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Helping Latino Children Reach a Healthy Weight by Kindergarten

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Abstract

Latino youths in the United States are more likely to be overweight or obese than their white peers. This disparity warrants attention to possible contributing factors that may directly impact obesity rates or act as barriers or facilitators to achieving a healthy weight in this population. The positive effects of breastfeeding on childhood obesity are evident among Latina mothers and interventions or policies aimed at

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improving breastfeeding rates within this group may be critical to promoting healthy weight goals. State and federal policies are beginning to address the issue of breastfeeding and childhood obesity in the United States. In addition, research suggests that factors such as pre-delivery strategies, maternity leave, formula marketing, physical activity levels during pregnancy, and healthy eating and physical activity habits established during early childhood education may also play a critical role in ensuring that all Latino children enter kindergarten at a healthy weight.

Introduction

In the United States, obesity continues to be a nationwide problem, where Latino children and adolescents are particularly at risk. According to a recent estimate, nearly 40 percent of U.S. Latino youths ages 2-19 are overweight or obese, compared with only 28.5 percent of non-Latino white youths.[1] Furthermore, the percentage of those who are overweight or obese between ages 2-5 is nearly 30 percent for Latino children compared with only 21 percent of non-Latino white children.[1] The high prevalence of obesity among Latino children and adolescents is of great concern due to the numerous adverse physical and mental health issues related to obesity, such as cardiovascular disease, asthma, type 2 diabetes, liver disease, sleep apnea, and psychological stress.[2] As overweight or obese children are more likely to suffer from an unhealthy weight in adulthood, childhood is a critical developmental stage for preventing and/or reducing lifelong obesity.[2]

The risk of obesity can be affected by a number of variables early in life, spanning from before birth to infancy and early childhood. In fact, levels of physical activity among pregnant mothers and factors influencing duration of breastfeeding or formula use may already influence the likelihood of obesity in the child. Current or prospective policies supporting breastfeeding, physical activity, and a healthy diet with fresh fruits and vegetables for both mother and child may help the child to establish healthy habits from an early age. Developing a foundation for healthy behaviors will be crucial to overcoming the epidemic of childhood obesity among Latino children.

Due to the higher rates of childhood obesity among young people of racial and ethnic backgrounds, efforts to ensure that obesity is addressed from an early age are of crucial importance Among these efforts, one main objective is that all children are prepared to enter kindergarten at a healthy weight.[3] As such, this research review is designed to outline factors affecting obesity rates among Latino youths and interventions or policies that may help these children to achieve a healthy weight prior to entering kindergarten.

Methodology

This comprehensive research review summarizes current, peer-reviewed scientific literature regarding the influence of breastfeeding policies, physical activity during pregnancy, healthy eating and physical activity during childcare, paid maternity leave, pre-delivery strategies, the Special Supplemental Nutrition Program for

Women, Infants, and Children program (WIC), formula marketing, and health care insurance on issues related to overweight and obesity in Latino infants and preschool-aged children. Keyword searches were conducted in PubMed and Google Scholar. Databases were searched with key terms such as: "breastfeeding policy AND Latino childhood obesity," "breastfeeding policy AND obesity AND Hispanic," "breastfeeding policy AND childhood obesity," or "breastfeeding policy AND BMI AND Latino AND children." Variations of terms, including variants of the terms "Latino" and "Hispanic," were used throughout the literature search. Article titles and abstracts were examined, and relevant articles were retrieved, independent of the study's conclusions regarding Latino childhood obesity. Additional articles were identified through the reference lists of the initial set of publications. Further sources of evidence included reports from governmental agencies and other relevant stakeholders and peer-reviewed, published review articles. Searches were confined to the English language and were not restricted by study design.

Key Research Results

- Maternal obesity and gestational weight gain is highly correlated with childhood obesity in Latino children. In addition to not maintaining a healthy weight, Latina women are not meeting recommendations for physical activity during pregnancy.
- Breastfeeding for one year or more significantly lowers the prevalence of childhood obesity.
- Policies supporting paid maternity leave may increase breastfeeding rates and reduce childhood obesity.
- Pre-delivery interventions are associated with improved perinatal outcomes for low-income women.
- WIC program policies are being revised to promote increased breastfeeding rates and healthier eating habits among low-income populations.
- Marketing infant formula to pregnant women is associated with reduced rates of initiating breastfeeding, shorter duration of breastfeeding, and increased use of formula.
- Parental behaviors relating to healthy eating and physical activity have important implications for establishing healthy early childhood habits and promoting a healthy weight among Latino children.
- Childcare centers and providers are an important resource for promoting obesity prevention measures such as healthy eating and physical activity practices among Latino children and their parents.

Studies Supporting Key Research Results

Maternal obesity and gestational weight gain is highly correlated with childhood obesity in Latino children. In addition to not maintaining a healthy weight, Latina women are not meeting recommendations for physical activity during pregnancy.

Studies have shown that maternal obesity and lower social class are both associated with a tendency to formula feed and a greater risk of obesity in children.[4] In fact, parental obesity is considered a strong predictor of obesity in offspring, which can be due to both environmental and genetic components.[5,6] Results from the Viva La Familia Study in 2009 outlined genetic and environmental risk factors linked to childhood obesity in 1,030 Latino children from Houston.[7] Findings confirmed that maternal obesity was indeed an independent risk factor for childhood obesity within this population; Latina mothers ≥30 kg/m^2 gave birth to children that were 1.8 times more likely to be obese.[7] Another study of Latino families in 2009 corroborated that maternal BMI positively correlated with a child's weight.[8] The association between maternal weight and childhood obesity is of particular interest for the Latino community, as nearly 50 percent of Latina mothers are overweight or obese when entering pregnancy, and are more likely to fall within these categories versus non-Latino white mothers.[9–13]

In addition to maternal obesity before pregnancy, gestational weight gain (GWG) during pregnancy has also been associated with an increased risk of obesity in offspring.[14–18] A multicenter cohort study in 12 U.S. sites demonstrated that each 1 kg of GWG correlated with a 3 percent increase in the odds of the child being overweight at age 7.[18] This was recently supported by a study of Greek mothers and their children, where a 1 kg increase in GWG yielded a 1.014 times greater risk of the child being overweight/obese by age 8; this risk was even greater among mothers who exceeded the Institute of Medicine (IOM) maternal weight gain recommendations.[19] In addition, children in this study were less likely to be overweight/obese if the mother reported moderate exercise during pregnancy versus remaining sedentary. These findings stress the importance of physical activity and healthy GWG during pregnancy in order to promote healthy childhood weight. They also suggest that healthcare practitioners should advise women to maintain GWG within a specified range and to undertake moderate exercise during pregnancy. Several professional associations in the United States currently outline recommendations surrounding physical activity during pregnancy. For instance, ACOG recommends that pregnant women are allowed to undertake 30 or more minutes of moderate exercise on most, if not all days of the week, assuming there are no health problems or obstetric complications.[20] In addition, the American Ministry of Health suggests that pregnant women participate in at least 150 minutes of moderate-intensity aerobic exercise a week, even if they did not participate in such activities before pregnancy.[21]

