

# Analysis the contraception usage and unmet needs of education and reproductive health in Hubei province, China

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## Research

**Keywords:** contraceptives, abortion, STIs, Family planning services, reproductive health, knowledge

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# Abstract

**background:** In recent years, contraceptives have developed rapidly, which are divided into modern contraceptives and non-modern contraceptives. The use of contraceptives less unwanted pregnancy and sexually transmitted infections(STIs) including HIV. And cause traditional attitudes towards sex, marriage and family have changed. It leads to a lack of caution about sex and pre-marital sex is more acceptable. Hence, the number of miscarriages caused by unwanted pregnancies has increased. People is going to settle many of sexual and reproductive health matters.

**Methods:** This study, was conducted of about 103 counties in Hubei Province from August 2014 to July 2016, which used frequencies, percentage, mean, chi-square, logistic regression to analysis this data that collected from 17555 respondents. (IBM-SPSS v 25.0)

**Results:** The results in this article describe more men (62.6%) received family planning services education than women (37.4%). And people who did not participate in family planning services education, 17.0% and 21.9% did not know about vasectomy and withdrew as a method of male contraception, respectively. Striking, up to 23.9% and 22.8% of people with or without participating in family planning services education had experienced contraceptive failure (pregnancy for example) in couple. Age, educational, occupational status and the number of living children were strongly associated with contraceptive failure within participating in family planning services education. Only age, place of residence and number of living children were significant associated with contraceptive failure without participating in family planning services education. The figure showed greatly unmet needs of education and reproductive health whether or not to accept family planning services education

**Conclusion:** There is a huge difference in Knowledge and use of contraceptives, as well as unmet educational and reproductive health needs between those who participated in family planning services education and those who did not. That means people who participate in family planning services education got more about sexual and reproductive health education and understand the important of the family planning services. Therefore, it is necessary to provide family planning services for more people and regions to obtain a good understanding of contraceptives, sexual intercourse and unintended pregnancy.

## Plain English Summary

The use of contraceptives less unwanted pregnancy and sexually transmitted infections(STIs) including HIV. And traditional attitudes towards sex, marriage and family have changed. The number of miscarriages caused by unwanted pregnancies has increased. People is going to settle many of sexual and reproductive health matters.

A cross-sectional study was conducted of about 102 counties in Hubei Province from August 2014 to July 2016. 17555 respondents aged 18-49 (female) and 20-60 (male) filled the questionnaire

The results in this article describe up to 23.9% and 22.8% of people with or without participating in family planning services education had experienced contraceptive failure (pregnancy for example) in couple. Age, educational, occupational status and the number of living children were strongly associated with contraceptive failure within participating in family planning services education. Only age, place of residence and number of living children were significant associated with contraceptive failure without participating in family planning services education. The figure showed greatly unmet needs of education and reproductive health whether or not to accept family planning services education

In conclusion: People who participate in family planning services education got more about sexual and reproductive health education and understand the important of the family planning services. Therefore, it is necessary to provide family planning services for more people and regions to obtain a good understanding of contraceptives, sexual intercourse and unintended pregnancy.

## Introduction

The one-child policy has been in effect since 1980, family planning services mainly restricted to IUD and sterilization (tubal ligation) to control the population in china [1]. Indeed, family planning services settled many of sexual and reproductive health matters. Some studies show that early sex and subsequent unsafe behavior can increase the risk of STIs [6–8]. And the World Health Organization (WHO) also estimated that roughly 1 million people are infected with any of four curable sexually transmitted infections every day(including chlamydia, gonorrhea, syphilis, and trichomoniasis) [9]. However, in recent decades, contraceptives have developed rapidly, which are divided into modern contraceptives (including Sterilization, Intrauterine devices, Oral contraceptives, Emergency contraceptive pills, etc.) and non-modern contraceptives (including Withdrawal, Lactational amenorrhea Abstinence etc.) [2]. Contraceptive methods are aimed to overcome biological advances in technology that allow couples to have sex whenever they want and most important is to protect the health of mother and child. Moreover, the use of contraceptives is not only less unwanted pregnancy and less STIs including HIV, but is also to improve family income and the status of women [3–5]. We believe that the people who are in the reproductive age need a good understanding of sexual intercourse and unintended pregnancy. Similarly it is also necessary to strengthen education on sexual and reproductive health.

