

The Association Among Maternal Nonresponsive Feeding Practices and Child's Eating Behaviors and Child Weight Status in Children Aged 1 to 6 Years

Department of Child Health care

Nanjing Maternal and Child Health Hospital

Chunmei Shi, Min Zhang, Meiling Tong

2016.8.29

Responsive parenting

Interactive behaviors between caregivers and children



- Sensitive to child's cues
- Prompt
- Appropriate

World Health Organization. Infant and young child feeding: Model Chapter for textbooks for medical students and allied health profession[M]. Geneva: World Health Organization, **2009**: 16, 20.

Parental **Responsivity** - applied to feeding

- Sensitive to child's cues
- Respond to child's cues:
 - Prompt
 - Appropriate
 - Development/age
 - **Culture**
 - Situation



Responsive Feeding

Nonresponsive parenting

- ✓ Giving children whatever they want.
- ✓ Letting children be in charge of what they want, whenever they want it.



WHAT IS NON-RESPONSIVE FEEDING?

- *Excessive parental control*
 - Forceful – Eat! Eat!
 - Underweight children remain underweight
 - Restrictive – No dessert for you!
 - Overweight children remain overweight



WHAT IS NON-RESPONSIVE FEEDING?

- *Lack of parental control*
 - **Indulgence**
 - Eat whatever you want
 - Risk of overweight / obesity
 - **Uninvolved**
 - Eats meals alone
 - Risk of underweight



Responsive Feeding Questionnaire (RFQ)

3 closed-ended items ("yes" means there exists nonresponsive feeding practices):

- 1) **Restriction:** You only give child to eat what you like or what you think is good food;
- 2) **Pressuring:** If child refuses to eat, you will force or trick him/her to continue to eat a certain amount of food;
- 3) **Uninvolved or neglectful:** No or little active physical help during mealtimes.

Child Eating Behavior Questionnaire (CEBQ)

10 closed-ended items:

- 1) child prefers high-calorie food? ;
- 2) child rarely eats vegetables / fruits food?;
- 3) child prefers snacks, thus affecting the regular meal;
- 4) child refuse to accept new foods;
- 5) child often refuses to open mouth or push away food?;

Child Eating Behavior Questionnaire (CEBQ)

