

Original Research Article

Perceived barriers and facilitators of healthy eating and physical activity: focus groups with children, parents and teachers in Mumbai, India

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Received: 07 April 2020

Accepted: 06 May 2020

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ABSTRACT

Background: Childhood offers a critical opportunity to inculcate healthy eating habits and promote adequate activity levels. Prior studies have assessed the factors that influence food choices and activity among children, however, these perspectives may vary considerably across communities, cultures and social environments. Knowledge regarding determinants of diet and activity related behaviors among children in India is lacking; understanding these influences will help to develop appropriate interventions. This qualitative study employed the tenets of the health belief model to identify barriers and facilitators of healthy eating and physical activity levels in children in Mumbai, India.

Methods: Fourteen focus group discussions were conducted with children, parents and teachers, selected from three aided and three private schools in Mumbai. The transcripts were coded and analyzed using the scissor and sort method to derive common themes as per the protocol questions.

Results: The discussions revealed four main themes, namely knowledge regarding non communicable diseases and physical activity guidelines, perceived susceptibility and severity of consequences of unhealthy behaviors, socio-environmental factors such as availability and accessibility of foods at school and home, facilities for sports and peer support and individual determinants that shape choices such as time, academic pressure, convenience and will power. Variety in canteen menus, 'fun' outdoor activities, daily screen time monitoring and parent role modeling emerged as key facilitators.

Conclusions: The results reiterated a need to improve parents' nutrition knowledge, enforce strict school food sale policies and generate interest and motivation among children through targeted behavior change communication strategies.

Keywords: Attitude, Barriers, Children, Focus group, Healthy eating, Physical activity

INTRODUCTION

A staggering rise in obesity rates and an escalating burden of non-communicable diseases among children pose glaring public health challenges for epidemiologists and policy makers in low middle income countries, including India.¹⁻⁷ Several studies have reported that an unfavorable nutrition transition, the phenomenon hypothesized to

encompass shifts in dietary patterns accompanying globalization and urbanization and resulting in an increased consumption of foods that are high in fat, sugar and salt is underway in India.⁸⁻¹² Furthermore, a decline in physical activity levels and an increase in sedentary behaviors seem to have contributed to an earlier onset and increasing prevalence of metabolic health problems such as overweight and obesity, diabetes and hypertension among children in India.^{4,7,13-18}

Factors that influence diet and activity related behaviors in children can vary considerably across communities, cultures, school and familial environments.¹⁹⁻²² Thus, designing feasible interventions that aim at steering children towards better dietary and activity related practices can be challenging unless the perceived ecological and psycho social factors are recognized. Understanding the attitudes and perceptions of children regarding healthy eating and activity levels may help as formative research to tailor interventions according to the priorities of the specific group and support improvements in health related risk factors. Behavior theories and models can provide guidance for investigating health related behaviors in a population.^{23,24} The Health Belief Model (HBM) is one of the most widely used frameworks developed to understand health and diet related behaviors and constitutes perceived susceptibility, severity, benefits and barriers, cues to action and self-efficacy as key constructs.²⁵ Parents and teachers impart key influences on lifestyle behaviors of children, thus understanding their knowledge and perceptions related to bringing a change in child's eating habits and activity levels is crucial.

A qualitative study that is based on a behavior change framework and investigates the determinants of eating habits and activity levels among children, their parents and teachers, can make a significant contribution towards implementing age appropriate health promoting interventions among children in urban India. However, relatively little research has evaluated the attitude and perceptions to healthy eating and activity levels among school going children in India using qualitative methods. This study employed the tenets of the HBM to assess the knowledge, attitude and perceptions towards healthy eating and physical activity levels and focus group discussions with children, parents and teachers to identify the barriers and facilitators of improving diet and activity related practices in children in Mumbai, western India.²⁵

METHODS

Study design and participants

Overall, fourteen focus group discussions, six with children, five with parents and three with teachers were conducted from January to April 2019. The eligible participants for discussions with children were 10-12 years, old boys and girls, attending grade 6 or grade 7 of either a private school or an aided school in Mumbai. Considering that eating behaviors and activity patterns begin to change significantly during the period of transition from childhood to adolescence and that attitudes and behaviors learnt during this stage can set in practices that last for rest of their lives and can impact the present and future health, the researchers selected children, ages 10 to 12 years as focus groups.^{26,27}