Looking specifically at Latinos during pregnancy, this ethnic group is the most physically inactive in the United States.[22,23] Studies have shown that Latino women are only half as likely to comply with ACOG guidelines for physical activity during pregnancy versus non-Latino whites.[23,24] In addition, 52 percent of overweight and 75 percent of obese Latino women experience excessive GWG that exceeds IOM guidelines.[25] In addition, high BMI and excessive GWG appear to be increasing over time for Latina women.[26,27] Although few studies have assessed the underlying factors influencing GWG among Latina mothers, focus groups of Latina prenatal care patients reported receiving advice on GWG primarily from nutritionists and

family members, as opposed to their physicians.[28] For overweight/obese women, the majority did not receive any recommendations on the topic of GWG from their physicians. The lack of physician-guided instruction on this topic may be especially problematic for Latina mothers, as family members commonly perceived GWG as leading to a healthier baby, while also emphasizing that rest during pregnancy, rather than exercise, is important for protecting the baby.[28,29]

Several studies have investigated factors that may act as barriers or facilitators to physical activity during pregnancy among Latina women. Findings from a focus group series among Mexican women demonstrated that knowledge of how to exercise safely during pregnancy and concern over unsafe streets were two major barriers to physical activity in this population.[30] Another focus group-based study among Mexican women identified social isolation, lack of social support from husbands, a lack of friends to exercise with, and a lack of childcare as barriers.[29] The lack of social support as a barrier was reported more commonly by Latina women compared with non-Latino white or African American focus groups.[31] Focus groups of Puerto Rican and Dominican women identified barriers including physical limitations and restrictions, and a lack of resources, energy, and time.[32] Conversely, powerful facilitators of physical activity during pregnancy included factors such as social support, access to resources, information, and proper diet.[32]

The majority of overweight/obese Latina women did not receive physician advice on gestational weight gain (GWG).

In the Proyecto Buena Salud prospective cohort study of patients with Puerto Rican/Dominican heritage, 45 percent of Latina women were overweight or obese prior to pregnancy and the number of women who met ACOG guidelines for sports/exercise activity decreased from 24.7 percent in pre-pregnancy to 7.1 percent in early pregnancy.[33] By including household/caregiving, transportation, and occupational activities into physical activity calculations, the number of Latina women meeting ACOG standards was higher, but still decreased from 69.7 percent pre-pregnancy to 45 percent in early pregnancy. Notably, household/caregiving activities comprised between 56 percent and 60 percent of all perinatal activity for Latina women. Interestingly, those with one or more children and those with the highest levels of activity pre-pregnancy were less likely to become inactive during pregnancy. This suggests that targeting inactive women prior to the onset of pregnancy may benefit physical activity levels during pregnancy.

In 2011, the Behaviors Affecting Baby and You study investigated the impact of an individually tailored 12-week exercise program in a population of patients that was 60 percent Latino.[34] Overall, 86 percent of participants reported that the study materials were interesting and useful. Following the intervention, pregnant women in the exercise group had a smaller decrease in total activity and a greater increase in sports/exercise compared with controls.[34] These findings support the concept that interventions aimed at increasing physical activity during pregnancy may be beneficial and well received in Latino populations.

Two recent meta-analyses went on to conclude that interventions aimed at increasing physical activity during pregnancy may lead to less GWG compared with controls.[35,36] However, the ability of increased physical activity to lower GWG has been limited and most studies focus on non-Latino white populations. In the prospective Proyecto Buena Salud study, over half (51.9%) of the 1,276 pregnant Latina women participating experienced excessive GWG according to IOM guidelines.[37] Those with higher levels of education, those who were overweight prior to pregnancy, and those who lived longer in the U.S. showed a significantly greater risk for excessive GWG. While those who did not comply with physical activity guidelines in late pregnancy tended to have greater and more rapid GWG versus those who met guidelines, this study showed that even the highest levels of physical activity during pregnancy were not sufficient to prevent excessive GWG overall. These findings demonstrate the need for additional studies assessing the possibility of increasing physical activity during pregnancy in Latina women in an effort to better control GWG. Additional studies investigating the link between perinatal physical activity, GWG, and offspring obesity in Latino populations are also needed, as well as interventions facilitating social support, providing information and resources, and promoting the benefits of physical activity during pregnancy among Latina women.

Breastfeeding for one year or more significantly lowers the prevalence of childhood obesity.

The benefits of breastfeeding for both mother and baby are well established in the literature, and yet breastfeeding rates in the United States remain below desired levels.[38,39] According to recommendations from The American Academy of Pediatrics (AAP) and The American Congress of Obstetricians and Gynecologists (ACOG), mothers should exclusively breastfeed their infants for at least the first 6 months of life, with continuation for 1 year or longer. In addition, breastfeeding infants should not receive supplemental formula unless advised by a health care professional.[39,40] As part of the Healthy People 2020 initiative, the U.S. Department of Health and Human Services outlined several goals relating to breastfeeding, which include:

- 81.9 percent of new mothers initiating breastfeeding;
- 60.6 percent continuing for at least 6 months; and
- 34.1 percent continuing to 1 year postpartum.[41,42]
- For exclusive breastfeeding, the goals were 46.2 percent at 3 months and 25.5 percent at 6 months.[41]

In the Latino community, these goals are supported by recent findings that breastfeeding duration can positively impact childhood obesity in Latino youths. In 2012, staff from the Los Angeles County WIC program conducted phone surveys with caregivers of 1,483 Latino children (ages 2-4). The study demonstrated that breastfeeding for 1 year or more can profoundly lower the prevalence of obesity among this population.[43] In 2014, the same group published findings from phone surveys with caregivers of 2,295 low-income, primarily Latino children. This study confirmed the previous finding, demonstrating that breastfeeding ≥12 months

resulted in a 47 percent reduction in obesity prevalence.[44] Another study published in 2014 confirmed that breastfeeding for more than 1 year significantly protected Latino children from developing early childhood obesity in a cohort of high-risk, recently immigrated Latina women in San Fransisco.[45] In fact, the protective effect of breastfeeding on obesity seen in this study persisted through age 4.[45]

Although Latina mothers are nearing the Healthy People 2020 target for breastfeeding initiation, their rates of continued and exclusive breastfeeding remain considerably under the 2020 goals (Figure 1).[46] In addition, Latina mothers may be more likely to provide early formula supplementation compared with mothers of other racial or ethnic backgrounds.[46] Compared with non-Latino white mothers, Latina women are also more likely to introduce solids before 4 months of age, more commonly utilize restrictive feeding practices (such as pressuring their children to eat more food, limiting overall intake, or restricting the intake of certain foods), and demonstrate a reduced rate of exclusive breastfeeding.[10] Evidence suggests that factors such as nonexclusive breastfeeding and early formula supplementation both contribute to significantly higher body mass indexes (BMIs) in Latino children.[47] Taken together, these data suggest that increasing breastfeeding continuation and exclusivity among Latina mothers may help to lower the burden of childhood obesity in Latino youths.

Latina mothers may be more likely to provide early formula supplementation and introduce solid foods, which has been linked to higher BMIs in Latino children.

