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Changes to the home food environment and parent feeding practices during the COVID-19 pandemic: A qualitative exploration

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ABSTRACT

The COVID-19 pandemic brought about many changes that potentially altered the home food environment, which has been associated with child eating patterns and dietary intake. There is also some evidence that changes due to the COVID-19 pandemic are associated with health behaviors in children, such as an increased intake of high-calorie snack food. The current study aimed to more deeply understand how the COVID-19 pandemic affected the home food environment of meal and snack time routines and parent feeding practices within families of young children. Data for this study are taken from the Kids EAT! Study, a racially/ethnically diverse cohort of families with 2–5 year old children. Qualitative interviews were conducted by phone and video conference with mothers (n = 25) during August/September 2020 and were coded using a hybrid deductive/inductive analysis approach. This allowed coders to identify themes using the interview questions as an organizational template (deductive) while also allowing unique themes to emerge from the qualitative data (inductive). Three overarching themes emerged with multiple sub-themes: 1) Mothers were more directive in the types of food and amounts of food eaten by children; 2) Mothers had less rules around mealtimes; 3) Mothers had increased meal responsibilities. When faced with a change in a structured schedule and increased stress—such as occurred with the COVID-19 pandemic, parents may benefit from advice on how to manage parent feeding practices, including tips on appropriate limit setting, establishing a schedule and routines, and improving accessibility of healthful snacks. Lessons learned during the COVID-19 pandemic may have relevance to other time periods when families face disruptions to routine and during other times of transition.

1. Introduction

The COVID-19 pandemic brought about many rapid changes for families that had the potential to dramatically alter the family home environment. For example, parents' lives were impacted, such as shifting to working from home (Bick et al., 2020; Brynjolfsson et al., 2020) and experiencing job loss (Couch et al., 2020; Kong & Prinz, 2020). They were also impacted by changes in their children's routines, such as distance learning (2020World Economic Forum) and other changes to child care (Kalluri et al., 2021). While the landscape of parents' lives were altered by the COVID-19 pandemic, they remained responsible for shaping the home food environment for their children.

Prior research has demonstrated that factors within the home food environment (e.g., family meals, parent feeding practices, home food availability) are associated with child and adolescent health outcomes, such as weight status (Couch et al., 2014; MacFarlane et al., 2009) and dietary intake (Campbell et al., 2007; Couch et al., 2014; Hanson et al.,

2007; MacFarlane et al., 2009; Ranjit et al., 2015; Wyse, Campbell, Nathan, & Wolfenden, 2011a, 2011b). For example, one cross-sectional examination of the home food environment of preschool-aged children found positive associations between many aspects of the home food environment (i.e., parental modeling of fruit and vegetable (FV) consumption, FV availability and accessibility, and parental feeding practices such as offering FV and having set meal times) with children's FV consumption (Wyse et al., 2011a, 2011b). Another study examining the home food environment and children's diet quality found positive associations between home food environment factors such as parental encouragement/modeling and more healthful child dietary intake while an inverse relationship was found between some home food environment factors (e.g., unhealthy food availability, permissive feeding) and child dietary intake.

While there has been some evidence that changes brought about by the COVID-19 pandemic are associated with both healthful and less healthful changes in the health behaviors of children (e.g., increased

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child fruit consumption (Pietrobelli et al., 2020), an increase in the consumption of high-calorie snack foods (Pietrobelli et al., 2020; Adams et al., 2020; Dondi et al., 2021; Carroll et al., 2020; Ruíz-Roso et al., 2020; Allabadi et al., 2020) and a decrease in FV consumption among children) (López-Bueno et al., 2020), there has been little research that investigates the impact of the COVID-19 pandemic on the home food environment in families with children. The research that is available on the home food environment and COVID has found an increase in home cooking and eating more meals at home (Carroll et al., 2020; Berge et al., 2021). In addition, one study found an increase in coercive food-related parenting practices (e.g., food restriction, pressure to eat) (Adams et al., 2020), which has been shown to be associated with negative child weight outcomes in other studies (Shloim et al., 2015). Many of the studies evaluating children's diets and the home food environment during the COVID-19 pandemic were conducted in countries outside of the United States (US) (Pietrobelli et al., 2020; Dondi et al., 2021; Carroll et al., 2020; Ruíz-Roso et al., 2020; Allabadi et al., 2020; López-Bueno et al., 2020; Medrano et al., 2020)–(Allabadi et al., 2020; Carroll et al., 2020; Dondi et al., 2021; López-Bueno et al., 2020; Medrano et al., 2020; Pietrobelli et al., 2020; Ruíz-Roso et al., 2020); it is unclear whether the home food environments of children in the US have been similarly changed due to the pandemic. It is also important to investigate mothers' perspectives on how the COVID-19 pandemic affected the home food environment as this is an area where mothers have traditionally held more responsibility (Beagan et al., 2008; Bianchi et al., 2000; Harnack et al., 1998; Trofholz et al., 2018).