Three private schools and three aided schools were selected using a purposive sampling method. From each

of these schools, a class from either grade 6 or grade 7 was randomly selected as the participating class. An information sheet outlining the objectives of conducting focus group discussions was sent home for receiving parental consent. The first five girls and first five boys whose parents provided consent from each of the selected classes (n=60) were invited to participate in the discussions. Written and informed assent forms were collected from participants before starting the discussions. Each discussion included around 7-8 participants, took approximately 45 minutes to an hour to administer and was conducted in vacant school classrooms during school hours.

For conducting discussions with teachers, the homeroom or science teachers of the participating grade at each school were invited. A total of 9 teachers (5 from two private schools and 4 from an aided school) provided consent and participated in the discussions. For inviting parents' participation, the parent's association was contacted at each selected study site and details were shared with them. From six study sites, an aided school did not have an active parents' association and a private school did not provide permission to conduct the parent discussions. A total of 28 parents provided consent to participate in the discussions; however six parents were not available on the day of the discussion, so finally there were 22 parents who participated in the discussions from two private schools and two aided schools. The average number of participants in each parent and teacher group was 3-5, a focus group size that is considered adequate to yield diversity in thoughts, when the participants hold knowledge and/or experiences to share during discussions.³² Ethics approval was obtained prior to starting the focus group discussions.

Focus group themes and topics

Focus group discussion is an effective method of data collection in qualitative research that allows for an interactive and facilitated discussion in relation to a particular issue and provides in-depth understanding of attitudes and perceptions of a specific group.^{21,28-30} In this study, two semi-structured open ended focus group discussion (FGD) guides (one for children and one for parents and teachers) under the key themes of knowledge regarding healthy eating habits and recommended activity levels, perceived susceptibility and severity of adverse health consequences, perceived benefits and barriers, perceived readiness of change and self-efficacy and suggestions to improve practices were developed based on prior experience, extensive literature review and diligent discussions. As a pre testing exercise for the clarity and relevance of the FGD schedules, two discussions were conducted with children (n=11) and one with parents (n=5) at an aided school and a private school. The themes and examples of the questions included in the final FGD guides for children and parents and teachers are provided in Table 1.

Table 1: Topics for focus group discussions with children, parents and teachers in the barriers and facilitators to healthy eating and activity level in children study.

Topics	Protocol questions for children	Protocol questions for parents and teachers
Knowledge about healthy and unhealthy eating habits	What comes to mind when you think of eating right or eating healthy?	Which eating habits of children will you consider as 'healthy eating habits'?
	Which habits can be referred to as unhealthy eating habits?	According to you, what are the major unhealthy eating habits of children that must be addressed?
Knowledge about non communicable diseases, healthy eating and physical activity recommendations	Do you know the recommended daily servings of fruits and vegetables? About risk factors and preventive strategies for non-communicable diseases? Example of moderate to vigorous and sedentary activities?	Do you know the recommended daily servings of fruits and vegetables for children? About risk factors and preventive strategies for non-communicable diseases? Example and recommended duration of moderate to vigorous and sedentary activities?
Perceived severity and susceptibility to adverse consequences	What can be the effect of poor eating habits on your health?	The prevalence of childhood obesity and NCD are on rise. What do you think can be the cause of it?
	Do you think children can get diabetes and heart problems?	The access to foods is easy these days. Do you think it can have any kind of impact on the child's health?
	What may happen to children if they are not physically active?	
Perceived benefits to healthy eating and being active	Why is it important to eat healthily? To be physically active? What is the most important reason for choosing a food? (provide prompts if needed)	What are a few benefits of eating healthy and being active for children?
Perceived barriers to healthy eating and being active	Even if you want to eat more fruits and vegetables, it is sometimes difficult to eat them.	What do you think are some challenges that parents face in
	What do you think gets in the way?	Order to make positive changes in eating habits and physical activity of the child
	Why do you think children indulge in unhealthy eating habits even though they know the ill effects of these habits on their health?	On a scale from 1 to10, how will you rate the difficulty to teach children to increase fruits and vegetable consumption and reduce junk food' consumption?
	How can we motivate children to be more active?	What do you think are the barriers for parents to make positive changes in physical activity of the child?
Perceived readiness to change and self- efficacy	If you are asked to add a fruit in your daily diet, will you be able to do it?"	Have you tried to bring any change in the eating habits of your children recently? If yes, which ones?
	If you were made the canteen in charge for one day, which foods will you make free? Which foods will you take out of the menu? Which foods will you add? How would you rate, out of a scale of 10, your favorite snacks in terms of them being good for health?	Parents are role models for children. How likely are you to change your own habits to bring a change in your child's habits?
Practices related to healthy eating and activity levels	How often do you eat fruits and vegetables? Eat breakfast on a daily basis? Indulge in outdoor activities? Sedentary activities? Play a sport?	How often do you eat fruits and vegetables?
		Eat breakfast on a daily basis?
		Indulge in outdoor activities? Play a sport?
		Sedentary activities?

