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Experiences and Perspectives of Children Attending a Weight-Loss Camp in China: a qualitative study

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ABSTRACT

Background: Modernisation, urbanisation as well as the globalisation of food markets, have exposed Chinese children to an obesogenic environment. With the dramatic increase in the prevalence of overweight and obesity among Chinese children, there are now over 2000 weight-loss camps for children. This aim of this study was to investigate how one typical weight-loss camp operates, and to explore the experiences and perceptions of children attending the camp.

Methods: This study utilized ethnographic techniques and semi-structured interviews with children attending a 28-day summer weight-loss camp in Hangzhou, China. All children attending at the time of study were included. Field notes were taken, and interviews with children were recorded, transcribed, and analysed into themes.

Results: Nine boys and 10 girls aged 7-18 years old with a BMI ranging from 21 to 37 kg/m2 were interviewed. The weight-loss programme combined dietary restriction (<350 calories/meal) and a daily schedule of eight hours of exercise in outdoor temperatures of around 40℃. Field observation and interviews showed that the regime was distressing for all the children, who suffered hunger and exhaustion leading to crying, squabbling, fighting and desperate phone calls to parents. All felt their weight loss could not be sustained.

Conclusions: The extreme conditions, and total absence of health and nutrition education at the camp were of great concern. Parents should be aware of the potential dangers and long-term ineffectiveness of such interventions. At the very least these camps must be subject to regulation.

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INTRODUCTION

The prevalence of overweight and obesity in children has increased substantially in many countries (Wang Y & Lobstein T 2006). Ten percent of schoolchildren aged 5-17 worldwide are estimated to be overweight, with 25% of these overweight children categorised as obese (Lobstein T et al. 2004). The World Health Organisation has stated "Childhood obesity is one of the most serious public health challenges of the 21st century" (WHO 2015).

Childhood obesity not only has adverse health consequences in the short term, but has long-term impacts on morbidity and premature mortality in adult life (Reilly JJ & Kelly J 2011). China has undergone a rapid epidemiological transition. From the early 1980s Deng Xiaoping's market reforms led to dramatic economic growth (Shen T et al. 1996). Modernisation, urbanisation as well as the globalisation of food markets, have exposed Chinese children to an obesogenic environment: increased intake of high-fat or energy-dense foods, as well as convenience and fast food, together with more sedentary lifestyles (Bell AC et al. 2002). As a result, over the past three decades there has been a shift from a predominance of under-nutrition to over-nutrition in Chinese children (Wang Y et al. 2002). In 2010 the prevalence of overweight was 9.9% (12.3% for boys and 7.5% for girls) and an additional 5.5% (6.7% for boys and 3.4% for girls) of obesity among Chinese children aged 7-18. This equates to over 30 million individuals (Ji CY et al. 2013). Importantly, the total number of overweight and obese school-aged children almost doubled over the past decade. This increase has led to a range of interventions to facilitate weight loss in children. It has also led to considerable commercial interest. These have included so-called weight-loss camps for children. In many western countries weight loss camps have comprised short-term interventions, almost always away from home, which include controlled diet, intense exercise and physical activity, and nutrition education with a focus on behaviour modification. The first of these were operational as early

as 1973, and they showed promising results for weight loss in children mostly in the United States (Kelly KP & Kirschenbaum DS 2011).

As the prevalence of overweight and obesity among Chinese children has increased, so has the number of weight loss camps. In 2014 over 2000 weight-loss camps for children were held around China during the summer holidays. Two studies have assessed the effectiveness of these camps among Chinese children. Cheng et.al found that there was significant reduction in body weight (2.34±0.89kg, $p<0.01$) in obese children at a two week summer camp in comparison with a control group (Cheng M et al. 2010). The other study showed significant weight loss (7.2±2.2kg, $p<0.001$) in twenty obese children aged 7-17 after a 4-week summer camp (Tang Q et al. 2014). In neither study was long term follow-up conducted.

Although weight-loss camps for children are becoming popular in China, and have attracted considerable media attention as a quick solution to obesity, little is known about the way these camps operate and their acceptability from the perspective of the children. The aim of this study was to investigate the operations of a weight-loss camp for children in China and to explore the experiences and perceptions of children in relation to these camps.

METHODS

Study design

This study utilized ethnographic techniques and semi-structured interviews with children attending a 28-day summer weight-loss camp from July to August 2013 in Hangzhou, the capital city of Zhejiang Province, China.

