to ascertain the relationship's internal and external factors. By considering woman's reproductive willingness and intention, we can obtain a novel perspective on the relationship between female education level and fertility intention, while taking into account the unique circumstances of the present situation. Additionally, previous research and the questionnaire used in this investigation provide a perspective or altitude on females' intention to have a second child. Simultaneously, we examined the effect of education level on females in this experiment, as well as the differences in living area and age. In addition, the questionnaire asks if having more education makes women more likely to have children with men.

## **2. PREDICTION OF INFLUENCE FACTORS**

### **2.1. The opportunity cost**

#### *2.1.1. Implicit Cost*

High-achieving females with higher levels of education have the potential to play an important role in their workplace or to accomplish their worth in places other than their families and homes by participating in social activities or going to work, among other things. Females pursuing a more difficult education are well aware of the dangers of pregnancy and the consequences of having a second or many children. They could take steps to prevent this from occurring in their daily lives. Women who are pregnant or who have recently given birth must spend time caring for their children. They may opt to take time away from their jobs to take care of it, or they could utilize their spare time after work to do so. If they decided to stay at home with their children, their wage would be an explicit expense. It is likely that they would have less free time if they opted to work while also caring for a young child. Furthermore, their physical and emotional health are both harmed as a result. It poses a significant concealed threat to females.

#### *2.1.2. Children's Expenditure*

It is reported in a report by the National Bureau of Statistics that the cost of childbearing is one of the most important factors influencing the willingness to have children in families of childbearing age. Bringing up a child between the ages of 0 and 17 costs an average of 485,000 yuan per year. The average cost of raising a child from birth to college graduation is 627,000 Chinese Yuan (approximately \$627,500). According to this report, the average cost of raising children aged 0–17 in 31 provinces was estimated, with families in Shanghai incurring the highest costs at 1,026 million yuan. Beijing

came in second with a total of 969,000 yuan in its bank account. [1]

Compared to GDP per capital, the cost of raising a child until the age of 18 is 2.08 times higher in Australia, 2.24 times higher in France, 2.91 times higher in Sweden, 3.64 times higher in Germany, 4.11 times higher in the United States, 4.26 times higher in Japan, and 6.9 times higher in China. According to the findings of this report, higher dependency costs as a multiple of GDP per capital are associated with greater parental stress and, consequently, lower fertility rates. [1]

### **3. METHODOLOGY**

#### ***3.1. The overview of questionnaire***

The majority of the respondents in this experiment are female, and they have varying levels of education, ranging from no education to a post-doctoral degree, and they are all of varying ages. In addition, we only have a small number of male respondents on our team of researchers. In addition, the factors not only have different gender and degree, but also have different regions in China.

We were already aware that the fertility rate would be influenced by a variety of factors in a particular region. On the basis of the available literature research and data, this questionnaire would include several variables to help researchers better understand the relationship between education level and fertility intention. Not only would this questionnaire include variables such as fertility intention and education level, but it would also include other controlled variables such as gender, age, and marital status.

#### ***3.2. SWOT Analysis***

SWOT means conducting an in-depth and comprehensive analysis of oneself and positioning competitive advantages before formulating development strategies by evaluating one's own strengths, weaknesses, opportunities, and threats in external competition. The strength of SWOT analysis is that the current environment can be easily understood and visualized by combining only two axes. By using this method in the experiment, the situation of educated women can be comprehensively, systematically, and accurately studied, and corresponding development strategies, plans, and countermeasures can be formulated according to the research results.

