

National Assembly for Wales

Children and Young People Committee

CO 40

Inquiry into Childhood Obesity

Evidence from : Mend

Community child weight management programmes for the Welsh Assembly Government, 2008-2012

If obesity is to be addressed in an equitable manner both population level initiatives and community-based treatment programmes are required in a coordinated response. Population level initiatives, such as Change4Life, are key to halting the continued secular rise in obesity levels, while evidence suggests the 36% of children in Wales who are already obese and overweight will not respond to lower intensity approaches but require more intense treatment interventions.

MEND (Mind, Exercise, Nutrition, Do it!) is one such targeted intervention for children who are already overweight or obese. MEND currently holds the largest child weight management programme database in the world and is the largest provider of child weight management services. As a recognised authority in the field of child weight management, we aim to reduce obesity levels by focusing on the behaviours that lead to obesity. Over thirty published peer reviewed articles and abstracts support the effectiveness of the programmes we run, including a successful Randomised Control Trial (RCT) showing efficacy on a wide range of health and psychosocial outcomes. Independent research also found MEND programmes to be cost effective.

Initially supported by a Welsh Assembly Government grant to deliver programmes across Wales for children aged 7 to 13 years old and more recently re-commissioned by Public Health Wales to deliver across a larger age range, the programme addresses the needs of children who are at Level 2 of the clinical care-pathway. The success of MEND programmes to date has been built on the delivery of clinically effective outcomes by teams working in the community and sustainable asset building by training of healthcare professional.

Key achievements include:

- Delivery of 160 child weight management programmes directly benefiting 1450 individuals over two and a half years
- 170 frontline staff from a range of partner organisations trained to deliver programmes
- 325 professionals participated in child obesity awareness training sessions
- Partnership working with all seven local health boards and 12 local authority councils across Wales

In the future programmes such as MEND, delivered in partnership with organisations such as Change will be in the strongest position to achieve the required reach and effectiveness, and ultimately deliver greater outcomes for the health of children in Wales.

We would welcome the opportunity to present to the Committee on our findings or share any further information you feel is relevant to your inquiry.

Friday, 03 May 2013



MEND 7-13 Portfolio Report

generated using post-programme measurement data

Welsh Government April 2011- March 2012



Table of contents

1. Portfolio Sites	2
2. Portfolio's Overview	3
3. Quantitative Results.....	5
3.1 Anthropometry.....	5
3.2 Physical activity, sedentary behaviour and fitness	7
3.3 Psychological indices	10
3.4 Dietary habits	11
4. Appendix: Tables with MEND 7-13 results.....	12
4.1 Table of MEND Welsh Government April 2011- March 2012 Portfolio results	12
4.2 Tables of MEND's National Roll-out results.....	13
4.3 Table of MEND's Published Research results	14
5. Executive summary	15
6. Appendix: Participants with high SDQ scores	16



MEND 7-13 Portfolio Report

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Welsh Government April 2011- March 2012



1. Portfolio Sites

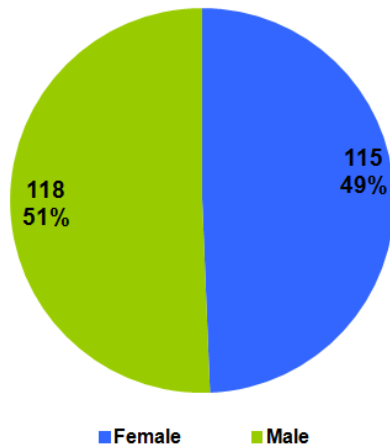
- Programmes' time period: 05/2011 - 06/2012
- Total number of participants¹: 233
- Total number of participants with pre and post programme BMI data: 168 (72% of total)

¹Filters applied

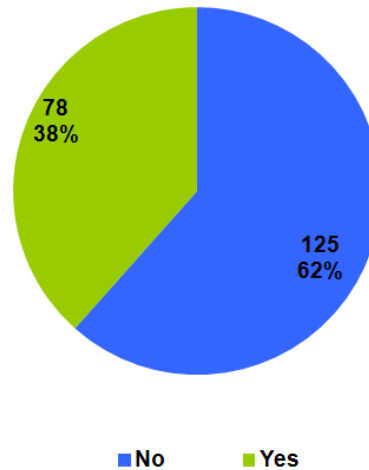
- ✓ Age: 7-13 years old (at pre-programme measurements - Session 1)
- ✓ BMI z-score at baseline > 1.33 (at least overweight i.e. $\geq 91^{\text{st}}$ BMI centile)

