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RESEARCH ARTICLE

The Mediating Role of Birth Control Method, Sex Life, Mental Health, and Its Affecting Factors on Pregnancy Outcome Among Young Adults

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ABSTRACT

Pregnant young adolescents can be affected by various factors, whether through romantic relationships or self-status. Hence, young pregnant adolescents can face a lot of challenges and problems during or after pregnancy. For example, early marriages, less equitable relationships, and poor maternal and child mental health are all factors that disturbed pregnant young adolescents. This study aims to discover the mediating role of birth control methods, time having sex, health care, and its affecting factors on pregnancy outcome by using big data analytics statistical analysis. This study utilized the large ICPSR dataset (>90,000 respondents, 42 datasets), merged, cleaned, and transformed the most relevant datasets (DS11-In Home Questionnaire, 25-Pregnancy data) for correlation and mediation analysis using SPSS statistics v23 and PROCESS macro 4.0. The result shows that family plans and religion have correlated positively with pregnancy outcome, this may be due to the discussion with the partner and their religion will affect the pregnancy outcome such as high live birth rate. Furthermore, education status and mental health correlate negatively with pregnancy outcomes. This study is important to allow people to understand the scientific basis for lowering prenatal mental illnesses by examining the prevalence and influences of maternal stress and anxiety during early pregnancy.

INTRODUCTION

The purpose of this study is to determine how pregnancy is affected by a special focus on family plan, mental health, and education status by giving the impact on pregnancy outcome influenced by birth control before pregnancy, time having sex, and health care. Stressful life experiences have a significant impact on pregnancy [1]. Teens and young adults who earn less have more difficult life circumstances than their counterparts who earn more. [1]. These stresses include violence, the passing away or illness of a family member or friend, money problems, breakups in relationships, and interruptions in one's career or education [1]. Furthermore, changes in romantic relationships result from becoming a parent, as stated by several investigators. They also have an unfavorable effect on parents' welfare

[McLanahan and Adams, 1987]. During the pregnancy period, some mental health problems will lead to the priority of the expected time of birth and the decrease in the weight of the new baby [2]. The live birth rate and pregnancy become the primary outcomes according to IVF/ICSI [3]. It is also said that several factors will influence the family plan, such as household income and the age of the women [4]. Moreover, family planning is also said to be affected by religion [4]. Several family planning methods are allowed by certain religions to use [4].

It is also said that there are almost 16 million young people pregnant at their young high school age (15-19 years) [5]. This is due to the lack of birth control methods, low educational levels, and low socioeconomic status. This has led to the pregnant woman to get an unwanted pregnancy [5]. Adolescents who are pregnant at a young age are hard to handle their daily routine and especially their school activities [5]. There is also research that stated that only nearly 34% of adolescents know how to perform birth control in their first sexual intercourse, which has increased the pregnancy rate [5]. Several studies have shown that the effect of smoking is one of the mental health symptoms during early fertility [2]. The poor pregnancy outcome has been affected by the poor romantic relationship between the couple. Most women also said that they felt vulnerable during their pregnancy [2]. They will need more support from their families, friends, and especially from their partner [2]. Although pregnancy is a happy experience for a woman, there can be a positive desire in the future, but the result of pregnancy, such as live birth and low socioeconomic status, and total household income, has deeply affected the woman's mental health [2].

There is a gap to give special focus to the family plan, mental health and education status by giving the impact to the pregnancy outcome influenced by birth control before pregnancy, time having sex, and health care. It is said to be significant to deeply investigate the impacts and provide important factors that will affect pregnancy outcomes.

1.1 Problem Statement

One in three women in countries have married before 18 years old and one in nine of them have their marriage before their fifteenth birthday [6]. It has offended the rights of children [6] and caused them quickly to become a mother [6]. From research, early marriage, and early childbearing have become interesting topics for researchers and practitioners. Nevertheless, women become less equitable in relationships which causes less agency in women [6]. Moreover, early marriages, pregnancy, and childbirth have a high risk of suffering maternal and child mental health [6]. In addition to that, this study has also found that most of the research usually focused on maternal depression and the effects of paternal participation on mental health or relationship of both partners [7]. It is also known that women with higher education status were 7,169 times more likely to know the dangerous outcomes of pregnancy than females with lower or no education [8].

According to UNICEF, there will be 14 percent of teenage girls and young women who give birth before turning 18 in 2021 [9]. Research states that a girl turning into adulthood with healthy growth will be affected by pregnancy and childbirth during early childbirth and it deeply impacted her life, mental health, and education status. During the antenatal, delivery and postnatal periods, careful monitoring and quality care for most adolescents who are experiencing pregnancy for the first time is crucial. However, paradoxically, adolescent girls tend to have a lower coverage of maternal health indicators compared to other women and girls in most regions of the world (UNICEF) [9]. According to WHO (2014), young mothers, especially those of teenage age, who give birth to children have higher rates of miscarriage, recently born mortality, and decreased weight compared to children who deliver to mothers between 20 to 30 years of age. Furthermore, teenage pregnancy limits the access of young women to their studies and work and causes them to get high-income work [10]. Teenagers who become pregnant are more likely than their classmates who do not become pregnant to drop out of

school or have lower educational levels, according to studies by several professors. The possibilities are limited if they leave school and don't go on to higher education. Moreover, there is a high probability that children will learn behavior in sexual activities when they turn into mature adults [10].

