Looking at aspects of family dynamics that contribute to childhood obesity

Childhood obesity has reached epidemic levels over the past 30 years and has become a global issue. As obesity can lead to multiple comorbidities, it is essential to gain a good understanding of possible contributing factors to help address it. This article looks at variables in family dynamics that are associated with childhood obesity.

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Childhood obesity has become a pandemic. In 1975, the number of obese children, ages 7–19 years, was about 11 million, worldwide (Abarca-Gomez et al, 2017). In 2016, obesity in children, ages 5–19 years, increased to about 124 million, with an additional 213 million children being overweight (World Health Organization, 2021; Statistics – Childhood Obesity Foundation, 2019). In 2019–2020 it was estimated that 150 million children worldwide are obese, with 39 million being under the age of 5 years (World Health Organization, 2021; Childhood Obesity Foundation, 2019). Research shows that obesity can lead to multiple comorbidities and a shorter lifespan (Henderson, 2021). Studies have also documented ways in which parents (or families) can access free interventions to combat childhood obesity, yet the epidemic has shown little signs of decline in those with obesity (Henderson, 2021). Identifying the contributing factors to obesity may be key to creating an effective treatment plan and help address this issue. A more recent area of study in childhood obesity focuses on family dynamics, including family structure, family environment, and family functioning. How do these family dynamics contribute to, or affect childhood obesity?

Looking at variables in childhood obesity

Children eating high fat or sugar foods, and decreased exercise are some of the main contributing factors found in studies (Conlon et al, 2019; Kininmonth et al, 2022). It is becoming more evident that the obesity problem doesn't come from a few simple sources, but from much more intricate and complex situations. Studies show that family dynamics play a role in the body mass index (BMI) of children within the family. Many articles looking at these dynamics found a relation between socioeconomic status within the family and children's body mass index (BMI) (Hemmingsson 2018; Bates et al, 2019; East et al, 2019; Wang et al, 2022; Min et al, 2018; Fismen et al, 2022; Vaquera et al, 2018; Gray et al, 2018; Gatjens et al, 2020; Lindsay et al, 2018). Socioeconomic status generally includes income level of the family (poverty status), occupation of parents, education levels of parents, and ethnicity. Poverty is considered the greatest contributor to, or strongest predictor of childhood obesity (Hemmingsson 2018; Gatjens et al, 2020; Min et al, 2018; Wang et al, 2022; Gmeinder et al, 2023). Research avenues have widened to include additional variables such as family chaos or disorganisation, parental smoking, parental weight, screen/media time, stress, unhealthy eating habits, and sedentary lifestyle, for example.

Stress

Among the studies reviewed for this article, stress was labelled as psychosocial stress, financial stress, parental stress, family strain, and stress. Stressors can directly affect the family dynamics and ultimately affect various aspects of family life. In a three-year Swiss study, children were part of an obesity treatment programme where health professionals visited the family home on several occasions and used observation, a question checklist, and the Heidelberger stress scale to measure psychosocial stress (Gmeinder et al, 2023). The Heidelberger scale measures five different subcategories of stress: overall stress, the family's stress level, the child's personal stress, social stress, and any financial burden (Gmeinder et al, 2023). Scores range from 0 to 100 with a score of 40 or more indicating stress levels or factors that have the potential to affect daily life (Gmeinder et al, 2023). The home environment and structure were assessed through observation or the checklist questions (Gmeinder et al, 2023). The children's BMI was measured at the beginning of the study and again at the end. A total of 26 families were included in the study, out of these 21 had elevated stress levels (Gmeinder et al,

2023 May 15). The researchers found that psychosocial stress contributes to obesity (Gmeinder et al, 2023). However, there were subcategories of psychosocial stress that were most associated with weight status, these included financial burden and the parents' social stress (Gmeinder et al, 2023). A home health programme could help as many unhealthy home habits were observed through this research and the study also found that the obesity treatment programme has a positive impact on weight status (Gmeinder et al, 2023).

Another recent study approached obesity research in a different direction looking to see how positive social exposure, namely familial psychosocial assets within the family, reduces risk of obesity (Rollins et al, 2022). Looking at the family dynamic of positive exposure to such things as maternal sensitivity, which would be of a more non-stressful event, in early childhood along with the child's behavioural regulation helps to identify and reduce the risk of obesity in youth (Rollins et al, 2022). It was noted that children who had poor behaviour regulation and lower family assets in early childhood were at greater risk of a severely obese outcome, but this psychosocial risk was not distinguished as the possible contributing factor to obesity. Rather, it may be precipitated by genetics or other environmental variables, or variables such as the stress of poverty (Rollins et al, 2022). Additional studies concluded that stress is an accelerator of BMI and that children who are already overweight will continue to increase in weight (East et al, 2019).