Recruitment

Permission to conduct the research was obtained from the weight-loss camp director prior to the field observation. All participants in the camp at the time of the study were included. Informed written consent to involvement in the research, including observation and interview

components, was obtained from both parents and children on arrival at the camp. Ethical approval was obtained from the Research Ethics Committees of UCL and Zhejiang University.

Data collection

Field observation was conducted at the weight-loss camp during the whole period of 28 days by the first author. She lived at the camp, observing the daily activities of the children and she recorded her observations and informal conversations with the children. This proximity meant that she was able to get to know the children well. The in-depth interviews with children were conducted in a private room and lasted around one hour each. Anonymity and confidentiality were assured. The main topics for the interviews included knowledge and attitudes to childhood obesity, self-awareness about overweight, reasons for attending the weight loss camp, feelings about the camp, especially diet and the activities, and whether the weight loss is sustainable.

Data management and analysis

Interviews with children were audio-recorded with their consent and then fully transcribed. Both field notes and the interview transcripts were reviewed and coded by two independent researchers. Codes were categorized into five main themes based on their similarities. These common themes were agreed by the three authors.

RESULTS

Field Observation

Children's height and weight were measured by healthcare staff on the first day of the weight-loss camp. Parents paid $1600 (USD) and signed a contract which stated that the full payment would be returned if their children did not achieve weight loss of at least 8% of their baseline body weight. Informal conversations with the parents showed that all had learnt about the camps from advertisements and from the camp's website. These both made highly exaggerated

claims about the components of the regime, the accommodation standards and location of the accommodation in relation to the exercise facilities. The camp programme consisted of dietary restriction (<350 calories per meal) and a daily schedule of eight hours of exercise, mostly held outside. It so happened that this camp was held during a heatwave with daytime temperatures of over 40℃. The detailed schedule is shown in **Table 1**. They did not offer a range of different indoor and outdoor sports as spinning, boxing, or outdoor team building activities as advertised. Also, there was no nutrition education component to the programme. Neither team doctor nor psychological counsellor was involved in the group as was claimed. Parents who were concerned about the security of accommodation were shown a standard twin room of a hostel at the camp site prior to their registration. However, the actual accommodation was basic, with two children sharing one double bed. The accommodation was ten minutes' walk from the site where the exercise facilities were located, necessitating walking there and back twice per day (they returned to the accommodation for noon break) in the hot sun on a busy and potentially dangerous road. During mealtimes children were supervised by the staff, and were not allowed to share or exchange food. It was observed that the children were frustrated and upset by the small meals. Two of them (ironically) went on a hunger strike in protest. Some participants bought snacks on the way to-and-from the accommodation when they were not supervised.

The exercise programme was very intense and the camp supervisor made sure all children participated in every activity. This seemed at times tantamount to cruelty with exhausted, children being forced to exercise in the extreme heat. The children became irritable and upset with many of the girls reduced to tears, and the boys squabbling and fighting.

Many of children called their parents in the evenings telling them how miserable the experience was, how hungry and exhausted they were, and asking them to prepare their favourite dishes on their return home!

Children were weighed every morning after the morning running and before breakfast and before being allowed a drink. The body weight was then posted on a noticeboard. All children were found to have lost the required 8% body weight at 28 days, but the final weighing was done after an extreme work-out when all were thirsty.

Interviews

Nine boys and 10 girls aged 7 – 18 years were included in the study. Their baseline body mass index was categorised according to International Obesity Task Force (IOTF) standards (Cole TJ et al. 2000). 11 were classified as obese, six as overweight and two as normal weight. Their characteristics are summarised in **Table 2**.

Theme 1: Awareness of being overweight/ obese

Two children, one boy and one girl, were of normal weight. The boy said he wanted to become muscular and fit. The girl was looking after her 8-year-old obese brother. Most of the participants were aware they were heavier than other children of the same age, but few of them labelled themselves as "overweight" or "obese". Regarding the reasons for becoming fat, most blamed parents and grandparents, especially grandparents for pampering and over-feeding them. Five blamed their parents for frequently taking them out to restaurants. One obese girl aged 18 years said she had no time for exercise and snacked a lot when she was preparing for the "GaoKao" (National University Entrance Examination). Apart from this girl none of the others regarded themselves as responsible for their overweight. Two didn't regard themselves as overweight at all and a further two didn't think being overweight was a problem.