With the development of economy and the popularization of internet and social media, young people are becoming more open-minded in China [10]. And cause traditional attitudes towards sex, marriage and family have changed [11]. It leads to a lack of caution about sex and pre-marital sex is more acceptable [12]. Hence, the number of miscarriages caused by unwanted pregnancies has increased. According to the latest available figures, 13 million induced abortions were conducted in China in 2008 [13]. Furthermore, unmarried women accounted for 30%-35% of all induced abortions in china [15–17] and it is also estimate that there were 35 abortions per 1000 women aged 15–44 years worldwide each year and some 25% of pregnancies ended in abortion in globally in 2010–14[14]. However, the number would be even higher than it is now if not using use contraceptives. Thus, Knowledge of contraceptives and the choice of effective contraceptives are greatly important.

China introduced the universal two-child policy in 2015. Family planning services also play an important role in new policy cause people who have undergone ligation maybe want to get second baby. Then it can provide counseling of restoring fertility and technical services for them. The same family planning service can also provide the knowledge of pre and postnatal care, sexual health matters, parenting rights and regular reproductive health examination. Because people's knowledge of contraceptives and how to choose suitable contraceptives is still relatively weak. This study is focused on to the knowledge, behavior and use of contraceptives and unmet needs of family planning services among people of reproductive age with or without accepted family planning services education in Hubei province, China.

## **2 Materials And Methods**

### **Study Population**

A cross-sectional study was conducted of about 102 counties in Hubei Province from August 2014 to July 2016. 17555 respondents aged 18-49 (female) and 20-60 (male) filled the questionnaire, which have lived in the area for at least six months and provide informed consent. Five towns (streets) were selected from each county in Hubei Province, and two village (resident) groups were selected from each township: a total of 20 sample points were selected from each village (resident) group, and the sample size was determined according to the number of people in each township. Fourteen investigators (five peer educators from local communities, five medical staff from health districts and four junior researchers from the Hubei Provincial Family Planning Institute) were interviewed in different regions. The survey investigators had to summarize and provide sexual and reproductive health education including family planning counseling each time to respondents

### **Statistical analyses**

This study was to analysis knowledge and use of contraceptives and unmet needs of education and reproductive health, as well as the factors of failure of contraception among with or without accepting family planning services education by frequencies, percentage, mean, chi-square, logistic regression. The data collected were from a 37-question questionnaire filled out by 17555 people. Statistical analysis was performed using IBM-SPSS v 25.0

### **Ethical consideration**

Ethics approval was provided by the Hubei Family Planning and Reproductive Institute of Tongji Medical College and field authorizations were delivered by the local authorities. During the data collection training phase, the researchers obtained the informed consent of all participants. This information provided by the participants only be used for scientific research and we kept it confidential

## **3 Result**

### **3.1 Sociodemographic Characteristics of Respondents**

A total of 17555 people filled in the questionnaire, of whom 13382 (76.2%) were participating in family planning services education and 4173 (23.8%) were not. Most of the study participants belonged to the Han ethnic group. In addition to, more men (62.6%) had received family planning services education than women (37.4%). There was no significant difference in educational attainment between those who attended family planning services education and those who did not. In terms of educational experience, almost all those who received family planning service education (95.4%) and those who did not (93.7%) had a junior high school diploma or above. The majority of those who take part in family planning services education (56.1%) and those who did not (49.8%) come from countryside. As far as work is concerned most of the people who either participate in family planning services education or who did not participate in family planning services education had jobs. (Table 1).

