International Journal of Life science and Pharma Research
Content Available at www.ijlpr.com ISSN: 2250-0480

Evaluation of Efficacyand Safety of L-Methylfolate, Pyridoxal-5 Phosphate andMecobalamin in Pregnancy: A Questionnaire-Based Study

Shilpa Khaitan[1], Spandana Challagulla[2], Rounak Munshi[3], Varun Shirishkar[4], Mahesh Chanshetty[5]

[1]*Assistant Professor, Department of Obstetrics & Gynaecology, IQ City Medical College, Mohunbagan Avenue, Durgapur, West Bengal, India.*
[2]*Obstetrician & Gynecologist, Jeevan Hospital, Bhagavandas Colony Bank Street, Bhadrachalam, Andhra Pradesh, India.*
[3]*Gynecologist and Obstetrician, Vatsalya Clinic, Shop Number 2, Dhanvantri Plaza, Khandwa, Madhya Pradesh, India.*
[4]*Gynecologist and Obstetrician, Laparoscopy Surgeon, Navjeevan Hospital, Besides SBI Bank, Bhabola Chulna Road, Naka, Suyog Nagar, Vasai West, Vasai-Virar, Maharashtra, India.*
[5]*Gynecologist, Chanshetty Hospital, Shiva Nagar, Bidar, Karnataka, India.*

Article History: Received: 25.Feb.2025 Revised: 17.March.2025 Accepted: 11.June.2025

Abstract

Background: A balanced diet is essential during pregnancy to support healthy fetal development and prevent adverse outcomes. Due to increased nutritional demands, supplementation with key micronutrients like folic acid, pyridoxine, and mecobalamin is often necessary. Thus, this questionnaire-based study aimed to assess the efficacy and safety of these three supplements in pregnant women to improve pregnancy outcomes.

Methods: This questionnaire-based study was conducted among 51 physicians treating pregnant women prescribed the Folinext tablet, which contain L-methylfolate, pyridoxal-5 phosphate, and mecobalamin. A self-explanatory questionnaire comprising 17 closed-ended questions. The questionnaire focuses on last 10 pregnant women treated with Folinext tablet.

Results: A total of 51 physicians were included in the study. Out of the 51 physicians, more than half (56.86%) reported treating women with an obstetric history of inability to conceive. The majority of the physicians observed micronutrient deficiency, mainly folic acid, in 6/10 women. Thus, 78% of physicians prescribed the Folinext Gold tablet to all the women preconception and during pregnancy to improve fertility and avoid various complications like preeclampsia, gestational diabetes and pregnancy related hypertension. Also, all the physicians agreed to use a high dose of 5mg/day of folic acid as a supplement in women. More than 70% of the physicians rated the efficacy, safety and patient adherence to the treatment with this tablet as excellent.

Conclusion: This study demonstrated that the Folinext Gold tablet, containing L-methylfolate, pyridoxal-5 phosphate, and mecobalamin, is highly rated by physicians for its efficacy and safety in improving pregnancy outcomes.

Keywords: Pregnancy, Vitamins, Folinext Gold, Nutritional deficiency.

***Corresponding Author**
Dr. Shilpa Khaitan

DOI: https://doi.org/10.22376/ijlpr.v15i3.2000

INTRODUCTION

During pregnancy, a woman's body prepares itself to carry and grow a fetus inside the womb. The daily calorie intake increases during pregnancy by 300 calories/day, specifically after the second trimester [1]. A pregnant woman requires a balanced diet enriched with the essential macro and micro nutrients for a full-term pregnancy and a healthy baby. These macro nutrients are calcium, magnesium and phosphorus, while micronutrients are vitamins and trace minerals. A few micronutrients like vitamins A, D, E, folate, B12, B6, and C, iron, zinc, iodine, copper and selenium are provided as supplements to meet the increased dietary requirement during pregnancy [2]. Any deficiency in these essential nutrients during and after pregnancy may result in various complications, affecting both the mother and baby. The adverse outcomes seen in babies due to nutritional deficiency of the mother include fetal malformations, fetal loss, preterm delivery, small for gestational age, stillbirth, other developmental diseases throughout life, etc. However, maternal adverse outcomes may include antenatal, intrapartum and postpartum complications, cesarean delivery, depression, obesity, etc [3].

