

• 临床研究 •

喂养行为在母亲喂养焦虑情绪与婴儿生长发育间的中介效应

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摘要: **目的** 分析婴儿母亲喂养焦虑情绪、喂养行为以及婴儿身长别体重 Z 评分(WLZ)之间的关系,为制定改善母亲喂养焦虑情绪和喂养行为的有效干预策略提供参考。**方法** 采取便利抽样法,于 2023 年 9 月抽取山东省青岛市某三级甲等医院儿童保健科健康体检的 331 名婴儿及其母亲作为研究对象,采用母亲喂养焦虑评价量表、家长喂养行为量表为评估工具,并对婴儿体格指标进行调查。采用 Pearson 相关分析考察各变量间的相关关系,通过 Bootstrap 程序和 Process 插件检验中介效应。**结果** 母亲喂养焦虑得分为(39.592±8.173)分,喂养行为中的强迫儿童进食、担心儿童进食过少、情绪性及工具性喂养、家长主导进食与母亲喂养焦虑情绪呈正相关($r=0.591, 0.650, 0.398, 0.317, P<0.01$),与婴儿 WLZ 亦呈正相关($r=0.512, 0.428, 0.218, 0.258, P<0.01$);母亲喂养焦虑情绪与婴儿 WLZ 呈正相关($r=0.442, P<0.01$)。喂养行为中的强迫儿童进食、担心儿童进食过少、家长主导进食在母亲喂养焦虑情绪和婴儿 WLZ 间均起部分中介作用,中介效应值分别为 0.272、0.191、0.050(占总效应的 50.8%、35.7%和 9.3%)。**结论** 母亲喂养焦虑情绪可直接影响婴儿 WLZ,也可通过强迫儿童进食、担心儿童进食过少和家长主导进食间接影响婴儿 WLZ。若要改善婴儿的生长发育状况,应从提高母亲的喂养行为入手,医护人员应结合母亲的喂养焦虑水平给予个性化指导,促进婴儿长期健康发展。

关键词: 母亲; 喂养焦虑; 喂养行为; 婴儿; 生长发育; 身长别体重 Z 评分; 中介作用

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Mediating effect of maternal feeding behavior on the relationship between maternal feeding anxiety and growth and development of infants

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Abstract: **Objective** To analyze the association between maternal feeding anxiety, feeding behavior, and weight-for-length Z score (WLZ) of infants, so as to provide reference for the development of effective intervention strategies to improve maternal feeding anxiety and behavior. **Methods** By convenient sampling method, 331 infants and their mothers from the Child Health Care Department a Grade-A tertiary hospital in Qingdao, Shandong Province were selected as the study subjects in September 2023. Maternal Feeding Anxiety Scale, Parents' Feeding Practice Scale were used as assessment tools, and infant physical indicators were used to investigate. The association between variables was analyzed by Pearson correlation, and the mediating effect was tested by the Bootstrap program software. **Results** The score of maternal feeding anxiety was (39.592±8.173). Positive correlations were found between feeding behaviors and maternal feeding anxiety, including pressuring to eat, concerning about infant underfeeding, emotional and instrumental feeding, and parent-led eating ($r=0.591, 0.650, 0.398, 0.317, P<0.01$), which were also positively correlated with infants' WLZ ($r=0.512, 0.428, 0.218, 0.258, P<0.01$). Maternal feeding anxiety was positively correlated with infant's WLZ ($r=0.442, P<0.01$). Pressuring to eat, concerning about infant underfeeding, and parent-led eating all played a partial mediating role between maternal feeding anxiety and infants' WLZ, and the mediation effect values were 0.272, 0.191 and 0.050 (50.8%, 35.7% and 9.3% of the total effect), respectively. **Conclusions** Maternal feeding anxiety can directly affect infants' WLZ, or indirectly influence infants' WLZ through practices like pressuring to eat, concerning about infant underfeeding, and parent-led eating. In order to improve the growth and development status of infants, feeding behavior of mothers should be improved at beginning. Medical staff should provide personalized guidance based on the maternal feeding

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anxiety level to promote the long-term healthy development of infants.

