



Life Course Perspective: Evidence for Why All Health Professionals Should Support a Focus on Nutrition

Elizabeth Yakes Jimenez, PhD, RDN, LD
Dena Herman, PhD, MPH, RD




Agenda

5-10 min	Introduction
10-15 min	Topic 1: Description of the life course perspective and the T2E2 model
10-15 min	Topic 2: Examples of the life course perspective in nutrition science
10-15 min	Topic 3: Discussion - how can all health professionals support inclusion of nutrition as a key focal point in care, throughout the life course?
10 min	Questions and Answers
5 min	Conclusion

Learning objectives

Participants will be able to:

1. Describe the life course perspective and the T2E2 model.
2. Demonstrate how the science of nutrition provides strong evidence to support the life course perspective.
3. Determine recommendations for including nutrition as a key focal point for all health professionals as they work to optimize patient outcomes.

The Lifecourse Perspective

- Synthesis of two longitudinal biomedical models
  - Early programming
  - Cumulative pathway
- Posited that birth outcomes (and disparities in birth outcomes) are the result of nine months of pregnancy *and* the entire life course of the mother leading up to pregnancy

Lu MC, Halfon N. Racial and ethnic disparities in birth outcomes: A life-course perspective. Maternal and Child Health J. 2003; 7(1): 13-30.

Fine A, Kotelchuck M, Adess N, Pies C. 2009. Policy Brief. A New Agenda for MCH Policy and Programs: Integrating a Life Course Perspective; Martinez, CA. Contra Costa Health Services.
http://www.cchealth.org/groups/lifecourse/pdf/2009_10_policy_brief.pdf

T2E2 Model

- Timing
- Timeline
- Environment
- Equity

Fine A, Kotelchuck M. Rethinking MCH: The life course model as an organizing framework. In US Department of Health and Human Services (Ed.). 2010. Washington, DC: Health Resources and Services Administration, Maternal and Child Health Bureau.

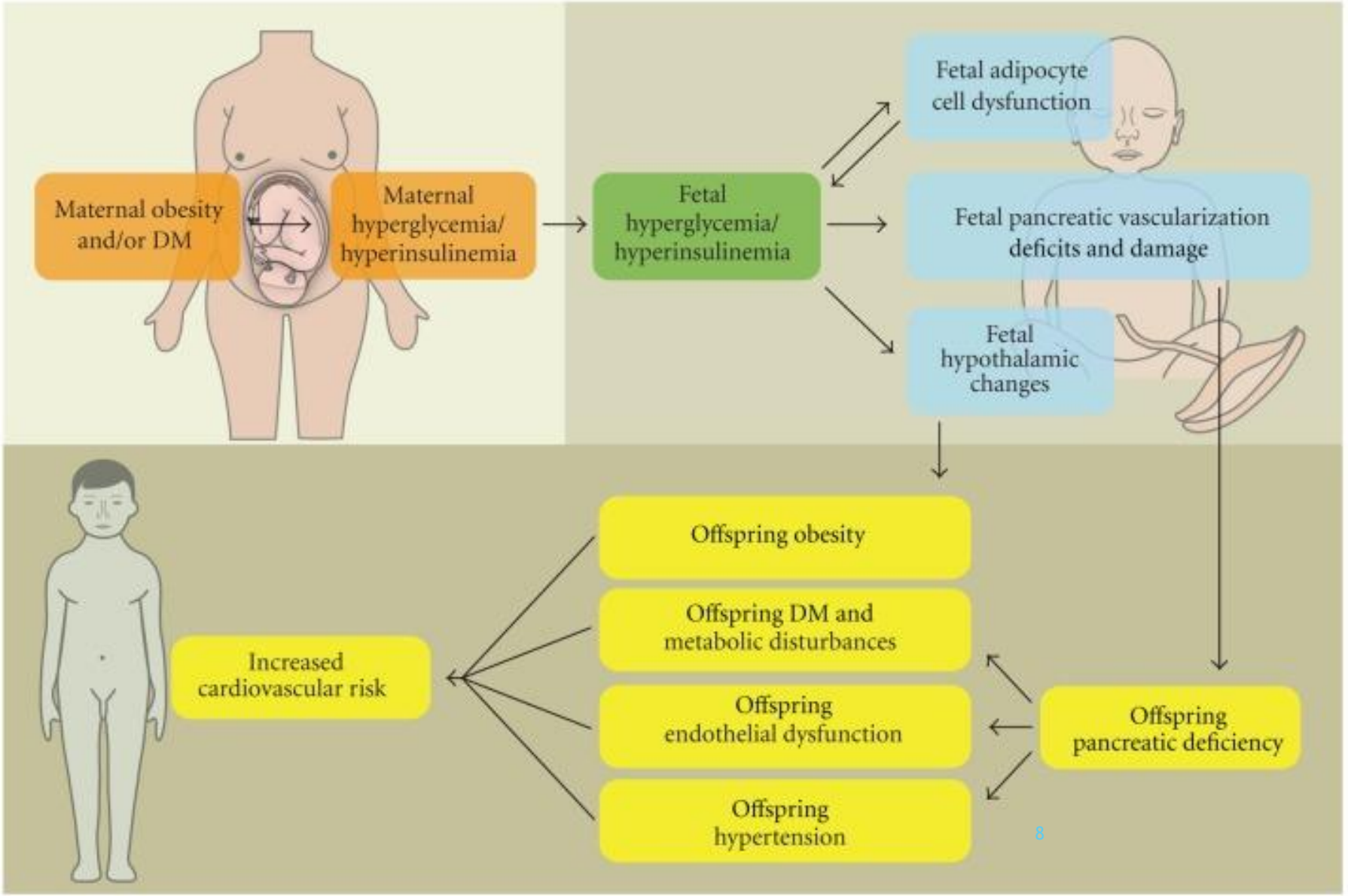
Herman DR, Baer MT, Adams E, Cunningham-Sabo L, Duran N, Johnson DB, Yakes E. Life Course Perspective: Evidence for the Role of Nutrition. *Mat Child Health J.* 2013. doi: 10.1007/s10995-013-1280-3