Several barriers may contribute to low rates of continued and exclusive breastfeeding in this population. For instance, Latina mothers have some of the highest overweight and obesity rates compared with other racial or ethnic groups, and pre-pregnancy weights have been associated with lower rates of breastfeeding.[48] In addition, many Latina mothers are low-income, WIC participants, which is another reported risk factor for lower breastfeeding rates, especially among Latina women.[48,49] In fact, as WIC provides access to free infant formula, program participation itself may be a disincentive for breastfeeding.[48,49] Pain/discomfort, embarrassment, employment, and inconvenience are other commonly reported barriers to breastfeeding for new mothers.[48] For minorities, additional cultural, social, economic, political, and psychosocial factors may also confound a mother's decision to breastfeed. Minority-specific barriers may include a lack of maternal access to breastfeeding information and support, acculturation, language, and literacy.[48]

While interventions, such as peer counseling, have been shown to make a positive affect on breastfeeding rates among Latina mothers,[46,48,50–52] additional policy measures may be necessary to help optimize breastfeeding practices among this population. There are several policy-related areas that may promote breastfeeding among Latina mothers. This may include policies directed at improving breastfeeding support in hospitals and childcare settings, in the workplace, in public areas, as well as in educational systems for adolescent mothers. Regulations surrounding health insurance and paid maternity leave may also play a supportive role. In 2011, the Surgeon General issued a Call to Action to Support Breastfeeding, which outlined a number of measures important for increasing societal support and encouraging breastfeeding rates to grow.[53]

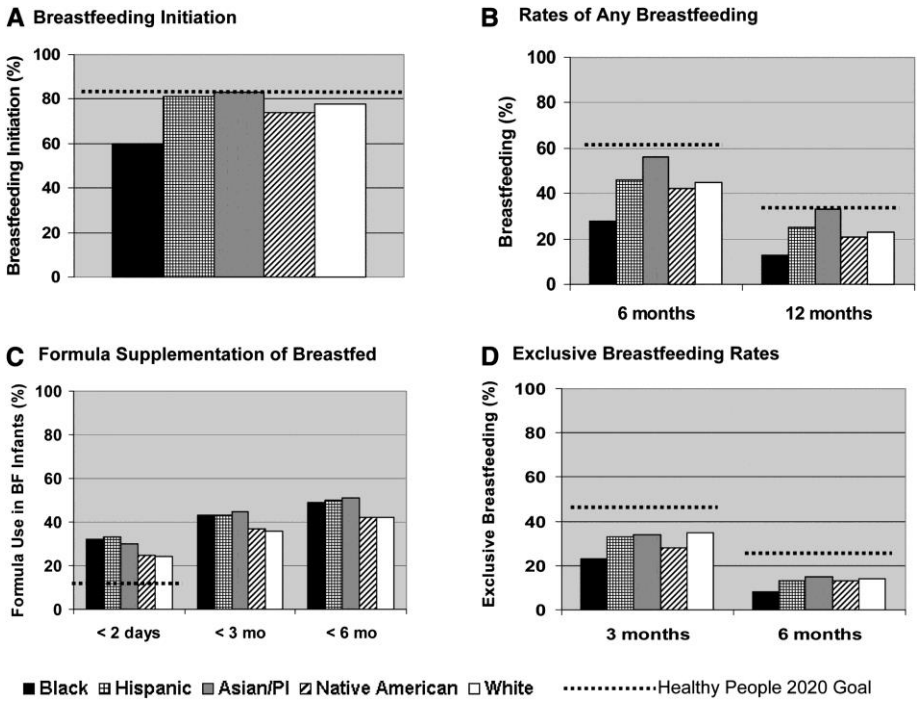

Figure 1.[46] *A. Breastfeeding Initiation: Black women have the lowest rates; B. Rates of Any Breastfeeding: Black women have the lowest rates of any breastfeeding at 6 and 12 months; C. Formula Supplementation: Excessive formula supplementation of breastfed infants in all ethnic groups; D. Exclusive Breastfeeding Rates: Lowest rates among black women, but no ethnic group meets Healthy People 2020 goals.*

Policies improving breastfeeding support in the hospital setting are particularly critical for Latina mothers, as Latina women commonly indicated that they were not properly instructed on how to breastfeed by hospital staff.[54] This marks an important area for improvement as hospitals and birth centers play an essential role in encouraging breastfeeding initiation following childbirth. Several organizations, including the American Academy of Pediatrics (AAP) and the World Health Organization (WHO)/United Nations Children's Fund (UNICEF), have outlined guidelines for establishing a hospital policy that supports breastfeeding.[38,55,56] In fact, the Ten Steps to Successful Breastfeeding jointly issued by WHO and UNICEF has been shown to increase breastfeeding initiation, duration, and exclusivity when properly incorporated.[55,57,58] The 10 steps outlined include measures to better inform pregnant women about the benefits of breastfeeding, help mothers to initiate breastfeeding in the first hour after birth, eliminate other feeding practices unless medically necessary, allow the infant to remain in the room with the mother after birth (referred to as "rooming-in"), avoid pacifiers, and place mothers in contact with breastfeeding support groups on hospital discharge.[56]

Importantly, in the National Survey of Maternity Practices in Infant Nutrition and Care, the Centers for Disease Control and Prevention (CDC) has determined that only 37 percent of birth centers practice more than five of 10 steps outlined by WHO/UNICEF, with only 2.5 percent practicing nine of 10 steps.[59] Out of all hospitals surveyed, 58 percent incorrectly advised mothers to limit suckling time at the breast, 41 percent offered pacifiers improperly, 30 percent supplemented more than half of all newborns with commercial infant formula, 66 percent provided mothers with discharge packs containing infant formula samples, and only 14 percent and 27 percent, respectively, had hospital policies in place and provided breastfeeding support after discharge.[59,60] The AAP responded to these findings by declaring the need for a "major conceptual change" in hospital services for mothers and their infants; they outlined several recommendations on breastfeeding management for healthy term infants.[39] Similar to the 10 steps outlined by WHO/UNICEF, the AAP policies for optimizing breastfeeding include: encouraging direct skin-to-skin contact during feedings, delaying routine post-delivery procedures until after the first feeding, formally evaluating breastfeeding by trained caregivers, removing supplementation with commercial formula or other fluids unless medically indicated, and discontinuing practices that limit the time an infant can spend with the mother, limit feeding duration, or provide unlimited pacifier use.[39]

Policies surrounding breastfeeding are also beneficial outside of the hospital setting. As an unsupportive workplace environment can greatly affect avoidance or discontinuation of breastfeeding among working mothers. Policies intending to encourage and protect women breastfeeding in the workplace are also desirable. The Patient Protection and Affordable Care Act (ACA) signed into law in March of 2010 included an amendment to Section 7 of the Fair Labor Standards Act (FLSA), known as the Reasonable Break Time for Nursing Mothers Provision.[61] This amendment requires employers to provide mothers with reasonable break time to express, or pump, breast milk for 1 year postpartum.[61] According to the provision, employers must also provide a location for mothers to express breast milk that is not a bathroom, is shielded from view, and is free from intrusion from other coworkers and the public.[61]

In 2015, a cross-sectional survey was performed to evaluate lactation support in the workplace by New Jersey employers, after implementation of the federal Reasonable Break Time for Nursing Mothers amendment.[62] The study compared amenity scores with regard to the furnishings, pump availability, milk storage options, and other amenities of employer provided lactation rooms. Overall, the mean amenity score of employer-provided lactation rooms in New Jersey remained far below comprehensive (0.95 out of a maximum score of 3.0), with nearly half of all employers surveyed documenting no amenities for the lactation room. Hospitals were more likely than nonhospital employers to provide lactation rooms, have a company-wide breastfeeding policy, and provide breastfeeding support in the form of educational classes or resources. Among nonhospitals, only 36 percent offered lactation rooms and only 7.7 percent had breastfeeding policies in place. In addition, of nonhospital organizations, 61.6 percent demonstrated no awareness of the federal Reasonable Break Time law.[62] These findings indicate that, despite laws promoting

breastfeeding in the workplace, additional efforts need to be made to increase awareness of federal mandates, understand barriers to compliance, and outline strategies that may help employers to implement a breastfeeding-friendly atmosphere.