2. Portfolio's Overview

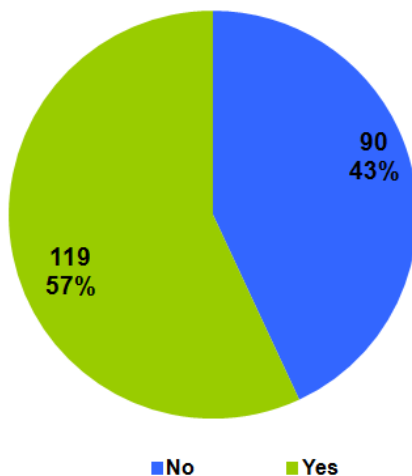
Gender



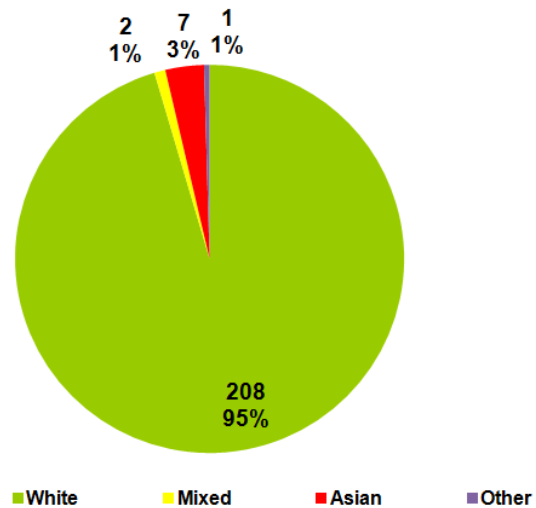
Do you consider yourself a single parent?



Do you own your accommodation?



Ethnicity

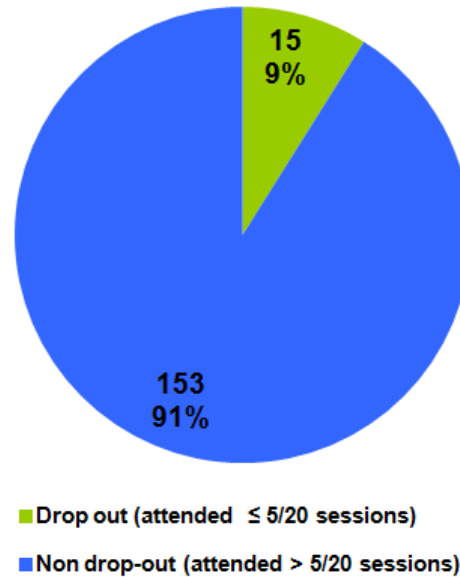


Figures on the graphs are (n; %)

Missing/Undisclosed data:

- Gender: n = 0
- Single parent: n = 30 (13%)
- Accommodation: n = 24 (10%)
- Ethnicity: n = 15 (6%)

**Drop out rate
(excluding participants with missing attendance)**



Figures on the graphs are (n; %)

