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Effect of Some Nutritional Supplements and Treatments Taken by Pregnant Women on the Health of the Children after Birth

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Annotation: Background: We conducted this study to evaluate the effects of treatments taken by mothers during pregnancy on the child during pregnancy or after birth. On the other hand, the current study may contribute to raising awareness to avoid taking medications that pose a risk to the child's stages of development before or after birth. **Method**: The current study is a cross-sectional study that included collecting a questionnaire and medical examinations from 100 mothers with their children suffering from health problems that related to the treatments that the mother took during pregnancy. Examinations were performed for the mother and child, which included routine tests, diagnostic tests, hormonal tests, and Ultrasound. **Result**: The children's ages ranged from 1 day – 10 years, with an average age of 1.32 months. Current study showed that most children born to a mother who used medication during pregnancy suffer from breathing disorders resulting from lung disorders as asthma (22%). We also found that (13%), (10%), (11%), and (8%) of the children suffer

from speech problems, incomplete growth (premature birth), mental problems, and vision problems respectively. We found that blood pressure medications that mothers took during pregnancy had the greatest role in the occurrence of heart disease, epilepsy, paralysis, and premature birth of babies while pregnancy stabilizers led to the emergence of many health problems in children, especially lung disorders such as asthma, digestive system disorders, delayed speech, and brain dysfunction. Moreover, taking antibiotics during pregnancy was associated with the appearance of jaundice, epilepsy, and abnormal tooth development in children after birth. Furthermore, treatments for gestational diabetes have led to the emergence of many diseases in children, the most important of which are polio, type 1 diabetes, and growth problems. **In conclusion:** UTI, blood pressure, anemia, and gestational diabetes are the most common pregnancy health problems in our society, the treatment of which directly or indirectly causes a deterioration in the health condition of the fetus during pregnancy and may extend for years after birth.

Keywords: Pregnant women, Children, Treatment, Anemia, Diabetes.

Introduction

The use of medications is one of the things that most worries pregnant women because of the danger they pose to her and her fetus. About 2-3% of birth defects result from the use of medications to treat a health disorder or symptom [1]. The use of medications is sometimes necessary for the health of the pregnant woman and the fetus. In these cases, the woman should consult a doctor to avoid health risks. The health care provider may recommend that the woman use some vitamins and minerals during pregnancy [2].

The medication, with its side effects and the chemical compounds it may produce, affects the formation of fetuses throughout pregnancy, especially the first months. In certain cases, it is

forbidden to take certain types of medicines, even natural ones, without consulting a doctor, as natural medicines (herbs) also have an effect that may conflict with other types of medicines and have a negative effect on the mother, the fetus, or both [3,4]. However, medications may sometimes be necessary and do not carry any risk, especially if prescribed by a specialist doctor. The medications taken by pregnant women reach the fetus through the placenta, through which the food and oxygen necessary for the growth of the fetus pass [5]. Medications taken without consulting a doctor can affect the fetus, causing some harm, including problems in growth, physical and mental development, or even death. The fetus begins to be affected by medications from the first month of pregnancy in the first or second week [4,5]. The effect of medications on the fetus varies depending on the stage of pregnancy, as there are some medications that are safe during the first months, but it is preferable to avoid using them in the last months, and vice versa [6].

In Iraq, we did not find studies concerned with identifying the treatments that the mother takes during pregnancy and which cause health problems for the child during pregnancy (as premature babies) or after birth. On the other hand, the current study may contribute to raising awareness to avoid taking medications that pose a risk to the stages of fetal development in the womb or after birth.

Methods and patients

The current study was cross sectional study includes collecting questionnaires and samples from 100 cases to find out effect of treatments used during pregnancy on the health of the child after birth. Samples were collected during the period from 11/9/2022 to 12/12/2023, where samples were collected from the Women's and Children's Teaching Hospital, AL- Shamiya General Hospital and private clinics in Diwaniyah. Ethical approval was obtained from all participants before beginning to collect information. Samples were collected from patient records in hospitals, in addition to our actual meetings with mothers and children. We also relied on doctors' prescriptions and documented analyzes and examinations in selecting the appropriate samples for our study. Samples were collected from patient records in hospitals, in addition to our actual meetings with mothers and children. We also relied on doctors' prescriptions and documented medical analyzes and examinations that were conducted in the aforementioned hospitals in selecting the appropriate samples for our study. Among the most important tests performed to diagnose medical conditions in a child or pregnant woman were ultrasound, complete blood count, urinalysis, diabetes test, blood pressure measurement, and hormones, in addition to X-ray, MRI, and spirometer. Statistical analysis was conducted using the Statistical Package for the Social Sciences, version 22, with Excel 2010, and a probability of less than 0.05 was considered statistically significant.