When I get taller, I think my weight now won't be a big deal. (11-year-old girl, overweight)

Theme 2: Motivation

Participants had various motives for attending the weight-loss camp. None expressed concern about the health consequences of being overweight. Six said they had been forced to join the

weight-loss camp by their parents against their own wishes. Four were persuaded by their parents to join the weight-loss camp, with promises of gifts, or even a trip abroad.

My parents registered this weight-loss camp for me, but I didn't tell them I was unwilling to come. (12-year-old girl, overweight)

Five girls said they wanted to lose weight to be able to look good in nice clothes.

After losing weight, I will have good-looking body shape, and then I will be able to wear nice clothes. (15-year-old girl, overweight)

Four mentioned they easily got "tired" and thought that this was because they were overweight. They said that losing weight would give them more energy for studying. They also mentioned that losing weight and getting fitter would mean they could get higher scores in the school physical education examinations (These are part of the Chinese education system). With higher physical education scores, one overweight girl aged 11 years said "I could qualify as a three-good student". One obese 13-year-old boy needed to lose some weight to better prepare for the "ZhongKao" (High School Entrance Examination) which requires high scores in all subjects and in physical education to enter better high schools. This extended beyond school. One girl concerned that being overweight would make it more difficult to get good jobs in the future.

I have been told by my mum I need to lose my weight. If not, I will get fewer opportunities in the future. (18-year-old girl, obese)

Five children thought that they would feel more confident after losing weight. Three of them specifically said they hated being teased and tormented by classmates because they were overweight.

Boys in my class sometimes make jokes about my body shape. I hope to make them surprised after I lose weight. (11-year-old girl, obese)

Theme 3: Experiences at the weight-loss camp

Positive experiences

A couple of participants mentioned that they didn't feel ashamed for being fat in the camp because there were other children even heavier.

At home, my body weight is twice that of my sister. But here others are fatter than me. (13-year-old girl, overweight)

One third of them assumed that attending weight-loss camps was the fastest way to lose weight.

Negative experiences

All participants said that they were hungry every day.

I feel so tired and hungry all the time. Here I always feel hungry before going to bed and really look forward to breakfast. But the breakfast isn't enough and certainly not for the whole morning training. I don't feel motivated and energetic at all. Also after the whole morning or whole afternoon activities, the lunch and dinner don't fill my stomach. I feel really depressed and would really like to go back home instead. I would rather not eat at all. (11-year-old girl, overweight)

My dad was sceptical how this weight-loss camp would run and wondered whether they would use weight-loss drugs to achieve the promised weight loss. Now I know that they just put us on a very strict diet. Here the three meals a day is still less than one meal back home. (11-year-old boy, obese)

All participants criticised the intensity of daily exercises. They felt overwhelmed by this.

Here the intensity of exercise is just crazy --- 2-kilometre running is morning exercise! I can't do this when I get back home. My scores in physical education are really bad- others usually get grade A or B, but I always get C. After all this, I think I will get E, fail! Because I will be probably die or be disabled after such training. (11-year-old boy, obese)

Running all the time- it is so boring and makes me extremely tired. I even got sunburn which I never had before. (15-year-old girl, overweight)

Most participants said they hated the weight-loss camp and just wanted to go home. Three felt frustrated when they didn't lose weight.

I have already fulfilled the instructor's training requirements. Why is my weight not changing? It's so frustrating. I will only have the soup tonight to see if that works. (18-year-old girl, obese)

After one week of such intensive exercise here, my ankles are really painful. Sometimes I cannot bear the pain and would like to stop to rest, but the supervisor always pushes me to continue. I feel as if I am being punished and just want to cry. Actually I did cry yesterday after he (camp supervisor) shouted at me. (11-year-old girl, obese)

I was prepared to have a tough time here, but I really don't think I can bear another three weeks. (11-year-old boy, obese)

I really want to leave the camp. I told my parents and my dad sent me these snacks and the iPad to persuade me to stay here longer. (10-year-old boy, overweight)

Theme 4: Weight-loss maintenance after the camp

Few participants were confident they would maintain their weight-loss after leaving the camp. Four said the camp had taught them self-control with food. But others couldn't bear the idea of being hungry all the time. One boy aged 10 years said "in any case back home it is not up to me to decide what to eat".