In this questionnaire-based study, three of the essential nutrients are taken into consideration, which includes L-methylfolate, pyridoxal-5 phosphate andmecobalamin. Folic

acid or vitamin B9 is one of the water-soluble vitamins necessary during pregnancy as it is required for the growth and development of the fetus. L-methylfolate is the predominant form of folic acid, which circulates in the plasma and is involved in various biological processes like DNA replication. Folic acid supplementation is extremely important during pregnancy since it cannot be synthesized de novo by the body. Folic acid efficiency leads to neural tube defects, anemia, preterm birth, congenital heart disease and oral clefts [4]. Vitamin B6 (active form – pyridoxal-5 phosphate) plays a vital role in the development of the nervous system and the prevention of pre-eclampsia and preterm birth [5]. Vitamin B12 is water soluble, exclusively synthesized by microorganisms and thus is obtained through animal source foods, including meat and dairy. Maternal vitamin B-12 deficiency is linked to increased risk ofabortion, recurrent pregnancy loss, small-for-gestational age, low birth weight, and intrauterine growth restriction [6].

This study aimed to evaluate and assess the efficacy and safety profile of these three supplements in pregnant women and their impact on pregnancy related conditions such as gestational diabetes, preeclampsia and neural tube defects.

Methods

Study design

This questionnaire-based study wasconducted among 51 physicians treating pregnant women prescribedthe Folinext tablet, which contain L-methylfolate, pyridoxal-5 phosphate, and mecobalamin. All study-related information, including the questionnaire, was thoroughly explained to participants and verbal consent was obtained before participation. This study approval was obtained from the Ethics Committee before commencement of the study.This study was conducted in accordance with Good Clinical Practices.

Study questionnaire

A self-explanatory questionnaire comprising 17closed-ended questions was prepared and distributed among the physicians. The questionnaire focuses on last 10 pregnant women treated with Folinext tablet. The questions were related to the impact of Tab Folinext Gold on adverse pregnancy outcomes like gestational diabetes, pregnancy-induced hypertension, preeclampsia and other complications of pregnancy. This questionnaire also focused on the physicians' opinion regarding UK guidelines to increase the dose of L-Methylfolate during pregnancy to avoid pregnancy related complications.

Data collection

The confidentiality of information waspreserved during the process by keeping it anonymous. Data was collected in an organized manner from the physicians.

Data analysis

Data from the structured questionnaires was entered, sorted, and analysed. The data analysis report included findings on the efficacy and safety of L-Methylfolate, Pyridoxal-5 Phosphate, and Mecobalamin in Pregnancy.

Results

A total of 51 physicians were included in the study. Out of the 51 physicians, more than half (56.86%) reported treating women with an obstetric history of inability to conceive [Table 1]. Most of the physicians reported that, of the last 10 treated pregnant women, 6 had micronutrient deficiency [Table 1]. A total of64.71% of physicians prescribed the Folinext Gold tablet to all the patients during the preconception period [Table 1]. According to 58.82% of physicians, 6 out of 10 patients were diagnosed with polycystic ovary syndrome (PCOS) during the preconception period and had a severe folic acid deficiency [Table 2].The majority of physicians (78.43%) prescribed the Folinext Gold tablet during the preconception period to enhance fertility and help prevent neural tube defects during pregnancy [Table 2]. According to 64.71 % of physicians, the Folinext Gold tablet may improve fertility, prevent neural tube defects, reducehyperhomocystinemiato enhance metabolic health, and help prevent gestational diabetes in the future [Table 2].Almost 60% of physicians reported gestational diabetes in only 1 woman out of 10 taking the Folinext Gold tablet [Table 2]. According to more than half ofthe physicians, none of the pregnant women taking this tablet developedpregnancy-induced hypertension, preeclampsia, or any other complications [Table 3]. The majority of the physicians (84.31%) observed full-term pregnancy in the 10 women taking the tablet [Table 4]. Except for one physician, all the physicians agreed that 5 mg of methylfolate improved the outcomes of pregnancy [Table 4]. More than 70% of the physicians rated the efficacy, safety and patient adherence to the treatment with this tablet as excellent [Table 5]. All the physicians agreed with the UK guidelines recommending the intake of 5mg L-methylfolate to reduce the risk of neural tube defects, particularly in obese women, those with a history of neural tube defects, or those with nutritional deficiency due to poor diet [Table 5].

