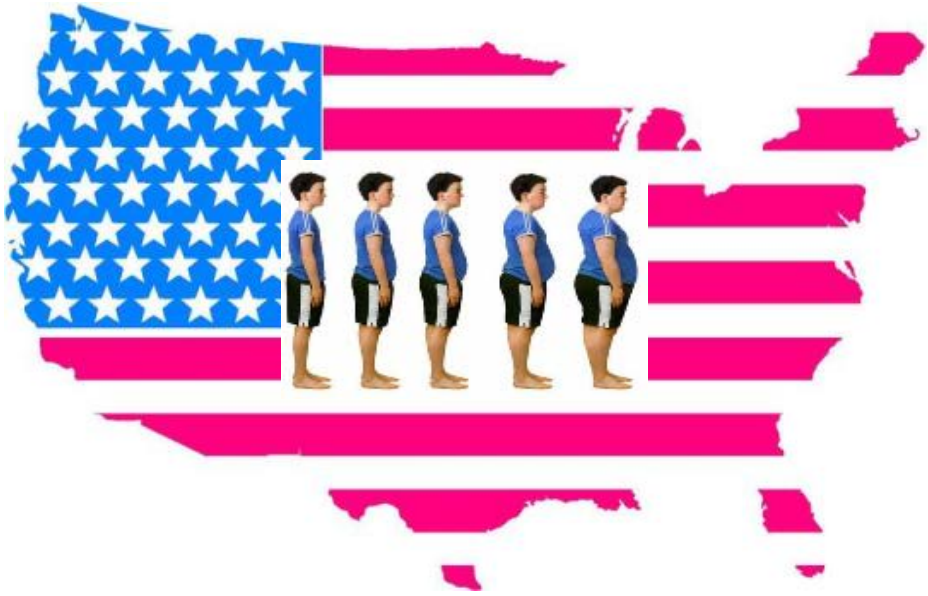
Winston Churchill Memorial Trust Travelling Fellowship 2007

# Development of a Childhood Obesity Treatment Programme



Winston Churchill Travelling Fellow

Helen Pittson

# 1.0 Introduction

Obesity is the most common paediatric chronic disease in the UK. However, recent reviews of the literature have concluded that there is limited evidence of the efficacy of programmes to treat childhood obesity (Summerbell et al., 2003). The literature also suggests there is a paucity of robust information on designing effective family-based models utilizing existing behavioural theories which can be implemented in primary care in the UK (SIGN., 2004). Review of the current literature highlights a growing research base in the United States of America. The US expert proposals focus on diet and control of sedentary behaviour (Barlow and Dietz., 1998) and research has shown that parents are crucial in the effective treatment of overweight children (Epstein., 1996).

## 1.1 My Background

I am a Researcher in Childhood Obesity with Telford and Wrekin Primary Care Trust. On being appointed to the role my main responsibility was to research and develop a treatment programme aimed at obese children. My investigation led to the development of the Y W8? (Why Weight?) project. The project is a fun and interactive 12 week course for children aged 8-13 years of age and their parents designed to assist families with weight management. Families are invited back at 6 monthly intervals after completion of the programme to evaluate their success in making longer-term lifestyle changes.

## 1.2 Why I Applied for the Fellowship

Many of the seminal papers in the treatment of childhood obesity are published by leading experts currently working in the US. I applied for the Fellowship because it would allow me the opportunity to visit a number of the established treatment centres for obese children and their families. These visits would provide me with an excellent chance to meet with the experts and view their methods first hand to gain an invaluable insight into the factors which combine to create a successful treatment programme. The knowledge gained through the Fellowship would be used to develop and improve the Y W8? project I have established in Telford.

## 1.3 Objectives of the Fellowship

The objectives of my Fellowship were:

- To visit established obesity treatment programmes for children in the United States.
- To gain an in-depth understanding of the practical and psychological methods used by these programmes.
- To use the knowledge I gain to develop and improve the treatment programme I have set up in my own locality.