98% of stillbirths and neonatal deaths worldwide, which are estimated to be 2.6 million stillbirths and 2.5 million, respectively, occur in low & middle-income countries. Most of these deaths can be avoided [11]. Data shows that almost seven thousand newly born children die every day in the world. In the 1990s, children under five died a percentage of 40% [12]. There has been an important increase in child survival since the year 1990 worldwide. The death of a baby has decreased from a range of 5 million to 2.4 million from 1990 to 2020 for almost 30 years. However, the decrease in neonatal death between the year 1190 to 2020 has slowed compared to post-neonatal. There are almost 75% of neonatal death in the year 2019 with almost 1 million babies dying on their first day of born. Most neonatal deaths in 2019 were due to premature birth, birth-related problems (no breathing or birth asphyxia), infections & birth abnormalities [13].

In most regions of the world, as well as during pregnancy, intimate partner violence is a common occurrence. Most regions about the world have heard of pregnant women experiencing intimate partner abuse [14]. Worldwide, almost 38% of female murders are caused by a romantic and good relationship. Furthermore, only= 6% of women in the world carry out sexual assault, and to insinuate this violence, the data on it are more horrible [15]. Furthermore, studies have shown that a pregnant woman's reproductive and mental health of a pregnant woman are both affected by close intimate partner violence (IPV) during her pregnancy [14]. IPV is still viewed in limited ways that only pay attention to bodily violence, leaving several types of sexual violence and abuse unnoticed, not just untreated. This has led victims to ignore the violence and sexual harassment they have faced because they had lived in a scary environment. Lower socioeconomic groups, institutionalized high-risk groups, spouse or husband participation, and substance misuse difficulties should all be the target of specific IPV interventions [16].

Research hypotheses

H01: The birth control method is negatively with pregnancy outcome.

H02: Health care is negatively related to pregnancy outcome.

H03: The time of having sex correlates positively with the outcome of pregnancy.

H04: The family plan correlates positively with the outcome of pregnancy.

H05: The birth control method mediates the relationship between the family plan and the outcome of the pregnancy.

H06: The time of sex mediates the relationship between family plan and pregnancy outcome.

H07: Education status is negatively related to pregnancy outcome.

H08: The birth control method mediates the relationship between education status and pregnancy outcome.

H09: Time having sex mediates the relationship between education status and pregnancy outcome.

H10: Religion correlates positively with pregnancy outcome.

H11: The birth control method mediates the relationship between religion and pregnancy outcome

H12: The time of having sex mediates the relationship between religion and the outcome of pregnancy.

H13: Mental health correlates negatively with the outcome of pregnancy.

H14: Health care mediates the relationship between mental health and pregnancy outcome.

2.0 LITERATURE REVIEW

In this literature review section, the potential measurement parameters to test in this study and the conceptual framework that includes 43 existing research articles on the relationships between pregnancy outcomes and family planning, education status, religion, mental health, birth control before pregnancy, time having sex, and health care are carefully reviewed. Family planning was found to help women in decreasing unwanted pregnancies. With the help of family planning. The program to ensure reproductive health for those who rarely want children in their life has been conducted. Media that distribute the family plan benefits will also bring in the benefits of birth control so that many educated individuals can be told and discuss among husband and wife to have the family planning to avoid bad pregnancy outcomes. It is also said that young girls will have their family planning decisions more careless. Your decisions will deeply affect your educational status [17].

Around the globe, teen pregnancy rates are high [5]. The World Health Organization (WHO; 2018) reports that teen pregnancy is more common in low- and lower-middle-income nations, where an average of 16 million girls aged 15 - 19 years are born every year. According to Gupta & Mahy, having more education protects against teenage pregnancy. Pregnant adolescents are more likely to have a less overall formal education, less education or not be enrolled in school [10]. Most adolescents have not completed high school, are single, unemployed, and financially dependent on their parents. Teenagers have unstable emotional development, which makes it challenging for them to become young mothers [18]. Because they are still in cognitive and social development and may not yet have established adequate coping mechanisms, teenagers and young adults expecting should pay particular attention to the impact of stress on depression. Experiences of stressful life events can, consequently, make expecting teenagers more prone to depression [5]. Data on adolescent pregnancy and education from other low and lower-middle-income countries may strengthen the argument that educational levels influence teenage pregnancy in these countries. To determine which initiatives might be the most successful in addressing this issue, it is crucial to thoroughly understand the variables that prevent women in these nations from dropping out of school [10].