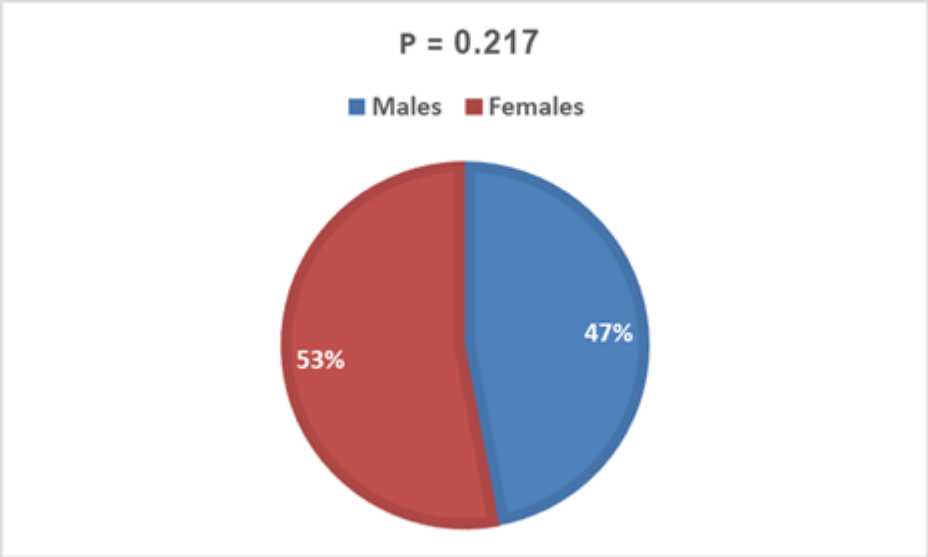
Results

The current study is a cross-sectional study that included collecting a questionnaire and medical examinations from 100 mothers with their children suffering from health problems that may be related to the treatments that the mother took during pregnancy. The ages of the children ranged from 1 day to 10 years, with an average age of 1.32 months, as shown in Table (1). Most of the children who suffered from health problems after birth were female (53%), while the percentage of males was 47%, as in Figure (1).

Table (1): Age characteristics of sick children

Age properties	
Age range	**1 day-10 years**
Age mean	**1.32 months**
Standard deviation	**2**
Standard error	**0.2**
Total number	100

Figure (1): Shows the distribution of cases according to gender



The results of the current study showed that most children born to a mother who used medication during pregnancy suffer from breathing disorders resulting from lung disorders as asthma (22%). We also found that (13%), (10%), (11%), and (8%) of the children suffer from speech problems, incomplete growth (premature birth), mental problems, and vision problems respectively, as in Table (2). We also found that (5%) of the children suffer from heart and digestive system problems. While (7%) of children have delayed growth, especially the appearance of teeth. On the other hand, we found that some health problems develop or are diagnosed with age. While the other part of these health problems was related to the child during the first hours of birth.

It was found that most diseases of the heart, lungs, breathing, and sepsis in newborns last from one day to 3 months, at a rate of (60%), (100%), (54%), and (75%) for each of them, respectively, while we found that problems with GIT and dental disorders have appeared in children aged 3 months to 2 years, at a rate of (60%) and (71%) for each one. While the highest percentage of children with diabetes (100%) and speech problems (77%) was found in children aged 2-6 years. In addition, we found (50%) of epilepsy and polio and (60%) of children with mental problems within the age group of 2-10 years, as in Table (3).