## **4. FERTILITY & EDUCATION SWOT ANALYSIS**

### ***4.1. The strengthen of internal environment***

A female with higher level education because they have opportunity to go for studying and could spend more time in school to learn the knowledge. They can learn a lot from books or courses, such as different cultures, different topographical features and temperatures, and their own cultures and customs. It can extend their view. It is different from now and past. Women could build their thinking way and logical skills by reading books or learning from knowledge. It could help them to have a better life because they can express their feeling and pursue their willingness by using their own way. In addition, they can choose to learn some skills from school, so that they can choose to do some specific jobs in the future. They can choose to go for work outside or stay at home to raise children inside. It is depending on their decision. In addition, having a job would not only change the choice of having children, but also change the desire for females of marriage. The relatively better financial situation of unmarried working women compared to non-working women helps prolong the desire to be single [6]. By comparing to the women living in the past, they stay at home to take care of children is because they have no ability to go out for work. They were confined in their family. However, women could go out for work because they have ability to competent the jobs. When they go out for work, they can play different roles. Other people could see their outcomes and contributions for society or world. In the same time, they also could choose to stay at home to take care of children. They have more chances to decide what they really want to do.

Another strengths for higher education level is that the females have higher education level could have more science way to raise their children. Woman's education significantly affect children's survival [7]. It is because they learn some knowledge from school so they would have experience about how to solve these problem. For example, when the children meet some problem such as mental disease, they can use more professional way to solve by learning from school. Perhaps they would bring their children to seek the professional mental doctor or psychologist to diagnose the disease and deal with it. At the same time, for the females who have higher education level, if they have children, they would prefer fewer and better births to create better living environment for their children. The overall quality of the child would significantly improve. This would result in an improvement in the overall quality of the generation as a whole. In addition, they also can help their children to learn within their father. It is because they also learn the same knowledge from school so women could give some advise according to their studying life.

**4.2. The weaknesses of internal environment**

The weakness of education level and fertility is that the female with a higher level of education would have a lower desire to become pregnant. The first reason is that they learn how damage caused by fertility to their body within the gaining of knowledge. They can choose to whether to fertility before their birthing instead of they realize the damage of their body after their birthing. Many female would decide to have no child because they do not want to damage their body health. The second reason for lowering desire to become pregnant is some of them would have their own job. So that they can spend more time on their workplace. The process of raising children would waste much time for them to work and to pursue higher salary. From the perspective of some people who having lowering desire to have child, they think they could get higher and more achievement from their job rather than from their children. In addition, more and more females who have higher education level would pay more attention on their own. They hope they can have enough time to keep contact with their family and friends. They want to spend more time to achieve the higher working goal. They want to spend their time to satisfied their own desire rather than on their children. The process of raising children would use much time for them to satisfied themselves. These are the reason why the higher education level’s female would not have such high desire to raise children.

**4.3 The opportunity of external environment**

More and more society place would find the presence of female so that the status of female would increase. The presence of women in more and more important place would certificate the working ability of female. It is good for the gender equality because people would realize that the importance of females. By increasing women economic and social participation in the community, researchers found that it causes the positive social benefits for the society[8]. The increasing presence in working place or social activity also could decrease the influence of gender inequality [9]. In addition, women could do better than men in some jobs such as the job need to communication or the job need more emotion. The presence and opinion of women would make the work become more completed.

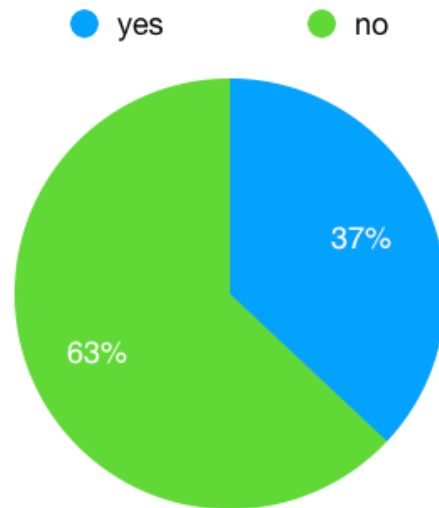
**4.4. The threats of external environment**

More and more females within higher education would choose to get one birth or no birth. It causes the fertility rate reducing dramatically. In the future, the population structure would change because each person would have two parents need to raise. Sometimes, they need to raise their grandparents. It is because they do not have sister or brother to separate their pressure. It could increase their economic cost, maybe they would not want