225 million women in developing nations seek to delay or avoid getting pregnant. Despite an increase in the use of birth control methods in different corners of the world, especially Asia and several Latin American nations, the use of birth control methods worldwide remains low. One of the elements related to the usage of contraceptives is the educational level. Yago-Simon et al. showed that a lower level of education is associated with an unintended pregnancy in a group of women aged 13 to 24 years, further highlighting the risk of poor use of the birth control method. Use of birth control in teenagers reveals lower rates of compliance and consistent use than among adults, as well as higher failure rates. Young males are often less responsible when faced with an unwanted pregnancy, as they are less interested in contraception [5]. Younger women also tend not to develop physically during pregnancy, and expectant mothers may not be able to maintain their pregnancy and deliver safely [19]. All of this is because stressful events often occur between young men and women, and they will occur more frequently when taken into account as a couple. The distribution of difficult living conditions differed by sex; most of the men experienced greater difficulties with the police and unemployment. They are said to be easier to be pregnant for younger women and may have been less likely than males to actively seek employment or participate in law enforcement-related activities. The typical hectic lifestyle situations cited in general were financial difficulties. Couples may be worried about how they will sustain their new child financially in an already precarious financial situation [18].

Meanwhile, teenage pregnancy is a complex and multifaceted issue that has significant health, social, and economic consequences. Using social network analysis, the study found that adolescents who had more sexual contacts within their social networks were more likely to experience pregnancy or father a child [19]. Then a study found that knowledge and attitudes about reproductive health were positively associated with contraceptive use, highlighting the need for comprehensive sex education programs to promote reproductive health among young people [20]. Then mothers who gave birth earlier in adolescence had worse educational and economic outcomes compared to those who gave birth later, highlighting the importance of avoiding pregnancy to improve long-term outcomes. Lastly, the use of contraception and the risk of unwanted pregnancy among young age girls and young women in the United States [21].

In addition to that, it is said that childhood social advantage will affect the socioeconomic outcomes of pregnancy in the future, and various biological factors have shown the result. Children in Child Protective Services (CPS) are known to usually receive poor educational environments and materials. It may lead to acts of criminality. Women with high educational and socioeconomic status normally lower the risk of harmful pregnancy outcomes [22]. In addition to that, the pregnancy period which has almost 18 months postpartum in which the child has affected the romantic relationship between parents. There are also some studies that have proved that when parents give birth directly after birth, there will be short happiness which is a slight increase in satisfaction in the romantic relationship [23]. There have been studies that marital quality or marital satisfaction has to suffer the following issues such as the satisfaction of interrelationship between the couple, the satisfaction in life after a period of time in overall life, and lastly the most important issue is lacking in giving birth to a baby or child, especially for the 1970s-1980s, their life quality has risen after the birth of a baby on their maternal life (hansen2009). Low-educated women were more likely to have an induced abortion, a stillbirth, or a preterm delivery, and less likely to have a spontaneous abortion. Three factors have played a good role in explaining the relationship between pregnancy outcomes and education level, which are the age range, the couple's educational level and the CPS of a family [24]. A study was conducted to compare mothers with low educational status and high educational status. Women with high educational attainment were found to have reduced the bad outcome of preterm birth and have low birth weight [25]. Adolescent girls, which quickly become a mother at a young age give evidence that the almost 78.9% of death when one hundred thousand live births are born and the age of pregnant women is between 15-19 years old. It is also said that when the educational level increases, pregnancy outcomes will decrease proportionately. Therefore, the educational status is strongly affected by pregnancy outcomes, especially an infant born prior to 37 weeks of gestation, which also means the live birth [26].

Spirituality and religion are two important cultural components that give importance to human behaviors, attitudes, and experiences [27]. Family planning and religious beliefs have many different and complicated interactions. Furthermore, studies show that women who often attend religious services are less likely to get information about family planning during their doctor appointments. To promote or oppose the practice of family planning, Christian scripture has been the subject of contrasting and contentious readings of passages. In addition, texts from the Qur'an also have been used to argue against family planning by emphasizing high fertility and pitting the use of contraceptives against family values. Both Christians and Muslims think of religious traditions to have as many children as God would grant them [4]. Without birth control, the interpregnancy interval (IPI) occurs and pregnancy-related anemia is linked to IPI [28]. Therefore, preventing brief IPI could greatly lower the prevalence of anemia in pregnant women [28]. Integrating religious and spiritual care with physical and medical treatment will improve complete or holistic care and ensure that no part of care is neglected. Healthcare professionals can do this if they believe that childbirth is a holy experience for women [27]. Religious beliefs and practices have been found to influence women's attitudes towards family planning and therefore affect pregnancy outcomes. For instance, a study by

Al-Akour and Haddad (2021) conducted in Jordan revealed that conservative religious beliefs negatively impact women's attitudes towards family planning. The study found that women who had conservative religious beliefs were less likely to use family planning methods than those who held moderate or liberal religious beliefs. This lack of family planning could lead to unintended pregnancies and subsequent adverse pregnancy outcomes [29].