Table (2): health disorders of children born to a mother used medication during pregnancy

Health disorders	Number	Percentage
Heart diseases	5	50%
Jaundice	4	40%
Epilepsy	2	20%
Diabetes	5	50%
Poliomyelitis	2	20%
Lung diseases	22	22%
Blood diseases	3	3%
GIT disorders	5	5%
Growth retardation	7	7%
Problems with the appearance and growth of teeth	7	7%
Speech problems	13	13%
Visual impairment	8	8%
Brain defect	10	10%
Premature birth	11	11%

Table (3): Distribution of health problems according to age groups of children

Health disorders	**Total number**	**1 day – 3 months**	**3 months – 2 years**	**2-6 years**	**6-10 years**	**P value**
Heart diseases	**5**	3 (60%)	2 (40%)	0 (0%)	0 (0%)	0.006*
Jaundice	**4**	4 (100%)	0 (0%)	0 (0%)	0 (0%)	0.112
Epilepsy	**2**	0 (0%)	0 (0%)	1 (50%)	1 (50%)	0.075
Diabetes	**5**	0 (0%)	0 (0%)	5 (100%)	0 (0%)	0.081
Poliomyelitis	**2**	0 (0%)	0 (0%)	1 (50%)	1 (50%)	0.075
Lung diseases	**22**	12 (52%)	5 (23%)	2 (9%)	3 (14%)	0.005*
Blood diseases	**3**	2 (75%)	1 (25%)	0 (0%)	0 (0%)	0.047*
GIT disorders	**5**	1 (20%)	3 (60%)	1(20%)	0 (0%)	0.016*
Growth retardation	**7**	0 (0%)	1 (14%)	3 (43%)	3 (43%)	0.050
Abnormal growth of teeth	**7**	0 (0%)	5 (71%)	2 (29%)	0 (0%)	0.033*
Speech problems	**13**	0 (0%)	2 (15%)	10 (77%)	1 (8%)	0.009*
Visual impairment	**8**	2 (25%)	1 (12%)	3 (38%)	2 (25%)	0.042*
Brain defect	**10**	0 (0%)	0 (0%)	4(40%)	6 (60%)	0.039*
Premature birth	**11**	11(100%)	0 (0%)	0 (0%)	0 (0%)	0.048*

***significant association (P<0.05)**

To know the Impact of the diseases that pregnant women suffer from and their impact on the child's health after birth, we counted these cases and recorded the treatments that the mothers participating in the current study took, as we found that the majority of mothers suffer from urinary tract infections (71%), anemia (64%), and irregular blood pressure (47%). We also found that 7% of the mothers had diabetes, as these diseases led to premature birth, and the treatments used also led to the deterioration of the child's condition after birth, as in Figure (2) and Table (3)**.** In table (4), we determine 40%, 7%, 33%, 89%, 75% and 5% of mothers took blood pressure drugs, diabetes drugs, pregnant stabilizers, Folic Acid/Multivitamins/ Minerals, antibiotics and other drugs as aspirin, corticosteroids.

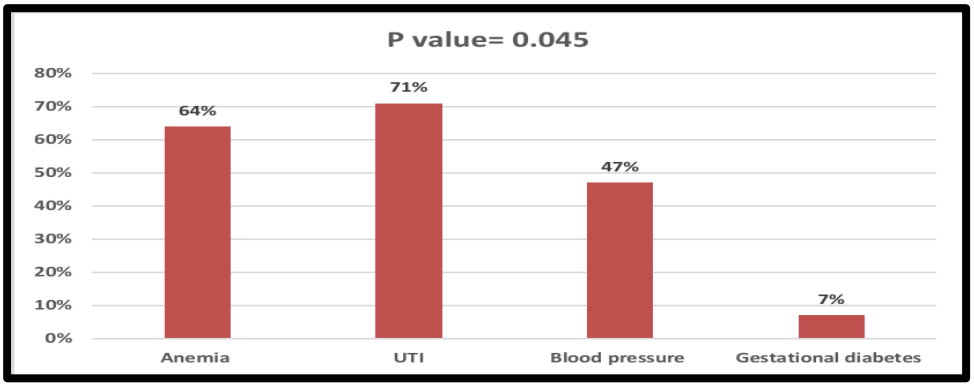


Figure (2): Percentage of diseases among mothers during pregnancy

Table (4): Treatments used by the mother during the pregnancy

Treatment	Antibiotics	Folic Acid Multivitamins Calcium	Pregnant stabilizers	Gestational Diabetes drugs	Blood pressure drugs	Other As aspirin, corticosteroids
Percentage	**75%**	**89%**	**33%**	**7%**	**40%**	5%