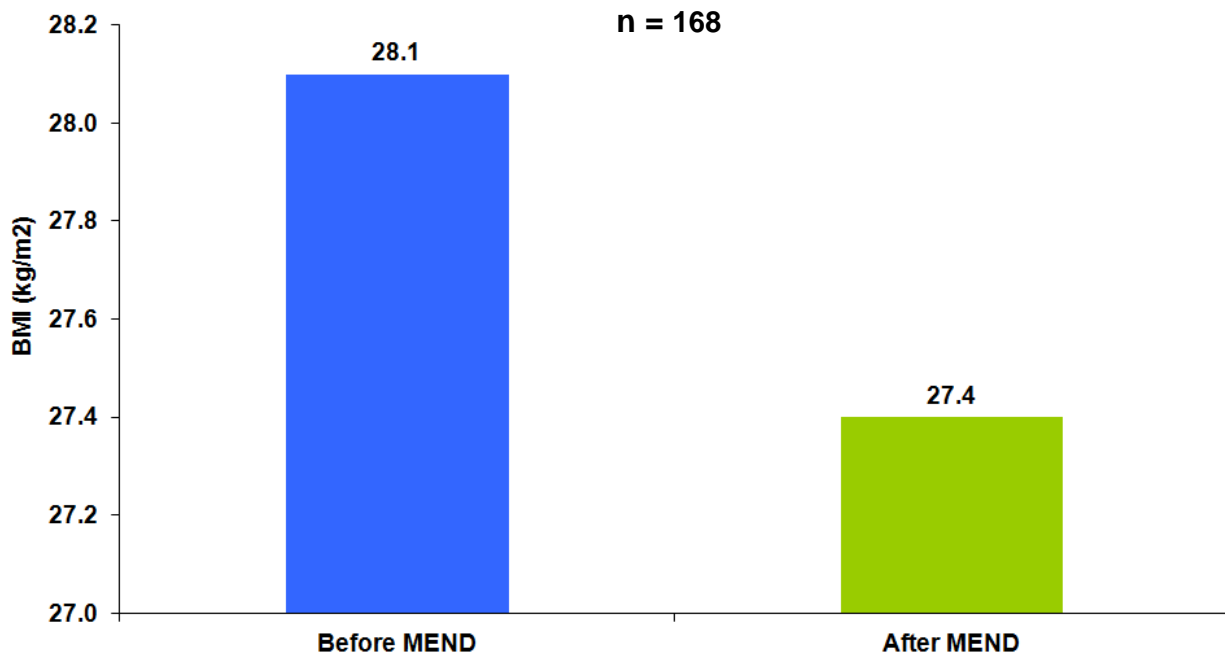
Mean attendance rate was 89.8% (± 16.5)

Mean age for the group: 10.5 (± 2.0)

Note: Dropout rate and attendance are only reported for programmes that have fully completed attendance data on OMMS.

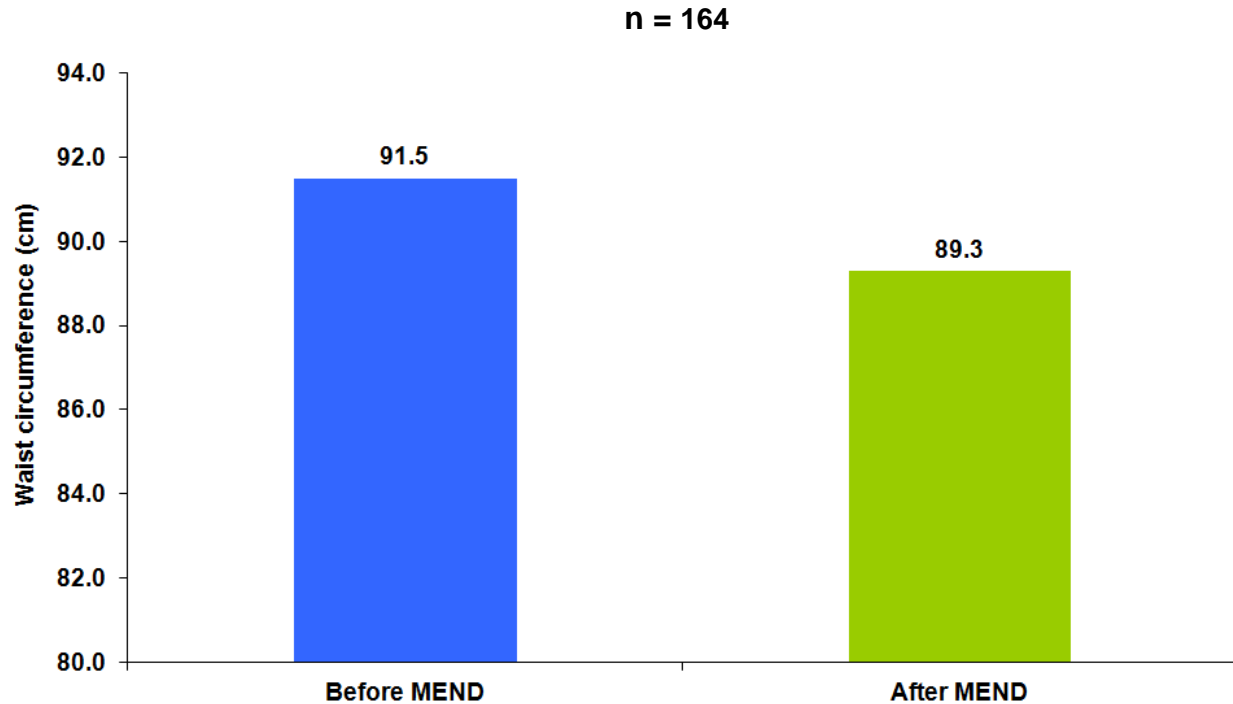
3. Quantitative Results

3.1 Anthropometry



Body Mass Index (BMI) decreased from 28.1 kg/m² pre-MEND 7-13 to 27.4 kg/m² post-MEND 7-13, leading to a 0.7 BMI unit reduction for the Portfolio.