The most important transition from a couple to parenthood is the identity of becoming a mother for the pregnant woman with a clear female identifying with her parents [30]. This is important for the woman to plan to have a child and decide to be pregnant herself and end with the formation of maternal [30]. It is also a serious issue, and this study has shown that depression is one of the main problems that caused worldwide disability in people, the range for women who undergo depression is 20% to 25%. Depression deeply affects the pregnancy status of women, which increases the percentage of antenatal depression. There is a range from 5.4% in the first trimester to 10.0% in the third trimester. Prenatal depression is also said to have a high risk of getting PPD which is a dangerous mental health problem. This mental health issue will deeply affect the pregnant mother and her child. It may lead to minor depressive disorder in the first year after delivery [24]. Pregnancy is typically a joyful experience for women with joyful expectations, but worry and concerns frequently grow. During pregnancy, many women experience a sense of vulnerability and an increased need for their partners. They also become more dependent on family and friends, especially other women, for help [2]. Most of the world's countries have recorded incidents of intimate partner violence (IPV) against pregnant women. These studies show that, globally, violence during pregnancy is a serious problem, even though prevalence rates have varied in research due to different definitions of violence, nonuniform methodology, and sampling discrepancies [31].

According to studies, reproductive and mental health are affected by IPV. Because mental health issues can have an impact on both the mother and the fetus, it is crucial to recognize the emotional problems of the maternal during pregnancy and identify the possible factors for it [2]. Pregnancy complications include miscarriage, abruptio placenta, premature labor and delivery, fractured fetuses, and low birth weight have been linked to physical abuse, anxiety, and depression [2], [31]. In addition to being crucial for the mother's own well-being, children's mental and body health, as well as the welfare of the family, all depend on the mother's mental health. From a preventive perspective, it’s important to place emphasis on women receiving the protection from healthy mate connection while also exhibiting several risk factors [2]. Additionally, mental health problems have been found to be a risk factor for poor pregnancy outcomes. Balogun et al. (2020) conducted a study in Nigeria and found that women with mental health problems were less likely to use family planning methods than those without mental health problems. The study also found that mental health problems during pregnancy increased the risk of adverse pregnancy outcomes such as preterm birth, low birth weight, and stillbirth. Therefore, addressing mental health problems in pregnant women could potentially improve pregnancy outcomes, and incorporating family planning education and services could help prevent unwanted pregnancies in women with mental health problems [32]. The feeling of isolation and loneliness can affect the mental health of people [33]. In the past few years, the Covid-19 pandemic has faced great challenge for pregnant women [34]. The severity of this pandemic has led most governments around the world to implement some limitations and restrictions to control the spread of the virus such as social distancing and national lockdowns. However, this kind of isolation-like method brings many changes to people [35]. For example, confinement, modifications to daily activities, social life, loss of freedom, and concern about one's health and finances. Through the investigation, more than half of those surveyed in a previous study reported having moderate to severe psychological symptoms (anxiety, depression, and stress) and women, in general, are one of the most impacted groups [36]. Another research shows that pregnant women examined during the pandemic showed more depression and anxiety symptoms than a different cohort of pregnant women evaluated before the pandemic, even in low-risk groups [26]. These intricate and varied factors can

have three terms effects on the physical and mental health of mothers and their offspring, which are long, medium and short [36]. Therefore, supporting maternal mental health during pregnancy should be prioritized for these reasons and because it has a harmful impact on both the health of mothers and their unborn children [36]. In another research, physical and emotional problems of a pregnant woman are important to have social support to ensure the wellness of the fetus and the newborn [1]. Table 1 summarizes the review of the previous studies in this section on the pregnancy outcome. A conceptual framework (Figure 1) is developed based on the literature review carried out in this section. The details of each component in the conceptual framework are presented in Table 2.

Table 1. Covariates of pregnancy outcome from previous studies.

Covariate Category	Detail Variables	Previous studies
Education Status Family Plan	Educational attainment High school, High school above Mother with major depression, high-school education	[22] [24] [25]
	Number of Living Children, Age Birth Control Method	[17] [5]
Religion Mental Health Covariate Category	Health issues Spirituality	[4] [27]
	Depression, anxiety Women's perinatal experiences Prenatal depressive symptoms	[35] [36] [1]
Education Status Family Plan Religion	Educational attainment High school, High school above Mother with major depression, high-school education	[22] [24] [25]
	Number of Living Children, Age Birth Control Method	[17] [5]
	Health issues Spirituality	[4] [27]
Mental Health	Depression, anxiety Women's perinatal experiences Prenatal depressive symptoms	[35] [36] [1]

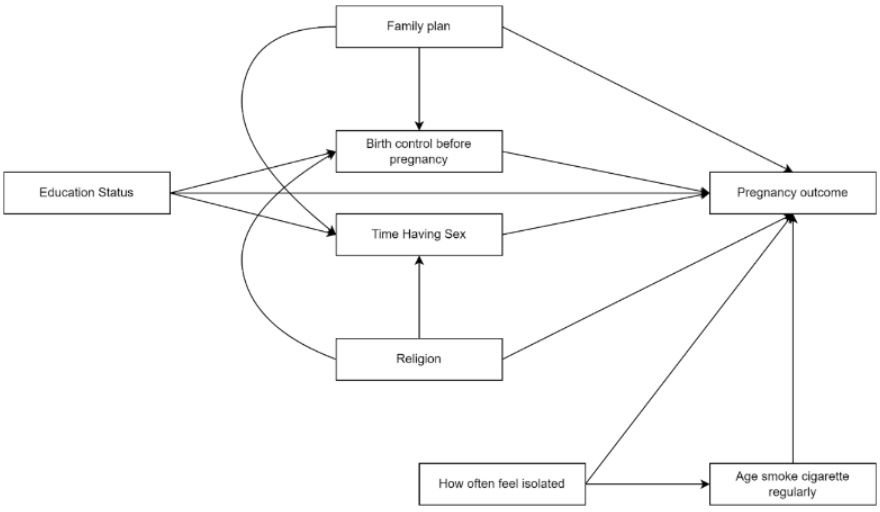

Figure 1. Conceptual framework of the study.