Continued.

Topics	Protocol questions for children	Protocol questions for parents and teachers
Suggestions for improvement/interventions	How could children your age be encouraged to eat healthily? Be more active?	How can families play a role or contribute to prevent weight problems in children?
	Do you think that adding more F& V recipes in menu will encourage children to eat more of F& V? What are a few interesting ways to get health related information?	-According to you, which are the best ways for encouraging better physical activity levels in children?
	How can we make physical activity more fun?	

Data analysis

All discussions were facilitated by the principal researcher (PM) assisted by two research assistants who took notes and observed non-verbal communications. The discussions were audio recorded and transcribed verbatim; the observational data was entered as remarks in the guide. The transcripts were systematically demarcated as per the responses received from each focus group (children, parents and teachers) and type of schools attended (aided or private) and the answers related to specific protocol questions were rearranged. The transcripts were then reviewed, coded and analyzed using the scissor and sort or cut-paste method to derive common themes based on the constructs of HBM and key research questions.^{23,31} A posteriori inductive approach of data analysis ensured that the codes and interpretations were generated from the actual data. The findings were iteratively evaluated by a panel of experts with prior experience of conducting and interpreting focus group discussions and recurrent emergent themes and key quotes under each theme were identified. The summarized results are presented in a narrative format supported with few excerpts of the study participants

RESULTS

The total number of participants across discussions was 73 (42 children; 22 parents and 9 teachers in 14 FGDs). Eight focus group discussions were conducted with parent (5 FGDs; n=22) and teacher focus groups (3 FGDs; n=9).

The mean age of children who participated in the discussions was 11.3 (1.1) years, more than three fourth (81%) of the parent participants were mothers and all teacher participants were graduates with a degree or diploma in education. The number of participants across focus group discussions is given in Table 2.

The main themes and insights that emerged from the discussions are described below-

Knowledge and perceptions about healthy and unhealthy eating habits

Eating habits were frequently considered synonymous to consuming specific food items and rarely to eating habits

such as breakfast consumption, meal skipping or frequency of eating outs. Teachers shared that “healthy eating implies eating to get a healthy weight”, “having home cooked foods” and that “eating food items that are cheap and cost Rs 5/- or Rs 10/- are the unhealthiest eating habits”. Parents mentioned that “if children don’t bring their tiffin, then they will have to eat from school canteen and because canteen usually has only unhealthy food options, eating more at canteen can be considered as an unhealthy eating habit”.

Table 2: Number of focus group discussions conducted and characteristics of study participants.

Focus group discussions ^a	Children ^b	Parents	Teachers
Number of discussions	6	5	3
Number of participants	42	22	9
Average number of participants per discussion	7	04-5	3
Gender			
Females [#]	25 (59.5)	18 (81.2)	8 (88.8)
Age categories of parents and teachers[#]			
18-24 years	-	0 (0.0)	2 (22.2)
25-40 years	-	16 (72.8)	5 (55.5)
41-50 years	-	6 (27.3)	2 (22.3)

a: Number of focus group discussions=14; number of participants across discussions=73; b children, were recruited from aided schools (n=18) and private schools (n=24); mean age of children in focus group discussions=11.3 (1.1) years; #data is presented as number and percentages in parentheses

Knowledge about non communicable diseases and healthy eating and physical activity recommendations

Majority of the children understood the importance of eating healthily and being active, though their knowledge regarding recommended daily servings of fruits and vegetables and risk factors and preventive strategies for non-communicable diseases was inadequate. They were

also unable to list out activities that may be categorized as sedentary, moderate and vigorous physical activities. More than three fourth of parent and teacher participants showed lack of knowledge about daily allowed screen time and the recommended duration of moderate to vigorous activity for children and adolescents.