Keywords: mother; feeding anxiety; feeding behavior; infant; growth and development; weight-for-length Z score; mediating effect

2020 年国务院新闻办公室报告称,6 岁以下儿童超重和肥胖率为 10.4%,这一比例正在迅速上升^[1]。生命历程研究指出,婴儿期体重增长过多是成年后超重/肥胖和常见相关慢性疾病发生的危险因素^[2],该时期的喂养行为与婴儿的营养状况、生长发育等密切相关。喂养行为是指在喂养过程中,家长用来影响儿童吃什么,何时吃和吃多少的行为或策略,包括顺应性和非顺应性两大类^[3]。顺应性喂养指家长能够对婴儿的饥饿/饱足信号做出恰当回应,非顺应性喂养行为的典型特征是父母忽视婴儿内部信号,进而采用强迫进食、情绪性喂养等喂养行为^[4],这种喂养方式干扰了婴儿内部能量的自我调节,进而导致超重/肥胖。

婴儿主要喂养人是母亲,母亲的喂养情绪会对喂养行为和婴儿的健康生长产生重要影响。有研究发现,产妇罹患产后焦虑症的概率约为 10.8%^[5]。喂养焦虑是一种特殊的产后焦虑,是由于对喂养问题的过度焦虑所导致的一系列异常行为表现及心理体验^[6]。既往研究表明,有喂养焦虑症状的母亲在喂养过程中可能更多使用非顺应性喂养^[7-9],造成婴儿超重/肥胖。已有研究主要集中于焦虑情绪对喂养方式的影响,而对于喂养焦虑、喂养行为以及婴儿生长发育状况之间关系的研究鲜有报道。

鉴于此,本研究拟构建中介效应模型,探究母亲喂养焦虑情绪、喂养行为及婴儿身长别体重 Z 评分(weight for length Z score, WLZ)间的关系,为制定改善母亲喂养行为和婴儿生长发育状况的干预策略提供参考,模型如图 1 所示。

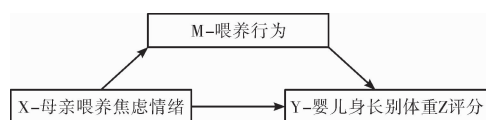


图 1 母亲喂养焦虑情绪、喂养行为与婴儿身长别体重 Z 评分的关系假设模型

Fig. 1 Hypothetical model of the relationship among maternal feeding anxiety, feeding behavior and infant's WLZ

1 对象和方法

1.1 对象 2023 年 9 月,采用便利抽样法于山东省青岛市某三级甲等医院儿童保健科选取 6~12 月

龄的婴儿及其母亲为研究对象。纳入标准:1)6~12 月龄的婴儿及其母亲;2)母亲是婴儿主要喂养人,且具备良好的读写和语言沟通能力;3)知情同意且自愿参加本研究。排除标准:1)婴儿患有影响正常进食的急性或慢性疾病;2)婴儿胎龄<37 周。本次调查共发放 340 份问卷,回收有效问卷 331 份,有效回收率 97.35%。本研究已通过青岛大学伦理委员会审批(QDU-HEC-2023235)。

1.2 方法

1.2.1 婴儿母亲喂养焦虑评价量表 由李永进^[10]于 2013 年编制,通过母亲自我评价某些内容在喂养过程中所占时间来评定母亲的喂养焦虑水平,该问卷具有良好的信度和效度。量表共 23 个条目,采用 Likert4 级计分法。喂养焦虑水平评判标准:总分>38 分为喂养焦虑阳性,23~38 分为正常,39~52 分为轻度焦虑,53~70 分为中度焦虑,>70 分为重度焦虑。本研究婴儿母亲喂养焦虑量表 Cronbach's α 系数为 0.881。