The current study demonstrated in Tables (5) that urinary tract infections and the use of antibiotics during pregnancy led to health disorders in children after birth, represented by heart problems (60%), polio (50%), and problems with Digestive system (60%), developmental delay (75%), speech problems (63%), and vision problems (62.3%). Gestational diabetes and its treatments also cause premature birth in (55%) of women. While high blood pressure and its low during pregnancy cause epilepsy, diabetes, polio, shortness of breath, and septicemia in children (50%), (55%), (59%) and (67%) respectively.

On the other hand, anemia led to Jaundice and epilepsy in 50% of children. We have noticed that gestational diabetes has less impact on the child's health after birth, while anemia and urinary tract infection during pregnancy have the most impact on the child's health.

In Table (6) we found that blood pressure medications that mothers took during pregnancy had the greatest role in the occurrence of heart disease, epilepsy, paralysis, and premature birth of babies. While the results showed that pregnancy stabilizers led to the emergence of many health problems in children, especially lung disorders such as asthma, digestive system disorders, delayed speech, and brain dysfunction. We also found that taking antibiotics during pregnancy was associated with the appearance of jaundice, epilepsy, and abnormal tooth development in children after birth. Moreover, treatments for gestational diabetes have led to the emergence of many diseases in children, the most important of which are polio, type 1 diabetes, and growth problems.

Table (5): The effect of diseases during pregnancy on the child's health after birth

Health disorders	Gestational Diabetes	Blood pressure	UTI	Anemia	P value
Heart diseases	1 (20%)	1 (20%)	3 (60%)	0 (0%)	0.036*
Jaundice	0 (0%)	1 (25%)	1 (25%)	2 (50%)	0.022*
Epilepsy	0 (0%)	1(50%)	0 (0%)	1 (50%)	0.072
Diabetes	0 (0%)	3 (50%)	1 (17%)	2 (23%)	0.012
Poliomyelitis	0 (0%)	1(50%)	1(50%)	0 (0%)	0.072
Lung diseases	2 (9%)	13 (59%)	6 (27%)	1 (5%)	0.007*
Blood diseases	1 (23%)	2 (67%)	0 (0%)	0 (0%)	0.021
GIT disorders	0 (0%)	2 (40%)	3 (60%)	0 (0%)	0.016
Growth retardation	1 (14%)	1 (14%)	4 (57%)	1 (14%)	0.335
Abnormal growth of teeth	1 (14%)	1 (14%)	4 (57%)	1 (14%)	0.335
Speech problems	0 (0%)	2 (23%)	8 (63%)	2 (15%)	0.015*
Visual impairment	1 (12.5%)	0 (0%)	5 (65.5%)	2 (25%)	0.006*
Brain defect	1 (8%)	5 (38%)	3 (23%)	4 (31%)	0.008*
Premature birth	6 (55%)	4 (36%)	1 (9%)	0 (0%)	0.031

***significant association (P<0.05)**

Table (6): The effect of treatments used by pregnant women on the health of the child after birth

Health disorders	Total number	Blood pressure drugs	Pregnancy stabilizers	Anemia drugs	Antibiotics	Diabetes drugs	P value
Heart diseases	**5**	**2 (40%)**	**1 (20%)**	**0 (0%)**	**1 (20%)**	**1 (20%)**	0.088
Jaundice	**4**	**0 (0%)**	**1 (25%)**	**0 (0%)**	**2 (50%)**	**1 (25%)**	0.044*
Epilepsy	**2**	**1 (50%)**	**0 (0%)**	**0 (0%)**	**1 (50%)**	**0 (0%)**	0.067
Diabetes	**5**	**1 (20%)**	**1 (20%)**	**0 (0%)**	**1 (20%)**	**2 (40%)**	0.086