Body Mass Index (BMI) is calculated by dividing weight (in kg) by height (in meters) squared. It is used to categorise individuals as underweight, normal weight, overweight or obese. In clinical practice, the 98th BMI centile for age and gender is used as the cut-off point to define obesity in children. BMI is a valuable tool for initial screening and follow-up as it is easily calculated; however, it does not take into consideration body composition, so it should be ideally complemented by other measures -e.g. waist circumference (see below)- to assess changes in degree of overweight.

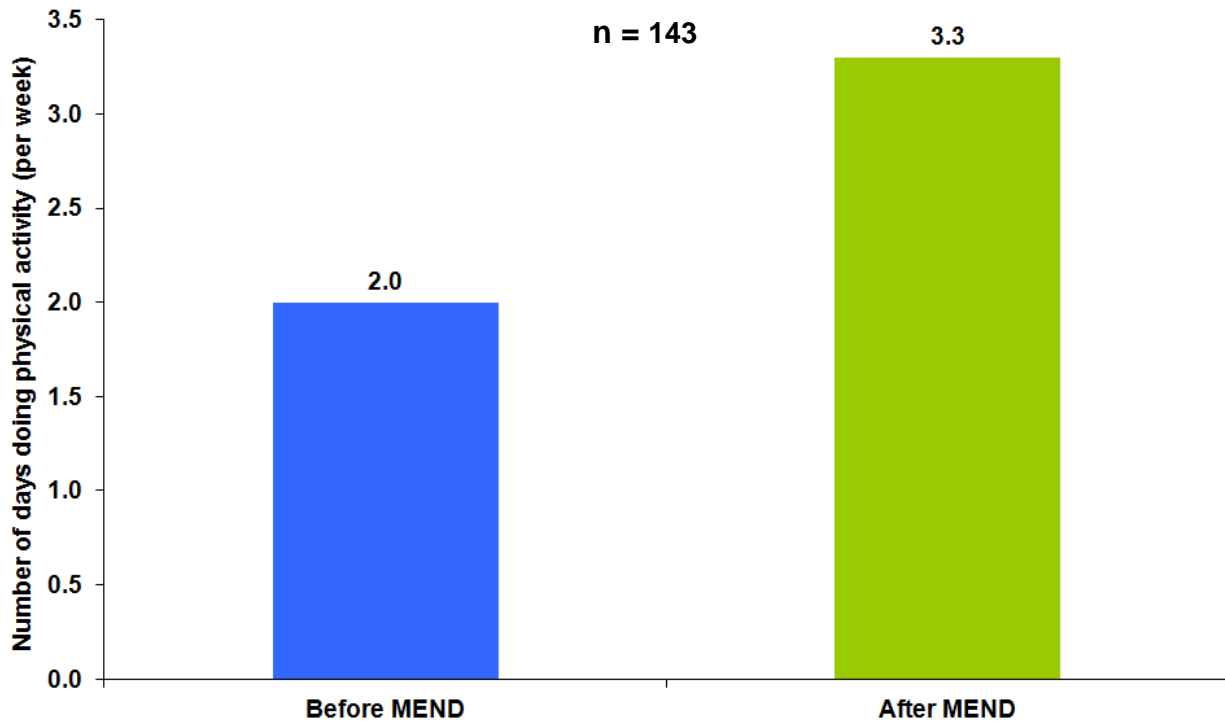


Waist circumference, an indicator of abdominal fat, was decreased by 2.2 cm post-programme for the Portfolio.