Table 2. Details of the covariate category based on the conceptual framework.

Categories	Details
Education Status	• Highest education level achieved to date • High school graduation status • Highest education level ever expected
Time Having Sex	• Age first time vaginal sex • Before 18 often touch sexual way
Religion	• How often have you attended church, mosque, synagogue, temple or religious service in the last 12 months? • How important religion faith • How often do you pray in private? • How often do you turn to your religious or spiritual beliefs for help when you have personal problems, or problems at school or work?
Family plan	• Number of kids intend to have • Want child before pregnancy

3.0 RESEARCH METHODOLOGY

The Interuniversity Collaboration for Political and Social Research (ICPSR) is one of the top worldwide consortiums that offers more than 250,000 dataset files for social science research. Researchers can download the public use samples for free and use them to clean, curate, and analyze data for study in the social and behavioral sciences. Three particular datasets are utilized in of present study, "Longitudinal study the education status and birth control before pregnancy that affect the pregnancy outcome among young adults in the United States", "Statistical analysis of family plan and religion effect on pregnancy outcome of young adults in the United States." and "Impacts of birth control method, time having sex and mental health problems on pregnancy outcome - a longitudinal study among young adults in the United States". There are a total of 7276 responses for the questionnaire of the whole cross-sectional data set. The first questionnaire got 3053 cases; the second questionnaire got 2348 cases, while the third questionnaire got 1875 cases.

Through this study, two ICPSR datasets are used (DS22-In Home Questionnaire, 25-Pregnancy data) that are merged by using SPSS and the dataset already cleaned. 414 variables are shown when we merged the data, and 15 (Table 2) of them we choose to use in our research. The main dependent variable is the pregnancy outcome which relates to the other 14 independent variables. The 15 selected variables are analyzed and cleaned in this study which includes 5 main categories: education status, time having sex, religion, family plan and mental health. Following the procedures in Figure 2, the combined datasets are cleaned. Missing data will be eliminated in situations where there are more than 10 variables. Furthermore, variables that have more than 30% of their value missing will be removed. After data cleaning, there were 1875 instances in total.

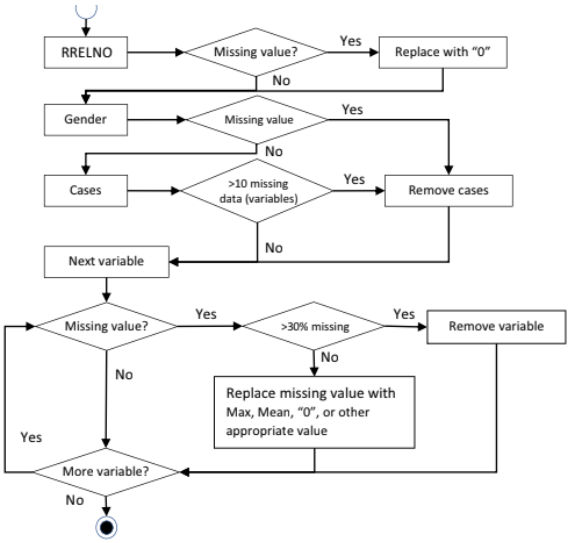

Figure 2. Data set cleaning and transformation adopted from Ting et al. (2024) [46, 47].

Table 3. 15 variables selected for this research study.

Dataset	ID	Variable Label	Questionnaire Question / Item
DS25	H4PG1	S18Q1 Pregnancy Outcome – W4	This question refers to your fill (pregnancy / number of pregnancy reported with {initials}. How did this pregnancy end?
	H4PG7	S18Q7 Birth Control before Pregnancy	In the month before you (got pregnant/got {initials} pregnant) were you or {initials} using any kind of birth control, including condoms?
	H4PG8	S18Q8 Want Child before Pregnancy - W4	Thinking back to the time just before this pregnancy with {initials}, did you want to have a child then?
DS22	H4ED9	S9Q9 Highest Educ Level Ever ExpectedW4	What is the highest level of education you ever expect to complete?
	H4ED1	S9Q1 High School Graduation StatusW4	What is your high school graduation status?
	H4ED2	S9Q2 Highest Education Level Achieved to Date-W4	What is the highest level of education that you have achieved to date?
	H4SE7	S15Q7 Age First Time Vaginal Sex-W4	How old were you the first time you ever had vaginal intercourse?
	H4MH9	S14Q9 Number of Kids Intend to Have-W4	Including any children, you may already have, how many children, in total, do you intend to have? Respondents should include children he or she intends to adopt or foster.
	H4MH2	S14Q2 How Often Feel Isolated-W4	How often do you feel isolated from others?
	H4MA5	S24Q5 Before 18 Often Touch Sexual Way-W4	How often did a parent or other adult caregiver touch you in a sexual way, force you to touch him or her in a sexual way, or force you to have sexual relations?