Perceived susceptibility and severity of the consequences of unhealthy eating habits and physical inactivity

Children, in general did not perceive themselves to be susceptible to the adverse consequences of unhealthy eating habits and physical inactivity and were 'only little worried' about getting overweight, diabetes or heart diseases in future. The severity of the consequences were perceived in the short term ("get indigestion", "cannot focus in class", "feel tired and sleepy" and "pain in muscles") by children and as "become weak", "not able to study properly" and "food poisoning" by parents.

Perceived benefits and barriers to healthy eating and regular physical activity

The participants listed "staying fit and strong", "having enough energy to carry out day's work", "keeping bones strong", "body stays flexible", and "helps to lose unwanted weight" as perceived benefits of healthy eating and regular activity levels. A few direct quotes of what children mentioned as key barriers are given below:

"Fruits don't smell and look as good as a pizza or burger, so I don't like eating them"

"I don't get time to eat breakfast so my mother gives me money to buy from canteen"

"I like mangoes and strawberries so when they are not in season, I don't eat fruits at all"

"I think children don't eat vegetables because vegetables don't taste good"

"Drinking soft drinks can make your teeth bad but they will not make you sick"

"Sometimes you are so bored that you want to eat junk food. I eat chocolates when am bored" "Everybody eats samosa during recess, so it's okay"; "they sell the same food daily in canteen"

"If I don't like the menu at home, I just don't eat anything"

"I don't care whether my health is good or bad"

The comments showed that taste, appearance and flavor associated with specific foods and sometimes moods dictate the choice of foods; seasonal availability of favorite fruits and what peers are eating constitute other

factors that may also influence the decision. The consequences of eating unhealthy foods are not totally understood, thus immediate pleasure of eating foods were much more important determinants than future risks involved with practicing unhealthy dietary habits. The biggest challenges, as mentioned by the parents were that "children just don't listen" to them and that "children have become so stubborn nowadays that it becomes difficult to convince them". Focus groups of teachers pointed out that "the major barrier is time- children are always busy so they want quick snacks but parents do not get time to try different recipes". The teachers were also worried about the "easy access to unhealthy foods in school canteens, from street vendors adjacent to school premises and unrestricted use of food delivery apps"; the parents added that "there are always some or other discount offers or 'special discount days in the weeks' that tempt the children to order takeaways. Parents pointed out that the "biggest menace" was gadgets and electronic devices that have "just made kids lazy" and that "children are so attached and pre-occupied with their screens, for academic and non-academic purposes, that they don't feel the need to meet friends and play outside". Children mentioned that, "everyone is busy with tuitions and assignments" and "I am so tired that I don't have energy to play any sport in the evening".

Lack of adequate facilities (limited play areas, recreation centers and sports arenas at/near places where the participants stayed), limited knowledge about the right way to play a sport ("there isn't any structured sports related instructions and guidance provided to them in schools"), lack of will power and enjoyment from physical play ("I would rather play video games than go out in my free time") and parent role modeling ("if children do not see their parents engaging in regular exercises or playing a sport, then they start assuming that it's okay to not go outside to play") were discussed as further barriers.

Perceived readiness to change and self-efficacy

The discussions revealed that children were quite open to trying new foods and were ready to add fruits or vegetables in their diet or even indulge in physical activities if these foods and activities were introduced to them in a fun, interesting manner and if majority of their peers were also indulging into these habits, thus indicating that fun element and peer support are crucial to bring any change in dietary or activity related practices among children. Parents mentioned that they sometimes try to add healthy foods in their child's diets by either trying new recipes or sneaking them in as sandwiches, wraps and cutlets but often end up giving up after a while due to time constraints or lack of support from children.

