Why Registered Dietitians Should Focus On The First 90 Days

THE IMPORTANT ROLE OF PRECONCEPTION NUTRITION

Nebraska Academy Nutrition and Dietetics 2022

1

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Disclosure:
Sponsored By National Cattleman Beef Association & Nebraska Beef Council

2

WHO LEARNED ABOUT PRECONCEPTION HEALTH IN SCHOOL?

3

OBJECTIVES

What We'll Cover

- Define preconception period and why this period is crucial for both mom and baby to be
- Identify the importance of the 90 day period before conceiving to help improve the chance of a healthy pregnancy and baby
- Discuss nutrition recommendations based on the scientific literature
- Evaluate how to take the focus off weight and instead improve preconception health through positive lifestyle and diet changes
- Recognize ways to present this information to clients/followers

4



5

DEFINING PRECONCEPTION HEALTH

6

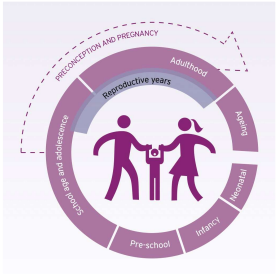
WHAT IS PRECONCEPTION HEALTH[1]

- Health of both men and women during their reproductive years
- For women, this period is typically defined between 15 to 49 years of age
- Also Known As
  - Fertility Window
  - Pre-Pregnancy
  - Periconceptional Development Period

7

WORLD HEALTH ORGANIZATION (WHO)[2]

- Recognized in 2013 the importance of this period for the health and wellbeing of both mothers and their future offspring



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EQUALLY AS IMPORTANT AS PRENATAL PERIOD

- Fundamental for formation of future embryo (baby)
- Emphasis on both the egg and sperm, recognizing important nutrients that benefit male and female health

9

WHY PRECONCEPTION HEALTH MATTERS

10

1 IN 5 WOMEN STRUGGLE TO GET PREGNANT[3]

CDC - Reproductive Health

11

1 IN 4 HAVE DIFFICULTY CARRYING A PREGNANCY TO TERM[3]

12

US INFANT MORTALITY RATE
5.6 DEATHS PER 1000 BIRTHS[4,5]

CDC, Infant Mortality, 2021

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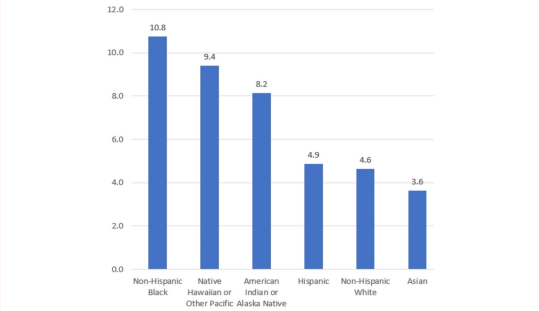
Infant Mortality Rates by Race and Ethnicity, 2018 [6]



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US MATERNAL MORTALITY RATE
23.8 DEATHS PER 100,000 BIRTHS[7]

15

IMPACT ON MOM & BABY'S FUTURE HEALTH

- Infertility
- Pregnancy Complications (Pre-eclampsia, gestational diabetes)
- Delivery Complications (Macrosomia, congenital abnormalities, stillbirth, low birth weight, maternal death)
- Fetal Growth Restriction (Related to nutrient deficiencies)

16

WHEN TO START IMPLEMENTING PRECONCEPTION HEALTH CHANGES

17

8

Published in final edited form as:

PMID: 29673873

Lancet. 2018 May 5; 391(10132): 1830–1841.

Published online 2018 Apr 16.

doi: 10.1016/S0140-6736(18)30311-8

Before the beginning: nutrition and lifestyle in the preconception period and its importance for future health

Professor Judith Stephenson, FFPH, Dr Nicola Heslehurst, PhD, Dr Jennifer Hall, PhD, Dr. Danielle A.J.M. Schoenaker, PhD, Dr Jayne Hutchinson, PhD, Professor Janet Cade, RNutr FAfN, Professor Lucilla Poston, PhD, Dr Geraldine Barrett, PhD, Dr Sarah Crozier, PhD, Dr Kalyanaraman Kumaran, DM FFPH, Professor Chittaranjan Yanjik, MD, Dr Mary Barker, PhD, Professor Janis Baird, PhD FFPH, and Professor Gita Mishra, PhD FAHMS

Lancet. Author manuscript; available in PMC 2018 Nov 5.