## 2.0 The Fellowship

When planning my Fellowship I decided I would like to visit established centres which offer different models of treatment to families e.g. clinics, camps, so I could compare the benefits of each type. I also wanted to visit different areas of the US to gain a better understanding of the barriers the project workers face when delivering the projects in diverse areas.

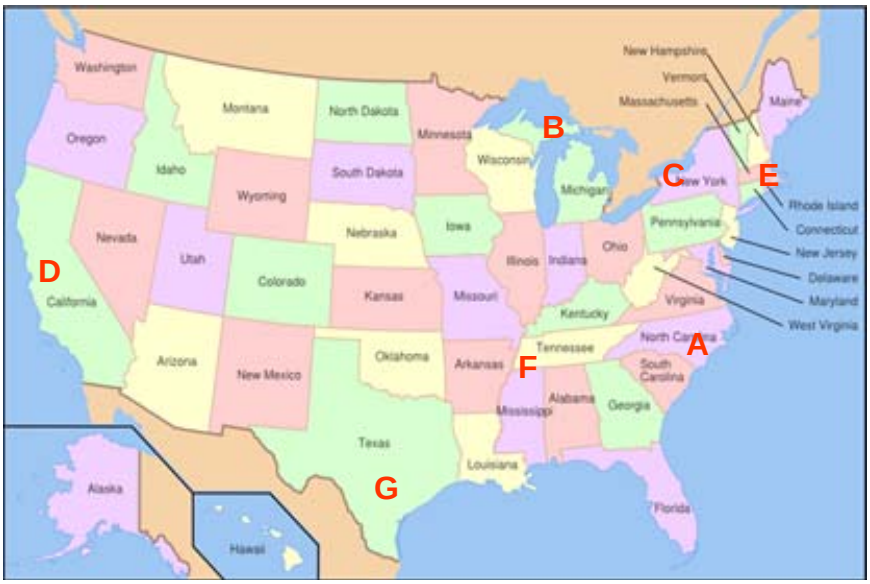



Figure 1. Map of the US Showing Places Visited During Fellowship

**A** = Pediatric Healthy Weight Research and Treatment Center, East Carolina University, Greenville, NC.

**B** = Wellspring Family Camp, Clear Lake, Upper Peninsula, MI.

**C** = Childhood Weight Control Program, University of Buffalo, Buffalo, NY.

**D** = Center for Weight and Health, University of California, Berkeley, San Francisco.

COAST (Center for Obesity Assessment Study and Treatment), University of California at San Francisco, CA.

**E** = OWL (Optimal Weight for Life) Program, Harvard University, Boston Children's Hospital, MA.

**F** = Memphis GEMS (Girls Health Enrichment Multi-site Studies) Project, University of Memphis, TN.

TeamPLAY (Positive Lifestyles for Active Youngsters), University of Tennessee, Memphis, TN.

**G** = CATCH (Coordinated Approach to Child Health) Program, Michael and Susan Dell Center for Advancement of Healthy Living, University of Texas at Austin, TX.

2.1 Pediatric Healthy Weight Research and Treatment Center, East Carolina University (ECU)

Healthy Weight Case Management

The Healthy Weight Case Management programme runs from the Pediatric Healthy Weight Research and Treatment Center. Within Healthy Weight Case Management there are two similar programmes; Medical Nutrition Therapy (MNT) which is clinic based, and KidPower which is community based. During my time at the centre I attended the MNT clinic and met with a dietician who delivers the KidPower programme.

Medical Nutrition Therapy (MNT)

This programme is clinic based and runs from the research and treatment centre. Children from 2-18 years of age attend an initial appointment accompanied by a parent. At the initial appointment the child's height, weight and bloods are taken to screen for underlying causes of obesity and other health problems such as diabetes. The family then meets with a paediatrician to assess their physical status, a dietician to analyse their nutritional intake and receive dietetic advice and, if necessary, a behavioural therapist. All health professionals provide advice based on the US nutrition and dietary guideline pyramid (see Figure 2) and the US Government recommendations for physical activity levels.

