Title:
Factors Influencing Gastrointestinal Microbiota During Pregnancy

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Abstract Summary:
We present evidence related to factors that influence the structure, and subsequently function, of gastrointestinal (GI) microbiota in the general and pregnant population. Clinicians can benefit from understanding the implications that GI microbiota has for disease and wellness to clinically address the factors that adversely influence the GI microbiota during pregnancy.

Learning Activity:

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<tr>
<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
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<tr>
<td>The learners will be able to reiterate the factors that influence the structure and/or function of the gastrointestinal microbiota in pregnant women.</td>
<td>Factors that influence the structure and/or function of the gastrointestinal microbiota in pregnant women including demographics and health characteristics such as race, ethnicity, time and chorological age, geographic location, host genetics, diet, dietary supplements, antibiotic use, and body mass index (BMI).</td>
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<td>The learners will be able to apply the implications that the gastrointestinal microbiota has for disease and wellness in</td>
<td>Implications that the gastrointestinal microbiota has for disease and wellness in</td>
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microbiota has for disease and wellness in pregnant women by regulating physiologic homeostasis such as maintaining metabolic and immunologic homeostasis.

**Abstract Text:**

**Purpose:** The gastrointestinal (GI) microbial composition is pivotal to the maintenance of a “healthy” pregnancy because it influences the metabolic and immunologic pathways involved in maintaining physiologic homeostasis. Conversely, alterations in the GI microbial composition are associated with metabolic disease processes, corroborating the hypothesized linkages between the microbial composition and health issues. This is particularly relevant during pregnancy because of the increased physiologic burden on the maternal systems. The purpose of this study was to present the current evidence related to the factors that are associated with the structure, and subsequently function, of the GI microbiota in the general and pregnant population.

**Methods:** Comprehensive review of literature was performed. Eligible studies included published, peer-reviewed, English-language studies originating from any country, identified in The National Library of Medicine’s Pubmed databases. Additional studies were located by hand-searching the bibliographies of full-text articles.

**Results:** The factors associated with the structure, and subsequently function, of the GI microbiota were categorized into host genetics, time and chronological age, race, ethnicity, geographic location, diet, dietary supplements, antibiotic use, and body mass index. Each of the factors modulated the composition and subsequently their functions in different ways. In addition, each of the factors were associated with different disease or wellness states. Although studies in pregnant women were very limited, the results from the studies conducted in the general population can be extrapolated to the pregnant population.

**Conclusion:** Pregnancy is a period characterized by changes in the maternal hormonal and metabolic systems necessary to maintain the pregnancy and meet the demands of the developing fetus. Inadequate physiologic adjustments can lead to adverse pregnancy outcomes such as gestational diabetes and preterm labor that have implications for the short- and long-term health of the mother and the baby. The findings demonstrate the factors including diet, dietary supplements, antibiotic use, and body mass index that can be modulated to maintain the “healthy” structure of GI microbiota during pregnancy to promote adequate physiologic adjustments and prevent adverse pregnancy outcomes. Clinicians can benefit from understanding the implications that the microbiota has for disease and wellness as well as the factors that can adversely influence the GI microbiota during pregnancy in order to clinically address them.