A 21-year study using a latent growth curve model with trajectories from 5 to 21 years followed children's BMI growth over time that was related to family stress as well as other variables (East et al, 2019). The 21-year longitudinal study concluded that a lack of support by the family for child development was associated with the child becoming overweight or obese in adolescence or adulthood (East et al, 2019). Household chaos, or entropy (things such as clutter, noise, disorganisation, and being rushed) produces stress that can predispose children to weight issues (Andraea Van Hulst et al, 2023; Buchanan et al, 2021; Krupsky et al, 2021; Bates et al, 2019). The more chaotic an environment a child lives in the greater the risk that they will experience obesity as the stressors caused by chaos tend to reduce positive parent-child interactions and decrease child self-regulation (Krupsky et al, 2021; Buchanan et al, 2021). However, bates et al found that income status affected their sample population in that higher income families had a prediction of lower zBMI even though they had high levels of disorganisation (chaos) in the household (Bates et al, 2019). This may mean that chaos affects families in different ways according to their socioeconomic status. Other articles indicated in their conclusion that chaos in families was more likely to affect sleep rather than directly affecting weight (Van Hulst et al, 2023; Bates et al, 2019).

Stress and chaos within a family negatively impact family dynamics and increase the risk of a child developing obesity. Stress influences the amount of sleep achieved by the paediatric population which in turn can lead to an increase in children's BMI. Providers should assess for stress within the family when investigating contributory causes to overweight and obesity in children.

Family interactions

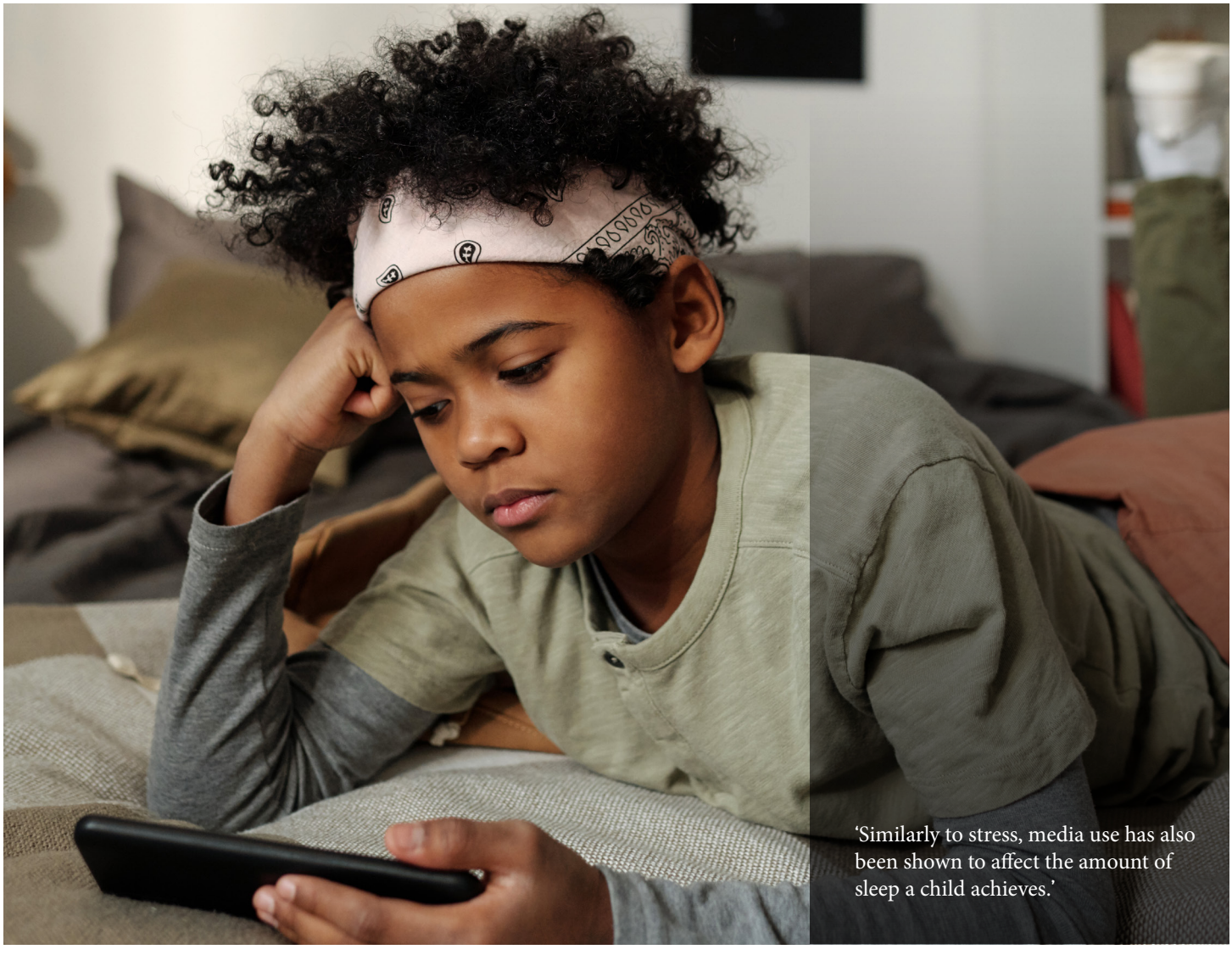
Varying types of family interactions with a child can also be a negative factor to obesity (Conlon et al, 2019; Buchanan et al, 2021; East et al, 2019; Rollins et al, 2022). This was measured through the dynamics of joint family meals, parental warmth towards a child, maternal sensitivity, positive parenting styles, and parent-child interactions. Rollins et al investigated exposure to a familial asset, labelled maternal sensitivity, during the 1–15 months and 24–54 months of age periods using a lifecourse approach (Rollins et al, 2022). Exposure to maternal sensitivity during early childhood shows more positive results in reducing obesity than exposure in infancy (Rollins et al, 2022). It also shows that it reduces the likelihood of obesity and buffers the negative effects of familial risk in developing severe obesity (Rollins et al, 2022). Thus, maternal sensitivity decreases the chances of a child becoming part of a severely obese paediatric population (Rollins et al, 2022). Low or negative parent-child interactions were linked to childhood obesity (Buchanan et al, 2021). Using a person-centred statistical analysis structure, Buchanan et al allowed for the emergence of profiles or patterns regarding risks in developing obesity (Buchanan et al, 2021). Families were videotaped playing board games together during home visits. Observation of the recorded interactions were performed by trained research team members who were blinded to the study hypothesis, and used the Iowa Family Interaction Rating Scales to code the recordings (Buchanan et al, 2021). This measured interpersonal behaviours during the games. A strong bivariate correlation in dominating and warm behaviours between child and parent was found (Buchanan et al, 2021). When parents behaved in a warm manner, so did their children. And, when parents displayed dominating behaviours, the children also displayed dominating behaviours. Families who were inconsistent and distant in their parent-child interaction were found to be strongly associated with childhood obesity (Buchanan et al, 2021).