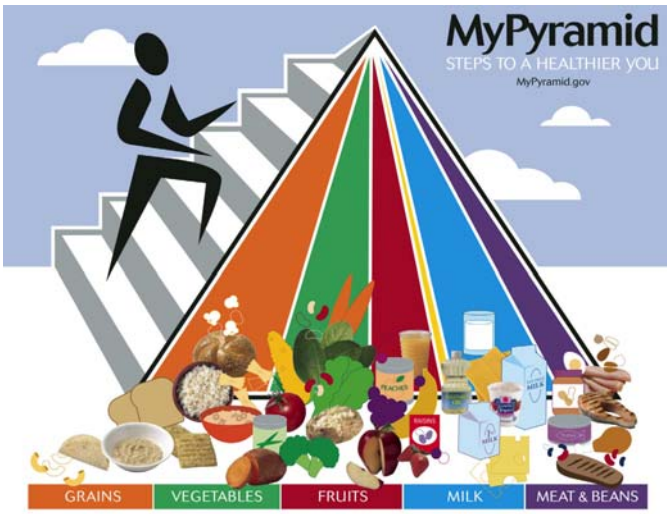



Figure 2. US Nutrition and Dietary Guideline Pyramid

A family's first appointment at the clinic may take up to 3 hours to complete. Families are normally invited back for a 3 month review appointment and further review appointments will be scheduled after this as necessary. Health professionals use the change promotion technique of motivational interviewing to assist families in identifying their barriers to change and strengthening their

commitment to changing their behaviour. The tools the health professionals use to assist the families with behaviour change include goal setting and suitable rewarding, food diaries and a hunger score index.

KidPower

This programme is very similar to MNT but runs out in the community in schools, doctor's surgeries and after-school clubs. Families have an initial appointment with a dietitian which lasts about 60 minutes and receive nutritional advice. The dietician sees families for a 30 minute review appointment every 3 months and uses e-mail and telephone calls to follow-up families if necessary. The dietician working on this programme reported improved outcomes for children when the parents are involved at each appointment than without.

Health professionals working on both MNT and KidPower reported a high drop out rate from the programmes. They also highlighted they felt the 3 month period between appointments was too long for families to wait, and this may have an influence on the high number of non-attendees at appointments. They are currently considering a means of introducing a payment system for families where they will have to pay for appointments regardless of their attendance. They hope this will increase retention rates, improve motivation to change and subsequently improve the results the families achieve.

Camp Golden Treasures

During my time at ECU I had the opportunity to spend the day at Camp Golden Treasures – "where winners lose!" This Summer was the first year the camp had been run. Golden Treasures is a 6 week weight-loss camp for 10-18 year old girls from the locality which is hosted on the ECU campus. The aim of the camp is to help the girls lose weight, raise their self-esteem and learn the tools and habits necessary to lead a healthy lifestyle and reduce their risks for developing chronic disease later in life. Their motto is "tomorrow starts here".

Camp Golden Treasures is the first non-profit weight management camp in the US. The camp raises funds from registration fees ($4500 per girl), grants and private donors. This allows a percentage of girls from low income backgrounds to attend the camp on a fully-funded scholarship.

The main emphasis of the camp this year was on physical activity and providing the girls with a healthy, balanced nutritious diet. The girls also had weekly group meetings with a dietician to learn about healthy eating and group meetings with a family behavioural therapist to plan how they can continue with the changes they have made when they return home.


Figures 3 and 4. Campers taking part in activity sessions at Camp Golden Treasures.

The organizers plan to follow-up the families through '4-H' after school clubs based in their locality. During the sessions it is planned that the girls will attend with their families to help the families learn about the benefits of healthy eating and physical activity and explore how they can support the girls with changes at home. They hope to remain in contact with the girls for 12 months to monitor their body mass index (BMI) status and the lifestyle changes they are successful in maintaining.