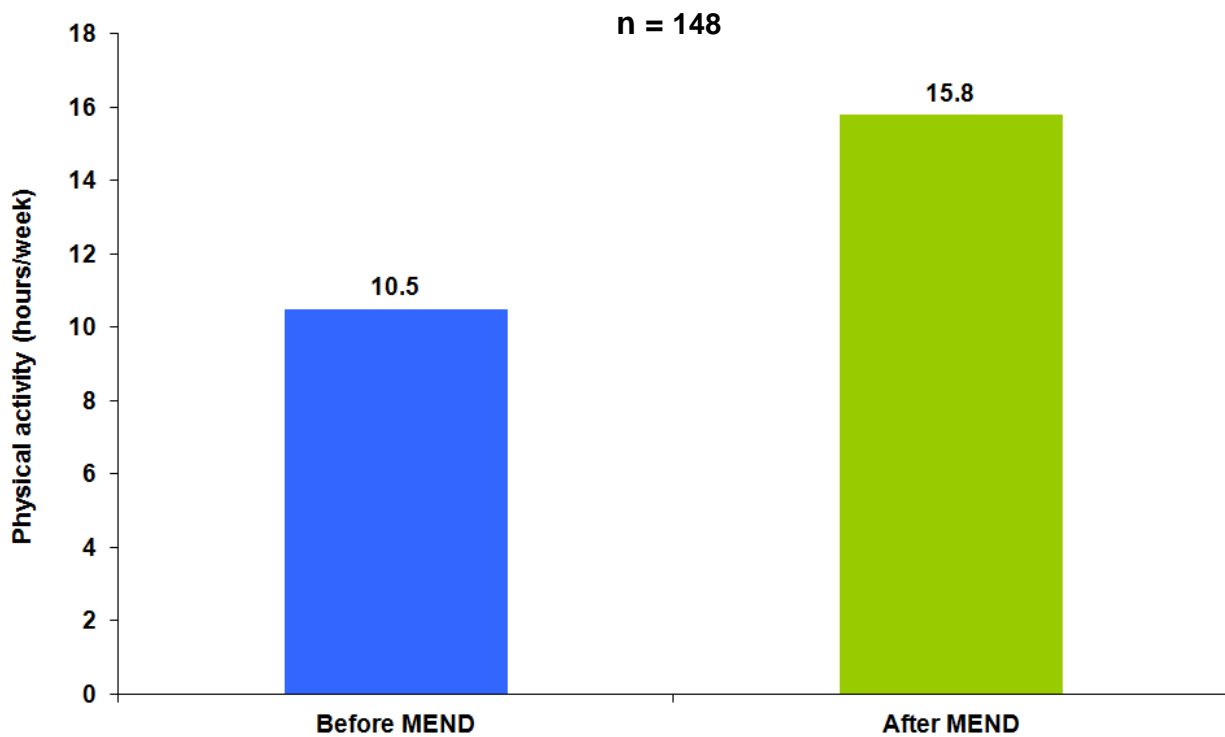
Waist circumference is a measure of abdominal fat, which has been associated with several obesity-related co-morbidities e.g. heart disease and diabetes. Changes in waist circumference are always due to changes in body fat, specifically abdominal fat which is associated with health risk. Waist circumference is a very important measurement as, unlike BMI, it is specifically related to changes in abdominal fat which is reliably related to the health risks of increased weight. Obesity management programmes aim to change the composition of the child's body over the course of development so that muscle mass increases along with a reduction in the level of adipose (fat) tissue. Such changes in the proportions of muscle and adipose over the course of an intervention may mean that BMI is unchanged in children attending MEND 7-13 Programmes. This is why waist circumference is a useful additional measure to examine outcome since it is generally considered more sensitive to changes in body composition. Reductions in waist circumference in the absence of a reduction in BMI will indicate that abdominal fat has been reduced and that health outcomes have been improved.

