Workshop on Pre-pregnancy BMI and Gestational Weight Gain: New Evidence, Emerging Innovations, and Policy Implications

I have no conflicts of interest to disclose

Maternal and Infant Health Research with the Marshallese Community

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Background

- Home Birthed and Breastfed
- Lactation Consultant and Midwife's Apprentice
  - Social inequities in maternal health
- PhD in Public Policy
  - Birth and breastfeeding policy
- Maternal Health research with the Marshallese for 10 years

Recent Work I will Highlight Today

Project 1: Determining the preliminary efficacy of Mobile CenteringPregnancy, with Care Navigation, to reduce maternal and infant health disparities in Marshallese communities in Arkansas

Project 2: Assessing the acceptability of a culturally adapted group-model parenting intervention, CenteringParenting, for Marshallese Families

Historical Background of Marshallese

- US military tested nuclear weapons 1946-1958
- Equivalent to 7,000 times that of Hiroshima-sized bombs
- Significant levels of nuclear radiation
- US government conducted research
  - Without consent/Not in language
- Historical trauma
- Deep distrust of researchers

Population

- ~16,000 Marshallese residing in Arkansas
- 2012 UAMS works with the Marshallese using Community-engaged research
  - Prioritize health needs: Maternal health was chosen as a key focus

Project 1: Pacific Islander Maternal Health

<u>Pacific Islanders residing in the US have:</u>

-preterm birth
-low birth weight infants
-preeclampsia
-primary cesarean delivery
-excessive gestational weight gain
-gestational diabetes mellitus
-low exclusive breastfeeding
-low prenatal care

Marshallese Maternal Health

Birth record data of Marshallese (n=2,567)

19% of Marshallese infants were born preterm (9.6%)

15% of Marshallese infants were low birth-weight (8.3%)

50% did not attend the recommended prenatal care visits

15% received no prenatal care (1.6%)

CenteringPregnancy/ Kirae

What is CenteringPregnancy?

- Alternative to standard prenatal care
- Grouped by gestational age
- 10 group visits (Clinical and Educational)

Research demonstrates:

- Reduce preterm birth
- Reduce low birthweight infants
- Improve breastfeeding initiation/duration
- Reduce excessive GWG

Table 2. Centering Session Topics	
Session 1	Prenatal testing, nutrition, serving sizes, food diary, healthy lifestyle choices
Session 2	Body changes during pregnancy, healthy gum and teeth, and pain management in labor
Session 3	Mental relaxation, breastfeeding, and care-seat safety
Session 4	Family planning, fetal brain development, pre-term labor, skin-to-skin, and rooming in
Session 5	Labor, birth facility, medications for labor, and signs of early labor
Session 6	Birth experience and birth plans
Session 7	Newborns first days, pediatric care, caring for baby, circumcision, siblings, latch
Session 8	Pregnancy to parenting transition, kick counts, emotional adjustment, postpartum
Session 9	Putting it all together, newborn safety, infant massage, and postpartum depression
Session 10	Newborn care, growth and development; the first month, home and family changes

Project 2: Postpartum Support Needed

Background Data: Marshallese adults in Arkansas

- 2016: (n=400) 90% were overweight or obese
- Exclusive breastfeeding (EBF) for 6 mo→ reduces odds of obesity by 30%
- Protective effects of EBF against obesity increase w/ duration
- EBF among Marshallese in Arkansas is very low
- Qualitative research: EBF barriers
  - *Acculturation, lack of policy support, working outside the home*
- Qualitative research: Early introduction foods
  - *Rice, pureed fruit, and sweetened condensed milk*
- Currently, no childhood obesity interventions for Marshallese

CenteringParenting/Kokajjiriri

CenteringParenting, is a group-model intervention but for postpartum

- 9 sessions based on age of infant
- 6 weeks to 12 months postpartum
- Abbreviated version (3 sessions)

First childhood obesity prevention for Marshallese children in US

Table 1. CenteringParenting Session Topics	
Session 1	**Welcome; Birth Stories; Infant Feeding and Sleeping**
Session 2	Feelings about Birth; Feelings about Sex; Contraception; Staying Healthy
Session 3	**Infant Feeding and Sleeping; Motor Skills; Infant Massage; Age; Appropriate Play**
Session 4	Family and Parenting Styles; Reducing Stress; Your Baby's Personality
Session 5	Who is My Baby?; Family and Parenting Part 2
Session 6	Dealing with Conflict; Personal Goals
Session 7	**My Child's Development; Infant Nutrition**
Session 8	Who am I?; Baby Feeding and Sleeping; Baby Safety
Session 9	My Baby and Me; One Year Later

Methods/Approach

Pre-intervention dietary recall w/ (n=20) Marshallese mothers

-Nutrition Data System for Research (over 18,000 foods)