I was also present at a meeting of the organizers of the camp where they discussed the challenges they had faced during this first camp and how they plan to address these for future camps. Issues raised included a problem with girls being taken out of camp by their parents at weekends and these girls not being as successful with their weight loss. There were also some cultural issues with the need in future years to allow girls sufficient time for bible study and church meetings. In addition, many of the girls at the camp who are there on a scholarship have had problems obtaining the necessary kit, especially clothing and trainers, needed for the 6 week camp. The organizers are going to investigate how they might help families with this by offering either financial assistance or obtaining clothing which the girls can be given when they attend the camp.

2.2 Wellspring Family Camp

I then traveled North to visit the Wellspring Family Camp on the shores of Clear Lake in the Hiawatha National Forest. Families stay in huts at the camp and share meals and activities together. Each child must be accompanied by at least

one parent, and the cost for the 2 week camp is $5350 for the pair. Families self-refer to the camp by applying on-line.

Families attending the camp take part in a very structured programme involving a mixture of physical activity sessions, healthy eating workshops, cooking classes, a supermarket tour and a visit to a restaurant. Children also have cognitive behavioural therapy (CBT) and stress management sessions and parents attend child management workshops. All the food prepared and served at mealtimes is very low in fat and carefully portion controlled. At mealtimes there is always salad and fruit available which is regarded as 'free food' – campers can help themselves.

The philosophy of the camp is to provide a place for parents and children to have fun whilst learning to establish an active, healthy lifestyle which can be maintained at home. All campers, parents and staff wear pedometers everyday and are asked to keep a daily food and activity diary. Children are set goals each day for the number of steps to achieve and different foods to try. The children are rewarded for achieving their goals and behaving well throughout the day by receiving beads which can be exchanged at the 'trading post' for fun items such as skipping ropes, frisbees and key rings.

Figure 5. A family taking part in a blindfolded maze challenge

Figure 6. A camper taking part in a cooking class

During my time at the camp I was able to take part in various physical activity sessions including ultimate frisbee, dodgeball, Tai Chi and yoga. I also joined a cooking class where we cooked the evening meal for the camp and learned how to make low fat food taste good. At one meal we had bison which I had not tried before. The camp uses the meat regularly as it is very low in fat. I definitely enjoyed trying something new although it was slightly chewy!

I also took part in a children's stress management session during which we played a game which encouraged us to think of strategies for dealing with stressful situations without resorting to comfort eating or poor behaviour. I also attended two child management sessions where the parents discussed strategies to change the family lifestyle at home and how to deal with setbacks.

Throughout my time at the camp I talked with the families about their camp experience and asked them how they plan to continue with the changes they have made at home. Most parents chose to attend the camp because they felt they needed a 'kick-start' in helping their child to lose weight and change to a healthy lifestyle. They valued the time away from their normal hectic lives to spend time with their children and work together as a family to learn new skills which they can take home. The children were enjoying themselves at the camp and commented that having fun, making new friends and spending time with their parents were the best aspects.

Figure 7. Families attending Wellspring Family Camp

Figure 8. Sunset over Clear Lake

2.3 Childhood Weight Control Program, University of Buffalo

I was very pleased to be invited to visit the Childhood Weight Control Program at the University of Buffalo as it has a long-established and well-renowned childhood obesity treatment centre. When developing the Y W8? project I studied a great deal of the papers published from this centre and used the community-based model they have established here as the basis for my programme.

During my time at the University I met with a number of the Project Coordinators of the programme and gained an excellent understanding of how and where they deliver their programme, and followed the programme through from recruitment of families and delivery of sessions to their follow-up schedule. Although there were no sessions running during the time I was there it was excellent to spend time with the coordinators and gave me a great opportunity to discuss my project with them, evaluate how it compares with their own and the chance to think of improvements that can be made to the Y W8? project.

I was particularly interested to identify the key success factors for the programme so I could learn from them. I was particularly interested in their recruitment procedure and their excellent ability to retain families in the programme for follow-up appointments for many years after their initial contact.