Timing

- Health trajectories are particularly affected during critical periods

Timing Example

Overnutrition: Gestational diabetes and obesity



Vrachnis N et al. E*xp Diabetes Res*. 2012. doi: 10.1155/2012/538474.

Timing Example

Timeline

- Biological, cultural, social, behavioral, and psychological exposures (positive and negative) accumulate across a lifespan and across generations

Timeline example: A tale of two babies

- **Critical period:** Adverse fetal exposures

- Positive child, adolescent and/or adult exposures

- Middle age: Does not develop diabetes

- **Critical period:** Positive fetal exposures

- Adverse child, adolescent and/or adult exposures

- Middle age: Develops diabetes

Now let's pause for a question…

Today's exposures influence tomorrow's health is an example of "timeline."

True or False?

And the answer is …

Today's exposures influence tomorrow's health is an example of "timeline."

True or False?

Environment

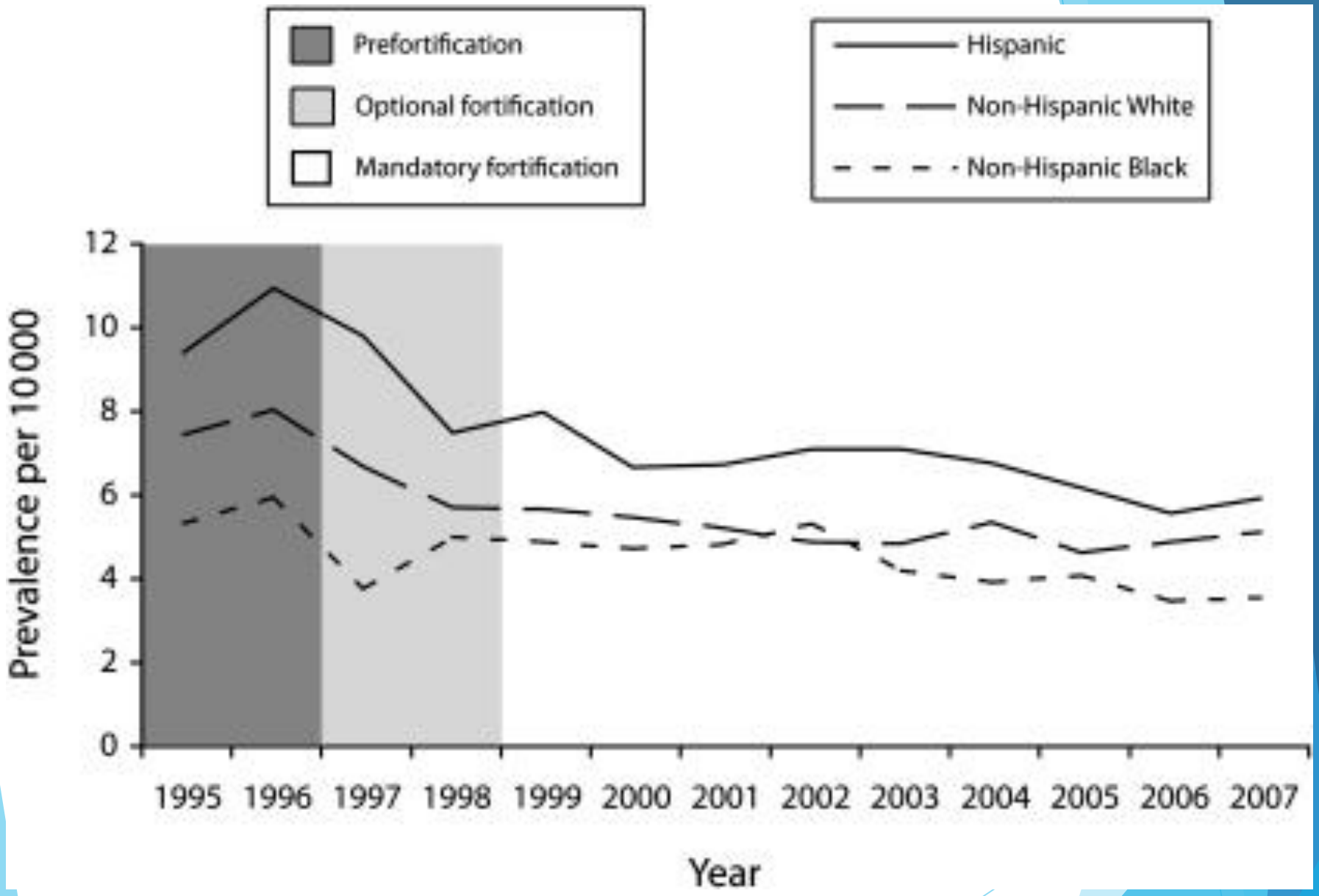
- The broad environment (physical, social, political, cultural, policy, etc.) strongly affects the capacity to be healthy

Environment example

http://latimesblogs.latimes.com/lanow/2012/12/bike-share-company-announces-plans-to-start-in-downtown-la-this-april.html

Equity

- Health disparities (inequality in health) reflect more than genetics and personal choice



Neural tube defect prevalence by race/ethnicity for 25 surveillance programs: National Birth Defects Prevention Network, United States, 1995–2007. Am J Public Health. 2011 August; 101(8): 1360–1364.

Now let's pause for a question…

Risk of gestational diabetes due to food insecurity is an example of which of the E2 concepts?