This paper aimed to qualitatively deepen our understanding of how the COVID-19 pandemic affected the home food environment of racially/ethnically and socioeconomically diverse mothers with young children who were navigating feeding their families in the midst of upheaval (e.g., mandatory lockdowns (Documenting Minnesota's p, 2020), distance learning (Documenting Minnesota's p, 2020), job loss (Couch et al., 2020; Kong & Prinz, 2020) etc.) Results from this study will offer guidance to providers working with families of young children on how to achieve healthy home food environments in the face of life disruptions and public health crises.

2. Methods

2.1. Study design and population

Participants for the current study ($n = 25$) were recruited from the Kids EAT! study, which is a cohort of families with 2–5 year old children. All members of the cohort ($n = 75$) were invited over email to participate in a semi-structured qualitative interview via phone and video-conferencing during August/September 2020 that explored their experience during the Covid-19 pandemic. A rolling recruitment approach was used. Twenty-five cohort participants responded to recruitment materials; after completing these interviews, it was decided by the study team not to recruit other cohort participants as few additional insights were being provided by interviewees.

2.2. Data collection

Two research staff members trained in qualitative interviewing conducted interviews using a semi-structured interview guide (Krueger & Casey, 2014). The goal of data collection for the Kids EAT! study during the COVID-19 pandemic was to learn about how families were impacted by the COVID-19 pandemic and to identify best ways to support families during the pandemic and future public health crises. The interview guide was developed by the Kids EAT! team using this lens. Participants responded to a 22-question interview guide with open-ended questions about how their household was impacted by the COVID-19 pandemic, including childcare, food insecurity, physical activity, and employment. Most questions had additional prompts for the interviewer to use to ensure the participants fully answered the

question. The current study specifically investigates the impact of the COVID-19 pandemic on the family food environment. Food-related interview questions utilized from the semi-structured interview for the current study included: (1) "Tell me a little bit about how feeding your family has worked since the pandemic of COVID-19. Specifically, I am interested in anything that has changed with regard to the types or amounts of foods you or your child(ren) are eating or any changes to rules or routines at home?"; (2) Have you changed the types of foods you are serving your child or eating yourself, or the frequency of meals/snacks in your home? What has prompted these changes? (3) How has food shopping and food preparation looked similar or different? Tell me more about that? and (4) Do you find yourself being more or less strict with the types and amounts of foods your children eat? Why? Total interview length ranged from 30 to 60 min. All interviews were audio-recorded, and participants provided verbal consent prior to the interview. The University of Minnesota Institutional Review Board Human Subjects Committee approved all study protocols.

2.3. Data analysis

Interviews ($n = 25$) were transcribed verbatim and coded using a hybrid deductive/inductive analysis approach. This allowed coders to identify themes using broad a priori categories (deductive) while also allowing unique themes to emerge from the qualitative data (inductive). Therefore, while the interview questions helped guide theme development, participant responses to questions could cut across themes. Two researchers coded the first five interviews together line-by-line to establish an initial coding tree. Both coders coded each additional transcript independently; meetings were regularly held to discuss new themes that may have emerged and to reach consensus on coding. Both coders discussed interview coding until 100% agreement was reached. After all interviews were coded, two additional rounds of coding were conducted to: (1) identify over-arching themes (2) identify sub-themes in the identified over-arching themes, and (3) to ensure saturation of themes had been reached. All qualitative coding was done using NVivo software (version 10, QSR International Pty Ltd, Burlington, MA, 2014).

3. Results

All participants in the Kids EAT! study were mothers. Participants were racially/ethnically and socioeconomically diverse (96% non-white), an average age of 26.12 (SD: 1.27), a third (32%) had a high school education or less, and over half (68%) earned less than \$35,000 in annual household income.