Some of the key features I identified were:

- Most of the recruitment on to the programme is by self-referral. This assumes a high level of self-motivation from families.
- Families attend a stringent recruitment interview prior to starting. If the project coordinators feel the families motivation is not high enough then the family is refused.
- For families where mum and dad are no longer together both parents still have to attend the recruitment interview and assure the Project Coordinators of their willingness to take part. If one of the parents does not show sufficient motivation to help their child make changes then the family is refused.
- Families in certain circumstances would not be recruited due to the high likelihood that they would drop-out e.g. a single mum with 3 children.
- Families pay $40 at the beginning of the project which they earn back each week by attending.
- Children and parents each receive a separate manual. Chapters of the manual have to be read before each session and the children have to complete quizzes which are marked to ensure compliance. If a child does not score high enough on a quiz then they are asked to resubmit it.
- Incentives are used to get families to return for their follow-up appointments.

The points listed above document the stringent recruitment criteria the programme follows. I feel these factors are instrumental in ensuring the high retention level of families on the weight control programme at Buffalo. Not all of these factors are practical for use in Telford but I will give careful consideration to how I might adapt the ideas discussed to improve the recruitment and retention of families into my own project.

The city of Buffalo is located just 20 miles from the border with Canada and Niagara Falls. During my stay in Buffalo I visited Niagara Falls and took a trip on the ‘Maid of The Mist’ boat ride which takes you right by the falls for spectacular views. It was excellent!

2.4a Center for Weight and Health, University of California, Berkeley

I then traveled West to the city of San Francisco where I visited Berkeley to meet with researchers who have been evaluating the impact of making healthy changes in schools throughout the state of California. California has been the leading US state for making changes in schools. The system taken has been a ‘top down’ approach where the researchers have worked with the State government to make changes to legislation to force schools to make changes.

The researchers are conducting an impact study to measure school compliance, surveys of students, financial effects on the schools and barriers schools report in trying to adhere to the legislation. Examples of the legislative changes include:

- Fresh Start – a 10% reimbursement system for fruit and vegetables sold in schools
- Introducing USDA (United States Department of Agriculture) nutrition standards for the competitive foods sold in schools. Schools will be certified once every 5 years to ensure the USDA nutrition regulations are being adhered to.

In addition to the impact assessment the researchers are going to monitor the BMI of 5$^{th}$, 7$^{th}$ and 9$^{th}$ graders to evaluate changes in children's weight status. Students will also undertake a fitness assessment, the 'Cooper FitnessGram', to determine their fitness levels based on known values for good health. Recording of these measures each year will give the researchers a measure of the impact the legislation is having on children's health, fitness and obesity levels.

Although the impact study is still in the early stages they have found one clear result; legislation is the most powerful means of getting schools to make changes. However, they comment that legislation is not enough, 'grass-roots' pressure is required from the local community to ensure the changes are implemented and monitored. From this very early work the researchers suggest that coalitions involving multiple sectors are required to target a problem, and that whole community approaches are required to work alongside this to effect environmental changes and diffuse the impact amongst a large number of people.

2.4b COAST (Center for Obesity Assessment Study and Treatment), University of California at San Francisco


Figure 9. University of California at San Francisco Children's Hospital

Whilst visiting San Francisco I also attended the WATCH (Weight Assessment for Teen and Child Health) clinic. This clinic uses a medical model of treatment. Children with an accompanying parent attend for an initial appointment at the clinic where their height, weight and fasting blood glucose levels are taken (to check for glucose intolerance or diabetes). The family then meet with a paediatrician to assess the child's physical status and then a dietician to receive nutritional advice. At the initial appointment all families are given the same intervention protocol – a healthy balanced diet, based on low glycemic index foods, and exercise.

At their 3 month review the children's weight status is reviewed to check on progress. If the child is progressing well then they are further encouraged and another appointment made for a further 3 months to monitor their progress. If the child's weight status has not improved then their initial insulin levels are reviewed. The clinic is identifying a trend that many children whose weight does not improve using a normal lifestyle intervention tend to have high levels of insulin indicating impaired glucose functioning and a predisposition towards developing diabetes. These children are offered pharmacotherapy using the diabetic drug Metformin. The clinic is finding that when using the drug alongside the lifestyle intervention the majority of children have positive effects on their weight status.