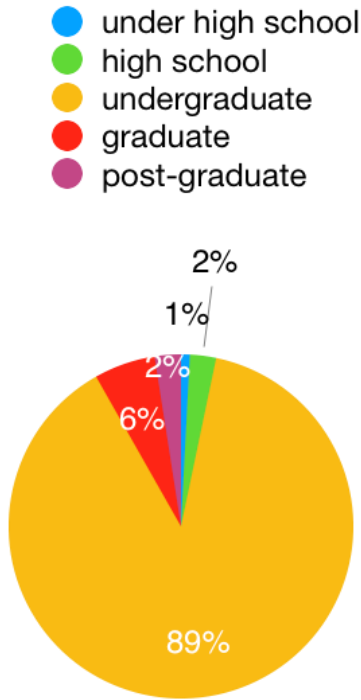
to have child at that time because they have no enough money to raise children. It is a bad cycle and the pressure would increase and increase. The problem of population would not be solved. In addition, within the reducing fertility rate, the labor would become shortage so that there have many jobs do not have enough people to employ. It is bad for the labor market.

**5. RESULTS**

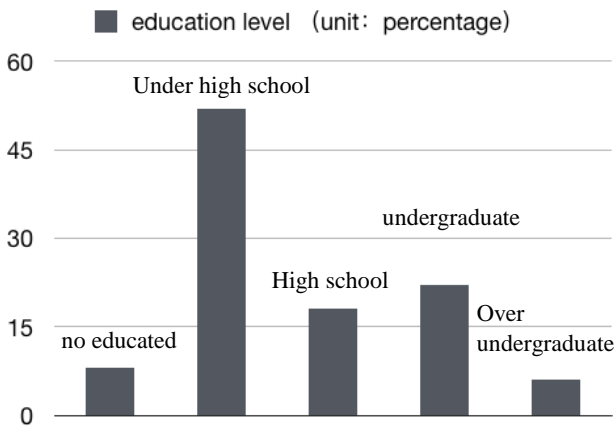
There are 122 respondents participating in this experiment, with 22 males and 100 females, with females accounting for the majority because they have almost 82% among the respondents, by completing the questionnaire. From the pie chart(in Figure 1), it is easily to demonstrate that most of respondents are choosing “no” in the question whether they want to have child in the future. There are 63% respondents choose “no” and 37% respondents choose “yes”. In addition, in bar chart (in Figure 2), it is clearly to show that most of the respondents have undergraduate diploma and the rest of diplomas are approximately the same. To be specific, the majority of respondents have an undergraduate degree, with 89% and the second largest group is the respondents who have graduated diploma, with 6%. In addition, the groups of post-graduated diploma and high school diploma have 2% respondents. It is the second smallest group. The smallest group is the respondents who having under high school diploma.



**Figure 1.** The probability between males and females about their altitude of fertility intention in the questionnaire.



**Figure 2.** The probability within the different degree of the respondents in the questionnaire, such as under high school degree, high school degree, under/post and graduated degree.

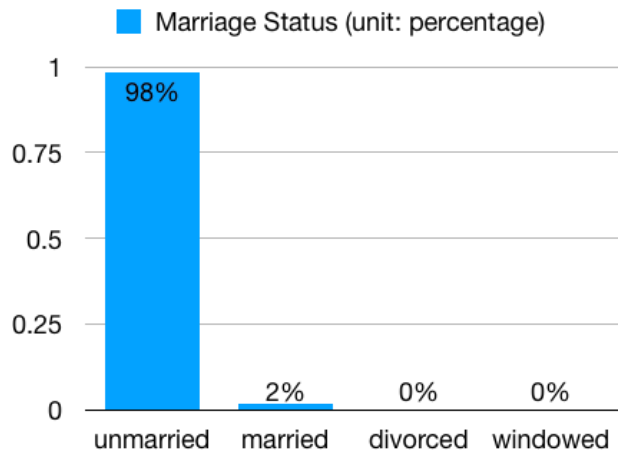


**Figure 3.** The bar chart within the different degree of the respondents in the database from CGSS, such as no educated, under high school degree, high school degree, under/ over-graduated degree.