In a publication by Smith-Gagen and colleagues in 2013, 8 additional state laws were outlined that aimed to encourage breastfeeding at the state level, in both work and public settings.[63] This included legislation designed to exempt breastfeeding from public indecency laws, allow women to breastfeed in any public or private location, exempt breastfeeding mothers from jury duty, promote breastfeeding awareness education campaigns, require reasonable unpaid break-time from work to express breast milk, and require a private and sanitary location for mothers to express breast milk.[63,64] Enforcement provisions were also directed at enforcing workplace pumping and public breastfeeding laws.[63] Interestingly, this study found that, relative to non-Latino whites, Mexican American women were 30 percent more likely to meet the AAP's recommendation of breastfeeding for at least 6 months in states with laws that provided break-time from work.[63] Mexican American mothers were also 20 percent more likely to breastfeed for at least 6 months in regions with enforcement provisions for pumping laws.[63] These findings suggest that legislation supporting breastfeeding in the workplace may be beneficial in achieving breastfeeding goals in Latino populations.

Presently, according to the National Conference of State Legislatures, 27 states, the District of Columbia, and Puerto Rico have passed laws relating to breastfeeding in the workplace.[64] Additionally, 17 states and Puerto Rico have exempted (or postponed) breastfeeding mothers from jury duty. Regarding breastfeeding in public, 49 states, the District of Columbia, and the Virgin Islands currently have laws that specifically allow breastfeeding to occur in any public or private location. Breastfeeding is also exempted from public indecency laws in 29 states, the District of Columbia, and the Virgin Islands. In the state of New York, a Breastfeeding Mothers Bill of Rights is required to be posted in all healthcare facilities providing maternal care.[64]

In addition to laws surrounding breastfeeding in the workplace and in public, three U.S. states have also passed laws relating to breastfeeding in a childcare setting.[64] This includes Louisiana, which prohibits discrimination against breastfed babies by any childcare facility, as well as Maryland, which requires that childcare centers establish training and policies to promote breastfeeding practices. In Mississippi, licensed childcare facilities are required to provide a sanitary place, other than a bathroom, for mothers to breastfeed their children, express breast milk, and safely store expressed milk in a refrigerator. Mississippi childcare facility staff must also be trained in the safe and proper storage and handling of human milk, and the facility is required to display breastfeeding promotional information to its clients.[64] The AAP and American Public Health Association (APHA) support this movement with the recommendation that each childcare or early childhood education facility should "encourage, provide arrangements for, and support breastfeeding."[65] These organizations agree that childcare centers should require appropriate staff training,

provide support for breastfeeding mothers, and offer a designated location for mothers to feed and express breast milk.[65]

In terms of policies surrounding health insurance support for breastfeeding, the ACA requires new private health insurance plans to offer preventive health services for women with no cost sharing.[64] These preventive services include breastfeeding support, supplies, and lactation counseling for peripartum mothers.[64] Another example of health care-related support is the potential for insurance providers to offer more flexible postpartum schedules for mothers as well as better options for paid family leave.

Young mothers may also be especially at risk for facing breastfeeding-related barriers. This is particularly relevant to the Latino population as Latino teen birth rates remain twice as high than that for non-Latino white teens; in fact, in 2013, Latino teens demonstrated the highest rate of live births among females between ages 15-19.[66] Evidence from the CDC's National Immunization Survey has shown that young mothers are less likely to initiate breastfeeding and often quit breastfeeding more quickly than older mothers.[67] Teen mothers are often faced with unique barriers, such as embarrassment, lack of parenting readiness, need for peer acceptance, and dependence on social support systems that may not encourage breastfeeding.[68–71] Policy updates similar to the Affordable Care Act's Reasonable Break Time for working mothers should be extended to student mothers as well. Providing reasonable break time and a clean, private space for student mothers to express breast milk may help to encourage young women to continue breastfeeding for a longer duration.[71]

Student and teen mothers may benefit from policies that provide reasonable break time and a private space to express breast milk.

Policies supporting paid maternity leave may increase breastfeeding rates and reduce childhood obesity.

Short periods of maternity leave remain a major barrier to breastfeeding, as a woman's employment plans commonly impact her plan to breastfeed.[72–77] Women who return to work before 6 weeks are over 3 times as likely to stop breastfeeding than those who return to work later than 6 weeks postpartum.[78,79] In addition, the timing of breastfeeding discontinuation is closely linked with the return to work in low-income mothers.[72] A mother is more than twice as likely to quit breastfeeding during the month she returns to work compared with a mother who remains on leave.[72] A longer duration of exclusive breastfeeding correlates with a longer period of maternity leave.[72–77] Each additional week of maternity leave has the potential to increase breastfeeding duration by nearly half a week.[80]

In California**,** where a paid family leave program is currently in place, breastfeeding duration was twice as long among mothers who took paid family leave, increasing from 5 to 9 weeks in women with lower-paying jobs.[81] According to global social policies, the United States is 1 of only 5 countries—and the only developed country—not to mandate paid leave for new mothers.[82] In the U.S., the Family Medical Leave Act (FMLA) offers women up to 12 weeks of unpaid, job-protected maternity leave; however, not all female employees are eligible and many low-

income households cannot afford to take unpaid leave, relying on a combination of short-term disability, sick leave, vacation, and personal days.[83] Between 2006 and 2008, one-third of employed women (29.4%) did not report the use of maternity leave during their last pregnancy.[83] For those who did report taking maternity leave, the average duration was 10.3 weeks, and was completely unpaid for 33.1 percent of women. A more recent study demonstrated that 59 percent of women did not receive paid maternity leave, and those who did averaged only 3.3 weeks paid with 31 percent wage replacement.[84] Policies surrounding maternity leave are particularly important for Latino families, as data from the CDC National Survey of Family Growth show that Latina women are less likely to utilize maternity leave compared with non-Latino white and black women.[83]

Mothers who planned to return to work before 12 weeks were less likely to express a plan for exclusive breastfeeding, according to a study of 2,348 prenatally employed women.[85] In another published analysis from this cohort, only 28.8 percent of women who intended to breastfeed for ≥3 months were able to meet this objective.[86] Policies supporting flexible work scheduling and paid maternity leave may allow more women to achieve their breastfeeding goals, which may also reduce the rates of childhood obesity. There is a need for further studies investigating the impact of paid maternity leave on breastfeeding and childhood obesity directly within Latino populations.

Pre-delivery interventions are associated with improved perinatal outcomes for low-income women.