type 1							
Poliomyelitis	**2**	**1 (50%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**1 (50%)**	0.038*
Lung diseases	**22**	**2 (9%)**	**11 (50%)**	**1 (4.5%)**	**3 (14%)**	**5 (23%)**	0.040*
Blood diseases	**3**	**0 (0%)**	**1 (33%)**	**1 (33%)**	**1 (33%)**	**0 (0%)**	0.118
GIT disorders	**5**	**0 (0%)**	**3 (60%)**	**0 (0%)**	**2 (40%)**	**0 (0%)**	0.032*
Growth retardation	**7**	**1 (14%)**	**1 (14%)**	**2 (29%)**	**1 (14%)**	**2 (29%)**	0.057
Abnormal growth of teeth	**7**	**0 (0%)**	**1 (14%)**	**2 (29%)**	**3 (43%)**	**1 (14%)**	0.036*
Speech problems	**13**	**1 (8%)**	**6 (46%)**	**4 (31%)**	**1 (8%)**	**1 (8%)**	0.073
Visual impairment	**8**	**1 (12.5%)**	**3 (37.5%)**	**1 (12.5%)**	**2 (25%)**	**1 (12.5%)**	0.203
Brain defect	**10**	**0 (0%)**	**4 (40%)**	**2 (20%)**	**3 (30%)**	**2 (20%)**	0.115
Premature birth	**11**	**5 (45%)**	**1 (9%)**	**1 (9%)**	**1 (9%)**	**3 (27%)**	0.226

***significant association (P<0.05)**

Discussion

In the current study, we found that most mothers during pregnancy suffered from urinary tract infections, anemia, and blood pressure. These diseases were associated with the occurrence of many health disorders in children, the most important of which were digestive and respiratory diseases, jaundice, premature birth, and disorders of the nervous system and growth. We attribute these diseases in the child to the effect of treatments in addition to the disease itself in the mother (the disease plus its treatment). However, the use of medications is often necessary during pregnancy. When a pregnant woman suffers from any health problems especially when suffers from temporary health problems (such as: headache, cold, influenza, etc. [3,7]. Medications taken by pregnant women reach the fetus through the placenta, through which the food and oxygen necessary for the growth of the fetus pass [8]. Medications taken without consulting a doctor can affect the fetus and go directly to the fetus, causing some damage, problems with growth and physical and mental development, or even death [9]. It can change the function of the placenta, and usually causes narrowing of the blood vessels, resulting in a lack of supply of oxygen and nutrients to the fetus. In fact, all of these symptoms and health problems need treatment, especially during pregnancy, because the pregnant woman's continued suffering and failure to control the diseases will negatively affect the health of the mother and the fetus, and may lead to complications such as miscarriage, the appearance of deformities, or slow fetal growth [10 , 13]. On the other hand, it should be noted that not all medications are safe during pregnancy, as some of them cause malformations of the fetus and may cause contraction of the uterine muscles. Which leads to restrictions on the fetus or premature birth, some of which may cause miscarriage, and some of them affect the health of the fetus and the mother [14].

Medicines have been classified according to their degree of safety and their effect on the fetus during pregnancy into five main categories. This classification is approved by the US Food and Drug Administration (FDA), and aims to facilitate the task of doctors and medical personnel in determining the degree of safety of any medicine on the fetus when used by a pregnant woman. The classification of each drug is based on the scientific evidence available from animal or human studies on the extent of the drug's effect on the fetus and mother [15-18]. Our results have shown that the use of treatments, nutritional supplements, or pregnancy stabilizers has an impact on the

child's health in different proportions. We also found that it may have an impact on the child's growth and development until he reaches 10 years of age. We found that urinary tract infections and the antibiotics used to treat them have the greatest impact on the child's health after birth. As antibiotics are usually prescribed during pregnancy, which have been shown to have an impact on the child's health, such as jaundice, tooth growth, and epilepsy. The type of medication must be chosen carefully according to the doctor's prescription (as in our society, most antibiotics are taken from pharmacies randomly without consulting a doctor) [16-19]. Some antibiotics are appropriate to take during pregnancy, while others are not. The safety of these antibiotics depends on various factors, including the type of antibiotic, when to take the antibiotic during pregnancy, how long you take it, the amount you take, and the potential effects it could have in pregnancy [20]. Some other antibiotics are thought to pose a risk during pregnancy. For example, tetracyclines can affect a child's bone growth and discolor their teeth as they grow. Therefore, it is not recommended to use tetracyclines after the fifth week of pregnancy. As for sulfonamides, the risk of heart disease, cleft lip, cleft palate, and jaundice decreases [21].