Table 1: Distribution of responses to question numbers 1, 2, 3

Question	Response of HCPs (N=51)
1. Obstetric history of the 10 women A. Inability to conceive B. Presence of Type 2 diabetes C. PCOS D. Past history of gestational diabetes	 29 (56.86%) 2 (3.92%) 16 (31.37%) 4 (7.84%)
2. Number of women without a proper nutritional diet and with micronutrient deficiencies A. 6/10 B. 7/10 C. 8/10 D. All patients	 21 (41.18%) 14 (27.45%) 13 (25.49%) 3 (5.88%)
3. Number of women undertaking L-Methylfolate5 mg, Pyridoxal-5 Phosphate & Mecobalamin preconception? A. 6/10 B. 7/10 C. 8/10 D. All patients	 3 (5.88%) 4 (7.84%) 11 (21.57%) 33 (64.71%)

Table 2: Distribution of responses to question numbers 4, 5, 6, 7

Question	Response of HCPs (N=51)
4. Number of women with a history of PCOS and severe folic acid deficiency? A. 6/10 B. 7/10 C. 8/10 D. All patients	 30 (58.82%) 12 (23.53%) 4 (7.84%) 5 (9.80%)
5. The reason for giving Folinext Gold Tablet with L-Methylfolate 5 mg, Pyridoxal-5 Phosphate & Mecobalamin supplement preconception? A. To normalize folic acid levels faster with the 5 mg dose B. To improve fertility C. Prevention of embryonal neural tube defect in the planned pregnancy D. Both of the above	3 (5.88%) 2 (3.92%) 6 (11.76%) 40 (78.43%)
6. The reason for giving Folinext Gold Tablet containing L-Methylfolate 5 mg, Pyridoxal-5 Phosphate & Mecobalamin preconception in these 10 women with PCOS wanting to conceive? A. The 5 mg dose of Methylfolate is now recommended by the UK guidelines for women with low folic acid B. To improve fertility C. Prevention of embryonal neural tube defect in the planned pregnancy D. Improve metabolic health by reducing hyperhomocystinemia E. Prevent gestational diabetes in the future by improving metabolic health F. Both of the above	7 (13.73%) 0 8 (15.69%) 3 (5.88%) 0 33 (64.71%)
7. Number of women undergoing treatment withFolinext Gold Tablet containing L-Methylfolate 5 mg, Pyridoxal-5 Phosphate & Mecobalamin who developed gestational diabetes during pregnancy A. 1/10 B. 2/10 C. 3/10	 31 (60.78%) 14 (27.45%) 6 (11.76%)

Table 3: Distribution of responses to question numbers 8, 9, 10

Question	Response of HCPs (N=51)
8. Number of women undergoing treatment with Folinext Gold Tablet containing L-Methylfolate 5mg, Pyridoxal-5 Phosphate & Mecobalamin who did not develop pregnancy induced hypertension A. 8/10 B. 9/10 C. All patients remained normal	 8 (15.69%) 13 (25.49%) 30 (58.82%)
9. Number of women undergoing treatment with Folinext Gold Tablet containing L-Methylfolate 5mg, Pyridoxal-5 Phosphate & Mecobalamin who did not develop preeclampsia A. 8/10 B. 9/10 C. All patients remained normal	 9 (17.65%) 9 (17.65%) 33 (64.71%)
10. Number of women undergoing treatment with Folinext Gold Tablet containing L-Methylfolate 5mg, Pyridoxal-5 Phosphate & Mecobalamin who did not develop any other complication of pregnancy A. 8/10 B. 9/10 C. All patients remained normal	 9 (17.65%) 11 (21.57%) 31 60.78%)

Table 4: Distribution of responses to question numbers 11, 12, 13

Question	Response of HCPs (N=51)
11. Number of women undergoing treatment with Folinext Gold Tablet containingL-Methylfolate 5mg& Mecobalamin who had a full term pregnancy A. All women B. 9/10 women	 27 (52.94%) 24 (47.06%)