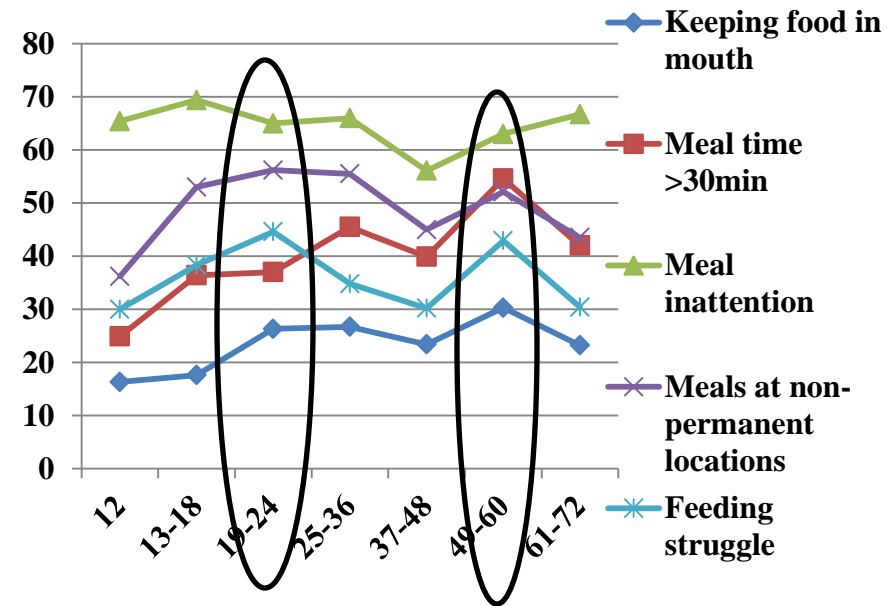
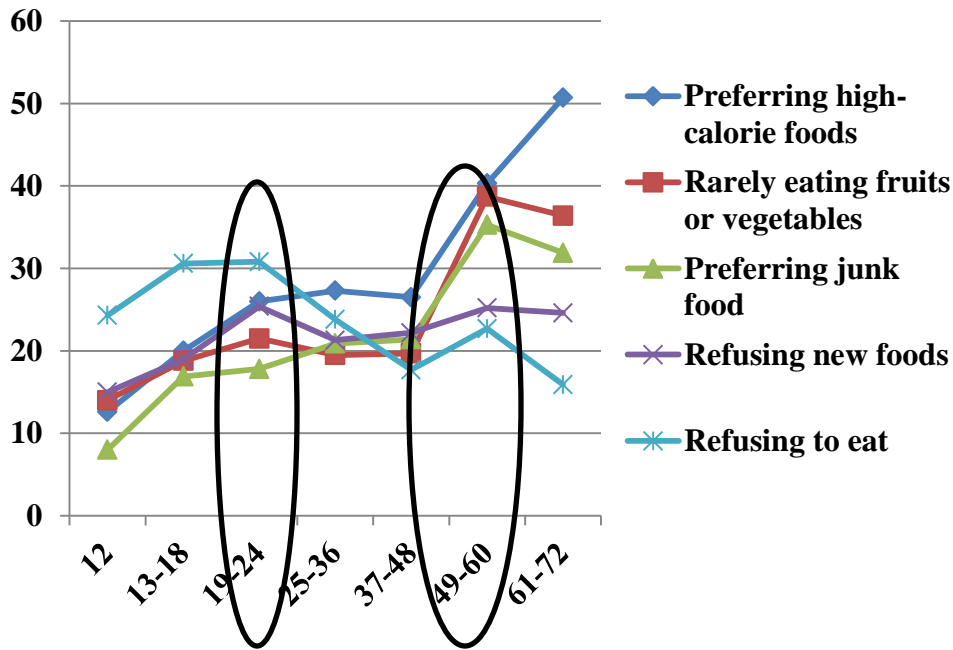
10 closed-ended items continue:

- 6) child always has food in her mouth;
- 7) child eats very slow;
- 8) when eating, child is easily distracted;
- 9) the place where child eats is not fixed, he/she would stop participating and start walking around;
- 10) feeding child is often a struggle.

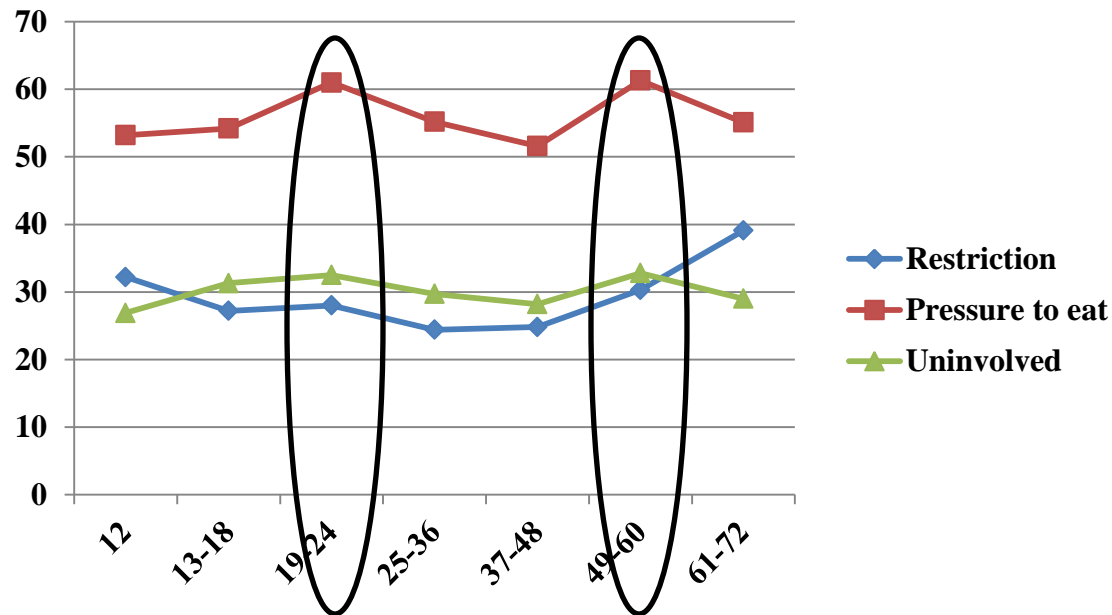
Basic information of the investigated subjects