	H4RE10	S13Q10 How Often Pray in Private-W4	How often do you pray privately, that is, when you're alone in places other than a church, synagogue, temple, mosque, or religious assembly?
	H4RE9	S13Q9 How Important Religion Faith-W4	How important (if at all) is your religious faith to you?
	H4RE11	S13Q11 How Often Turn Religion for Probs-W4	How often do you turn to your religious or spiritual beliefs for help when you have personal problems, or problems at school or work?
	H4RE7	S13Q7 Have Attended Church/Mosq/Syng-W4	How often have you attended church, synagogue, temple, mosque, or religious services in the past 12 months?
	H4TO4	S23Q4 Age Smoked Cigs Regularly-W4	How old were you when you first smoked cigarettes regularly that is, at least one cigarette every day for 30 days?

After the dataset has successfully transformed, education status, family plan, and religion that affect the pregnancy outcome among young adults will be produced by using Microsoft Excel through a bar chart. Single patterns are generated and analyzed with the family plan, educational status, religion, and mental health pattern according to the distribution of pregnancy outcomes. The covariates of the family plan, educational status, religion, and mental health are traversed through SPSS bivariate analysis tools which are also called Pearson's correlation as shown in Figure 2. This bivariate analysis process is the same as the earlier work in which only related variables are included in the result table. The arrangement of the result is according to Pearson correlation analysis.

IBM SPSS 23.0 was used in data analysis and the macro-PROCESS 4.2 for mediation analysis. After that, this study determined correlations between different metrics and descriptive statistics. To examine indirect outcomes in mediation models, this study used macro-PROCESS and bootstrapping with 5000 bootstraps resamples. The significant indirect result is indicated by the confidence intervals that do not contain zero mediation.

4.0 RESULTS

A. PRELIMINARY ANALYSIS

The descriptive statistics and correlations between the measures are reported in Table III. The results show that education status (r-- = -0.095, p<0.001) and mental health (r = -0.049, p<0.01) were significantly negatively correlated with pregnancy outcome, while Family plan(r = 0.171, p<0.001) and religion (r = 0.066, p<0.001) were significantly positively correlated with Pregnancy outcome. Our results, therefore, support hypotheses H01, H04, H07, and H10. The birth control method (r = -0.086, p<0.001) and health care (r = -0.044, p<0.01) were also significantly negatively correlated with pregnancy outcome. Only one time having sex was found that was significantly positively correlated with pregnancy outcome (r = 0.100, p<0.001). Hypotheses H01, H02 and H03 are therefore supported.

Table 4. Scale means, standard deviations, reliability coefficients, and correlations (n=4345)

Variables	M	SD	1	2	3	4	5	6	7
1. PO	4.62	1.93	-						
2. THS	21.40	2.83	0.100***						
3. BCM	0.28	0.45	-0.086***	-0.004					
4. HC	11.59	8.50	-0.044**	-0.180***	-0.015				
5. Edus	6.58	1.74	-0.095***	0.142***	0.016	-0.100***			
6. FPlan	3.14	1.42	0.171***	-0.065***	-0.088***	-0.013	-0.008		

7. Rel	11.18	5.39	0.066***	0.086***	0.015	-0.191***	0.139***	0.146***	
8. MH	0.95	0.96	-0.049**	-0.104***	0.000	0.091***	-0.022	0.036*	-0.011

Note: PO = Pregnancy Outcome; EduS = Education Status; FPlan = family plan; Rel = Religion; MH = Mental Health; THS = Time Having Sex; BCM = Birth Control Method; HC = health care. *p<0.05; **p<0.01; ***p<0.001

B. MEDIATION ANALYSIS

This study conducted mediation studies (see Table IV) to determine if the birth control method, the time having sex, and health care are important mediators of the relationships between each parenting style and the outcome of the pregnancy. The results show that the time of having a sex partially mediates the relationships between education status (indirect effect = 0.0181, 95% CI = [0.0121, 0.0251]), family plan (indirect effect = -0.0099, 95% CI = [-0.0156, -0.0048]) and religion (indirect effect = 0.0029, 95% CI = [0.0016, 0.0045]) and pregnancy outcome. The finding also indicates that the birth control method mediates the relationships between education status (indirect effect = -0.0015, 95% CI = [-0.0046, 0.0012]), family plan (indirect effect = 0.0085, 95% CI = [0.0042, 0.0140]) and religion (indirect effect = -0.0005, 95% CI = [-0.0015, 0.0004]) and pregnancy outcome. The last finding shows that the association between mental health and Pregnancy Outcome is mediated by healthcare care (indirect effect = -0.0072, 95% CI = [-0.0136, -0.0017]). Therefore, all the hypotheses were supported.