12. Number of women with full term healthy baby A. Yes B. No	43 (84.31%) 8 (15.69%)
13. In favour with the high dose of methylfolate 5 mg to be essential in Indian women and these 10 women to improve outcomes of pregnancy A. Yes. B. No	50 (98.04%) 1 (1.96%)

Table 5: Distribution of responses to question numbers 14, 15, 16, 17

Question	Response of HCPs (N=51)
14. Efficacy of Folinext Gold Tablet containing L-Methylfolate 5mg, Pyridoxal-5 Phosphate & Mecobalamin in pregnant women A. Excellent B. Good C. Fair D. Poor	42 (82.35%) 8 (15.69%) 1 (1.96%) 0
15. Safety of Folinext Gold Tablet containing L-Methylfolate 5 mg& Mecobalamin in pregnant women? A. Excellent B. Good C. Fair D. Poor	40 (78.43%) 11 (21.57%) 0 0
16. Adherence to treatment with Folinext Gold Tablet containing L-Methylfolate 5 mg, Pyridoxal-5 Phosphate & Mecobalamin in pregnant women? A. Excellent B. Good C. Fair D. Poor	37 (72.55%) 13 (25.49%) 1 (1.96%) 0
17. In favour of the UK guidelines for intake of 5 mg L-Methylfolate to lower the risk of neural tube defects as observed in obese women, women with a history of neural tube defects, and nutritional deficiency due to poor diet A. Yes B. No	51 (100%) 0

DISCUSSION

Women have been blessed with the power and strength to develop and deliver a new being. It's a known fact that significant physiological changes occur in a woman's body during fetal development in the womb. Thus, the nutritional needs of women increase during pregnancy to support all these changes and to prepare the body for childbirth and breastfeeding. Nutritional supplements before, during and after pregnancy are recommended by the World Health Organisation (WHO), the National Institute for Health and Care Excellence (NICE) and the American Pregnancy Association [7].Daily consumption of 400 µg/day of folic acid before and during pregnancy is recommended by the US public health for the prevention of neural tube defects (NTDs) [8]. Folic acid supplementation is started 2-3 months before the intended pregnancy until the 12th week of pregnancy. High doses of 4-5 mg/day of folic acid are recommended for women with an underlying risk or history of neural tube defects by UK guidelines [9]. Also, the Royal College of Obstetricians and Gynaecologists (RCOG) advised that obese (BMI ≥30 kg/m2) women who are planning pregnancy or are already pregnant should take a high dose of folic acid supplements (5mg) to reduce the risk of neural tube defects in babies. This study also concludes that the majority of physicians recommended prescribing a high dose of 5mg/day of folic acid to women before and during pregnancy. Many physicians also confirmed that the vitamin supplementation during pregnancy improved the outcomes of pregnancy.

Vitamin B6 supplementation is not recommended by the WHO for pregnant women to improve pregnancy outcomes [5]. However American Pregnancy Association suggests its vital role in the development baby's nervous system and brain. It also helps to reduce nausea and vomiting during pregnancy [10]. Our study results are per suggestions by the American Pregnancy Association. The physicians also recommended the inclusion of vitamin B6 in the antenatal care.

Vitamin B12 (Mecobalamin) is one more essential vitamin that has to be prescribed to pregnant women. Vitamin B12 deficiency increases the susceptibility to neural tube defects in fetuses, as it is directly involved as a coenzyme in folic acid metabolism. Thus, according to a few studies, low levels of vitamin B12 in the motherare correlated with lower serum or RBC folic acid concentrations [11].Although Peker et al in 2016 concluded that an association between low levels of vitamin B12 and risk of neural tube defects has been

established independently of folate levels [12].In line with this, the present study reportedthat as vitamin B12 is beneficial for improved pregnancy outcomes and reducing the risk of preeclampsia and gestational diabetes. The efficacy, safety and adherence to the Folinext Gold tablet were rated as excellent by almost all the physicians.

Although this study has a few limitations. A small sample size may limit the generalizability of findings, as the responses may not adequately represent the larger population of HCPs. The use of a self-reported questionnaire introduces the potential for response bias.