Multiple themes emerged regarding how the COVID-19 pandemic affected the home food environment of families in the Kids EAT! cohort: (1) Mothers more directive about foods eaten; (2) Mothers had less rules around mealtimes; and (3) Mothers had increased meal responsibilities. Results are presented below by each theme, with additional sub-themes identified; any identifying information has been removed to maintain participant confidentiality.

As these identified themes occurred within the context of the COVID-19 pandemic, it is important to understand other household changes described by mothers participating in these interviews. While some mothers were not working prior to the pandemic, nearly half of the current study's participants stopped working at the start of the pandemic or were temporarily furloughed; twenty percent of participants shifted to remote work. The majority of mothers who stopped working reported doing so because of the lack of childcare options for their children (e.g., distance learning). In addition to increased food-related responsibilities (described below), some mothers also discussed additional household responsibilities, including increased cleaning, caring for additional household members (e.g., family members temporarily living at the home), and providing additional childcare for other family members (e.g., children of essential workers). The majority of mothers described having increased stress, decreased physical activity, increased family screen time, and changes to household

sleep patterns.

Theme 1: Mothers more directive about foods eaten: Two subthemes emerged regarding parents being more directive: (a) More directive about types of foods eaten by children, and (b) More directive in terms of how much food is eaten by children.

More directive about types of foods eaten by children: Nearly one half of parents described being more diligent about shopping for and providing fruits and vegetables to their children, particularly for snacks and in response to children being hungry or wanting to eat more. One mother said, “There’s been a lot of changes with snacks, and then also me trying to focus more on incorporating fruits and vegetables in our meals and throughout the day ... I also tried to put all the kids on a schedule on when they can and can’t have fruit snacks and Froot Loops and Debbie cakes. So it’s been more, ‘Why don’t you get a nectarine or a banana?’” (Black, 24). Another mother said, “I think I’ve been more strict with the foods ... We don’t give candy out, so sweets came from the fruit and just trying to get them healthy snacks. I think I became a little strict with that, and it impacted us” (Black, 23).

More directive in terms of how much food is eaten by children: About a third of mothers described limiting the amount of food eaten by their children. This was generally driven out of concern for changes in how children were spending their time and their overall activity level as a result of the COVID-19 pandemic. For example, parents described children not wanting to go outside, not having access to outdoor activities and feeling the need to limit the food intake of bored children. Overall, mothers in the study overwhelmingly described that kids were eating more, and in particular, they said they were eating more snacks. One mother said, “He really doesn’t want to go outside ... so if he’s sitting, he’s just putting on more pounds, so I’ll just tell him, ‘You can’t get that much [to eat].’” (Black, 25). Another mother said, “Now that she’s 100% with me, I’ve definitely been more strict ... just out of boredom, she or everybody just wants to eat more, and so I’m like ‘No, you’re not hungry. You just ate. You’re bored’” (Hispanic/Latinx, 26). Two parents discussed rationing their children’s food intake because they wanted to reduce the amount of grocery store trips or were afraid the food at grocery stores may run out.

Theme 2: Mothers had less rules around mealtimes: About one quarter of parents described not being strict about the amount of snacks or the type of snacks children were eating at home. For example, one mother said, “We’re in the house, kids get a little bored, and it’s like, ‘Oh, can I get a bag of chips? Can I have a snack?’ and it’s like, ‘Sure. Go ahead.’” (Black, 27). Another mother said, “My son is eating more. He has gained weight during this pandemic. He doesn’t have to ask [to get a snack]. He can go into the refrigerator and get little snacks or fruits and his little juices.” (Black, 25). A few parents discussed the difficulty of not being on a usual schedule [as compared to the schedule that existed when children were in school or parents were at work], which made setting a schedule around snacking much more difficult. One mother said, “The routine and schedule has gotten so screwed up because [before COVID] I was working and then they would go to daycare—we had a routine that way. But now that I’m not working and I’m still trying to bounce back ... how do I set a schedule for us when we don’t really have anything going on?” (Mixed race, 27). A few parents also discussed being more permissive around non-snack mealtimes during the COVID-19 pandemic, including ordering more take out foods and allowing TV at family meals.

Theme 3: Mothers had increased meal responsibilities: In addition to the increased home and childcare responsibilities described above, mothers in the current study also reported increased meal responsibilities. The majority of mothers described increased meal preparation responsibilities because more meals and snacks were being eaten at home due to the COVID-19 pandemic. One mother said, “Normally he would have two meals and two snacks at daycare ... but him being home, I had to pretty much provide all of those meals and cook more often, which comes with cleaning more often” (Mixed race, 23) Another said, “My responsibilities have increased because I’m at home and my

kids are needing three meals a day at home. Everything is so difficult ... I enjoy cooking, but when it’s that much every single day, it gets hard balancing that and my other responsibilities” (Asian American, 26).