One study discussed the characteristics of the family/home with a less supportive environment, such as low paternal warmth. This type of family/home was associated with children developing a higher BMI as an adult and would have accelerated BMI growth (East et al, 2019). A cross-sectional study in the United States concluded through analysis of baseline data that shared family meals, without watching television, created healthier habits in the predominately Hispanic/Latino children of the study (Conlon et al, 2019). The more often the family shares meals together the greater the likelihood that the children will eat more than or equal to one cup of fruit, whereas watching television during meals made eating fruit less likely (Conlon et al, 2019). Family-centred mealtimes show an increased probability that children will choose to eat healthier foods, aiding weight reduction.

How a family interacts together can increase or decrease the risk of obesity in children. Positive family interaction produces a greater likelihood of children developing healthier eating habits and food choices. The familial relationship between child and family members should be assessed when gathering health information pertaining to a child's obesity risks.

Media and childhood obesity

As studies investigated whether watching television during mealtime increases the odds a child may not eat as healthy, it opened up the opportunity to study more widely how media affects a child's weight outcomes. Gatjens et al (2020) used a mediation analysis of family lifestyle



'Similarly to stress, media use has also been shown to affect the amount of sleep a child achieves.'

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factors to explain the inverse association with socioeconomic status (SES) and fat mass percentage – standard deviation score (FM%-SDS). Media consumption was found to be a mediator of the relationship between SES and FM%-SDS, and when comparing age groups, media consumption use increased with age (Gatjens et al, 2020). Children between 5 and 7 years old had an overall mediation effect to fat mass explained by media consumption and parental weight status (Gatjens et al, 2020). Older children and adolescents had additional mediating factors to fat mass which those aged 5 to 7 years did not have (Gatjens et al, 2020). As children transition into adolescents, home environment factors related to obesity increases.

A longitudinal study of the home media environment predicted an increase in child BMI from ages 4 to 12 (Kininmonth et al, 2022). The association between sleep issues and media time used by children has also been researched. A mediation analysis study shows that the hours of sleep achieved each night, from a sample of children and adolescents from Texas aged 8 to 18 years, was inversely associated with BMI in both sexes (Cha, 2018). This study also discovered that the hours of media used by children in the study was associated to the hours of sleep achieved as well as having nighttime eating issues and eating behaviours that were unhealthy (Cha, 2018). The review of research indicates that lack of sleep is related to obesity and the use of long hours of media time by children and adolescents may be a significant predictor of increased BMI due to a decrease in hours of sleep achieved (Cha, 2018)

Similarly to stress, media use has also been shown to affect the amount of sleep a child achieves. Media can greatly occupy a child's time with little physical demand. This time could be better used in physical activity or play. Media use can also result in poor eating habits and encourages snacking. Screening for the amount of media time a child consumes in a day as well as the amount of sleep a child is achieving could aid providers in determining if media is contributing to a child's weight or BMI increase within each child's family dynamics.