They are cheating people. Here there are no nutritious -meals at all. If I am taught about what is a healthy diet, I would have the confidence to control my diet and lose weight in a healthier way. (11-year-old boy, obese)

I think I will eat much more back home and then will regain the weight very quickly. (12-year-old girl, overweight)

Although four participants thought they would continue with more exercises after the weight-loss camp, others identified "no interest on sports", "limited access to sports facilities", "exhaustion after doing excessive sports" as barriers to being physically active back home.

Keeping up the habit of doing exercise is hard for me - it is impossible to continuing doing sports with this intensity. It is really difficult to maintain the weight after the camp. (11-year-old girl, overweight)

Because of the demands of schoolwork, most participants assumed they would have no time for doing sports during the term time. One overweight 10-year-old boy even commented "teachers keep telling us we should focus on our study and other things really waste our time".

Theme 5: Family support

A small number of participants said their parents would help maintain their body weight by controlling their diet once they got home. However, most participants complained about the unsupportive home environment. Many children said grandparents would not especially approve of them losing weight at home.

My grandparents still think I am slim. (11-year-old girl, obese)

But my grandma usually prepares lots of meat dishes for dinner. So I think I will just put the weight back on. (11-year-old boy, obese)

DISCUSSION

To our knowledge this study is the first qualitative research to investigate how weight-loss camps for children operate in China and to explore children's perceptions of attending these camps. We believe this camp is not untypical of the 2000 weight-loss camps across China. And our findings raise serious concerns about the way in which such camps operate.

According to the literature, which comes almost exclusively from Western countries, weight-loss camps for childhood obesity provide a friendly environment in which children have the opportunity to learn about healthier lifestyles, while at the same time undergoing some form of acute weight loss programme involving diet modification and exercise. Such interventions

focus on children's behaviour modification, which it is hope is maintained, when they return to their home environment (Barton SB et al. 2004).

However, our field observation of the weight-loss camp in Hangzhou was in sharp contrast to this. Not many of participants were really obese, and two children of normal weight who should not have been accepted were enrolled to the camp. The programme was predicated on each child achieving weight loss of 8% of their baseline body weight or the fee, substantial by Chinese standards, would be returned in full. This created a huge incentive for the organisers to achieve the guaranteed weight loss by whatever means. Hence, the programme comprised extreme diet restriction and excessive exercise in extreme heat, which was distressing for all the children. Many of the children thought that the regime could actually be counterproductive in terms of behaviour change. The advertisements for the camp were highly misleading. They attracted parents and children by advertising the outstanding team of staff with expertise in nutrition, physical training and psychology, the comprehensive components of the programme, as well as the high standard of accommodation and security. In reality, the staff had no specific expertise, had undergone minimal training and were poorly paid. There was no health education or behaviour change programme to help children's understanding of the lifestyle changes necessary for sustained weight loss. There were safety concerns about the walk between the accommodation and the training site. Even though the promised weight loss was achieved in all children within 28 days, the fast weight loss would undoubtedly be difficult or impossible to maintain.

The interviews with the children provide considerable insights. Firstly, none of the children had real awareness about the reasons for childhood obesity and the health consequences. Most had been persuaded or even forced by their parents to attend the camp. They were motivated by the possibility of better physical appearance, improved self-confidence and self-esteem, higher scores in school sports, and parents' promises of rewards or future opportunities. Children only

mentioned two positive elements of the programme - reassurance because they were mixing with other heavier children and the potential for fast weight loss. All the children described feeling starved and exhausted every day, and were desperate to go home. Children were very aware that the weight loss would be virtually impossible to maintain after they returned home. This was blamed partly on the difficulty finding the time to exercise given the burden of school work they face during the term time. In China children are under huge pressure to achieve in school with the ultimate purpose of entering a good university. Huge amounts of homework leaves little time even for leisure, let alone exercise. Somewhat paradoxically, the "three-good" student system rewards students who excel academically, physically and morally and includes a physical education examination comprising 50-metre sprint, one minute skipping and standing broad jumping. But this leads to exercise being seen as an exam hurdle rather than a lifestyle choice and results in the focus on exercise only occurring just before the exam. Children also felt that the home environment, and especially grandparents, would be a barrier to weight-loss maintenance.