1.2.2 婴幼儿家长喂养行为量表 由首都儿科研究所谢惠惠^[11]于 2017 年编制,主要用于评估家长在婴儿喂养方面的态度和行为。该量表围绕顺应喂养,参考婴儿喂养方式问卷^[12](Infant Feeding Style Questionnaire, IFSQ)、婴儿喂养问卷^[13](Infant Feeding Questionnaire, IFQ)、儿童喂养问卷^[14](Child Feeding Questionnaire, CFQ)、综合性喂养行为问卷^[15](Comprehensive Feeding Practices Questionnaire, CFPQ)、学龄前儿童喂养问卷^[13](Preschool Feeding Questionnaire, PFQ)、父母喂养方式问卷^[13](Parental Feeding Style Questionnaire, PFSQ)等国外成熟量表和国内的婴幼儿喂养问卷^[16](Young Child Feeding Questionnaire, YCFQ),结合中国家庭结构和饮食文化等特点开发的问卷,包括强迫儿童进食、担心儿童进食过少、情绪性及工具性喂养、鼓励与健康膳食、家长主导进食和担心儿童进食过多 6 个维度。该量表采用 Likert 5 级计分法(1=从来没有、2=极少、3=有时、4=多数、5=总是),各维度得分等于所包含条目得分之和除以条目数,量表得分越高,说明家长存在的喂养问题越多。该问卷经过严格的信效度评估,或可作为我国城市地区 6~24 月龄婴幼儿家长喂养行为的评估工具^[17]。本研究家长喂养行为量表 Cronbach's α 系数为 0.750。

1.2.3 婴儿的生长发育状况 由经过培训的专职护士测量婴儿身高和体重,分别精确到 0.1cm 和 0.1kg。婴儿的体格发育状况根据 2006 年 WHO 儿童生长标准^[18]进行分类:WLZ<-2 为消瘦,-2≤WLZ≤1 为正常,1<WLZ≤2 为高体重,WLZ>2 为超重及肥胖。Z 评分使用 WHO 的 Anthro 3.2.2 软件计算,Z 评分计算公式为: $Z=(\text{测量数据}-\text{同年龄同性别参考标准中位数})/\text{参考标准的标准差}$ ^[19]。

1.3 统计学方法 本研究数据采用 Epidata 3.1 进行双录入,采用 SPSS 26.0 进行统计分析。符合正态分布的计量资料,采用 $\bar{x} \pm s$ 表示,其他人口学资料采用频数和百分比(%)表示,采用 Harman 单因子法进行共同方法偏差检验,主要变量间的关系采用 Pearson 相关分析,采用 Process 3.4 插件分析母亲喂养行为在母亲喂养焦虑情绪与婴儿 WLZ 间的中介效应。检验水准 $\alpha=0.05$ (双侧)。

2 结果

2.1 共同方法偏差检验 采用 Harman 单一因子检验法进行共同方法偏差检验,结果显示,共提取出 14 个特征根大于 1 的因子,最大因子方差解释率为 20.05%(临界值为 40%),表明本研究数据均不存在明显共同方法偏差问题。

2.2 婴儿及母亲一般特征 本次调查共 331 名婴儿及母亲,婴儿月龄(8.90 ± 2.30)月,母亲年龄(27.29 ± 3.79)岁;发现喂养焦虑情绪评分正常母亲 172 名,占 52.0%,轻度焦虑 136 人,占 41.1%,中度焦虑 23 人,占 6.9%。11.5%的婴儿超重/肥胖,男婴比例(52.9%)高于女婴比例(47.1%)。见表 1。

2.3 母亲喂养焦虑情绪、喂养行为与婴儿 WLZ 的关系 采用 Pearson 相关分析考察各变量间的关系,结果显示喂养行为中的强迫儿童进食、担心儿童进食过少、情绪性及工具性喂养、家长主导进食与母亲喂养焦虑情绪和婴儿 WLZ 均呈正相关($P<0.01$);母亲喂养焦虑情绪与婴儿 WLZ 呈正相关($P<0.01$)。见表 2。

表 1 研究对象的一般特征(例,%)