The Director of the clinic is very keen on following this medicalised model. He believes that if normal lifestyle changes, (changing to a healthy diet and increasing physical activity levels), are not effective for the child then there must be a physiological reason in the child's genetic make-up. He thinks the role of insulin, and probably the hormone leptin, is key and the levels of insulin in the blood can be used as a marker to identify this.

The use of drugs in the treatment of childhood obesity is still not widespread in the US and uncommon in the UK. It was very interesting to meet with the Clinic Director to gain an understanding of what he believes to be potentially the most effective treatment method and meet with children who are gaining benefit from it. The use of Metformin by this clinic was still at quite an early stage so the impact on the child's weight status when the child stops taking the drug has not been discovered.

During my time in San Francisco my husband joined me and we spent my spare time exploring the city and the surrounding area. We hired bikes and cycled around a very hilly San Francisco and across the Golden Gate Bridge. One evening we visited the island of Alcatraz and took a tour around the prison which was a very eerie experience. After San Francisco we spent a couple of days in Yosemite National Park which was absolutely beautiful. The landscapes were stunning and we walked a number of trails to visit waterfalls and giant sequoia trees.

## 2.5 OWL (Optimal Weight for Life) Program at Boston Children's Hospital

I then traveled East to Boston and attended the OWL clinic at the Children's Hospital. This is a very busy childhood obesity treatment clinic run by up to 15 different health professionals including paediatricians, dieticians and behavioural therapists. On the day I visited there were about 60 appointments including initial consultations and review appointments. The OWL clinic is similar to the WATCH clinic I attended in San Francisco but does not use pharmacotherapy unless the children are diagnosed with diabetes. The nutrition information given by the dietcians is based on a low glycemic index diet, and all children are encouraged to increase the amount of activity they are doing.

Whilst at the clinic I followed a family through their first appointment. Initially the child had their height and weight recorded and their bloods taken. They then met the paediatrician where their physical status was discussed and the benefits for the child if they lose weight were identified.

The family then met with the dietician. During this appointment the child talked through their normal diet and their likes and dislikes. The dietician explained the difference between fake foods – processed/refined foods with a high glycemic index, and real foods – natural foods with a low glycemic index. The family set goals to increase the amount of real foods and decrease the amount of fake foods in the child's diet and to increase the amount of water the child drank.

Lastly, the family met with a behavioural therapist to discuss their family dynamics and really consider how they were going to achieve the goals they had set. At the end of the session the child was asked to leave the room and the therapist spent time with the parent discussing how to cope with the child's resistance to change. The therapist described to the mum how when trying to change a child's behaviour it can often meet with resistance, this will cause an increase in behaviour from the child including shouting, arguing, etc. The therapist encouraged the mum to stay strong during these times and not to relent. She described that if the child gets their own way then they will know that yelling and arguing work. If the parent stays strong then child will know that those tactics do not work and they will gradually accept the change. The key for the parent was to be consistent and strong.

At the end of the clinic the family was set a review appointment for 3 months. The family left the clinic feeling very positive about making changes and motivated to start straight away.

## 2.6a Memphis GEMS (Girls Health Enrichment Multi-site Studies) Project, University of Memphis

I then travelled to Memphis to visit researchers a the University of Memphis who have developed and delivered the Memphis GEMS Project. This is a community

based project with long-term follow-up data that I used when developing the Y W8? project.

The researchers I met with described Memphis as a poor city with 83% of the population Afro-american and 82% of the school student population entitled to free school meals. Access to healthy foods and a safe place to exercise is very difficult for those living in the most deprived areas. Like the neighbouring Southern states of Alabama and Mississippi, Tennessee has many cultural issues including continuing racial tension.