According to the Figure 3, it can be seen that the proportion of respondents in different education levels is distributed by the database from CGSS for females in China, among which junior high school and below account for the largest proportion, over 50%, indicating

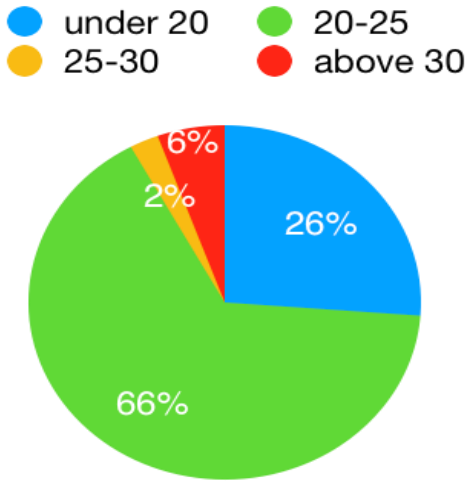
that more than half of the surveyed women of childbearing age have education level at junior high school and below. College education accounted for 22.55%. By comparing with Figure 2 and Figure 3, it is easily to find that the majority of respondents' degree focus on above and below of high school. It is perhaps the reason of nine years of compulsory education. Even though there is not too many females have special high degree such as post-undergraduate, the proportion of no educated is low too.

There are 98% of the respondents is unmarried, while 2% is married. We did not include respondents with different marital statuses, such as divorced or widowed, in this questionnaire.



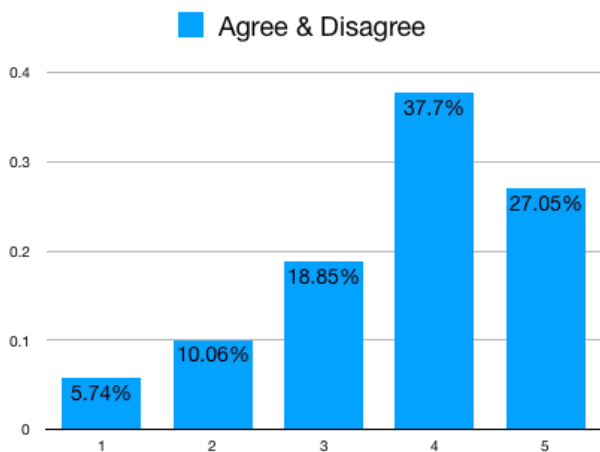
**Figure 4.** The bar chart within the different marriage status of the respondents in the questionnaire.

It is distinguishable from the questionnaire results because the majority of the people in the questionnaire hold an undergraduate diploma. It is easily to demonstrate that most of respondents are in year range between 20 to 25. And the nest largest group is the respondents are at under 20 years. The other year range groups: 25-30 and above 30 are at 2% and 6%, respectively. Recent conversations indicate that we assume this is an error caused by the sample population difference. By comparing Figure 2, Figure 4, and Figure 5, it could be assumed that the reason why most respondents are unmarried and have undergraduate degrees is because of the limitation of age. This is the questionnaire's shortcoming. To obtain more comprehensive data, respondents should span age ranges, including those below the age of 20, those between the ages of 20 and 30, those between the ages of 30 and 40, and even those over the age of 40 or 50.



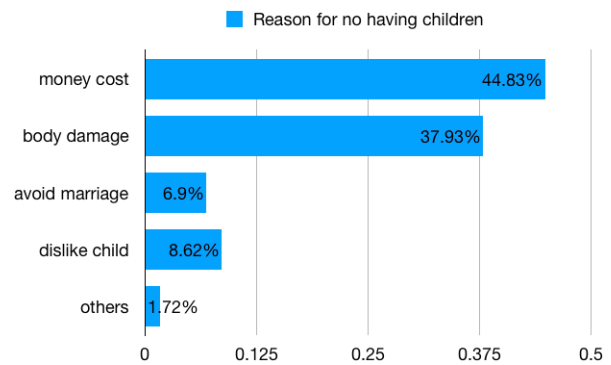
**Figure 5.** The pie chart within the different age of the respondents in the questionnaire. It is divided by four ranges: under 20, 20-25, 26-30, and above 30.