A mother's prenatal intention regarding infant feeding is one of the strongest predictors of how she will feed her infant.[87–90] In a study of 2,348 prenatally employed women from the Infant Feeding Practices Study II, the majority of mothers (59.5%) planned to exclusively breastfeed during the first few weeks postpartum.[85]

Pre-delivery strategies have been shown to be effective not only in increasing the likelihood of breastfeeding, but also in achieving numerous other desired outcomes for both mother and child. Following this concept, the Nurse Family Partnership Program (NFP) is dedicated to pairing a nurse with a first-time, low-income mother in an attempt to help educate new mothers in areas that may improve the health and well being of her and her child.[91] Several randomized controlled trials from the NFP were conducted in Elmira, New York, Memphis, , and Denver.,Follow-up studies continue to show long-term benefits in several areas: improved prenatal health, fewer childhood injuries, increased intervals between births, increased maternal employment, and improved school readiness among children.[91] In a prenatal setting, the NFP has been shown to decrease prenatal cigarette smoking and improve diets over the course of pregnancy significantly more than women in control groups.[92–94] In addition, women enrolled in the NFP in Colorado (47% Latino) achieved several positive outcomes, including 90 percent of babies being born at a healthy weight, 91 percent of mothers initiating breastfeeding, and 36 percent continuing breastfeeding by 6 months.[95]

The benefits of such pre-delivery interventions are also evident in the Latino population. A study in Orange County, California in 2003 demonstrated that the NFP home visitation program and a less intensive Public Health Field Nursing (PHFN) home visitation schedule could both positively affect birth outcomes in a population of 225 Latino adolescent mothers and their infants.[96] More recently, a 2014 study of 1,000 Latina women enrolled in the Pennsylvania NFP demonstrated that home visitation was associated with reducing the risk of short interpregnancy intervals, effectively improving birth spacing in Latina mothers.[97]

WIC program policies are being revised to promote increased breastfeeding rates and healthier eating habits among low-income populations.

Federal food assistance programs, such as the WIC program, are important for ensuring that low-income families have access to healthy foods. The WIC program is funded by the U.S. Department of Agriculture and aims to offer nutritious food as well as education on nutrition and breastfeeding to low-income, prenatal and postpartum women, and to their children up to age 5.[98]

Improvements to WIC program policies may promote healthier eating—which may benefit Latinos, who make up 41.5% of all WIC participants.

There have been conflicting reports on the affect of WIC programs on breastfeeding because women are allowed to purchase formula under the program.[99–106] Due to the role of breastfeeding and healthy eating habits in childhood obesity, policies to improve breastfeeding rates among low-income, WIC participants is an important area of focus.[107] Based on recommendations from the IOM, the WIC program was revised in 2009 to increase breastfeeding support and improve the types of foods contained within its packages.[107,108] Food packages for women and children older than 2 were revised to include fruits and vegetables, whole grains, and lower-fat milk options. For postpartum women and infants, food packages were updated in an attempt to incentivize breastfeeding. This included an increase in the amount and variety of food benefits for fully breastfeeding mothers as well as infants not receiving formula. Additionally, for infants receiving formula, formula amounts are now calibrated according to infant age and complementary infant foods are postponed. In the state of California, a policy was adopted preventing routine issuance of formula to breastfeeding mothers within the first 30 days after delivery.[107,108]

A study in 2012 aimed to assess the affects of these policy changes in a population of over 180,000 infants enrolled in WIC in Southern California.[109] The study demonstrated an 86 percent increase in the issuance rate of the “fully breastfeeding” package at the time of infant enrollment following the policy change. There were also significant increases in the issuance of packages without formula at 2 and 6 months of age, while formula-containing packages were issued at a significantly decreased rate. Importantly, a total of 18 months following food package revisions, a study by Kong and colleagues demonstrated significant improvements in total fat, saturated fat, dietary fiber, and overall diet quality specifically among Latino children participating in WIC in Chicago, Illinois.[110] A more recent study in 2015 demonstrated conflicting findings in a population of majority-Latino infants and toddlers enrolled in WIC in south central Texas.[111] Compared with feeding practices

prior to 2009 package changes, this population showed no significant post-change improvements in either breastfeeding initiation, duration, age of introduction of complementary foods, or exposure to baby food fruits and vegetables. A significant improvement was noted in the amount of infants receiving cereal in their bottles.[111]

Although findings relating to the impact of WIC policy updates on breastfeeding rates remain unclear, some recent evidence in the literature has illustrated that WIC policy changes can result in a moderate decrease in the prices of fruits and vegetables.[112] Studies have shown that reducing fruit and vegetable prices can increase the consumption of these healthy foods and improve weight outcomes, especially among low-income families.[113,114] As a result, WIC policy changes may have the potential to affect childhood obesity not only via altered breastfeeding rates, but also through healthier diets upon introduction of solid foods.

The potential benefits of WIC programs are especially important for Latino communities, as Latinos comprise 41.5 percent of all WIC participants.[115]

Marketing infant formula to pregnant women is associated with reduced rates of initiating breastfeeding, shorter duration of breastfeeding, and increased use of formula.

Given the benefits of breastfeeding on reducing childhood obesity in the Latino population, it follows that factors discouraging mothers from breastfeeding may be detrimental to childhood obesity rates in Latino youths. Exposure to formula marketing can have a negative affect on a woman's decision to initiate and/or continue breastfeeding.[116–118] Mothers enrolled in WIC may be at particularly high risk, as WIC is the largest consumer of infant formula in the U.S. and provides free formula to low-income mothers.[119] In addition, many states allow formula manufacturer's to use statements such as "WIC approved" or "WIC eligible," which may falsely imply that WIC endorses infant formula use over breastfeeding.[116,117] A 2015 review of marketing claims demonstrated that many infant formula advertising campaigns make unwarranted claims regarding their products that are not supported by sufficient clinical evidence.[120]

Formula marketing comes in many forms, from free education packs in medical offices to hospital discharge packs for new mothers. These marketing materials commonly include formula samples, discount coupons or vouchers, pamphlets, posters, and other promotional materials.[121] According to one survey in Rochester, New York, 65 percent of women reported that they had received free formula offers at some point during their pregnancy; 78 percent reported receiving materials published by a formula company.[122] Another survey in Monroe, New York found that 61 percent of obstetrician offices offered free formula and 41 percent displayed some form of formula promotional material.[123] Since 1989, formula companies have engaged in direct consumer marketing via television commercials, magazine advertisements, and more recently social media.[121] In 2013, one study revealed that the prevalence of infant formula advertisements had steadily increased in two popular U.S. parenting magazines between 2009 and 2012; at its peak, about 15

percent of the advertisements in these parenting magazines were dedicated to infant formula.[124] In addition, exposure to formula information in print media or on websites is associated with an increased likelihood of mothers intending to use formula or use formula earlier, and a decreased likelihood of breastfeeding initiation.[125] Infant formula marketing via social media platforms such as Facebook, mobile apps, and You Tube videos also represents a growing area of concern.[126]

Evidence shows that women who encounter advertisements for infant formula in medical practices may be unintentionally discouraged from initiating breastfeeding or may be less likely to breastfeed for the recommended amount of time.[118,127–129] In one randomized controlled trial, women exposed to formula company-produced marketing materials versus non-commercial materials at the first prenatal visit were more likely to stop breastfeeding before hospital discharge or before 2 weeks postpartum.[118] Commercial materials also negatively impacted rates of exclusive breastfeeding and overall breastfeeding duration for women who were uncertain about their breastfeeding plans or who planned to breastfeed for ≤12 weeks.[118] In a focus group setting, women reported that formula marketing decreased confidence in a mother's ability to breastfeed, especially in cases where marketing material was supplied by healthcare practitioners or their practices.[130]

Aggressive infant formula marketing may discourage mothers from breastfeeding. Policies that regulate the marketing of formula may increase breastfeeding initiation rates.