The Memphis GEMS project was a 2 year intervention targeted at 8-10 year old Afro-american girls and their parents. Prior to commencing the programme the families had a rigorous assessment including measurement of their height, weight, body fat percentage, waist circumference and blood pressure. They also underwent a physical activity assessment using accelerometers and completed a 3 day dietary intake analysis. Researchers carried out psychological assessments including a questionnaire assessing self-efficacy for physical activity and diet, an eating habits questionnaire and a social desirability questionnaire. Families were also asked to complete an inventory of household items including the number of televisions and computers at home, and whether they have goods such as a dishwasher and a microwave in the house. All of these measures were repeated at 1 and 2 year follow-up.

Families were asked to attend 34 GEMS sessions over a 2 year period. The sessions ran once a week for 14 weeks and then once a month for 20 months at local community centres around Memphis. Each session was split into 2 parts. During the first part the families were separated into parent and child groups and had a nutrition workshop. In the second part of the session the families came together for a physical activity session. At the end of the session the families either made or were given a healthy snack and received a recipe card to try at home during the week. The researchers used telephone calls, newsletters and postcards to maintain contact with families and remind them of forthcoming sessions.

The project leaders who delivered GEMS were all local community members with an education background who were trained to be able to run the programme. The researchers identified this as a positive aspect of the project as the project leaders had already had credibility in the local community and became role models for the families.

After the first year the researchers found the number of families attending the sessions was reducing. To address this they carried out focus groups with the families to find out why. The families reported that they enjoyed coming along but they found too long between sessions. They also wanted to try some different activities on the theme of healthy eating. In response to this the

researchers changed the format to include 12 field trips including a grocery store tour, food tasting and mall walking.

The full results of the project are currently awaiting publication and due to embargo regulations the researchers could not share their findings with me. However, they did hint that they had seen changes in children's diets especially concerning their consumption of fizzy drinks.

I also asked the researchers what they would do differently if they were to repeat the project. Their answers included:

- Expand the target group to boys
- Make the materials more user-friendly for other projects
- Shorten the length of the project – 2 years was too long
- Meet weekly or fortnightly consistently throughout the project
- Use fewer incentives e.g. families received $50 for attending their assessment and a gift at every session which taught them to expect a gift for taking part

Figure 10. Helen Pittson and Researchers from Memphis

2.6b TeamPLAY (Positive Lifestyles for Active Youngsters), University of Tennessee

At the Urban Child Institute at the University of Tennessee I met with 3 health professionals; a researcher and 2 paediatricians, who have come together to develop TeamPLAY. This project is a family-focused randomised control trial delivered in the community at local YMCA's and sports centres.

The team have used the principles of Social Cognitive Theory, (skill building, positive reinforcements), to develop the project. The project is aimed at overweight and obese 4-7 year old children and runs on a Saturday morning. During the first part of the morning the children and parents are separated and the children have a physical activity workshop based around music and being

creative, and the parents attend a nutrition workshop delivered by a dietician. During the second part of the morning the parents and children take part in an activity session together and the parents learn how to play with their child, are coached to use positive language and reinforcement and how to deal with any child's resistance.

The programme runs for 6 months. Families attend 8 sessions during the first 2 months, 4 sessions over the next 2 months and 2 sessions during the last 2 months. They hope to follow the families for 2 years to examine changes in the children's weight status.

The team reported they found recruitment into the project difficult at first. In Memphis there has been a history of mistrust from Afro-americans towards white researchers because in the 1950's researchers injected Afro-americans with syphilis. The current researchers found they had to carry out some preliminary work in the communities they were targeting to gain their trust prior to starting recruitment.

The TeamPLAY research is still in the early stages but the researchers hope to be able to share their preliminary results in the next year.

Whilst in Memphis I visited a number of the museums and tourist centres. I spent some time on Beale Street in the music venues listening to the blues bands. At Sun Studios I saw where Elvis Presley recorded his forst song and introduced rock 'n' roll to the world, and I also visited the Stax Museum where many famous artists recorded soul music.