01	Knowledge about healthy and unhealthy eating habits	<ul style="list-style-type: none"> • Eat less junk foods • Have fruits and Vegetables everyday • Unhealthy Foods = Unhealthy Eating Habits- samosa, chocolates, wafers and soft drinks
02	Perceived Susceptibility and Severity of Consequences	<ul style="list-style-type: none"> • Majority were 'only little worried about future health' • Get stomach upset, feel tired • Become fat , become sick
03	Perceived Benefits of Healthy Eating and Being Active	<ul style="list-style-type: none"> • Staying away from diseases • Being fit, grow tall and strong • Having energy to do daily activities
04	Perceived Barriers to Healthy Eating and Being Active	<ul style="list-style-type: none"> • Taste, appearance, smell, variety • Peer influence and lack of time and will power • Boring, lack of facilities and screen addiction
05	Facilitators to Bring Change in Eating Habits and Activity	<ul style="list-style-type: none"> • Improve availability of healthy foods in schools • Monitor daily screen time • Parent role modeling

Figure 1: Key findings of focus group discussions with children, parents and teachers as per the constructs of HBM.

Facilitators to improve knowledge and practices

Children suggested showing videos, playing informative games related to healthy diet and activity behaviors in classrooms and organizing skits at school events as interesting ways to learn. According to them, posters, charts and talks may have limited reach as “nobody cares enough to read posters in canteens” or “listen to lectures”. Parents mentioned that better availability and variety of healthy foods like “rajmah chawal” (beans and rice), “bhelpuri” (puffed rice), “sandwiches and wraps”, “fruit salads and fruit juices” in school canteens can improve dietary practices. Teachers suggested that “parents should not give packaged foods high in fat and sugar like wafers and chocolates as snacks”, “parents should be strict about children having breakfast before leaving for school” and “a discipline in terms of allowed daily screen time must be maintained at home”. Other suggested strategies included reducing the frequency of takeaways, ensuring that proper meal time discipline is followed and not allowing children to eat their meals while watching television. Increasing parent and family involvement, and conducting skill based workshops for children as after school co-curricular activities were also suggested.

The key findings of the focus group discussions are summarized in Figure 1.

DISCUSSION

The series of focus group discussions that were conducted with key stakeholders-children, parents and teachers provided information regarding their perceptions on the importance of good health in general and healthy eating and physical activity in particular. The knowledge about

risk factors, consequences of non-communicable diseases (NCDs), recommendations for allowed screen time and activity guidelines were observed to be inadequate. Few studies that had evaluated the NCDs related knowledge and health perceptions of urban children and adolescents had also reported poor knowledge and large gaps in knowledge-practice related behaviors.³³⁻³⁷

This study observed that perceived susceptibility to and perceived severity of non-communicable diseases such as obesity, diabetes and heart diseases were low among children, highlighting the critical role that attitudes and perceptions may play in shaping practices. According to the HBM, individuals can be motivated to take health related actions such as increased consumption of fruits and vegetables or reduced sedentary behaviors if they understand the negative consequences of their present practices (perceived severity), feel that the recommended action can prevent/reduce the risk to negative health conditions (perceived benefits), believe that the efforts taken to engage in health related action is lower than the resulting harm related to their present action (perceived barriers) and are confident that the practice can be adopted comfortably and successfully by them (self-efficacy). Improving knowledge, especially with regards to perceived susceptibility to and perceived severity of non-communicable diseases and adopting measures that overcome perceived barriers are warranted. Targeting behavior change and promoting positive attitudes towards perceived benefits and self-efficacy can help to bring desired improvements in eating habits and activity related practices of school going children in India. Using interactive audio visual aids, conducting regular health assessment sessions and peer led health promoting activities may help improve knowledge among children while conducting training and awareness building

sessions for parents will reinforce the messages learnt in schools.