Characteristics		Age group (months of age)							Total
		12	13-18	19-24	25-36	37-48	49-60	61-72	
Child gender (%)	Boy	158(52.5)	230(55.4)	192(54.2)	441(54.2)	186(53.0)	69(58.0)	40(58.0)	1316(54.3)
	Girl	143(47.5)	185(44.6)	162(45.8)	373(45.8)	165(47.0)	50(42.0)	29(42.0)	1107(45.7)
Maternal educational level	High School	64(21.3)	30(7.2)	49(13.8)	141(17.3)	74(21.1)	35(29.4)	11(15.9)	404(16.7)
	Undergraduate	152(50.5)	295(71.1)	241(68.1)	516(63.4)	219(62.4)	59(49.6)	43(62.9)	1525(62.9)
	Graduate	85(28.2)	90(21.7)	64(18.1)	157(19.3)	58(16.5)	25(21.0)	15(20.4)	494(20.4)
Child's BMI percentile ^[19]	< P ₁₅	16(5.3)	22(5.3)	17(4.8)	109(13.4)	41(11.7)	19(16.0)	15(21.7)	239(9.9)
	P ₁₅ -P ₈₅	191(63.5)	282(68.0)	246(69.5)	549(67.4)	246(70.1)	81(68.1)	45(65.2)	1640(67.7)
	P ₈₅ -P ₉₅	67(22.3)	80(19.7)	70(19.8)	97(11.9)	39(11.1)	11(9.2)	4(5.8)	374(15.2)
	> P ₉₅	27(9.0)	31(7.5)	21(5.9)	59(7.2)	25(7.1)	8(6.7)	5(7.2)	176(7.3)
Total		301	415	354	814	351	119	69	2423

Eating behavior problems detected in different age groups of children



The detection rates of maternal nonresponsive feeding in children aged 1 to 6 years



Correlations between maternal nonresponsive feeding practices and child's eating behaviors

OR for weight status of children (95% CI)

	Preferring high-calorie foods	Rarely eating vegetable /fruits	Preferring junk food	Refusing new foods	Refusing to eat	Keeping food in mouth	Meal time >30min	Meal inattention	Meals at non-permanent locations	Feeding struggle
Restriction	1.52 (1.24, 1.86)	2.09 (1.69, 2.59)	1.86 (1.49, 2.32)	1.77 (1.43, 2.18)	1.76 (1.42, 2.16)	1.37 (1.11, 1.70)	1.25 (1.03, 1.52)	1.41 (1.13, 1.74)	1.72 (1.41, 2.08)	1.66 (1.36, 2.04)
Pressure	1.70 (1.39, 2.08)	1.73 (1.38, 2.16)	1.80 (1.43, 2.27)	1.59 (1.28, 1.97)	2.88 (2.31, 3.60)	2.98 (2.38, 3.73)	3.18 (2.64, 3.82)	3.58 (2.98, 4.30)	2.73 (2.30, 3.256)	4.71 (3.84, 5.77)
Uninvolved	1.42 (1.16, 1.74)	2.12 (1.71, 2.63)	2.25 (1.81, 2.80)	1.62 (1.31, 2.00)	2.65 (2.16, 3.24)	2.15 (1.75, 2.65)	2.31 (1.91, 2.79)	2.09 (1.68, 2.61)	2.10 (1.73, 2.55)	3.35 (2.75, 4.08)