4. Discussion

Overall, mothers in the Kids EAT! study qualitatively described major household changes due to the COVID-19 pandemic; including job loss, increased childcare, additional household responsibilities, and helping children distance learn. This is supported by emerging research showing mothers were impacted by COVID-19-related stressors, such as loss of childcare/school, the transition to working from home (Bick et al., 2020; Brynjolfsson et al., 2020), job loss and/or other financial hardships (Couch et al., 2020; Kong & Prinz, 2020), and that mothers also took on a disproportionate share of household responsibilities during the COVID-19 pandemic (e.g., household chores) (Borah Hazarika & Das, 2021). Many mothers in the current study reported increased meal responsibilities amongst other household responsibilities, which translated into more opportunities for parents to interact with their child around food, both in terms of the quality of foods served, but also in regards to parent feeding practices.

Mothers in the current study overwhelmingly spoke about an increase in meal and feeding-related responsibilities, including an increase in their children requesting and needing assistance with accessing snacks. Mothers responded by either becoming more restrictive in their parent feeding practices (e.g., restricting frequency of snacks, limiting consumption of certain foods), or becoming more relaxed about their child’s eating behaviors (e.g., letting children grab a snack whenever they were hungry). Additionally, some parents in our sample responded to their child’s increase in food consumption by increasing the number of healthy food options in the home. Many of these findings are consistent with other examinations of child snacking and parent feeding practices during the COVID-19 pandemic (Jansen et al., 2021; Philippe et al., 2021). For example, one study found that parents experienced increased stress during the pandemic, and that this stress was associated with more instrumental (e.g., rewarding child with food for good behavior) and emotional (e.g., giving children food when they are bored) feeding practices (Jansen et al., 2021). Another study conducted in France during the COVID-19 pandemic found that child boredom during lockdown was associated with increased snacking, and that some parents reported becoming more permissive in their feeding practices during this time period (Philippe et al., 2021). Previous research has also found that the presence of transient stressors (e.g., conflict between parent and child, or having too much work to do) have been associated with an increase in parent engagement in restrictive parent feeding practices (Berge et al., 2018). Given the increased role mothers had in providing snacks to their children during the COVID-19 pandemic (e.g., children at home instead of being provided snacks at daycare), that snacks are often provided when parents need to manage child behavior (e.g., keeping children quiet) (Blaine et al., 2015; Fisher et al., 2015), and the important role of snacking in children’s daily caloric intake (Loth et al., 2020; Rudy et al., 2018), understanding more about how parents navigated child snacking during the COVID-19 pandemic is important.

Additionally, these findings demonstrate another area where mothers need support. For example, the current study suggests that some mothers who are overwhelmed with providing all meals for their child may engage in more restrictive feeding practices, which has been associated with less healthy child dietary intake (Birch, Fisher, & Davison, 2003a, 2003b; Jansen et al., 2007). Other mothers felt they did not have capacity to monitor child eating in addition to other responsibilities and had limited or no rules (e.g., structure) around child eating. Offering support to mothers and providing ways to decrease stress and/or manage stress may help to improve or maintain child health during other shifts away from structured routine-based environments (e.g., school, daycare). It is unclear why mothers responded

differently in their feeding approaches. For example, it may be that the COVID-19 pandemic intensified parent feeding practices that existed prior to the pandemic (e.g., mothers who used restriction prior to the pandemic became much more restrictive). It is also possible that parent feeding practices were influenced by the degree to which mothers were impacted by changes and the societal stress brought on by the COVID-19 pandemic. For instance, mothers that were less well supported, had more negative mood (Loth et al., 2021), and/or were more overwhelmed by the pandemic may have had less capacity to have rules around food (Berge et al., 2017). While this is an area for future research, it is clear that providing tools to families (e.g., managing stress, helpful feeding practices) prior to times of crisis and stress would be most beneficial.