Additionally, the discussions identified important barriers and facilitators to healthy eating and activity levels among children. Taste, personal likes and dislikes, peer influences and lack of motivation emerged as significant determinants of food choice. Parent groups perceived time, limited facilities for sports and 'screen addiction' as barriers to improve physical activity levels. Similar findings have been observed in previous studies. While a few studies had reported the lack of time and the high cost of healthy foods as barriers to being active and eating healthily in children, a qualitative study that evaluated the perceptions of Indian adolescents observed academic stress, lack of time and limited parental supervision as important perceived barriers.^{34,38,39} Prior qualitative studies conducted in different parts of the world have suggested branding healthy foods as tasty foods, reinforcing messages such as 'exercises can be fun' and establishing positive food related experiences early in life as ways to foster motivation and promote healthy eating behaviors in children.^{22,40,41}

Similar to earlier studies, school canteen foods were considered to be 'unhealthy' and the canteen menus as 'monotonous' by participants of this study. Availability and easy access to unhealthy foods in and near schools and children's preference for unhealthy foods were perceived as barriers to healthy eating in the school environment.^{42,43} Several studies have deliberated on the demand and cost effectiveness of unhealthy foods and their availability in school canteens as factors that work in tandem to adversely impact the consumption patterns of children.⁴¹⁻⁴⁴ Therefore, it is important that clear and strict school food policies that ensure better availability of healthier food options and reduced accessibility to unhealthy foods be enforced in schools. The statutory food safety and regulation body in India, the Food Safety and Standards Authority of India has recently taken a step towards improving the school food environment by releasing draft regulations related to the sale and promotion of unhealthy food items in school canteens and around school premises. The enforcement of the regulations and the adherence by the schools will determine the impact of such initiatives in future. Besides the school food environment, modifications in other built environments such as the home food environment are also needed. Studies have established that home food environment factors such as a family's purchasing behaviors, parents' perception and practices towards diet and the availability and accessibility of foods at home may influence the consumption patterns of children.^{21,45,46} Parents' activity levels and role modeling can also motivate children to engage in physical play.^{14,34} Future research should target the evaluation of the influences of these factors and identify strategies to improve the home environment and parental practices.

This qualitative study is the first to explore the barriers and facilitators to healthy eating and activity levels among children in Mumbai, a major urban city in India that has recently witnessed a remarkable economic growth as well as a subsequent transition in the nutritional landscape. The discussions with children, teachers and parents helped to delineate information about psychosocial influences on eating habits and physical activity among children. Several facilitators such as stricter school food policies especially with regards to the sale and promotion of unhealthy foods in and near school premises, active parental involvement in meal preparations, positive mealtime routines at home, exposure to different flavors and sport activities early in life and behaviorally focused education programs for children and parents were identified. These influences may provide potential targets for future interventions that are aimed at improving the eating and activity related practices of children in India. This study was also unique in using the constructs of the HBM as a theoretical framework to understand the perceived benefits, barriers and the readiness to change behavior and adopt healthier practices among the participants. A further strength was that the discussions were conducted at aided and private schools, which provided an opportunity to understand the perceptions of stakeholders from different socioeconomic status.

However, this study has few limitations, too. Although the focus groups of children were mixed gender, almost all parent and teacher groups were females. Furthermore, the modest sample size and selection of urban population as participants may limit the generalizability of the reported perceptions. Future research should include male participants and stakeholders in rural areas to assess the attitudes and perceptions related to healthy eating and activity levels in children in India.

CONCLUSION

The discussions revealed four main themes i.e. knowledge about healthy eating habits, physical activity and sedentary behavior recommendations, perceived susceptibility and the severity of consequences of unhealthy eating behaviors and physical inactivity, environmental determinants such as the availability and accessibility of foods at school and home, facilities and training for sports, and peer support and influence, and individual factors that shape food and activity related choices such as time, personal preferences, convenience and will power.

The results reiterated that providing children with tailored nutrition education and structured physical activity routines may shape their present and future eating habits as well as their activity patterns in a healthy manner. The interplay of interactions between individual factors such as personal preferences, perceptions and motivations with physical environment factors such as home food and the school food environment must be explored in depth to

improve health promoting lifestyle behaviors and reduce the risk to early onset of non-communicable diseases among children in India.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the efforts of field staff, the Heads of the Institutes who provided permission to conduct the study and appreciate the valuable inputs and cooperation provided by the children, parents and teachers of the participating schools during the study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Intersystem Biomedica Ethics Committee, Mumbai, India

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Cite this article as: Moitra P, Madan J. Perceived barriers and facilitators of healthy eating and physical activity: focus groups with children, parents and teachers in Mumbai, India. *Int J Community Med Public Health* 2020;7:2363-71.