-Dietary intake over a 24-hour period 3X within 1 month

-Provide a rich characterization of the diet patterns and practices

Surface and deep cultural adaptations

-Marshallese foods based on dietary recall

-Pictures, words, and idioms specific to Marshallese

-Centralized location

Characteristic	Median	IQR
Age (Years)	25.5	(22.3-32.8)
Number of Children Living in Household	4.0	(3.0-6.0)
Number of Adults Living in Household	4.5	(4.0-6.0)
Years Living in the U.S.	11.5	(7.0-18.3)
	Frequency	%
Relationship Status		
Single	7	39%
Married	7	39%
Unmarried couple	4	22%
Education		
Some high school	5	28%
High school graduate	9	50%
Some college or technical school	1	6%
College graduate	3	17%
Employment Status		
Out of work for less than 1 year	1	6%
Out of work for 1 year or more	2	11%
Taking care of your family/home	8	44%
Employed	7	39%
Health Care Coverage[b]		
Yes	9	50%
No	7	39%
Don't know/Not sure	2	11%
Birthplace		
Marshall Islands	16	89%
U.S. Born	1	6%
Other	1	6%
Enrolled in WIC		
Yes	16	89%

Demographic Results

Over half of the participants were either married or in an unmarried couple (n=11; 55%). Majority of the participants were high school graduates or had some high school (n=14; 70%) and over half were either working from home or out of work (n=11; 55%). Almost all the participants were born in the Marshall Islands (n=16; 80%) and were enrolled in WIC (n=16; 80%). **The median age was 25.5 with a median of 4 children and a median of 4.5 adult living in the home**. Participants ranged from living in the US between 2-33 years with a median of 11.5.

Diet Quality Component (Minimum to maximum possible score)	Median (IQR)	Standard for Maximum Score	Standard for Minimum Score
Total HEI-2015 Score (0-100)	46.4 (43.0-48.5)	---	---
Adequacy Components			
Total Fruit (0-5)[a]	0.0 (0.0-1.1)	≥ 0.8 c eq/1,000kcal	No fruit
Whole Fruit (0-5)[b]	0.0 (0.0-0.0)	≥ 0.4 c eq/ 1,000kcal	No whole fruit
Total Vegetables (0-5)[c]	0.9 (0.1-1.8)	≥ 1.1 c eq/1,000kcal	No vegetables
Greens and Beans (0-5)[c]	0.0 (0.0-0.3)	≥ 0.2 c eq/1,000kcal	No dark green vegetables or beans or peas
Whole Grains (0-10)	0.0 (0.0-0.0)	≥ 1.5 oz eq/1,000kcal	No whole grains
Dairy (0-10)[d]	0.4 (0.0-1.6)	≥ 1.3 c eq/1,000kcal	No dairy
Total Protein (0-5)[c]	5.0 (5.0-5.0)	≥ 2.5 oz eq/1,000kcal	No protein foods
Seafood and Plant Protein (0-5)[e]	5.0 (5.0-5.0)	≥ 0.8 oz eq/1,000kcal	No seafood or plant proteins
Fatty Acids (0-10)[f]	7.3 (5.3-8.7)	(PUFA's + MUFA's) / SFA's ≥ 2.5	(PUFA's + MUFA's) / SFA's ≤ 1.2
Moderation Components			
Refined Grains (0-10)	0.0 (0.0-0.0)	≤ 1.8 oz eq/1,000kcal	≥ 4.3 oz eq / 1,000kcal
Sodium (0-10)	6.0 (3.7-9.7)	≤ 1.1 g/1,000 kcal	≥ 2.0g / 1,000kcal
Added Sugars (0-10)	10.0 (10.0-10.0)	≤ 6.5% of energy	≥ 26% of energy
Saturated Fat (0-10)	9.9 (7.7-10.0)	≤ 8% of energy	≥ 16% of energy

Dietary Recall Results

- High intake of seafood/protein, fatty acids, sodium, added sugars, and saturated fats
- Low intake of fruit, vegetables, dairy, and whole/refined grains