3.2 Physical activity, sedentary behaviour and fitness

Days spent taking part in 60 minutes of moderate to vigorous physical activity



Total time spent in physical activity





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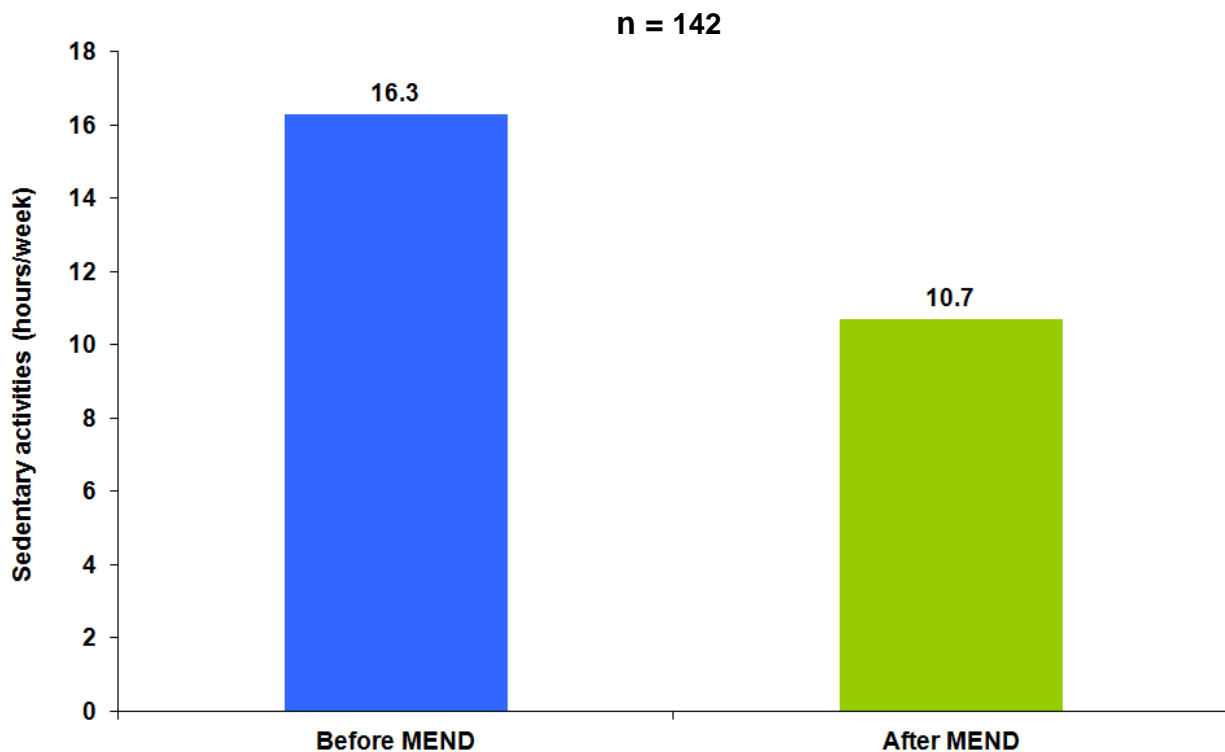
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Post-MEND 7-13, participants were doing 60 minutes of moderate to vigorous intensity physical activity for 1.3 additional days per week (2.0 days/week pre-programme vs. 3.3 days/week post-programme). The official recommendation for children's physical activity levels is at least one hour of moderate to vigorous physical activity per day. Any increase towards meeting the recommendation is extremely positive.

Additionally, because for obese children this target may be unrealistic, it is important to consider time spent in all levels of physical activity. An average increase of 5.3 hours physical activity per week occurred amongst the total number of MEND 7-13 Participants for this Portfolio (10.5 hours/week pre-MEND 7-13 vs. 15.8 hours/week post-MEND 7-13).