PMCID: PMC5975952

EMSID: EMS77899

Published in final edited form as:

PMID: 29673874

Lancet. 2018 May 5; 391(10132): 1842–1852.

Published online 2018 Apr 16.

doi: 10.1016/S0140-6736(18)30312-X

Origins of lifetime health around the time of conception: causes and consequences

TF Fleming,[1] A Watkins,[2] MA Velazquez,[2] JC Mathers,[3] AM Prentice,[3] J Stephenson,[4] ME Barker,[1,2] R Saffery,[5] CG Yajnik,[6] JJ Eckert,[11] MA Hanson,[6,11] T Forrester,[12] PD Gluckman,[13,14] and KM Godfrey[7,8,11]

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Lancet. Author manuscript; available in PMC 2018 Nov 5.

EMSID: EMS78606

Published in final edited form as:

PMID: 29673875

Lancet. 2018 May 5; 391(10132): 1853–1864.

Published online 2018 Apr 16.

doi: 10.1016/S0140-6736(18)30313-1

Intervention strategies to improve nutrition and health behaviours before conception

M Barker,[1,2] SU Dombrowski,[3] T Colbourn,[4] CHD Fall,[1] NM Krznik,[5] W Lawrence,[1,2] BA Norris,[6] G Ngaiza,[4] O Poston,[7] J Skordis-Worrall,[4] FF Sniehotta,[8] R Steegers-Theunissen,[9,10] C Vogel,[1,2] K Woods Townsend,[11,2] and J Stephenson[7]

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18

WHY 90 DAYS?

19

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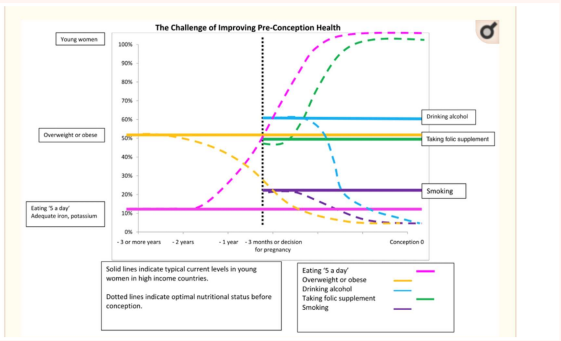

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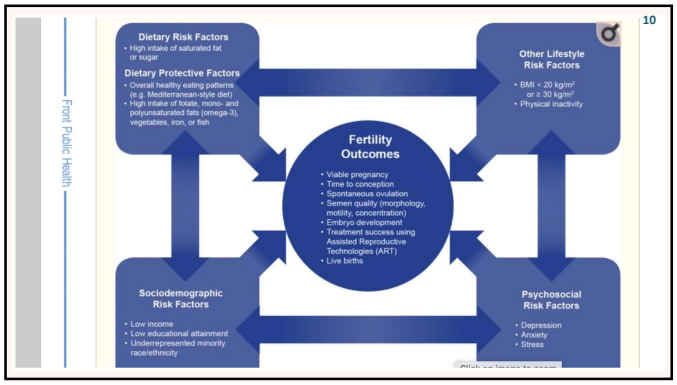
"There should be no obesity strategy, no undernutrition strategy, no non-communicable diseases strategy, and no adolescent health strategy without including preconception health."

The Lancet [8]

21

PRECONCEPTION NUTRITION RESEARCH RECOMMENDATIONS

22



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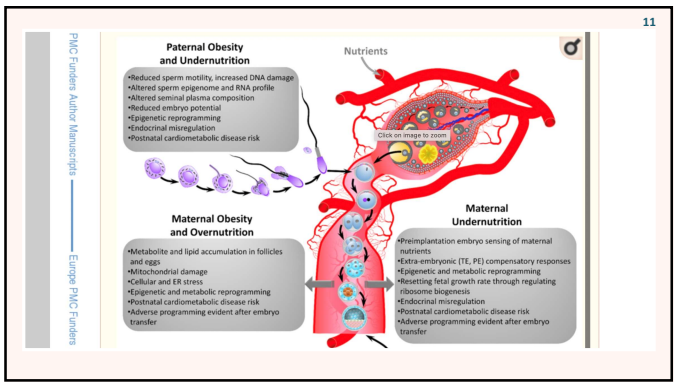