Recommendations for practice

Nearly all research discussed in this article concluded that a family-centered approach to prevention or treatment for childhood obesity needs to be considered and further researched (Gray et al, 2018; East et al, 2019; Bates et al, 2019; Rollins et al, 2022). Nurse practitioners could use a questionnaire

screening tool at child wellness visits to guide them in determining the risks of developing obesity in the children seen (Harding, 2023). As research uncovers the variables that predispose children to obesity, screening tools can be tailored toward family dynamic variables. These questions may be aimed at the children themselves, the family members, or the family dynamics. The nurse practitioner can use this information to guide them in determining the need for treatment or in tailoring a treatment plan specific to that family's needs. It can help focus on the areas in which that family has the most predisposing factors and limit areas that are of a less likely contribution, giving strength to structure and lessening generalisation. A literature review article examined barriers to success for nurse practitioners in the implementation of tools and guidelines to aid them in combating childhood obesity (Harding, 2023). Barriers in the studies included lack of interest by patients or resistance from parents, difficulty for patients to change their behaviours, providers not being experienced in the subject or being uncomfortable with the subject, lack of time, providers not feeling motivated, and not having the appropriate referral services (Henderson, 2021). Current tools used to assess childhood obesity need to be modified so that they are easy to understand, follow guidelines, and are quick to administer. It is also important that these tools assess the family dynamics that may affect childhood obesity. Studies concurr that early detection and intervention produces the best outcomes (Henderson, 2021). Provider or trained medical staff home visits to gauge a family's needs could be helpful (Krupsky et al, 2021; East et al, 2019; Gmeinder et al, 2023). This would likely be costly, time-consuming and would need further study. However, it could give rise to a subgroup of paediatric providers or nurse practitioners specialising in child weight issues in the home setting, assessing the family dynamics first hand and developing strategies to assist families in combating childhood obesity during home visits.

Conclusions

Family dynamics play a role in the paediatric population concerning obesity. Research suggests that prevention options may be better served if they were designed to include the family unit and not just the parents or the child(ren) alone. This would include understanding the individual family needs by learning about their family dynamics through family structure, environment, and/or functioning as this can further aid nurses to tailor a plan for specific needs. Not all possible variables related to childhood obesity have been studied and there are still many gaps in research. Other possible contributors to childhood obesity could include parental grocery shopping habits for example.

As research uncovers variables that contribute or predispose children to obesity, it becomes important to distinguish how treatment and prevention will be addressed. It is known that low socioeconomic factors are the greatest contributor to the problem and prevention may be best started by targeting those in this category, later stretching to all socioeconomic groups. As the problem does not solely lie with the child, but by many factors within the family, it would be to the nurse's advantage to have screening tools to assess the whole family unit and if research proves fruitful, possibly eventually enter the home environment to observe family interactions such as stress (Hruska et al, 2020). If tools are designed that are easy to understand, quick to administer and target many of the contributing factors, there will be an avenue that nurse practitioners can implement and use to reduce and prevent childhood obesity effectively. Through literature review and evaluating studies, screening tools that already exist could be modified and made current to reflect new information and start the challenging process. Nures Practitioners can then choose the programme they feel will best fit the family and implement it. There are numerous evidence-based obesity prevention or reduction programmes/interventions available for nurse practitioners to present to families (Henderson, 2021). For nurse practitioners encountering patients with obesity or weight increases, further education about guidelines could be made available to motivate and allow practitioners to become more comfortable to step in and take on the challenge. **CHHE**

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Gray LA, Hernandez Alava M, Kelly MP, Campbell

KEY POINTS

- Many complex family dynamics contribute to current obesity trends.
- Family factors that have been investigated include stress, media use, and interactions between family members and children.
- While some studies have been carried out into family dynamics and their impact on childhood obesity, more research needs to take place.
- The use of home observation may help determine family contributors to childhood obesity and individual families' needs.
- A childhood obesity screening tool would help providers quickly determine a child's risk for obesity and implement interventions.

REFLECTIVE QUESTIONS

- Should researchers further their efforts in finding family associated variables to examine?
- How does the family environment or family functioning contribute to childhood obesity?
- How can current childhood obesity screening tools be improved to help determine a family's risk for obesity in their child(ren)?

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