Table 1

Descriptive statistics of population characteristics among with or without participating in family planning services education

Variable	Had accepted in family planning services education n (%)		P-value
	Yes (13382)	No(4173)	
<b>Age</b>			
< 25	823(6.2)	380(9.1)	0.000
25 ~ 35	5250(39.2)	1809(43.4)	
35 ~ 45	5564(41.6)	1475(35.3)	
≥ 45	1745(13.0)	509(12.2)	
<b>Gender</b>			
Male	8378(62.6)	2821(67.6)	0.000
Female	5004(37.4)	1352(32.4)	
<b>Ethnicity</b>			
Han	12788(95.6)	3965(95.0)	0.124
Other	593(4.4)	209(5.0)	
<b>Educational level</b>			
Junior middle school or below	5822(43.6)	1866(44.72)	0.000
Senior middle or secondary	4383(32.7)	1201(28.78)	
College or above	3177(23.7)	1106(26.5)	
<b>Place of residence</b>			
Countryside	7509(56.1)	2076(49.8)	0.000
City town	4419(33.0)	1466(35.1)	
Transitional area	1454(10.9)	631(15.1)	
<b>Occupational status</b>			
Yes	12742(95.1)	3916(93.9)	0.000
No	658(4.9)	257(6.1)	
<b>Number of living children</b>			
Nil	764(5.7)	437(10.5)	0.000
One	9662(72.2)	3004(72.0)	
Two or more	2956(22.1)	3916(17.5)	

Variable	Had accepted in family planning services education n (%)		P-value
	Yes (13382)	No(4173)	
N refers to total number of respondents; % refers to percentage; p refers to the p-value at $p \leq 0.05$			

### 3.2 Knowledge About Male Contraceptives

The majority (77.2%) of all respondents participated in family planning services education and those (67.6%) who did not participate in family planning services education knew about condom as a contraceptive method. Only a small percentage (5.5% and 15.0% )of those who participate in family planning services education are unaware of vasectomy or withdrawal as a method of male contraception whereas, among those who did not participate in family planning services education, 17.0% and 21.9% of all people did not know about vasectomy and withdrew as a method of male contraception, respectively. More than half of the respondents who with (65.9%) or without (57.1%) participating in family planning services education think condom was the best contraceptive method. Yet up to 22.5% of people who did not participate in family planning services education did not know the best method of male contraception. (Table 2)

Table 2

Differences in the Knowledge of male contraceptives among with or without participating in family planning services education

Knowledge	Had accepted in family planning services education n (%)		P-value
	Yes (13382)	No(4173)	
Do you know condom as contraceptive method?	Yes 13055(97.6)	3963(95.0)	0.000
	NO 327(2.4)	210(5.0)	
Do you know vasectomy as contraceptive method?	Yes 12648(94.5)	3463(83.0)	0.000
	NO 734(5.5)	710(17.0)	
Do you know withdrawal as contraceptive method?	Yes 11382(85.0)	3261(78.2)	0.000
	NO 2000(15.0)	912(21.9)	
Which of the following do you think is the best contraceptive method?			
condom	8821(65.9)	2382(57.1)	0.000
vasectomy	2659(19.9)	614(14.7)	
withdrawal	226(1.7)	108(2.6)	
Have no opinion	1302(9.7)	941(22.5)	
Others	374(2.8)	128(3.1)	
N refers to total number of respondents; % refers to percentage; p refers to the p-value at $p \leq 0.05$			