24

MEDITERRANEAN STYLE DIET[12]

- Focus on intakes of high antioxidant fruits and vegetables
- Whole Grains
- Seafood (2x per week, low mercury choices)
- Plant-Forward Protein Pairings
- Healthy Fats
- Lifestyle Factors (fitness, body weight, smoking, alcohol consumption)
- Supplementation

25

12

The effects of the selected dietary components on female fertility[1]

Nutrient	Summary	Recommended food sources
Carbohydrates	Added sugars and a high glycemic index have a negative effect on fertility.	Vegetables and fruit, whole-grain pasta, whole-grain bread, grains, rice, cereals
Fat	Intake of TFAs and excess SFAs appears to negatively affect female fertility. The direct effect of PUFAs on fertility is unclear, while MUFAs appear to have a positive effect on female fertility.	Oily fish, rapeseed oil, flaxseed oil, olive oil and other plant oil, avocado, nuts, seeds
Proteins	It is vital to include good sources of proteins in the diet. Plant proteins appear to have a positive impact on fertility, while animal protein—especially from processed meat—a negative impact.	Legumes, fish, lean meat, eggs, dairy product (particularly fermented)
Dairy	Studies regarding dairy are inconsistent—although dairy should be consumed as a part of healthy diet, it is hard to determine if it should be high-fat or low-fat in order to increase fertility. Taking current studies into the account, high-fat dairy should not be recommended in order to increase fertility, as it can have a negative impact on other risk factors for fertility.	Low-fat dairy, especially fermented dairy products
Iodine	Iodine is essential for the proper development of the fetus and proper thyroid function. While mild and moderate iodine deficiency is common among women, it is crucial to pay special attention to the supply of iodine by women planning a pregnancy.	Iodized salt, dairy, seafood
Folic acid	It appears that folic acid supplementation, particularly combined with vitamin B-12, may increase the chance of pregnancy and ART success. There is a need for the randomized trials.	Green-leafy vegetables, eggs, poultry
Vitamin D	Serum vitamin D concentrations may be associated with PCOS and endometriosis and affect ART success. In a population of healthy, fertile individuals, there is no significant association.	Fish, eggs, cheese, milk, dairy
Antioxidants	Very-low-quality evidence suggests that antioxidant supplementation may be beneficial for women suffering from infertility. More research is needed to assess the risk of the possible side effects. Inositol, L-carnitine, and NAC require particular attention due to the increasing number of studies positively assessing their impact on parameters related to female fertility.	Fresh fruits (especially berry fruits) and vegetables, vegetable oil, spices (e.g., cinnamon), tea, coffee
Phytoestrogens	The relation of phytoestrogens to female fertility remains unclear. Studies indicate that the consumption of soy isoflavones has a beneficial effect on ART success.	Pulses, flaxseed oil
Gluten	In healthy individuals, gluten does not appear to affect fertility.	Not applicable
Caffeine	High caffeine consumption may be a potential factor associated with the increased time to achieve pregnancy and an increased risk of pregnancy loss.	Coffee, cocoa—in recommended amounts

26

13

Prepregnancy Dietary Patterns and Their Association with Perinatal Outcomes: A Prospective Cohort Study

Nadya Helena Alves-Santos, PhD; Paula Guedes Cocate, PhD; Camila Benaim, MSc; Dayana Rodrigues Farias, PhD; Pauline M. Emmett, PhD; Gilberto Kac, PhD

ARTICLE INFORMATION

Article history:
Submitted 17 April 2018
Accepted 28 February 2019
Available online 30 April 2019

Keywords:
Dietary patterns
Pregnant women
Birth weight
Birth length
Prematurity

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https://doi.org/10.1016/j.jand.2019.02.016

RESEARCH SNAPSHOT

Research Question: Are prepregnancy dietary patterns associated with important perinatal outcomes such as type of delivery, large-for-gestational-age, birth length>90th percentile, Apgar score<7 at 1 minute, and preterm birth?

Key Findings: Results from a prospective cohort study of 193 pregnant women revealed that higher adherence to a fast food and candies prepregnancy dietary pattern increased the odds of large-for-gestational-age births and a higher adherence to the vegetables and dairy dietary patterns decreased the odds of preterm births.