The question of whether weight loss at such camps is maintained is a crucial one, yet most studies have focused on short-term outcomes (Gately PJ et al. 2000; Gately PJ et al. 2005; Larnkjær A et al. 2008; Cheng M et al. 2010; Huelsing J et al. 2010; McCarty K et al. 2012; Tang Q et al. 2014), and the psychological benefits, such as improving self-esteem (Walker LLM et al. 2003; Gately PJ et al. 2005; Quilan NP et al. 2009). One study from Denmark (Grønbæk H et al. 2012) showed that 24% of the children attending a fat camp maintained weight loss until the 12-month follow-up. So such camps can be effective and the concept of such camps cannot be dismissed outright. The key thing is to ensure that the operation of the camps is conducted to high standards. But there are a number of problems in the Chinese setting.

Firstly, one of the major problems of the camp we studied, as well as others in China is that they are purely commercial enterprises, guaranteeing short term weight loss. The fees are high, and given the facilities and conditions tantamount to financial exploitation of gullible parents. The welfare of the children seemed to be of minor concern to the organisers. Forcing children to exercise excessively in extreme heat could even be dangerous. There are no standards or regulations controlling the establishment or activities of these camps. Anyone can operate a camp and there are no requirements for staff to have any specific qualifications. With no standards in place, it is no surprise that no inspection or supervision takes place. Fraudulent advertising claims are commonplace and do not seem to be challenged. At this camp there was no nutrition and lifestyle education at all, despite the advertising claims and the standard of the facilities was grossly exaggerated. Regulation could come under the auspices of the health or education bureaus and would be relatively straightforward to operate. Secondly, the experiences of children attending the weight-loss camps are highly unlikely to lead to long term weight loss and may even be counterproductive, since children showed craving for their favourite foods and were looking forward to indulging themselves when they returned home. Thirdly, the isolated environment, excluding parents and grandparents, the main carers of the children is unlikely to be conducive to changes in children's lifestyles. Failure to provide advice to children about how to maintain weight loss in the home environment is simply a wasted opportunity. This could be addressed really easily and cheaply. Without such continuity, parents should be aware of likely long-term ineffectiveness of such interventions. The views of overweight children should be considered when designing interventions for childhood obesity.

Limitations

First, only one camp was included and the sample size was small, but data analysis indicated that all the emerging themes reached saturation. We believe that our findings provide some insight into children' views of attending a weight-loss camp in China and their experiences and

perceptions were supplemented and confirmed by the field observation. Second, since the participants were from different areas of the province, it was difficult to do follow-up interviews to explore children's after-camp experiences. We are planning a future study to determine whether such weight-loss camps have any value in addressing obesity in children in China.

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KEY MESSAGES

What is already known about this subject	What this study adds
Childhood obesity has become a significant worldwide public health issue.	This study was the first attempt to investigate weight-loss camps in China using qualitative research methods.
The prevalence of childhood obesity in China has increased dramatically in the past three decades.	The extreme conditions and the potential financial exploitation of the weight-loss camp were of concern. At the very least such camps should be subject to regulation.
A large number of weight-loss camps have been set-up for children in China.	To design more effective interventions on childhood obesity, perceptions of children themselves should be taken into account.

Table 1 The Weight-loss Camp Daily Schedule

Time	Schedule	Time	Schedule
06.30 – 07.00	Get up & wash	**12.45 – 14.00**	Noon break
07.00 – 07.15	Walk to exercise facility	**14.00 – 14.15**	Walk to exercise facility
07.15 – 08.00	Morning running	**14.15 – 14.30**	Warm up activities
08.00 – 08.30	Breakfast (congee/egg/steamed bread/milk)	**14.30 – 17.30**	Afternoon training - outdoor (running/rope skipping/badminton/ basketball/aerobics/swimming)
08.30 – 09.00	Warm up activities	**17.30 – 18.30**	Dinner (mainly vegetable dishes & limited portions of meat)
09.00 – 12.00	Morning training- outdoor (running/stair-running/rope skipping/sit-ups/push-ups/football/basketball)	**18.30 – 20.30**	Additional training or self-study
12.00 – 12.30	Lunch (mainly vegetable dishes)	**20.30 – 20.45**	Walk back to accommodation
12.30 – 12.45	Walk back to accommodation	**20.45 – 21.30**	Shower time & bedtime

Table 2 Characteristics of Participants (N=19)

Characteristic	Participant
Sex (boy/girl)	9/10
Age (years)	12.4±2.4
Weight (kg)	67.4 ±20.1
Height (cm)	155.8 ± 12.9
BMI (kg/m^2)	27.2 ± 4.9 (range BMI of 21.2 to 36.7 kg/m2)
BMI weight status	
Normal weight	2/19
Overweight	6/19
Obese	11/19