项目	基本特征	例数
职业	无业/家务	84(25.4)
	企事业单位	92(27.8)
	工商个体	34(10.3)
	工人/业务员	29(8.8)
	医务人员	15(4.5)
	其他	77(23.2)
文化程度	初中及以下	18(5.4)
	高中/中专	30(9.1)
	大学专科	91(27.5)
	大学本科	142(42.9)
	研究生及以上	50(15.1)
家庭年收入(万元)	≥15	179(54.1)
	<15	152(45.9)
分娩方式	剖宫产	160(48.3)
	顺产	171(51.7)
母亲焦虑程度	正常	172(52.0)
	轻度	136(41.1)
	中度	23(6.9)
婴儿性别	男	175(52.9)
	女	156(47.1)
婴儿出生体重(kg, $\bar{x} \pm s$)		3.42±0.38
婴儿 WLZ	消瘦	4(1.2)
	正常	186(56.2)
	高体重	103(31.1)
	超重及肥胖	38(11.5)

表 2 主要变量得分情况和相关性(r)

Tab. 2 Scores and correlations of the main variables(r)

变量	得分($\bar{x} \pm s$)	喂养焦虑	强迫儿童进食	担心儿童进食过少	情绪性及工具性喂养	鼓励与健康膳食	家长主导进食	担心儿童进食过多	婴儿 WLZ
喂养焦虑	39.592±8.173	1							
强迫儿童进食	2.330±0.896	0.591**	1						
担心儿童进食过少	2.396±0.853	0.650**	0.731**	1					
情绪性及工具性喂养	2.602±0.736	0.398**	0.422**	0.494**	1				
鼓励与健康膳食	2.584±0.779	-0.066	-0.092	-0.075	-0.169**	1			
家长主导进食	3.272±0.974	0.317**	0.322**	0.304**	0.254**	-0.261**	1		
担心儿童进食过多	1.939±0.693	0.097	0.059	0.026	0.147**	-0.164**	0.125*	1	
婴儿 WLZ		0.442**	0.512**	0.428**	0.218**	-0.015	0.258**	-0.050	1

注: * $P<0.05$, ** $P<0.01$ 。

2.4 母亲喂养行为的中介效应检验 采用 Process 插件中的模型 4 对母亲喂养行为在母亲喂养焦虑情绪与婴儿 WLZ 中的中介效应进行检验。将婴儿出生体重纳入控制变量后,Bootstrap 结果显示,母亲

喂养焦虑情绪正向预测婴儿 WLZ,当放入中介变量强迫儿童进食、担心儿童进食过少、家长主导进食后,母亲喂养焦虑情绪对婴儿 WLZ 的正向预测作用依然显著,强迫儿童进食、担心儿童进食过少、家

长主导进食在预测中起部分中介作用,中介效应值依次为 0.272、0.191 和 0.050;当放入中介变量情

绪性及工具性喂养时,中介作用不显著。见表 3。

表 3 喂养行为的中介模型路径检验结果

Tab. 3 Results of the mediating model path test of feeding behavior

路径	效应值	占总效应比值(%)	Boot SE	Boot 95%CI	
				下限	上限
喂养焦虑→强迫儿童进食→婴儿 WLZ	0.272	50.8	0.047	0.184	0.367
喂养焦虑→担心儿童进食过少→婴儿 WLZ	0.191	35.7	0.064	0.070	0.318
喂养焦虑→家长主导进食→婴儿 WLZ	0.050	9.3	0.023	0.010	0.099
喂养焦虑→情绪性及工具性喂养→婴儿 WLZ	0.024	—	0.025	−0.025	0.075