27

KEY NUTRIENTS TO FOCUS ON

WOMEN	MEN
CALCIUM	OMEGA 3S
CHOLINE	SELENIUM
FOLATE (FOLIC ACID)	VITAMIN D
IODINE	ZINC
IRON	
OMEGA 3S	
SELENIUM	
VITAMIN D	
ZINC	

28

CALCIUM[14]

- F: 1000 mg
- Found in fortified foods (milks and milk alternatives) as well as tofu, spinach, chia seeds
- Crucial for bone health and development for both mom and baby

29

CHOLINE[15]

- F: 425 mg -> 450 mg -> 550 mg
- Found in eggs, meat, beans, peanuts, fortified products
- Extremely important in neurological development of baby (and keeping mom's memory in tip top shape)

30

FOLATE (FOLIC ACID)[16]

- F: 400 mcg DFE (or up to 800 mcg)
- Found in avocado, Brussel sprouts, spinach, oranges, nuts, beans, and fortified foods
- Crucial in preventing neural tube defects and malformations during baby's development

31

IODINE[17]

- F: 150 mcg
- Found in eggs, dairy, seafood, seaweed
- Crucial for fetal growth and development and thyroid health

32

IRON[18]

- Iron - F: 18 mg -> 27 mg
- Found in lean meats, pulses, nuts, seeds
- Crucial for growth and development, red blood cells and oxygen delivery, as well as making hormones

33

OMEGA-3[19]

- 2 servings seafood (low mercury) per week
- Consider 200 mg DHA supplementation
- Found in seafood
- Important for baby's neurological growth and development and mom's mood

34

SELENIUM[20]

- F/M: 55 mcg
- Found in Brazil nuts, chicken, mushrooms, shellfish
- Important for reproductive health of both male and female
- May benefit sperm health, especially when paired with vitamin E

35

VITAMIN D[21]

- F/M: 600 IU
- Found in fortified foods, like dairy (plant and animal based), as well as mushrooms exposed to UV light
- Important for reproductive, immune, and bone health

36

ZINC[22]

- F: 8 mg / M: 11 mg
- Found commonly in animal proteins as well as whole grains
- Important for ovulation as well as sperm production

37

PRENATAL SUPPLEMENT

- Vitamin D: D3 = cholecalciferol
- Folate: methylated form
- Iodine
- Missing: Choline

Supplement Facts

Serving Size: 1 Softgel
Servings Per Container: 90

	Amount Per Softgel	% Daily Value for Pregnant Women
Calories	5	
Total Fat	0.5 g	<1%†
Vitamin C (as ascorbic acid)	15 mg	13%
Vitamin D (as cholecalciferol)	75 mcg (3000 IU)	500%
Vitamin E (as d-alpha tocopherol)	20 mg	106%
Thiamin (as thiamin mononitrate)	1.4 mg	100%
Riboflavin (vitamin B_2)	1.4 mg	88%
Vitamin B_6 (as pyridoxine hydrochloride)	1.9 mg	95%
Folate (as L-5-methyltetrahydrofolate, calcium)	1334 mcg DFE	222%
Vitamin B_{12} (as cyanocobalamin)	2.6 mcg	93%
Iron (as ferrous fumarate)	27 mg	100%
Iodine (as potassium iodide)	220 mcg	76%
DHA (Docosahexaenoic Acid)	300 mg	†
EPA (Eicosapentaenoic Acid)	60 mg	†
Sodium copper chlorophyllin	0.98 mg	†

* Percent Daily Values are based on a 2,000 calorie diet.
† Daily Value not established.

38

DOES BODY WEIGHT REALLY MATTER?

39

23

POSITION STATEMENT

It is the position of the Academy of Nutrition and Dietetics that women of childbearing age should adopt a lifestyle optimizing health and reducing risk of birth defects, suboptimal fetal development, and chronic health problems in both mother and child. Components leading to healthy pregnancy outcome include healthy prepregnancy weight, appropriate weight gain and physical activity during pregnancy, consumption of a wide variety of foods, appropriate vitamin and mineral supplementation, avoidance of alcohol and other harmful substances, and safe food handling.