We also found that gestational diabetes has a role in some health problems in the child, most notably premature birth. Some studies have shown that insulin resistance does not usually begin before the twenty-fourth week of pregnancy [22]. Congenital malformations that may affect the fetus are not considered one of the common complications of gestational diabetes because congenital malformations develop during the first thirteen weeks of pregnancy. However, gestational diabetes may increase the mother's risk of developing high blood pressure during pregnancy [23]. Gestational diabetes does not usually affect the process of labor and delivery, but it may lead to an enlargement of the size of the fetus or high blood pressure, making it necessary to resort to a cesarean section [24]. Careful monitoring and control of blood sugar levels is important during labor to avoid high insulin levels in the fetus as a result of high blood sugar levels in the mother. If this happens, the baby's blood sugar level may drop significantly after birth because he no longer receives a high percentage of sugar from the mother [25]. Therefore, a glucose solution (sugar solution) may be given to the baby after his birth. If the mother suffers from gestational diabetes, the risk of the newborn developing jaundice increases, which is a medical condition in which the color of the newborn's skin changes to yellow and is attributed to the presence of bilirubin in the newborn's blood [25-28]. Bilirubin is the pigment that causes jaundice and is secreted when extra red blood cells accumulate in the blood without being processed quickly enough. Some studies indicate that gestational diabetes does not cause the newborn to develop diabetes. A child's risk of developing diabetes in the future depends on the presence of the disease in the family, the child's weight, eating habits, and exercise. Breastfeeding can enhance a child's health from birth [29].

Our study also demonstrated the opposite concept to what most pregnant women believe that taking nutritional supplements such as vitamins without any prescription during pregnancy does not negatively affect the fetus [30]. On the contrary, it is important to know that the pregnancy period is a very sensitive period and requires special follow-up by the doctor and that supplements Foods have the same effect as medications on the fetus if they are taken in high doses or without consulting a doctor [31]. The most prominent risks that they can cause are: Excessive iodine intake causes problems during pregnancy for the mother and the fetus. Excessive intake of vitamin A leads to bone, urinary, or nervous system deformities in the fetus. It is worth noting that there are types of vitamins that a pregnant woman needs to maintain the health and growth of the fetus, such as folic acid and other vitamins that the doctor may prescribe during pregnancy [3,15,26]. Some studies have shown that taking a pregnancy stabilizer for a long period may cause the fetus to suffer from some side effects, including deformities, as a result of obtaining a large amount of the hormone progesterone or its deficiency in the body when taking a pregnancy stabilizer [32].

Our study showed a clear role for blood pressure during pregnancy on the child, and this is consistent with previous studies that showed that high blood pressure during pregnancy leads to the possibility of the following risks, such as decreased blood flow to the placenta [33]. If enough

blood does not reach the placenta, it may result in less oxygen and nutrients reaching the fetus. This can lead to slow intrauterine growth of the fetus, low birth weight, or premature birth [34]. In cases of premature birth, the baby may have breathing problems, and the risk of infection and other complications increases. High blood pressure also causes premature placental abruption, in which case the placenta separates from the inner wall of the uterus before birth [35].

In cases of premature birth, the baby may have breathing problems, and the risk of infection and other complications increases. High blood pressure also causes premature placental abruption [36]. Pre-eclampsia and high blood pressure increase the risk of premature placental abruption. Severe separation can cause severe bleeding, which can pose a threat to the life of the mother and the fetus. High blood pressure may also lead to slow or weak growth of the fetus. Failure to control high blood pressure can lead to damage to the brain, eyes, heart, lungs, kidneys, liver, and other organs of fetus. In severe cases, high blood pressure can be life-threatening of mothers and their babies [37].

Conclusion

Our current study is the first study that has linked diseases and their treatments during pregnancy with the child's health after birth as well as the occurrence of premature births. Despite the challenges faced by this study, we were able to reach important results, represented by the fact that antibiotics, anemia treatments/nutritional supplements, diabetes treatment and blood pressure treatment that the mother took during pregnancy has led to health problems for the child, such as heart disorders, jaundice, respiratory system disorders, especially asthma, and the nervous system, especially brain dysfunction, epilepsy, and delayed growth, especially teeth.

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