About the knowledge of the characteristics of male contraceptives, approximately two-thirds of the respondents who take part in family planning services education (77.2%) and those who did not (67.7%) think safe and effective should be the characteristics of male contraceptives. Regarding Less harmful to body and Operation should be simple, about half of the respondents who accepted family planning services education (62.8%;54.6%) and those who did not (58.8%;46.9%) think that also should be the characteristics of male contraceptives. However, still 11.4% of people who did not participate in family planning services education have no opinion for the characteristics of male contraceptives compared with those (5.8%) who participated in family planning services education. Additional, a part of the people who participate in family planning services education (25.7%) and those who did not (20.7%) indicated that vasectomy affects physical labor whereas both of them(24.4% with or 20.5% without participating in family planning services education) also revealed that side effects and complication is the most severe

disadvantage of vasectomy. Moreover, up to 25.8% of people who did not participate in family planning education didn't know the most severe disadvantage of vasectomy compared with those (16.3%) who participated in family planning services education (Table 3)

Table 3

Differences in the knowledge of the characteristics of male contraceptives among with or without participating in family planning services education

Knowledge	Had accepted in family planning services education n (%)		P-value
	Yes(13382)	No (4173)	
<b>What characteristics do you think male contraceptive methods should have</b>			
Safe and effective	10336(77.2)	2822(67.7)	0.000
Less harmful to body	8407(62.8)	2452(58.8)	
Operation should be simple	7311(54.6)	1956(46.9)	
Should restore fertility	4104(30.7)	1126(27.0)	
Should be low cost	2740(20.5)	786(18.8)	
Have no opinion	775(5.8)	498(11.9)	
Others	193(1.4)	77(1.8)	
<b>Which one do you think is the most severe about the disadvantages of vasectomy?</b>			
Affect sexual life	1521(11.4)	435(11.0)	0.000
Affect physical labor	3443(25.7)	865(20.7)	
Hard to restore fertility	1994(14.9)	552(13.0)	
Painful procedure	443(3.3)	195(4.6)	
Side effects and complication	3263(24.4)	859(20.5)	
High cost	32(0.2)	13(0.3)	
Have no opinion	2180(16.3)	1077(25.8)	
Others	506(3.8)	177(4.2)	
N refers to total number of respondents; % refers to percentage; p refers to the p-value at $p \leq 0.05$			

According to Table 2 and Table 3 showed a significant difference in knowledge of male contraceptive between those who received family planning services education and those who did not.

### 3.3 The Types Of Contraception Method Currently Used

About 69.8% and 64.8% of the respondents among with or without received family planning services education reported that they currently use female contraceptives. Whereas, there was an obvious difference between taking in family planning services education and did not taking in family planning services education in not using contraception, respectively 11.6% and 16.7%. Additional respondents who were not using contraception, more than one third (36.8%; 37.7%) have no interest in contraception among with or without accepted in family planning services education. Some of people who participated in family planning services education (25.0%) and those who did not (28.5%) were in the pregnancy period.

### 3.4 Factors Of Failure Of Contraception

Despite there was no difference between participating in family planning services education and non-participating in family planning services education even in contraceptive failure, but yet up to 23.9% and 22.8% of people with or without accepting in family planning services education had experienced contraceptive failure (pregnancy for example) in couple (Table4). Table 5 shows reported age  $p = 0.000$  (OR 1.015; 95% CI: 1.010–1.020), educational  $p = 0.004$  (OR 1.076; 95% CI:1.024–1.131), occupational status  $p = 0.003$  (AOR 1.357; 95% CI: 1.106–1.665) and the number of living children  $p = 0.030$  (AOR 1.088; 95% CI: 1.008–1.175) were strongly associated with on contraceptive failure within participating in family planning services education. while age  $p = 0.000$  (OR 1.028; 95% CI: 1.018–1.037), place of residence  $p = 0.000$  (OR 0.202; 95% CI: 1.090–1.326) and number of living children  $p = 0.000$  (OR 1.376; 95% CI: 1.195–1.563) were significant associated with contraceptive failure without participating in family planning services education.