I also spent a morning at the National Civil Rights Museum which displays a very comprehensive history of the struggle for civil rights in the South, and the museum us built around the Lorraine Motel where Dr Martin Luther King Jr was assassinated in 1968. Of course my trip to Memphis was not complete without a visit to Graceland. Although not the vast mansion I was expecting it was amazing to see inside Elvis's home and imagine him living there.

2.7 CATCH (Coordinated Approach to Child Health) Program, University of Texas at Austin

The final programme I visited was CATCH in Austin. This programme began at the University of Texas back in 1987. Its main focus is the prevention of childhood obesity by working with schools to;

- Create a healthy food environment
- Increase the availability of healthy foods
- Increase physical activity in schools
- Provide a safe place to play
- Encourage children to reduce screen time

The programme has taken many years to develop into its current format and is now being implemented in all the Travis County elementary schools in Texas. The current programme comprises modules for the:

- Classroom curriculum
- Physical education curriculum
- School food service
- Families at home

Through various studies the research team has demonstrated that the CATCH programme is effective in reducing levels of childhood obesity. The studies have also linked CATCH to improved academic achievement and a decrease in classroom disruption.

The research group have recently secured a significant amount of money to continue developing the CATCH programme and to implement it in more schools throughout Texas.

## 3.0 Learning Outcomes

The Fellowship gave me a fantastic opportunity to visit a number of different models of childhood obesity treatment, and to meet with many researchers working on these programmes. My time spent in the US was also an invaluable chance to present my project to experts working in the field to gain their feedback and share the work being carried out in the UK. When considering my own project I was heartened to receive very positive feedback and glad to discover that much of what we are doing both in Telford and the UK is in-line with the latest developments in the US.

Many of the established projects in the US now have considerable long-term follow-up results to prove the benefits of the programmes. It is important that here in the UK we run similar projects using the evidence base they have developed

My main learning outcomes, some of which are new and some of which corroborate the results and observations I am finding from running my own project, include:

- Parental involvement is key in supporting the child to make changes. This was demonstrated through all the projects I visited. Even the prevention project being delivered in schools contains modules for the parents to complete at home because the researchers recognised that without the involvement of the parents the programme would not be as effective.
- Field trips, including visits to a supermarket and restaurant, were used on a number of the projects I visited. I think this is a great idea to take families to

normal venues where they will find themselves regularly having to make choices and giving them practical advice and support in the actual setting.

- The stringent recruitment process used by the programme in Buffalo is undoubtedly a key factor in both the retention rate they achieve and their long-term follow-up results. However, I will need to give careful consideration as to whether it would be acceptable for my project to be so strict. If families are motivated to attend and committed to making changes then I think projects should be able to find a way of working with the family which is suitable for all.
- The clinics I visited which used a medicalised model of treatment have given me a great deal to consider. Current research suggests that the results gained from these treatment centres are similar to those seen by community based programmes. I will follow the work being carried out at these centres with interest, particularly the results seen with the use of pharmacotherapy, and may seek to make changes to my own project in the future if these methods significantly improve outcome.
- I learnt a great deal about making changes at a population level from the researchers I met at Berkeley. The early results from their impact study show that the most effective way of making significant changes over a large geographical or population area is through legislative or policy changes. I think this has been demonstrated in the UK with the changes being made to the school meal system. Their research also shows that this is not enough. There also needs to be pressure from people at a local level to ensure these changes do happen and are sustained. When trying to make changes, especially the wide ranging changes that are required to combat childhood obesity, we need to have a multi-faceted approach including changes to policy, communities, schools, homes, etc to ensure there is pressure to make changes at all levels.

My trip gave me an excellent insight into the development of different models for childhood obesity treatment and many new ideas to include in my own project. I came back from my trip pleased by the feedback I had received about my own project and motivated to develop the project further. I learnt a great deal from the people I met including the researchers and clinicians working on the programmes and the families and children attending the various projects. Their honesty, insight and knowledge will help me to improve the treatment of childhood obesity both in Telford and hopefully in the UK in the future.

## 4.0 Acknowledgements

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