Table 5. Unstandardized direct and indirect effects for mediation analysis.

Predator	Mediator	Dependent Variable	Direct Effect	Indirect Effect (95% CI)
EduS	THS	PO	-0.1230*	0.0181(0.0123, 0.0251)
EduS	BCM	PO	-0.1033*	-0.0015(-0.0046, 0.0012)
FPlan	THS	PO	0.2429*	-0.0099(-0.0156, -0.0048)
FPlan	BCM	PO	0.2245*	0.0085(0.0042, 0.0140)
Rel	THS	PO	0.0208*	0.0029(0.0016, 0.0045)
Rel	BCM	PO	0.0242*	-0.0005(-0.0015, 0.0004)
MH	HC	PO	-0.0906*	-0.0072(-0.0136, -0.0017)

5.0 DISCUSSION

The sig. for the negative correlation (-0.086) of birth control before pregnancy and the pregnancy outcome is significant (p<0.001) and therefore H01 is accepted. Due to this being a new result, no previous study has done this, we predict that birth control before pregnancy correlates negatively with pregnancy outcome because birth control methods will make the ovum and sperm hard to combine and fertilized eggs difficult to attach to the uterus. Other than that, the sig. for the negative correlation (-0.044) between health care and pregnancy outcome is significant (p<0.01) and therefore H02 is accepted. Compared to the study of Ginette G. Ferszt and Jennifer G. Clarke (2019), the result is similar to the result of this study. This could be due to healthcare worries about pregnant women. Pregnant women are likely to lack prenatal care and nutrition due to frequent vomiting during pregnancy [37]. Meanwhile, the sig. for the positive correlation (0.100) of time having sex and pregnancy outcome is significant (p<0.001) and therefore H03 is accepted. Compared to the previous study by Nikmatur Rohmah (2020), the results are similar to the result of this study [18]. Adolescents who become pregnant between 13 and 19 years of age are called adolescent pregnancy. Teen pregnancy occurs when a young woman, between the ages of 13 and 19, has sex with another person and becomes pregnant [18]. Furthermore, there is a high chance that their children will learn behaviors in sexual activities will be learned by their children when they turn into mature adults. This is considered one of the factors that having sex makes the pregnancy outcome become higher [10].

In H04, the family plan correlates positively with pregnancy outcome, the sig. for the positive correlation (0.171) of the family plan and the pregnancy outcome is significant ($p<0.001$) and therefore H04 is accepted. Based on research of Arteaga et al. (2019), personal experiences and environmental factors, such as previous unwanted pregnancies, shaped how pregnancy planning was conceptualized [38]. Although many participants viewed planned pregnancies as ideal, most of the participants (n=71) also believed that there was a status that fell somewhere between planned and unexpected pregnancy [38]. The sig. for the positive correlation (0.171) of family plan and pregnancy outcome is significant ($p<0.001$) and therefore H04 is accepted. Based on research by Arteaga et al. (2019), personal experiences and environmental factors, such as previous unwanted pregnancies, shaped how pregnancy planning was conceptualized [38]. Even though many participants viewed planned pregnancies as ideal, most of the ideal, most participants (n=71) also believed that there was a status that fell somewhere between planned and unexpected pregnancy [38].

Meanwhile, the indirect effect of the mediating effects of birth control before pregnancy on the positive correlation between family plan and pregnancy outcome is 0.0085, 95% CI = (0.0042, 0.0140). Therefore, birth control before pregnancy mediates the relationship between family plan and pregnancy outcome; hence H05 is accepted. Compared to the study by Bijetri Bose and Jody Heymann (2019), the results are similar to this study's result which stated that the level of education causes women in knowing the birth control method for family planning, since women with high education status know the correct birth control method before their first pregnancy [39]. However, based on the mediation analysis performed in Table IV, the indirect effect of the mediating effects of having sex on the negative correlation between the family plan and pregnancy outcome is -0.0099, 95% CI = (-0.0156, -0.0048). Therefore, the the time that sex mediates the relationship between family plan and pregnancy outcome; therefore, H06 is accepted. Based on research of Arteaga, S., Caton, L. & Gomez, A. M. (2019), personal experiences and environmental factors, such as previous unwanted pregnancies, shaped how pregnancy planning was conceptualized [38]. Despite the fact that many participants viewed planned pregnancies as ideal, the majority of participants (n=71) also believed that there was a status somewhere between planned and unexpected pregnancy [38]. The results confirmed the previous studies [5], [17]. The indirect effect of the mediating effects of time having sex on the negative correlation between family plan and pregnancy outcome is -0.0099, 95% CI = (-0.0156, -0.0048). Therefore, time having sex mediates the relationship between family plan and pregnancy outcome; therefore, H06 is accepted.