CONCLUSION

Thisstudy demonstrated that the Folinext Gold tablet, containing L-methylfolate, pyridoxal-5 phosphate, and mecobalamin, is highly rated by physicians for its efficacy and safety in improving pregnancy outcomes. Most physicians prescribethe tablet preconception and during pregnancy to address micronutrient deficiencies and prevent complications such as preeclampsia, gestational diabetes, and pregnancy-related hypertension.It has proven beneficial for mothers in nurturing a healthy baby and achieving a full-term pregnancy without complications.

CONFLICT OF INTEREST

All authors have no conflict of interest to declare.

FUNDING

Aristo Pharmaceuticals Private Limited, Mumbai.

ACKNOWLEDGEMENT

None

REFERENCES

1. Kominiarek MA, Rajan P. Nutrition Recommendations in Pregnancy and Lactation. Med Clin North Am. 2016 Nov;100(6):1199-1215. doi: 10.1016/j.mcna.2016.06.004. PMID: 27745590; PMCID: PMC5104202.
2. Gernand AD, Schulze KJ, Stewart CP, West KP Jr, Christian P. Micronutrient deficiencies in pregnancy worldwide: health effects and prevention. Nat Rev Endocrinol. 2016 May;12(5):274-89. doi: 10.1038/nrendo.2016.37. Epub 2016 Apr 1. PMID: 27032981; PMCID: PMC4927329.
3. Marshall NE, Abrams B, Barbour LA, Catalano P, Christian P, Friedman JE, Hay WW Jr, Hernandez TL, Krebs NF, Oken E, Purnell JQ, Roberts JM, Soltani H, Wallace J, Thornburg KL. The importance of nutrition in pregnancy and lactation: lifelong consequences. Am J Obstet Gynecol. 2022 May;226(5):607-632. doi: 10.1016/j.ajog.2021.12.035. Epub 2021 Dec 27. PMID: 34968458; PMCID: PMC9182711.
4. Greenberg JA, Bell SJ, Guan Y, Yu YH. Folic Acid supplementation and pregnancy: more than just neural tube defect prevention. Rev Obstet Gynecol. 2011 Summer;4(2):52-9. PMID: 22102928; PMCID: PMC3218540.
5. Salam RA, Zuberi NF, Bhutta ZA. Pyridoxine (vitamin B6) supplementation during pregnancy or labour for maternal and neonatal outcomes. Cochrane Database Syst Rev. 2015 Jun 3;2015(6):CD000179. doi: 10.1002/14651858.CD000179.pub3. PMID: 26039815; PMCID: PMC10082995.
6. Finkelstein JL, Layden AJ, Stover PJ. Vitamin B-12 and Perinatal Health. Adv Nutr. 2015 Sep 15;6(5):552-63. doi: 10.3945/an.115.008201. PMID: 26374177; PMCID: PMC4561829.
7. WHO antenatal care recommendations for a positive pregnancy experience: Nutritional interventions update: Multiple micronutrient supplements during pregnancy [Internet]. Geneva: World Health Organization; 2020
8. CDC (Cent. Dis. Control Prev.). 1992. Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. Morb. Mortal. Wkly. Rep. Recomm. Rep 41:1–7
9. Dwyer E R, Filion K B, MacFarlane A J, Platt R W, Mehrabadi A. Who should consume high-dose folic acid supplements before and during early pregnancy for the prevention of neural tube defects? BMJ 2022; 377 :e067728 doi:10.1136/bmj-2021-067728
10. Shrim A, Boskovic R, Maltepe C, Navios Y, Garcia-Bournissen F, Koren G. Pregnancy outcome following use of large doses of vitamin B6 in the first trimester. J Obstet Gynaecol. 2006 Nov;26(8):749-51. doi: 10.1080/01443610600955826. PMID: 17130022.
11. Chen MY, Rose CE, Qi YP, Williams JL, Yeung LF, et al. 2019. Defining the plasma folate concentration associated with the red blood cell folate concentration threshold for optimal neural tube defects prevention: a population-based, randomized trial of folic acid supplementation. Am. J. Clin. Nutr 109:1452–61
12. Peker E, Demir N, Tuncer O, Üstyol L, Balahoroğlu R, et al. 2016. The levels of vitamın B12, folate and homocysteine in mothers and their babies with neural tube defects. J. Matern. Fetal Neonatal Med 29:2944–48