4.1. Implications for research and practice

The current study supports what is becoming clear from anecdotal, media, and academic publication sources during the COVID-19 pandemic, namely mothers need more support, both in terms of more equitable distribution of household responsibilities, but also in systemic ways (e.g., state-provided emergency childcare) (Fortier, 2020). Clinicians and public health advocates working with parents of young children should seek opportunities to support parents, both during the COVID-19 pandemic, but also during other times of stressful transitions within the home and family environment (e.g., transition to summer break, new childcare arrangements, and parents starting new jobs). Families may need assistance during unstructured periods to help structure their child's eating, especially as previous research has shown that having a daily structured schedule is associated with a reduction in less healthy behaviors in children, including excessive snacking (Brazendale et al., 2017). For example, families could maintain the same schedule used during the school year (e.g., only providing a late afternoon snack along with regular meals). Parents may benefit from assistance on how to respond to a child who is frequently requesting food, including guidance on appropriate limit setting without overt food restriction, which has been associated with increased eating and weight status in children (Birch et al., 2003a, 2003b; Faith et al., 2004), or weight talk (e.g., telling a child not to eat too much because they are gaining too much weight), which has been associated with poorer wellbeing in children (Gillison et al., 2016). Covertly creating a healthful home food environment (e.g., not buying or bringing unhealthy foods into the home), has been associated with more healthy snack intake in children (Loth et al., 2016; Ogden et al., 2006); if parents have the ability and resources to create this environment, it may allow for parents to be less hands-on with providing children snacks and may reduce struggles with children who want available, but less healthful, snack options.

Eating behaviors, which are established during early childhood and are heavily influenced by family- and home environment factors (e.g., parent feeding practices) (Birch et al., 2007), are known to persist into adolescence and adulthood (Nicklaus & Remy, 2013). Thus, eating behaviors and patterns established during COVID-19 pandemic have the potential to impact children's eating patterns long-term. Parent feeding practices may be similarly impacted. A qualitative study with parents of young children found that parents reported that while they had ideas on how they wanted to approach child feeding (e.g., having a schedule or routine for meals and snacks), parents also recognized that more immediate factors (e.g., stress, busy schedules) decreased their ability to carry out these desired approaches (Berge et al., 2017, 2018; Loth et al., 2018). Relatedly, parents who may not have been able to follow their desired feeding practices during the COVID-19 pandemic due to overlapping obligations (e.g., working from home while simultaneously parenting children), in addition to the overall stressful nature of the pandemic on family life (Berge et al., 2017, 2018), may need assistance with re-engaging with their preferred parent feeding practices.

This study provides some of the first qualitative evidence regarding the impact of the COVID-19 pandemic on the eating patterns of young

children. A strength of this study was the economic and ethnic/racial diversity of the study population. In addition, the qualitative methods used in the current study allow for rich insight into some of the quantitative changes found in other studies. There are also limitations to the study. While most families have experienced some degree of disruption to home and family life brought on by the COVID-19 pandemic, specific impacts have varied widely from family to family. Further, it is not certain that experiences when participants were interviewed in August–September 2020 are necessarily reflective of their current experiences or behaviors. Additionally, questions regarding the home food environment were only a small portion of the full interview guide, and therefore, results from the current study cannot provide an expansive review of all home food environment changes experienced by families during the COVID-19 pandemic.

5. Conclusions

When asked to describe how the COVID-19 pandemic affected the home food environment via meal and snack time routines, mothers overwhelmingly spoke about increased meal responsibilities and changes to their parent feeding practices. Results from the current study and emerging COVID-19 pandemic-related research (Borah Hazarika & Das, 2021; Couch et al., 2020) demonstrates that interventions to improve child health need to address parental—particularly mothers'—stress rather than focusing solely on parental domains such as parent feeding practices or food preparation, as these are heavily influenced by parental stress (Berge et al., 2017, 2018). Lessons learned during the COVID-19 pandemic about the home food environment may have relevance to other time periods when families face disruptions to routine, including school breaks (e.g., weekends, summertime), and during other times of transition, such as parents starting a new job or following a move. Helping families prepare for these transitions prior to them occurring may help ensure that parents can maintain helpful feeding practices even in times of stress and public health crises.

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Data code and availability

Data was collected on behalf of the Family Matters study. A request for study data can be made to the first author, and a formal data sharing agreement would need to be submitted. The lead author has full access to the data reported in this manuscript.

Ethics statement

The University of Minnesota's Institutional Review Board Human Subjects Committee approved all protocols used in the *Kids EAT!* study. Participants were consented at the first in-home visit before any data collection.

Declaration of competing interest

None.

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