In addition, the sig. for the negative correlation (-0.095) between education status and pregnancy outcome is significant ($p<0.001$) and therefore H07 is accepted. Based on research of Rodríguez-Fernández (2022), the result is like the result of this study, as low educated parents will cause negative pregnancy outcomes, such as preterm birth and low birth weight [25]. Moreover, based on the results in Table III, the sig. for the negative correlation (-0.095) of education status and pregnancy outcome is significant ($p<0.001$) and therefore H07 is accepted. Based on the research of Rodrguez-Fernández et al. (2022), the result is like the result of this study's result as low educated parents will cause negative pregnancy outcomes such as preterm birth and low birth weight [25].

According to the mediation analysis performed in Table IV, the indirect effect of the mediating effects of birth control before pregnancy on the negative correlation between education status and pregnancy outcome is -0.0015, 95% CI = (-0.0046, 0.0012). Therefore, birth control before pregnancy does not mediate the relationship between education status and pregnancy outcome, so H08 is rejected. Compared to the research of Elizabeth Millera et al. (2022), the result of this study is similar which reported low education status and birth control methods have increased unintended pregnancies, leading to negative pregnancy outcomes [40]. Meanwhile, the indirect effect of the mediating effects of having sex on the positive correlation between education status and pregnancy outcome is 0.0181, 95% CI = (0.0123, 0.0251). Therefore, the time having sex mediates the relationship between education status and pregnancy outcome, therefore H09 is accepted. Compared

to the research by Wado et al. (2019), the result of this study is similar to theirs who concluded that first sexual activity with incorrect contraception or no birth control before sexual intercourse and low educational level leads to early pregnancy [41]. Furthermore, the sig. for the positive correlation (0.066) of religion and pregnancy outcome is significant ($p<0.001$) and therefore H10 is accepted. Religion and spirituality have been established to be essential components of good health and well-being [38]. Second, it is crucial that family planning techniques are accepted by the religious community. Most religious people who viewed family planning to be incompatible with their beliefs claimed that they had a duty to have as many children as God would allow them to [39]. Compared to the previous study by Ohaja et al. (2019), positive outcomes will be achieved when the influence of religion during pregnancy is the same as our result [27]. Furthermore, the indirect effect of the mediating effects of birth control before pregnancy on the negative correlation between religion and pregnancy outcome is -0.0005, 95% CI = (-0.0015, 0.0004). Therefore, birth control before pregnancy does not mediate the relationship between religion and pregnancy outcome, so H11 is rejected. Compared to the research conducted by Amjad et al. (2019), the results are similar to our results. Based on their results, these studies have achieved the same outcome in which the relationship between religion and birth outcome has been evaluated with the birth control method between pregnant women [42].

Furthermore, the indirect effect of the mediating effects of having sex on the positive correlation between religion and pregnancy outcome is 0.0029, 95% CI = (0.0016, 0.0045). Therefore, the time that sex mediates the relationship between religion and the outcome of pregnancy; therefore, H12 is accepted. Compared to the research conducted by Turi et al. (2020), the result is similar to the result of this study, which stated that different religions will affect the first sexual activity and provide a different pregnancy outcome [43]. Then, the sig. for the negative correlation (-0.049) between mental health and pregnancy outcome is significant ($p<0.01$) and therefore H13 is accepted. Compared to the research done by Claire et al. (2020), the results obtained are the same. According to their table, mental health is said to have a negative impact on pregnancy outcomes, such as stress and mental overload, leading to low birth weight [44]. Furthermore, the indirect effect of the mediating effects of health care on the negative correlation between mental health and pregnancy outcome is -0.0072, 95% CI = (-0.0136, -0.0017). Therefore, health care mediates the relationship between mental health and pregnancy outcome, hence H14 is accepted. This has confirmed previous studies [34, 39]. Compared to the study by Howard and Khalifeh (2020), the result is similar to the result of this study. Health care during the pregnancy period has been shown to reduce the risk of prenatal and postnatal depression [45].

6.0 CONCLUSIONS

The study conducted has highlighted the existence of the family plan, education status, and mental health affect pregnancy outcomes, as well as the mediating role of birth control method, time having sex, and health care between three of the variables stated and pregnancy outcomes among young adults in the US. Based on the results recorded and on previous studies, these studies have concluded that birth control method, time having sex, and health care has affected pregnancy outcomes. The education level of pregnant women must be high, family planning must be considered, the religion of the pregnant mother must be considered, as they will treat their children nicely, and stable mental health to prevent bad pregnancy outcomes such as low live birth rate, early pregnancy, and prenatal depression. To achieve a good pregnancy outcome, there are many determinations and responsibilities of parents who are willing to give birth to children. It can be a better way to inform them through several studies conducted before and now, which will lead them to have an appropriate way to do family planning and choose the correct birth control method when having sexual activity to prevent unwanted pregnancy. This study emphasized the interdependence between education status, family plan, religion and mental health obtained through the birth control method, time having sex and health care. Since the results highlighted the fact that education status, religion, and mental

health correlate negatively with pregnancy outcomes. Thus, this study is able to help the low-level education status, incorrect religion, and poor mental health to make sure that they know the pregnancy results for early pregnancy. Therefore, to achieve positive pregnancy outcomes, efforts between the couple, appreciation and respect for each other, good family planning, high education status, and helpful religious and stable mental health are necessary.

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