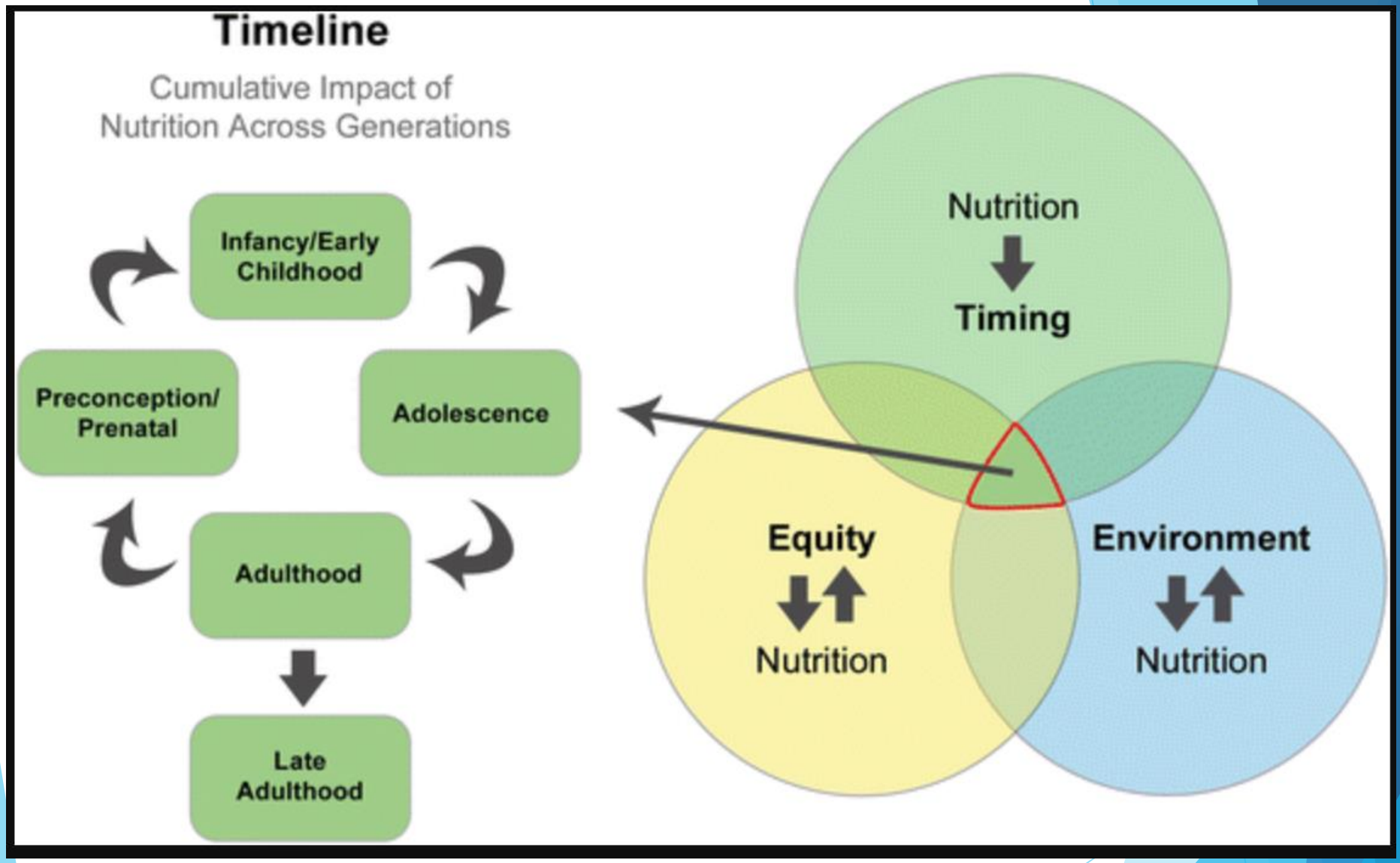
1. Environment
2. Equity

And the answer is …

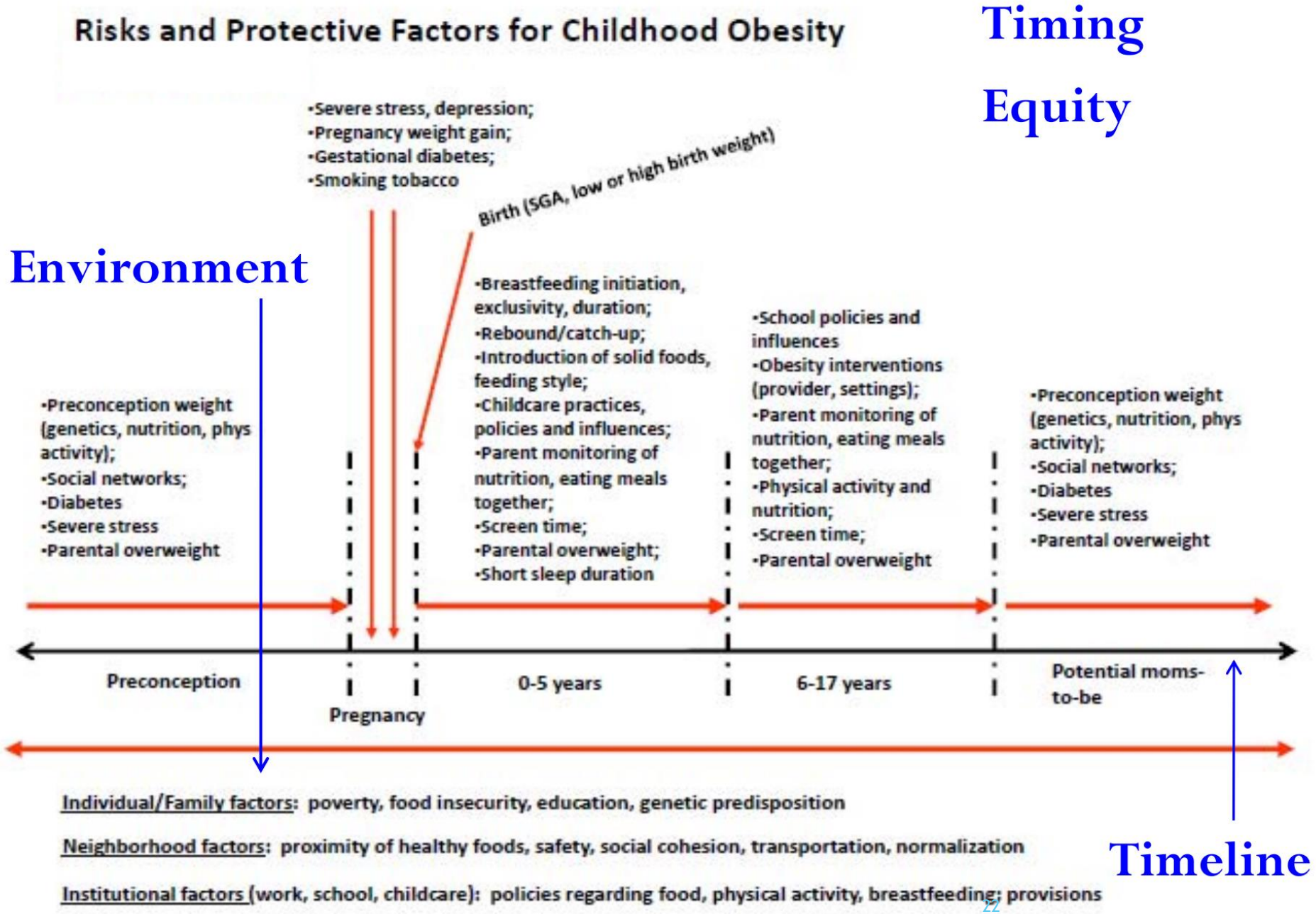
Risk of gestational diabetes due to food insecurity is an example of which of the E2 concepts?

1. Environment
2. Equity

Nutrition & the Lifecourse Framework



Herman DR, Baer MT, Adams E, Cunningham-Sabo L, Duran N, Johnson DB, Yakes E. Life Course Perspective: Evidence for the Role of Nutrition. *Mat Child Health J.* 2013. doi: 10.1007/s10995-013-1280-3



Adopted from Robin Stanton, MCH Section Oregon State, Office of Family Health

Intrauterine exposure to diabetes conveys risks for type 2 diabetes and obesity: a study of discordant sibships

- Looked for families in which one sibling was born before, one sibling after mom was diagnosed with Type 2 diabetes
- OR for diabetes for siblings born after mother's diabetes diagnosis vs. before = **3.7** (n= 58 from 19 families; p = 0.02)
- Mean BMI **2.6 kg/m^2** higher in offspring exposed to intrauterine diabetes vs. non-exposed (n = 183 from 52 families; p = 0.003)
  - Did not see same effects for fathers' diabetes diagnosis

Dabelea D et al. *Diabetes*. 2000; 49(12): 2208-11.

Differential methylation in glucoregulatory genes of offspring born before vs. after maternal gastrointestinal bypass surgery

- 5,698 genes were differentially methylated between siblings (n=50, from 20 mothers) born before and after maternal bariatric surgery
- Most genes had glucoregulatory, inflammatory, and vascular disease implications

Guénard F et al. *Proc Natl Acad Sci USA*. 2013;110(28):11439-44.