Nutrient	Top Food Category Contributor[a]	Second Highest Food Category Contributor[a]	Third Highest Food Category Contributor[a]
Total Calories	Cooked cereals, rice 36.4%	Chicken 9.8%	Finfish 9.5%
Total Fruit (c eq)	Fruits, not berries 49.2%	Citrus fruit juices 38.4%	Fruit juices, not citrus 7.2%
Whole Fruit (c eq)	Fruits, not berries 91.3%	Berries 6.8%	Grain/pasta/bread mixtures 1.9%
Total Vegetables (c eq)	Raw vegetables 31.2%	Potato salad 24.2%	Cooked vegetables 8.7%
Greens and Beans (c eq)	Raw vegetables 43.6%	Green/leafy vegetables 31.4%	Grain/pasta/bread mixtures 12.1%
Whole Grains (oz eq)[b]	Ready-to-eat cereals 63%	Salty snacks 37%	---
Dairy (c eq)	Milk, fluid 62.3%	Cream cheeses 5.9%	Grain/pasta/bread mixtures 5.8%
Total Protein (oz eq)	Finfish 36.4%	Chicken 30.1%	Frankfurters, sausages 11.9%
Seafood and Plant Protein (oz eq)	Finfish 88.1%	Shellfish 3.1%	Grain/pasta/bread mixtures 2.9%
Fatty Acids (% of energy)[c]	Chicken 19.5%	Finfish 11.1%	Frankfurters, sausages 10.3%
Refined Grains (oz eq)	Cooked cereals, rice 68.5%	White breads, rolls 9.5%	Pancakes 6.2%
Sodium (mg)	Chicken 19.3%	Frankfurters, sausages 13.0%	Soups with grains 11.9%
Added Sugars (% of energy)	Teas 26.7%	Soft drinks, carbonated 25.8%	White breads, rolls 11.2%
Saturated Fat (% of energy)	Chicken 15.3%	Frankfurters, sausages 10.6%	Chicken eggs 8.0%

Top Food Categories

- Highest calorie contribution was white rice
- Chicken w/ soy sauce, hot dogs/sausages
- Sweet tea and soft drinks
- **Tied to historical trauma**

Marshallese Stakeholder Input

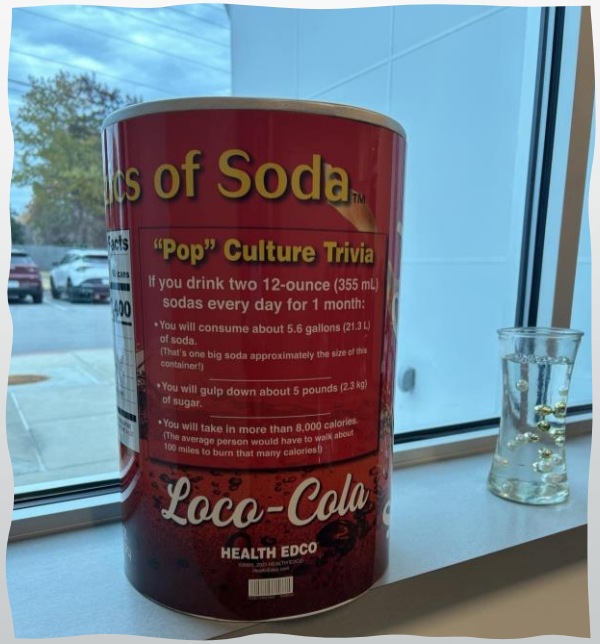
Marshallese Stakeholder Input

- Rice portion control vs. ½ brown & ½ white
- Positive view of fish consumption
- Education on sugar sweetened beverage
- Dairy—Islanders
- Fruit/vegetable consumption was very low
  - Marshallese word for fruits/vegetables: “Leen Wijket”

Cultural Adaptations

- Kokajjiriri Project
- Sessions in central location
- Translated in Marshallese
- Food Models for Portion Control
- Soy Sauce as Marinade→ Low Sodium
- Sugar Sweetened Beverages

  Spam→ Low Sodium Spam



Post-Intervention Results

Almost all participants reported the abbreviated intervention to be acceptable and feasible

Qualitative Results:

- Colostrum information

  "Dren nana" (bad water)
- Delay until six months
- Rice portion control
- Overall, liked the intervention

Table 2. Post-Intervention Survey (N=17)		
	Frequency	%
The information was useful in helping me think about nutrition for my baby/child.		
Yes	17	100.00%
No	0	0.00%
The information provided was relevant to Marshallese women like me.		
Yes	16	94.12%
No	1	5.88%
I am confident that the information provided is accurate.		
Yes	17	100.00%
No	0	0.00%
I learned new information about nutrition for my baby/child.		
Yes	17	100.00%
No	0	0.00%
The time and length of the session was convenient.		
Yes	16	94.12%
No	1	5.88%
I found the group parenting sessions to be suitable for Marshallese mothers.		
Yes	17	100.00%
No	0	0.00%
Location of the session was convenient.		
Yes	15	88.24%
No	2	11.76%
Location of the session was safe.		
Yes	17	100.00%
No	0	0.00%
Warm and understanding.		
Yes	17	100.00%
No	0	0.00%
Competent and well-trained.		
Yes	17	100.00%
No	0	0.00%
Knowledgeable.		
Yes	17	100.00%
No	0	0.00%

Key Takeaways

- Designing effective interventions takes time
- Community-engaged research is needed to design effective interventions
- Cultural adaptations are crucial to success
- Addressing health concerns includes using a kaleidoscope of focus

Q&A

- Thank you for your time and attention!
- What questions do you have?