Time spent in sedentary behaviour

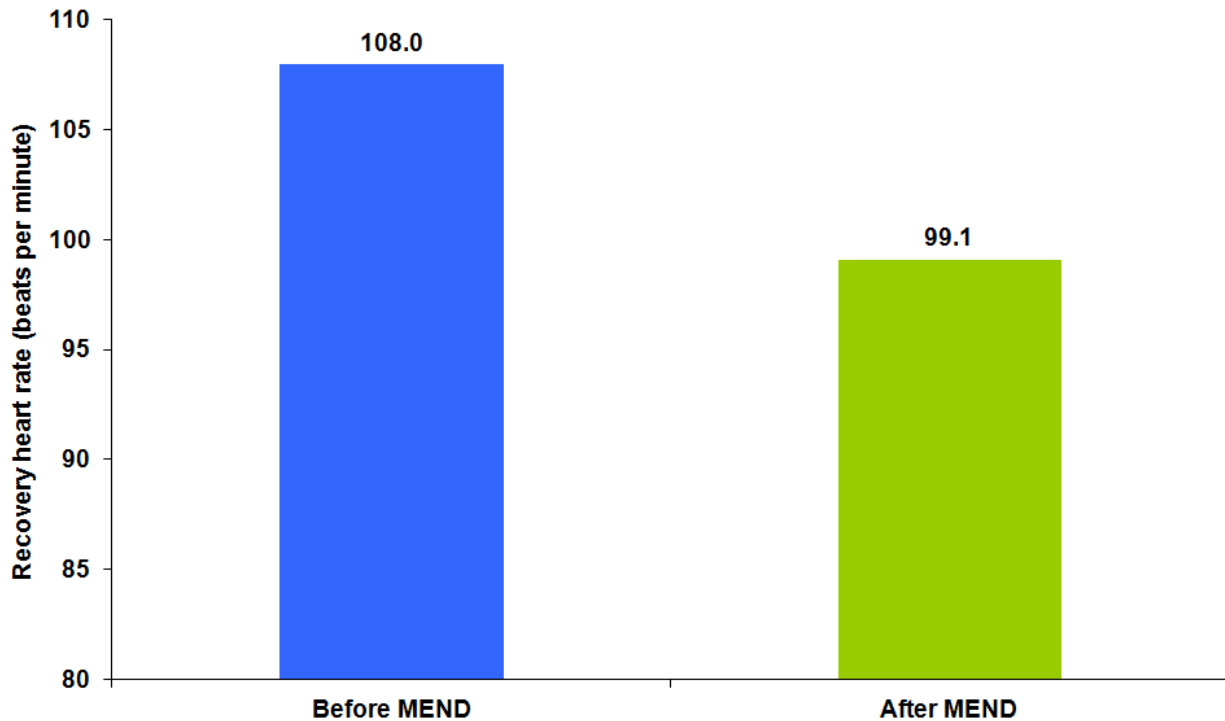


A 5.6-hour decrease in sedentary activities per week was also observed post-MEND 7-13, as television viewing and computer usage were reduced from 16.3 to 10.7 hours per week.

Television viewing has been associated with childhood obesity both directly by promoting sedentary behaviour and indirectly by encouraging the passive over consumption of high-calorie foods and drinks during these activities. The MEND 7-13 Programme focuses on increasing physical activity as well as reducing sedentary behaviour as these independently influences a child's weight status. Both physical activity and sedentary behaviour need to be targeted in any multi-component obesity intervention.

Fitness

n = 130

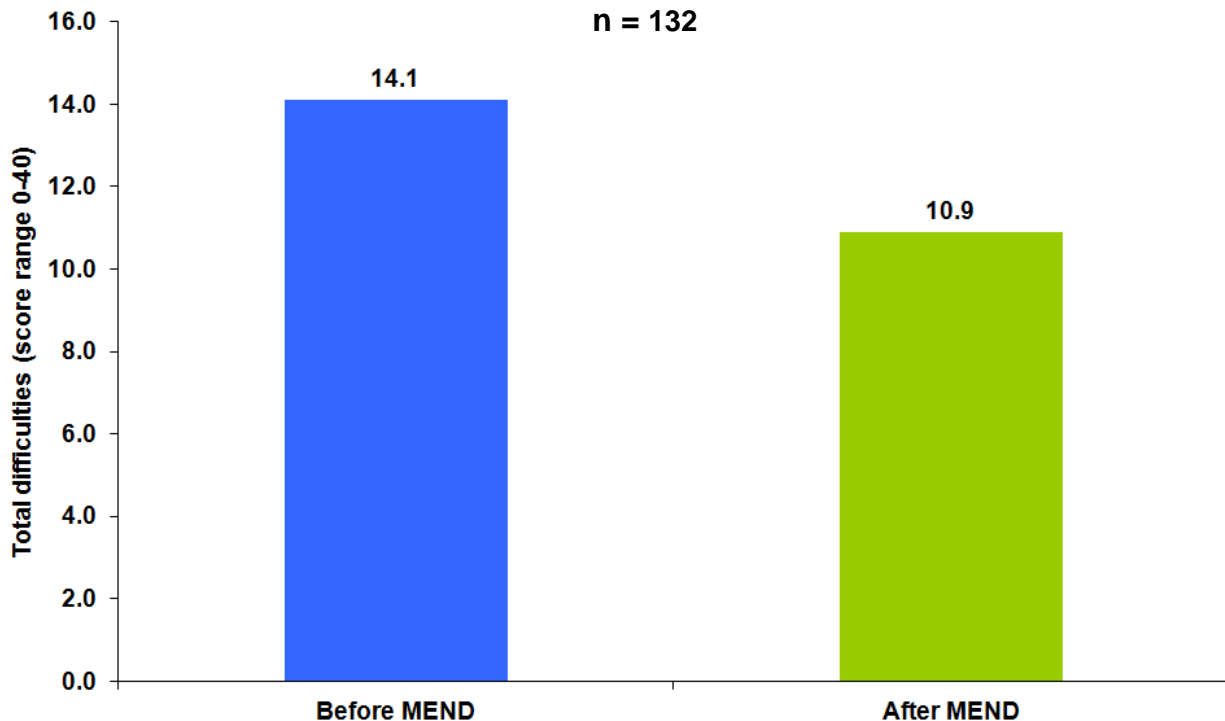


There was a 8.9 beats per minute decrease in recovery heart rate following the 3-minute step test for this group of MEND participants.