3 讨 论

3.1 母亲喂养焦虑情绪、喂养行为和婴儿 WLZ 现状分析 本研究结果显示,母亲喂养焦虑阳性率为 48.0%,低于 Sun 等^[20]研究报道(61.4%),略高于李慧等^[6]调查结果(42.25%),可能与婴幼儿月龄、母亲的年龄和文化程度有关。小月龄婴儿食物的选择仅限于母乳或配方奶,母亲在食物的选择和喂养方面的困扰较小;WHO 和中国婴幼儿喂养指南规定,满 6 月龄的婴儿需要在母乳喂养的基础上逐步添加辅食,此时婴儿母亲会面临食物的选择和制备、喂养环境处理、婴儿食物恐新等问题^[21],此外,该时期母亲更为担心婴儿的体格生长状况,故喂养焦虑阳性率较高。相对于 Almaatani 等^[22]研究结果,本研究喂养行为得分较高,代表母亲存在较多的喂养行为问题,可能与评估工具、母亲文化程度有关,文化程度较低的母亲因缺乏喂养知识等原因容易采取消极的喂养行为^[23]。本研究婴儿超重/肥胖检出率为 11.5%,低于邵祥龙等^[24]调查结果(16.60%),可能与本研究剖宫产比例低于邵祥龙研究中的剖宫产比例(53.10%)有关,因剖宫产分娩的婴幼儿超重/肥胖率较高^[25]。因此,医护人员不仅要重视婴幼儿的生长发育,也应加强对婴儿母亲喂养情绪和喂养行为的关注,针对性地开展多形式、多途径的照护干预,帮助母亲建立良好的心理状态,提高母亲对积极喂养的认知水平。

3.2 母亲喂养焦虑情绪、喂养行为和婴儿 WLZ 有一定的相关性 通过考察母亲喂养焦虑情绪、喂养行为与婴儿 WLZ 间的相关关系,结果发现母亲喂养焦虑情绪与喂养行为中的强迫儿童进食、担心儿童进食过少、情绪性及工具性喂养和家长主导进食呈显著正相关,与相关研究结果^[22,26]一致。究其原因,患有喂养焦虑症的母亲更易感到儿童要求高、易怒、喂养困难,喂养耐心较差,会曲解婴儿发出的信号,进而强迫进食、情绪性喂养^[27]。喂养行为与婴

儿 WLZ 呈正相关,与吴薇岚等^[28]研究结果一致。究其原因,我国儿童肥胖的“常态化”现象,使母亲对婴儿的体重水平感知有低估倾向,偏向于使用强迫进食、情绪喂养等非顺应性喂养策略,忽视婴儿自身的饥饿/饱足信号,扰乱机体内部能量的自我调节,导致婴儿超重/肥胖^[28-29]。因此,医护人员要指导母亲正确认识婴儿发出的信号,采取积极的喂养行为,防止因过度焦虑采取消极喂养行为而导致婴儿进食过多发生超重/肥胖。

3.3 喂养行为在婴儿母亲喂养焦虑情绪与婴儿 WLZ 间起部分中介作用 中介效应分析显示,母亲喂养焦虑情绪对婴儿 WLZ 有直接正向预测作用,喂养行为在母亲喂养焦虑情绪和婴儿 WLZ 间起部分中介作用。婴儿期是人一生中生长发育最快的时期,母亲的喂养情况会影响婴儿的体格和神经心理发育^[30]。喂养焦虑是指在喂养过程中对未知潜在危险和挑战的担忧感,是对未来不确定性的反应^[6],不仅损害母亲的身心健康,还会影响母亲的喂养习惯,对婴儿生长发育产生负面影响。存在喂养焦虑情绪的母亲易误判婴儿的气质类型为难养型气质^[31],导致母亲对婴儿需求感知的敏感性减弱,在母婴互动时的回应能力降低,容易忽视婴儿的饥饿/饱足信号,进而使用强迫性进食、情绪性喂养等非顺应喂养行为,过度喂养而破坏婴儿与生俱来的自我调节能力,摄入过多造成体内脂肪堆积,影响婴儿体格发育^[22,32-33]。因此,医护人员应指导母亲注意观察婴儿发出的饥饿/饱足信号,按需喂养,与婴儿之间形成良好的回应性互动,促进母婴依恋关系的建立,进而改善母亲的焦虑情绪。

综上所述,母亲焦虑情绪和母亲喂养行为均与婴儿 WLZ 显著相关,同时,母亲焦虑情绪不仅直接影响婴儿 WLZ,还会通过喂养行为间接影响婴儿 WLZ。这提示母亲在喂养婴儿的过程中,不仅要注重婴儿生长发育状况,更要考虑喂养行为的适宜性。

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