In addition to marketing in medical offices, distribution of hospital discharge packets containing free formula samples or coupons can also discourage breastfeeding exclusivity or duration.[117,131–139] In a U.S. Government Accountability Office review, seven of 11 studies demonstrated lower breastfeeding rates among women who had received hospital discharge packs containing formula samples or coupons, compared with women who received non-commercial discharge packs or no packs at all.[117] These findings were corroborated by more recent studies in 2012 and 2014.[140,141] In the latter study, rates of exclusive breastfeeding at 10 weeks and 6 months were significantly lower among women who had received discharge bags containing formula samples and/or coupons, compared with women receiving breastfeeding supply bags or no discharge bags at all.[141]

In 1981, WHO and UNICEF jointly published the International Code of Marketing of Breast Milk Substitutes, outlining recommended standards for advertisers, health care institutions, and health care workers.[142] According to a report in 2011, the United States is the only developed country that has not taken action to enforce this International Code.[143] A 2014 study demonstrated that none of the pediatrician waiting rooms observed were completely Code compliant and the vast majority still had formula-promotional materials readily available.[144] Support for the elimination of commercial discharge packs and the distribution of free formula, coupons, or commercially published handouts by pediatricians has also come from the AAP, the Academy of Breastfeeding Medicine, and the Surgeon General.[145,146,39]

To avoid inadvertent promotion of formula use over breastfeeding, several states are regulating marketing materials in hospitals and medical offices. The New York State Department of Health requires that all hospitals utilize written policies to ensure that formula is only administered to breastfeeding infants when medically indicated.[147]

Rhode Island eliminated the distribution of free formula discharge packs to new mothers in 2011. As part of the WHO's Baby Friendly Hospital Initiative (BFHI), hospitals aiming to achieve "Baby-Friendly" status are required to implement the WHO/UNICEF Ten Steps to Successful Breastfeeding, which includes requirements for eliminating formula.[55] Several reports in the literature have demonstrated that breastfeeding initiation and duration are improved for babies born in BFHI hospitals.[57,148,149]

In 2013, 32 percent of hospitals and birth centers in the U.S. distribute industry-sponsored discharge packs with formula samples to new mothers, but this is down from 73 percent in 2007.[150–154] A 2011 study, found states with the highest concentration of hospitals removing formula sample distribution were also those with the greatest average breastfeeding initiation rates.[155]

The majority of the literature on formula marketing and breastfeeding rates does not focus on Latina women, however there is evidence that low-income, WIC-enrolled mothers may be targeted with more marketing. One early study of low-income Latina women was able to show that those who received gift packs containing formula samples had significantly lower breastfeeding rates during the first three weeks postpartum.[134]

Parental behaviors relating to healthy eating and physical activity have important implications for establishing healthy early childhood habits and promoting a healthy weight among Latino children.

As we have discussed, a mother's physical activity level during pregnancy and early infant breastfeeding practices both play an important role in limiting the risk of childhood obesity among Latino youths. Within the first year of life, infants experiencing rapid weight gain are more likely to become overweight in later years.[156–159] As such, it is critical that parents continue to promote healthy eating habits and physical activity for their children during infancy and early childhood in order to encourage a healthy weight for life. This is particularly important for Latino families, as there is a higher rate of obesity among Latino preschoolers in the United States compared with non-Latino white youths.[1,160]

In 2014, a randomized obesity prevention trial investigated racial and ethnic trends in infant feeding and activity behaviors among parents of 2-month-old infants.[161] The trial enrolled 863 parents (50% Latino) and reported the prevalence of behaviors thought to relate to later obesity. Importantly, study investigators found that potentially obesogenic feeding behaviors were already prevalent at this early age, such as exclusive formula feeding in 45 percent of the total study population and early introduction of solid food in 12 percent. In addition, practices such as bottle propping (enabling babies to drink from a bottle without the assistance of a parent or caretaker) (23%), putting infants to bed with bottles (43%), always feeding when the infant cried (20%), and always encouraging infants to finish their milk (38%) were also prevalent. When considering racial and ethnic differences, Latino parents were

more likely than non-Latino whites to encourage infants to finish feeding or engage in bottle propping behavior.[161]

In terms of physical activity and sedentary practices, behaviors linked to obesity were also highly prevalent at this early age.[161] The same 2014 study evaluated markers of physical activity including infant tummy time, television exposure, and active television watching, in accordance with AAP recommendations. Television watching is discouraged in all children younger than 2;[162] and at least 30 minutes of tummy time, which helps infants strengthen their muscles, is recommended per day.[163] According to the study investigators, parental adherence to these recommendations was low.[161] Nearly 50 percent of all parents reported active television watching among their infants, with over 90 percent reporting that infants had exposure to television throughout the day.[161] For Latinos, 41 percent of infants took part in active television watching for more than 25 minutes per day, with a mean daily television exposure time of 228 minutes (or 3.8 hours). In addition to sedentary screen time, only 34 percent of all parents reported providing their infants with the recommended physical activity of ≥30 minutes of tummy time per day. Tummy time was lowest among Latino infants (22%) compared with non-Latino black or non-Latino white infants (45% and 46%, respectively).[161] These findings indicate that by the age of 2 months, behaviors discouraging physical activity and promoting sedentary behavior and unhealthy eating are already prevalent among Latino infants and their parents.[161]

At least 30 minutes per day of tummy time is recommended for physical activity during infants.

Childcare centers and providers are an important resource for promoting obesity prevention measures such as healthy eating and physical activity practices among Latino children and their parents.

Most young children spend a significant amount of time in day care, preschool, pre-kindergarten (pre-K), and Head Start programs.[164] An estimated 60 percent of children younger than 6 are placed in some form of non-parental care during the work week, averaging.[164] nearly 30 hours per week.This presents an opportunity for childcare centers and providers to encourage healthy behaviors in young children and to better educate parents on how to continue healthy behaviors at home.[164]

Evidence from the literature supports the notion that childcare is an important resource for promoting healthy behavior among children ages 2-5. Nutrition interventions and following nutrition guidelines in this setting can improve children's diets by decreasing fat intake and increasing fruit and vegetable consumption.[165–169] Physical activity interventions in preschool and childcare can increase children's activity levels and have a positive impact on fitness and motor skills.[169–172] There have also been reports that targeting nutrition and physical activity in this setting can benefit measures of a child's adiposity (i.e., weight, body fat, or BMI); however, fewer studies have investigated this correlation.[165,173,174]

A 2014 study evaluated the effects of an early childhood obesity prevention program implemented at 4 childcare centers compared with four non-intervention control centers.[175] Children at intervention centers received healthier menu options and

family-based education promoting increased physical activity, decreased screen time, more fresh produce consumption, and fewer simple carbohydrate-based snacks. Results demonstrated that there was a significant inverse correlation between children's BMI scores and the number of home activities completed by six months after the intervention. Additionally, children in the childcare-based intervention group consumed less junk food and drank less juice, while eating more fresh fruits and vegetables and drinking more 1 percent milk versus children at control sites.[175]