THE ACADEMY
Position Paper

To improve maternal and child health outcomes, women should weigh within the normal BMI range when they conceive and strive to gain within ranges recommended by the Institute of Medicine (IOM) 2009 pregnancy weight guidelines.[4] High rates of overweight and obesity are common in population subgroups already at risk for poor maternal and child health outcomes, compounding the need for interven-

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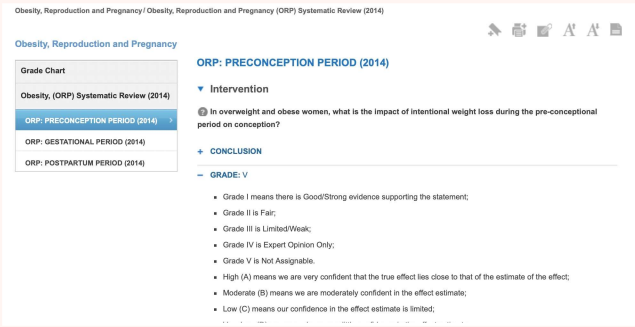

41

25

Effects of preconception lifestyle intervention in infertile women with obesity: The FIT-PLESE randomized controlled trial

Richard S. Legro, Karl R. Hansen, Michael P. Diamond, Anne Z. Steiner, Christos Coutifaris, Marcelle I. Cedars, Kathleen M. Hoeger, Rebecca Usadi, Erica B. Johnstone, Daniel J. Haisenleder, Robert A. Wild, Kurt T. Barnhart, Jennifer Mersereau, [···],for the Reproductive Medicine Network [view all]

Published: January 18, 2022 • https://doi.org/10.1371/journal.pmed.1003883

Conclusions

A preconception intensive lifestyle intervention for weight loss did not improve fertility or birth outcomes compared to an exercise intervention without targeted weight loss. Improvement in metabolic health may not translate into improved female fecundity.

42

2018 REVIEW PAPER[26]

PMCID: PMC6206616 | PMID: 30416711

Recent advances in understanding the relationship between long- and short-term weight change and fertility

Audrey J. Gaskins, Conceptualization, Investigation, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing[a,1,2]

43

"The obsessive focus on weight loss which has been the emphasis of clinical guidelines is perhaps misguided and efforts should be redirected to ones focused on the prevention of weight gain. "

Audrey Gaskins[26]

44

HOW TO PRESENT THIS INFORMATION TO CLIENTS/FOLLOWERS

45

SHOW THEM BALANCE

- Incorporate the cultural foods that fit their lifestyle in a balanced diet plan
- Highlight foods with high nutritional value in the nutrients crucial for conception

46

GIVE THEM A MENU

- Make it easy for them to follow these recommendations
- Make it fun
- Make it doable for their entire family

- Breakfast: Spinach & Mushroom Frittata w/ Orange
- Lunch: Beef Shawarma Salad w/Grilled Peppers
- Dinner: Salmon w/Green Beans and Wild Rice
- Snacks: Apple w/Peanut Butter
- Supplement Consideration:
  - Prenatal w/Methylated Folate, DHA, Choline, Vitamin D

47

SHARE WITH YOUR FOLLOWERS

- What would they want to know
- What will help lower their stress
- What ONE change can they do NOW, this week

48

YOU ARE YOUR CLIENT'S MAIN VOICE WHEN IT COMES TO NUTRITION FOR THEIR PRECONCEPTION HEALTH.

FOCUS ON WHAT THEY CAN ADD TO THEIR EVERYDAY ROUTINES TO MAKE HEALTHY LIVING THAT MUCH MORE ATTAINABLE & SUSTAINABLE.

Liz Shaw MS RDN CPT

49

QUESTIONS?

50

FOR MORE LEARNING

Consider These Resources

- Women's Health Dietetic Practice Group (DGP, AND)
- American Society of Reproductive Medicine (ASRM)
- Hormonally Yours Podcast
- Live Fertile, Yoga For Fertility
- PCOS Nutrition Center, Angela Grassi
- Women's Health Nutrition Academy

51

ADDITIONAL BOOKS

By Fellow Dietitians

- Fertility Foods Cookbook, Sara Haas & Elizabeth Shaw
- Fueling Male Fertility, Lauren Manaker
- Expect the Best: Before, During, and After Pregnancy, Elizabeth Ward
- The Stress-Free IVF Nutrition Guide, Elizabeth Shaw

52

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53