Association of child's eating behaviors and maternal nonresponsive feeding practices with Child's BMI

	BMI (χ^2) months of age						
	12	13-18	19-24	25-36	37-48	49-60	61-72
Gender	0.15	12.96**	1.30	0.33	5.78	4.01	7.71
Maternal education level	18.00**	19.49**	9.34	12.27	15.15*	7.30	22.02***
Preferring high-calorie foods	8.17*	8.76*	4.16	6.46	1.19	6.66	5.88
Rarely eating fruits or vegetables	7.26	1.75	3.96	0.13	1.03	3.18	9.51*
Preferring junk food	12.30**	6.76	5.32	14.22**	2.87	4.25	0.96
Refusing new foods	4.19	21.09***	11.86**	19.03***	8.57*	19.49***	3.65
Refusing to eat	2.64	1.73	0.52	3.76	6.53	1.69	3.00
Keeping food in mouth	4.39	3.72	2.59	2.10	7.97*	1.56	1.75
Meal time >30min	3.45	8.03*	0.91	6.54	4.80	1.24	3.54
Meal inattention	8.45*	5.30	0.23	7.41	8.50*	6.05	2.50
Meals at non-permanent locations	5.57	3.35	3.11	7.69	8.54*	3.69	1.93
Feeding struggle	6.94	3.85	0.52	2.19	9.96*	2.96	0.38
Restriction	6.01	12.30**	4.80	2.07	4.78	1.15	5.84
Pressure to eat	5.85	4.20	4.78	5.30	8.15*	6.77	2.38
Uninvolved	2.83	0.09	0.79	3.45	7.64	5.16	4.33

Association of maternal nonresponsive feeding practices and child's eating behavior with children's BMI

Variables	Child Weight status, OR (95% CI)			
	Underweight	Normal weight	Overweight	Obese
12 months of age				
Preferring junk food	1.04(0.10, 11.03)	Reference	4.63(1.46, 14.68)**	2.79(0.62, 12.57)
Meal inattention	0.35(0.10, 1.22)	Reference	2.10(1.04, 4.22)*	1.76(0.65, 4.78)
Pressure	0.23(0.06, 0.91)*	Reference	1.29(0.68, 2.46)	0.77(0.30, 1.99)
13-18 months of age				
Refusing new foods	5.23(1.84, 14.92)**	Reference	0.96(0.48, 1.91)	---
Meal inattention	0.36(0.11, 1.17)	Reference	1.18(0.62, 2.25)	3.57(1.03, 12.38)*
19-24 months of age				
Refusing new foods	3.28(1.10, 9.82)*	Reference	0.86(0.44, 1.70)	----
25-36 months of age				
Preferring junk food	0.33(0.17, 0.67)**	Reference	1.06(0.60, 1.88)	1.21(0.60, 2.43)
37-48 months of age				
Keeping food in mouth	0.24(0.07, 0.81)*	Reference	1.06(0.43, 2.62)	1.29(0.39, 4.27)
Meal inattention	3.02(1.24, 7.36)*	Reference	1.17(0.42, 3.21)	1.31(0.44, 3.97)
49-60 months of age				
Refusing new food	11.71(2.63, 52.18)**	Reference	0.23(0.02, 3.08)	----
Meal inattention	0.70(0.11, 4.56)	Reference	18.03(1.15, 281.72)*	0.35(0.04, 3.32)
Feeding struggling	1.33(0.22, 8.01)	Reference	0.04(0.00, 0.48)*	0.15(0.01, 3.07)
61-72 months of age				
Restriction	6.53(1.24, 34.48)*	Reference	---	---

Limitations

- Observational study
- Hospital base-Population

Conclusions

- **Evidence:** Nonresponsive feeding practice and child's eating behavior
- Key developmental age: 19-24 and 49-60 months
- **Red Flag:** Refusing new food, eating at non-permanent locations, Preference to junk food and inattention; Restriction and pressure



Thanks

Evolution not revolution, No one will 'fail' new standards.