In recent years, the U.S. Department of Health and Human Services issued the Surgeon General's Vision for a Healthy and Fit Nation.[176] This report promoted the importance of childcare centers and early childhood education programs in implementing strategies to meet expert recommendations on physical activity, screen time, proper nutrition, and healthy sleep. It also emphasized the role of childcare providers in helping to educate parents on how to promote these healthy habits at home. Childcare providers are called to: identify effective approaches for promoting healthy behaviors, establish best practices, stay current through regular training, and educate parents in training activities.[176]

State regulations regarding effective policies may vary according to state and type of childcare center.[176] For instance, federally-funded Head Start regulations may differ from those encountered in a state-funded pre-K program or a private, family-based childcare setting.[176] The Surgeon General's report called for standardized national goals surrounding the issue of early childcare regulations, particularly as it relates to those for achieving a healthy weight.[176] Sample recommended policies from this report include: requiring a mixture of structured and unstructured daily physical activity, following national recommendations to establish nutrition requirements, implementing a structured training approach for childcare providers to expand their knowledge on how to promote healthy eating, physical activity, and parent education in their practice, and providing parents with materials that will help in reinforcing these healthy practices at home.[176]

In January 2015, the United States Department of Agriculture (USDA) proposed a new rule that would revise the nutrition standards for the Child and Adult Care Food Program (CACFP) in the United States.[177] Should the proposed changes be implemented, meals with a greater variety of fruits and vegetables, more whole grains, and less sugar and fat will be provided to children in day care. The proposed CACFP meal patterns would help to promote healthy, balanced meal habits in this setting in an incremental manner that should not increase costs for childcare providers. This marks the first significant CACFP meal pattern revision since the program's inception in 1968.[177] Pending approval, this policy may have more universal implications on establishing healthy eating patterns and corresponding health outcomes for participating children.

The IOM has issued two reports outlining best practices in early childhood obesity prevention.[178,179] In addition, comprehensive national standards for the childcare setting have been outlined by the AAP, APHA, and National Resource Center for Health and Safety in Childcare and Early Education.[180] These standards, outlined in

Appendix A, address important areas of opportunity for encouraging healthy eating and sufficient physical activity among children in the childcare setting.

Pre-K programs, including the federally funded Head Start program for low-income children, are an example of interventions designed to encourage a healthy foundation for preschool-aged children (ages 3-5). These programs often follow more strict regulations aimed to prepare kids for kindergarten and ensure that they are succeeding by third grade.[181] For instance, federally mandated regulations for Head Start programs place strict requirements on nutrition, adequate time and space for active play, and parental involvement and education.[181] As Head Start programs are generally restricted to families in poverty, where obesity rates tend to be higher than national estimates,[182–185] this may be an important arena for early childhood obesity prevention in Latino youths. One study of 423 primarily Mexican-American preschool children (90% Latino) in Head Start centers in San Antonio, demonstrated that an obesity prevention program was able to significantly increase outdoor physical activity and intake of healthy food among children who participated in treatment groups.[186] In addition, measures of relative weight (adjusted for child age and sex) were positively improved for children participating in a combined center- and home-based intervention compared with those in the control group.[186]

Head Start centers and family childcare homes (FCCH) may be important avenues for promoting healthy lifestyle behaviors among Latino children and their parents.

Furthermore, a small study at a single Head Start program in 2010 demonstrated that children experienced healthy changes in BMI over the course of the academic year.[187] An additional study published in 2015 monitored changes in BMI across 12 Head Start programs in Michigan, compared with two age-matched sample populations from a primary care setting (one Medicaid sample and one non-Medicaid).[188] Results demonstrated that children who were obese or overweight upon entering Head Start experienced a significant reduction in BMI-for-age percentiles over the course of the first academic year. Importantly, this reduction was greater than that observed in the two control populations. The improvements in BMI were maintained during the second academic year, although no additional significant changes in BMI occurred. After completion of the two-year study period, children who had entered Head Start obese or overweight were significantly less obese/overweight than children from comparison groups. Investigators concluded that, among the other reported social and educational benefits of Head Start,[189] program participation offered "robust, early, and sustained improvements" on children's BMI. Children in the Head Start program had significantly healthier BMIs upon entry into kindergarten than those either enrolled or not enrolled in Medicaid.

Latino families often express a preference for childcare in a family-like setting and tend to use preschools and day care centers less often than other ethnic groups.[160] One recent study in Massachusetts conducted Spanish-speaking focus groups with licensed Latino family childcare home (FCCH) providers.[190] These providers indicated that they play an important role in promoting healthy eating and physical activity habits among preschool-aged children in low-income, Latino communities. Latino providers in this study also expressed the feeling that they had a responsibility for engaging and educating parents in these healthy practices. Results of the study were concomitant with findings from a group of Latino Head Start providers.[191]

However, they contradict another report that Latino childcare providers may promote negative eating behaviors, such as pressuring children to eat or providing rewards for eating certain foods.[192] Barriers identified by Latino FCCH providers included prohibitive prices of healthy foods, weather restrictions to outdoor play, and the physical environment of the FCCH.[190] It is important to note that interventions tailored for home-based FCCH services may face both logistical and financial constraints; for instance, these facilities are often limited in terms of access to appropriate indoor and outdoor spaces for physical activity.[193–195]

Conclusions and Policy Implications

CONCLUSIONS

- Early infant feeding habits surrounding breastfeeding and formula supplementation can impact childhood obesity among Latino youths. State and federal policies may be able to improve exclusive breastfeeding rates and duration by promoting support for breastfeeding in hospitals, childcare centers, workplaces, schools and public areas.
- Latina women may not be meeting recommendations for physical activity and/or gestational weight gain during pregnancy, and there is a need for increased education of expectant Latina mothers by their physicians. By increasing physical activity and reducing gestational weight gain (GWG) during pregnancy, childhood obesity rates may be positively affected.
- As poor eating and physical activity habits are prevalent in Latino parents of infants as young as 2 months of age, efforts to educate parents on the benefits of healthy eating and physical activity are necessary. In addition to parents, childcare centers and providers are an important resource for promoting obesity prevention measures in early childhood. Childcare providers should encourage age-appropriate eating and physical activity requirements for all children in their care and should help to educate parents in these areas as well.
- Additional studies will be necessary to confirm the positive effects of paid leave on breastfeeding and childhood obesity specifically within Latino populations.
- Pre-delivery interventions, such as the Nurse Family Partnership program that pairs a nurse with a low-income, first-time mother, have been shown to improve several perinatal outcomes. Studies focused on Latino populations and obesity-related outcomes are needed. Pre-delivery interventions may be an ideal way to increase education regarding the importance of breastfeeding and the negative effects of childhood obesity.
- WIC policy updates in 2009 were designed to encourage breastfeeding over formula feeding and increase accessibility to healthy foods, such as fruits and vegetables, among low-income populations. As some reports are beginning to show improvements in breastfeeding rates and healthier eating habits overall following the WIC policy update, it will be important for studies to determine whether these results have extended specifically to Latina mothers and children.
- Formula marketing in hospitals and medical facilities can lower breastfeeding rates among new mothers. Interventions aimed at reducing or eliminating

formula marketing in these settings may help increase breastfeeding rates among Latina mothers, which may result in improvements in childhood obesity.