Moreover, the questionnaire contains a question to ask the participants whether they agree on the importance of a higher education level and a lower fertility intention for females. When the perspectives of males and females are combined, the majority of people choose the fourth option (partially agree). In Figure 6, there are five options for evaluating their level of agreement: 1 means completely disagree, 2 means partially disagree, 3 means neutral, 4 means partially agree, and 5 means completely agree. 18.85% of those polled chose neutral, 37.7% chose partially agree, and the next largest group chose completely agree which having almost 27.05% respondents chose this one. The remaining respondents selected between partially agreeing and completely disagreeing within 10.06% and 5.74% respectively. It is clear that most people think that women with more education would have less desire to have children.



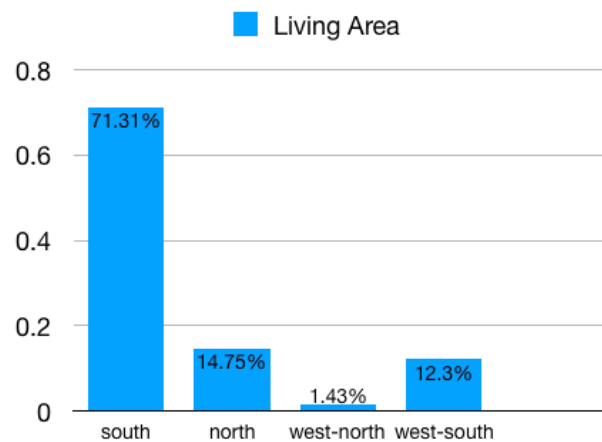
**Figure 6.** The bar chart within the different altitudes of the respondents in the questionnaire. There are five marks to show their altitude from disagreement to agreement. 1: completely disagree; 2: partially disagree; 3: neutral; 4: partially agree; and 5: completely agree

Furthermore, the questionnaire contains a question on why participants who choose not to have kids do not have fertility intentions. This chart contains five reasons, the first of which is the financial cost. It is the financial cost of giving birth and raising a child. The second is bodily harm. As we all know, pregnancy is harmful to women. Their endocrine immune systems would be sensitive, and they would be unable to control their emotions successfully on their own. Furthermore, their body shape would change as the fetus grew, putting additional strain on their hearts. These are some of the reasons why many women decide not to have children. Two additional reasons exist for participants to choose. It is a strategy for avoiding marriage and disliking children. The majority of them opt for the first option, which is the most expensive. The second largest category is damage to the body caused by pregnancy and breastfeeding (see Figure 7).



**Figure 7.** The bar chart within the different reasons why they do not want to have a child of the respondents in the questionnaire.

In the bar chart (in Figure 8), it is clearly to demonstrate that most of respondents are coming from southern area. It is achieved to 71.31%. And the second largest group is northern area, the probability is up to 14.75%. The next groups are south-western area and north-western area, which have 12.3% and 1.43%, respectively.



**Figure 8.** The bar chart within the different living area among the respondents

## 6. CONCLUSION

Whenever it comes to influencing female fertility intentions, education plays a critical role. Outside of the home, women realize and embrace their own worth and worthiness. It is not because they lack the ability to make their contribution in other locations, but rather because they are aware of the locations where they can make their contribution. The traditional conception of childbearing will also shift as a result of the popularization of education in society. It is expected that people of the new generation will begin to think about their own lives rather than being controlled by the old concept of having a child who will carry on their family name. Also taken into consideration will be the economic implications of childbearing, including the advantages and downsides of having children. Instead of being held back by traditional conceptions of reproduction, they should start seeking their own personal quality of life. These are the reason why the female with higher education level would have lower desire to have children. In addition, different conceptions exist concerning the desire to have children at different ages of conception. This is due to the fact that women born into different generations have distinctly different beliefs and perspectives on life. Because of the advancement of technology, women of the new generation can be exposed to a greater variety of new experiences, which can result in a shift in their perception of fertility. Woman's sense of success and pleasure in having children will be replaced by other things in the new millennium, which will make them less likely to have children in the years to come.