Table 4

Differences in the types of contraception method currently used among with or without participating in family planning services education

Behavior	Had accepted in family planning services education n (%)		P-value
	Yes(13382)	No(4173)	
<b>Current form of contraceptive practicing ?</b>			
Male contraception	2492(18.6)	770(18.5)	0.810
Female contraception	9339(69.8)	2705(64.8)	0.000
No contraception	1551(11.6)	697(16.7)	0.000
<b>What is your reason to not using contraception?</b>			
No interest to contraception	570(38.6)	263(37.7)	0.000
Pregnancy period	388(25.0)	199(28.5)	0.000
Other reasons	593(38.2)	236(33.8)	0.000
<b>experienced contraceptive failure</b>	3203(23.9)	950(22.8)	0.120
N refers to total number of respondents; % refers to percentage; p refers to the p-value at $p \leq 0.05$			

Table 5

The factors of contraceptive failure was analyzed by logistic regression among with or without participating in family planning services education

<b>Variables</b>	<b>Participating in family planning services education (contraceptive failure)</b>	<b>OR (95% CI)</b>	<b>p-value</b>	<b>Not participating in family planning services education (contraceptive failure)</b>	<b>OR (95% CI)</b>	<b>p-value</b>
<b>Age</b>	1.015(1.010,1.020)	0.000		1.028(1.018,1.037)	0.000	
< 25						
25 ~ 35						
35 ~ 45						
≥45						
<b>Gender</b>	1.030(0.949,1.118)	0.479		1.072(0.919,1.250)	0.377	
Male						
Female						
<b>Ethnicity</b>	0.867(0.710,1.059)	0.162		0.873(0.619,1.231)	0.439	
Han						
Other						
<b>Educational level</b>	1.076(1.024,1.131)	0.004		1.045(0.957,1.141)	0.324	
Junior middle school or below						
Senior middle						
College or above						
<b>Place of residence</b>	1.010(0.957,1.071)	0.728		0.202(1.090,1.326)	0.000	
Countryside						
City town						
<b>Occupational status</b>	1.357(1.106,1.665)	0.003		0.776(0.583,1.036)	0.085	
Yes						
No						
<b>Number of Living Children</b>	1.088(1.008,1.175)	0.030		1.376(1.195,1.563)	0.000	
Nil						
One						
Two or more						

Variables	Participating in family planning services	Not participating in family planning services
	education (contraceptive failure)	education (contraceptive failure)
	OR (95% CI) p-value	OR (95% CI) p-value

AOR refers to Adjusted Odd Ratio; CI refers Confidence Interval and p refers to the p-value at  $p \leq 0.05$ .

### 3.5 Education And Reproductive Health Unmet Needs

According to Table 6 there shows a huge difference in the education and reproductive health unmet needs between accepting in family planning services education and did not. But refer to education about pre and postnatal care, contraceptive methods, sexual health matters, sexually transmitted diseases(STDs) and prevention, parenting rights Showed greatly unmet needs Whether or not to accept family planning services education. Similarly involved reproductive health about free premarital health and regular reproductive health examination, Guidance of healthy pregnancy and access and technical services of contraceptives for free also Showed greatly unmet needs Whether or not to accept family planning services education

Table 6  
Differences in the education and reproductive health unmet needs among with or without participating in family planning services education

Unmet (%)	Had accepted in family planning services education n (%)		P-value
	Yes	NO	
<b>Education unmet needs</b>			
Prenatal and postnatal care education	9851(73.61)	2507(60.08)	0.000
Knowledge on contraceptive methods	9286(69.39)	2508(60.10)	
Knowledge on reproduction health	9444(70.57)	2697(64.63)	
Knowledge on STDs and prevention	8427(62.97)	2320(55.60)	
Knowledge on parenting rights	6003(44.86)	7379(55.14)	
<b>Reproductive health unmet needs</b>			
Free premarital health examination	9277(69.32)	2469(59.17)	0.000
Regular reproductive health examination	10221(76.38)	2855(68.42)	
Guidance of healthy pregnancy / healthy baby	6990(52.23)	1983(47.52)	
Free access and availability of contraceptives	7946(59.4)	2141(48.7)	
Free technical services for contraceptive use	6945(51.90)	1885(45.20)	
Others	406(3.03)	106(2.54)	
N refers to total number of respondents; % refers to percentage; p refers to the p-value at $p \leq 0.05$			