Example: Postpartum GDM care in NM

- Retrospective chart review of 97 medical records for women with GDM
- 53 of 97 women (55%) with GDM had a documented postpartum visit, with disparities by race/ethnicity and insurance type
- 18 of 97 (19%) had a documented oral glucose tolerance test after 6 weeks postpartum
- Most providers routinely documented interacting with patients around infant feeding, family planning, and emotional status, but fewer documented providing specific care to help patients manage future diabetes risk, with advance practice nurses significantly more likely than physicians to document some aspects of preventive care

Ortiz FM, Yakes Jimenez E, Boursaw B, Huttlinger K. Postpartum Care for Women with Gestational Diabetes. *MCN: Am J Matern Child Nurs*. 2016; 41(2): 116-122.

		Insurance Type			Race/Ethnicity			
	Total *n* = 53[b] *n* (%)	Private *n* = 15 *n* (%)	Public *n* = 18 *n* (%)	None *n* = 20 *n* (%)	Hispanic *n* = 31 *n* (%)	White *n* = 10 *n* (%)	American Indian *n* = 4 *n* (%)	Other *n* = 8 *n* (%)
Ask								
Infant feeding	47 (88.7)	13 (86.7)	16 (88.9)	18 (90.0)	8 (80.0)	29 (93.5)	2 (50.0)	8 (100.0)
Family planning	45 (84.9)	14 (93.3)	14 (77.8)	17 (85.0)	10 (100.0)	26 (83.9)	3 (75.0)	6 (75.0)
Emotional status	42 (79.2)	12 (80.0)	11 (61.1)	19 (95.0)	8 (80.0)	26 (83.9)	3 (75.0)	5 (62.5)
Diet	7 (13.2)	3 (20.0)	1 (5.6)	3 (15.0)	2 (20.0)	4 (12.9)	0 (0)	1 (12.5)
Physical activity	7 (13.2)	2 (13.3)	3 (16.7)	2 (3.8)	1 (10.0)	4 (12.9)	0 (0)	2 (25.0)
Future diabetes risk	7 (13.2)	3 (42.8)	2 (28.6)	2 (28.6)	1 (10.0)	3 (9.7)	1 (25.0)	2 (25.0)
Weight	5 (9.4)	1 (6.7)	3 (11.1)	1 (5.0)	1 (10.0)	2 (6.5)	0 (0)	2 (25.0)
Blood pressure/cardio	1 (1.9)	0 (0)	1 (5.6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (12.5)
Advise								
Exercise	16 (30.2)	4 (26.7)	3 (16.7)	9 (45.0)	2 (20.0)	12 (38.7)	0 (0)	2 (25.0)
Nutrition	15 (28.3)	3 (20.0)	3 (16.7)	9 (45.0)	1 (10.0)	12 (38.7)	1 (25.0)	1 (12.5)
Breastfeeding/self-care	7 (13.2)	3 (20.0)	1 (5.6)	3 (15.0)	2 (20.0)	5 (16.1)	0 (0)	0 (0)
Weight	1 (1.9)	0 (0)	1 (5.6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (12.5)
Assist								
Family support	1 (1.9)	0 (0)	1 (5.6)	0 (0)	0 (0)	1 (3.2)	0 (0)	0 (0)
Written materials	1 (1.9)	0 (0)	1 (5.6)	0 (0)	0 (0)	0 (0)	1 (25.0)	0 (0)
Arrange								
Follow-up <1 yr	32 (60.4)	9 (60.0)	9 (50.0)	14 (70.0)	6 (60.0)	21 (67.7)	3 (75.0)	2 (25.0)
Community referral	5 (9.4)	2 (13.3)	2 (11.1)	1 (5.0)	1 (10.0)	3 (9.7)	0 (0)	1 (12.5)

[a] There was no documentation of **Agree**. [b] Total *n* applies for both insurance type and race/ethnicity.

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One last question before the discussion…

In 1 – 2 words only, what is one thing you can do to support the implementation of preventive nutrition care in clinical practice during critical periods of the life course?

Discussion

- Are we reaching high risk populations with key nutrition messages and supports during critical periods in clinical care? Why or why not? What barriers exist, and can they be addressed?
- Are we providing preventive nutrition care, focused on reducing cumulative negative exposures over the lifecourse, or is care still reactive? What barriers exist to providing preventive nutrition care, and can they be addressed?
- How can health care providers more actively address environment and equity issues?