However, this research have some shortcoming such as the respondents in the questionnaire are not enough. In order to get more complicated and more detail data, researchers need to investigate more and more people within different age, education level, and living place and so on. More researches should be conducted. After understanding the real willingness of females within higher education level, the society could have more policy to give equal rights for female. In addition, if society want population become more, they could not only implement the more children policy, they could try to focus on the real willingness of females.

## REFERENCES

- [1] Jie Wang (2018), Research on the Influence of Educational Level of Women of Child-bearing Age on Their Second Child's Fertility Desire, DOI: <http://www.doc88.com/p7456429625746.html>
- [2] Treiman, Donald J. (1970) Industrialization and Social Stratification. In E.O. Laumann (eds.), *Social Stratification: Research and Theory for the 1970s*. Indianapolis: Bobbs-Merrill. DOI: 10.1111/j.1475-682X.1970.tb01009.x
- [3] Wail, Benaabdelali and Hanchane, Said and Kamal, Abdelhak, A New Data Set of Educational Inequality in the World, 1950-2010: Gini Index of Education by Age Group (July 1, 2011). DOI: 10.2139/ssrn.1895496
- [4] Barro R.J. & Lee J.A. (2013). New Data Set of Educational Attachment in the World. 1950-2010 *Journal of Development Economics*,104:184-198.DOI: 10.1016/j.jdeveco.2012.10.001
- [5] Yan Zhang (2021), Study on the influence of female labor participation on fertility level, DOI : 10.27224/d.cnki.gnmd.2020.000062
- [6] Cho, A. J., & Kong, S. K. (1988). In'gu pogon nonjip = Journal of population and health studies, 8(1), 34–57.
- [7] Death Clustering, Mothers' Education and the Determinants of Child Mortality in Rural Punjab, India, November 1990, *Population Studies* 44(3):489-505. DOI: 10.1080/0032472031000144866
- [8] Coady, David P. and Dai, Xinyi and Wang, Limin, *Community Programs and Women's Participation: The Chinese Experience* (June 2001). Available at SSRN: <https://ssrn.com/abstract=632690>
- [9] MD Gupta, Lee, S., Uberoi, P. , Wang, D. , & Zhang, X. . (2000). State Policies and Women's Autonomy in China, India, and the Republic of Korea, 1950-2000: Lessons from Contrasting Experiences.
- [10] Li Tiantian, & Guo Jun. (2019). Analysis of the impact of improved educational level on women's fertility intention. *Modern Marketing: Information Edition* (11), 1. DOI: CNKI:SUN:XIXX.0.2019-11-176
- [11] Sun K.L. (2010) Analysis on Influence Factors of Rural Women Fertility Desire. *Population Journal*, 2010.(24):352-267
- [12] Xiaolan Qi (2003). The problem and solution of fertility culture we meted in the social transformation. 2003,(1): 43-47
- [13] Evan, T., & P Vozárová. (2017). Influence of womens workforce participation and pensions on total fertility rate: a theoretical and econometric study. DOI: 10.1007/s40822-017-0074-0
- [14] Hackett, L., & F Marquez-Padilla. Working for change: the effect of female labor force participation on fertility. *Social Science Electronic Publishing*. DOI: 10.2139/ssrn.3354753
- [15] Wang, Y., Wang, D., & Zhang, W. X.. (2016). The international comparative study of the impact of asian women's income on fertility rate:based on the perspective of the labor participation rate, level of education and employment mode. *Northwest Population Journal*.