## Discussion

Historically, as early as 1973, China was concerned about the social and economic, China launched a nationwide family planning service [18, 19]. However, In 1979 china had begun most strictly implement the one-child policy which controlled population growth in order to economic growth [20] and intended to protect both the health of mothers and children. Furthermore, family planning services provided free contraceptives to protect women's reproductive health from sexually transmitted infections. More recently, the number of married women who either use contraception or who have an unmet need for family planning is projected to grow from 900 million in 2010 to 962 million in 2015 and will increase in most developing countries [21]

Here the findings revealed that most of the respondents knew about the knowledge of male contraceptives. But those who accepted education about family planning services knew more about the knowledge of male contraceptives (including ways, advantages, disadvantages) than those who did not. (Table 2,3). That maybe People who have received family planning services are consulting for more information about contraceptives

Although male contraceptive using so simple, about 69.8% and 64.8% of the respondents among with or without received family planning services education reported that they currently using female contraceptives far more than using male contraception (Table 4). Our data are in line with many previous studies: women dominated in family planning [22–25]. Furthermore, Ventura et al reported 89% of reproductive aged women are currently using some form of contraception [26] Strikingly, respondents who were not using contraception, more than one of third (36.8%,37.7%) have no interest for contraception among with or without accepted in family planning services education. It may be because someone does not want to use contraceptives that the number of unwanted pregnancies and abortion increases [2]. People need to be educated about the dangers of abortion through family planning services.

Yet up to 23.9% and 22.8% of people with or without accepting in family planning services education had experienced contraceptive failure in couple (Table4). The failure rates are higher than other studies. Such as other studies indicate that the most effective methods of contraception include Long Acting Reversible Contraceptive(LARC) methods and sterilization which have a failure rate less than 1% (27,28). Pills, the transdermal patch, injectables, and the vaginal ring also have effective when used correctly but the failure rate up to 7% when user error (29–33). Similar with combined methods, condom efficacy is limited and the failure rates approach 13% (34, 35). Table 5 shows reported ages, education, occupational status and having no living children had a significant effect on contraceptive failure within participating in family planning services education. while only age, place of residence, occupational status had an effected on contraceptive failure without participating in family planning services education. Different age, educational, occupation affected the understanding and choice of contraceptives. We also found that a greatly unmet needs of the education and reproductive health whether or not to accept family planning services education. In 2010,146 million (130–166 million) women worldwide aged 15–49 years who were married or in a union had an unmet need for family planning [21]. It should be noted that several studies suggested that have a huge unmet need of education and reproductive health [36–40]

## Conclusions

This study revealed that there is a huge difference in Knowledge and use of contraceptives, as well as unmet educational and reproductive health needs between those who participate in family planning services education and those who did not. That means people who participate in family planning services education got more about sexual and reproductive health education and understand the important of the family planning services. Therefore, it is necessary to provide family planning services for more people and regions to obtain a good understanding of contraceptives, sexual intercourse and unintended pregnancy

## Limitation

This study only involved knowledge (types of contraceptives and their advantages and disadvantages) about male contraceptives and not about female that leading to incomplete analysis of the results

# Abbreviations

STDs

sexually transmitted diseases

STIs

sexually transmitted infections

# Declarations

## Strengths

Our study conducted a systematic and comprehensive sampling of about 102 counties in Hubei Province, China. We cannot guarantee that all our results are applicable the whole of china. But maybe our findings are transferable to similar situations throughout Hubei Province. Additional we were doing questionnaires at the same time provided sexual and reproductive health education including family planning counseling for people

## Consent for publication

Not applicable

## Availability of data and materials

The datasets during and/or analysed during the current study available from the corresponding author on reasonable request.

## Competing of interest

There are no conflicts of interest

## Acknowledgements

Not applicable

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