POLICY IMPLICATIONS

- Expansion and enforcement of state and federal policies promoting breastfeeding in hospitals, childcare centers, workplaces, schools, and public areas have the potential to continue improving breastfeeding rates across the U.S. These policies may help to increase breastfeeding awareness, alleviate associated stigmas, reduce the potential for discrimination, and provide safe, private spaces for women to breastfeed and express breast milk for their infants.
- Physician-directed communication with pregnant mothers may be beneficial for increasing awareness of the importance of physical activity during pregnancy and safe GWG levels. Health care practitioner-driven education of pregnant mothers may help to overcome any inaccurate cultural assumptions that currently encourage unsafe GWG and sedentary behaviors in Latina mothers. Continued education efforts directed at parents following childbirth may also promote awareness of the ongoing benefits of establishing healthy eating and physical activity habits during infancy and early childhood.
- Policies promoting nutrition and physical activity standards across state, federal, private, and home-based U.S. childcare centers may help to reduce rates of obesity in infants and preschool-aged children. Evidence from federal Head Start programs has shown that these interventions can positively affect childhood obesity. Enforcing national standards and increasing the availability of universal pre-K programs may help to extend these benefits to a larger population of U.S. children. Reaching final approval and implementation of the USDA's proposed updates to CACFP meal patterns represents one important means of promoting access to healthy, balanced meals in the childcare setting.
- Policies offering paid parental leave after childbirth have been shown to have a positive impact on breastfeeding initiation and duration rates across the U.S. Given the correlation between lack of breastfeeding and childhood obesity, this is a critical area for improving the obesity epidemic among Latinos, especially among low-income families where unpaid leave is not typically a viable option and mothers are often driven to discontinue breastfeeding to return to work.
- Pre-delivery educational programs for pregnant women aimed at increasing awareness of the negative effects of obesity and the benefits of breastfeeding may help to encourage women to develop pre-delivery plans to breastfeed. Strategies should aim to increase awareness of international recommendations for exclusive breastfeeding for at least the first 6 months of a child's life and continued breastfeeding for at least 1 year postpartum. In addition, culturally appropriate educational interventions may help to decrease improper feeding practices that may be particularly common among Latina women, such as bottle propping, too-early introduction to solid foods, or encouraging infants to finish their bottles even if full. Pre-delivery educational programs may also encourage parents to engage in healthier nutrition and exercise behaviors postpartum.
- Efforts should also be made to eliminate both direct and inadvertent formula marketing from hospital and medical office settings. Recommendations from the

AAP and WHO/UNICEF surrounding formula marketing and discharge packs should be better enforced in these settings in order to send a clear message to mothers that breastfeeding is encouraged.

FUTURE RESEARCH NEEDS

Childhood obesity continues to be an ongoing epidemic in the U.S., especially among Latino youths. While many of the potential policies and interventions discussed in this review have been investigated in the literature in low-income or WIC-enrolled populations, many have not been thoroughly investigated directly in Latino populations. In order to further support the policy implications described herein, it will be important for investigators to provide further clinical evidence that these approaches are capable of affecting positive changes in childhood obesity endpoints in Latino infants and preschool-aged children. Future studies are particularly needed in the areas of paid parental leave and pre-delivery strategies, as few reports investigating the impact of these factors among Latino populations are presently available in the literature. In addition, the affect of recent WIC policy updates on Latina mothers, infants, and toddlers will also be of immediate interest in the coming years. There also is a strong body of evidence to suggest that childcare environments may be an optimal setting for incorporating interventions to promote healthy eating and physical activity behaviors among Latino youths and to educate parents on how to continue incorporating these strategies at home; additional investigations will be necessary to further support the impact of such interventions on obesity rates in Latino youths.

As evidenced by the key concepts outlined in this review, many factors work contribute to childhood obesity. Targeting barriers and facilitators along this pathway, such as breastfeeding or establishing healthy habits during childcare, can lead to direct and indirect effects on obesity rates among Latino youths. Continued efforts to investigate these correlations and promote relevant policy changes to address them will be essential to overcoming the childhood obesity epidemic and improving the number of Latino youths who enter kindergarten at a healthy weight.

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Appendix A

Healthy eating: According to national standards,[178–180] measures to ensure healthy eating in childcare may include serving healthy, age-appropriate beverages, such as water as a substitute for fruit drinks and soda, and offering low-fat milk options. Also, providing a balanced diet with a variety of fruits and vegetables, whole grains, lean protein, and minimally processed foods. Facilities should avoid high-calorie, low-nutrient foods, including salty snacks or foods high in saturated fats. In addition, care should be taken to follow age-appropriate feeding habits, such as no mixing of cereal or juice in infant formula bottles and no fruit juice for children under 1 year of age. Avoiding overfeeding by staying aware of cues that an infant is full and waiting until an appropriate age to begin introducing complementary foods is also advised. As children age, childcare providers should allow them to regulate their own food intake by offering meals or snacks every few hours and providing small portions. Children should be seated and undistracted during mealtime, and childcare providers should sit and eat with children to encourage positive, healthy mealtime behaviors. In addition, food should not be used as a reward or a punishment in the childcare setting.[178–180]

Physical activity: In addition to healthy nutrition and mealtime habits, standards have also been outlined for appropriate levels of physical activity, screen time, and sleep. This is especially important for Latino children in low-income areas, as they may have limited access to safe outdoor spaces to engage in active play outside of childcare.[196] Overall, daily physical activities should be offered during childcare, including time to play in a safe, outdoor space.[178–180] It is helpful to have a written policy outlining plans to promote physical activity and train childcare staff on age-appropriate activities. Infants should have appropriate tummy time on a daily basis, toddlers should have 60-90 minutes of vigorous physical activities interspersed over short, regular bursts, and children of preschool age require 90-120 minutes of such activity per day. Childcare providers should lead and participate in structured games or activities to model active play in an encouraging, positive fashion. Television, video game, or other screen time and sedentary time should be limited. This includes not allowing any screen time for children younger than 2, and limiting that for ages 2 and older to less than 30 minutes per week. Screen media should also be removed during naptimes to encourage healthy sleeping habits. Establishing a calming naptime routine is also recommended.[178–180]

Training parents: In addition to promoting these healthy habits during childcare hours, providers should also be trained to educate parents.[178–180] Childcare providers should encourage families to get involved in healthy eating approaches by providing parents with nutrition guidelines and copies of menus, while initiating conversations about the importance of healthy eating habits. Providing mothers with breastfeeding resources and an on-site location for breastfeeding is also encouraged. In addition, providers are encouraged to work with parents to develop a plan for appropriately timing the introduction of complementary foods for infants. The facility's policies for

promoting physical activity, limiting screen time, and cultivating healthy sleeping habits should also be shared with parents. This may encourage parents to continue reinforcing healthy habits with their children at home.[178–180] A study of Latino childcare providers in a family, home-based setting reported that the low-income, majority Latino children in their care typically have home environments that are not conducive to healthy eating and physical activity patterns.[190] They stressed that engaging and educating parents in these areas was an important responsibility. Several other focus group-based studies have supported the claim that childcare providers are crucial for engaging and educating parents in healthy eating and physical activity behaviors.[193,197,198]

It is important to note that other members of the community such as peers, family members, or community and religious leaders may also play an important role in promoting healthy parenting choices.