The 3-minute YMCA step test is a validated test used to assess fitness levels in children. This is achieved by measuring the recovery heart rate (beats during the minute after the step test). The quicker the heart rate returns to normal levels (resting heart rate) the fitter the child is. Fitness is considered a very important component of children's health. Low fitness is associated with increased risk factors for health problems and it is much easier for a fit overweight child to grow into their weight than an overweight child who is unfit.

3.3 Psychological indices

General psychological well-being (SDQ)



Based on the Strengths and Difficulties questionnaire (SDQ), parents assessed their children as having fewer difficulties (such as hyperactivity, emotional symptoms and peer problems) in their everyday life (score reduction of 3.2 units).

The SDQ is a parent-rated measure of common psychological symptoms in childhood. Scores on the SDQ are categorised according to whether the child has low, borderline or high psychological needs. The ranges for these categories are:

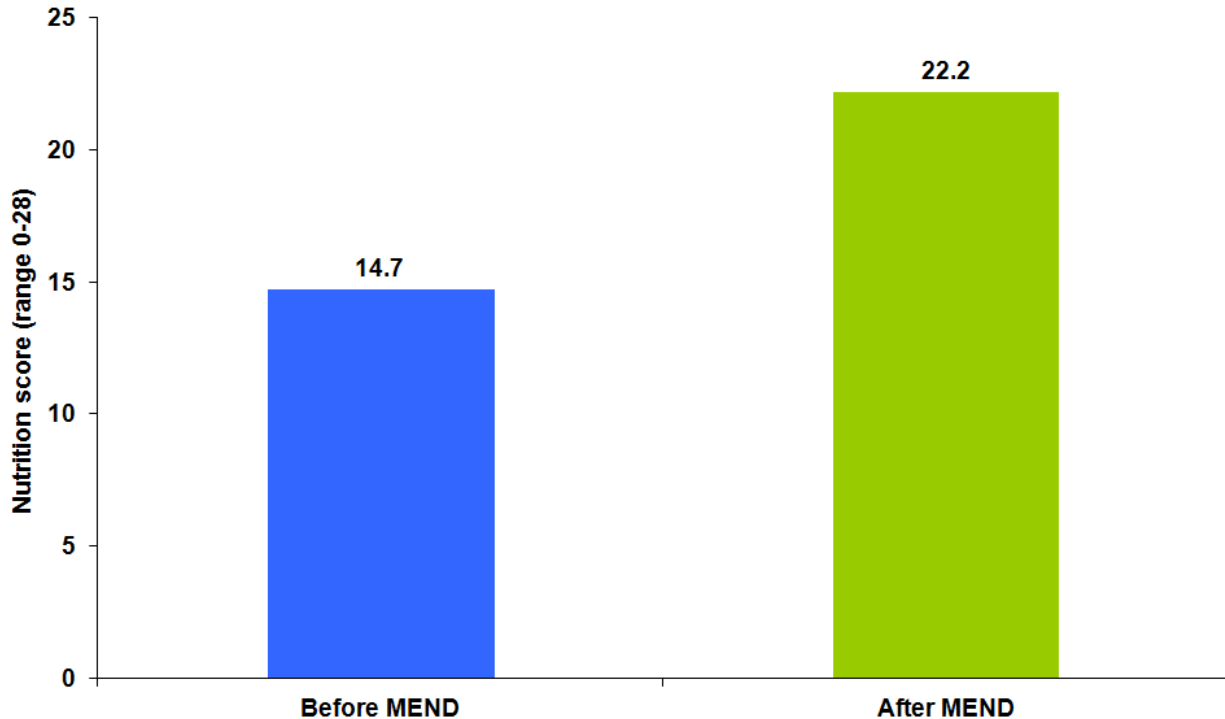
- 0 – 13 Low needs
- 14 – 16 Borderline high/low needs
- 17 – 40 High needs

The mean score on the SDQ was within the borderline high/low needs range and it is encouraging to note that post-programme the average SDQ score was within the low needs range. This suggests that participating in the MEND 7-13 Programme is associated with improved psychological functioning.

In cases where a child's SDQ score remains above 17 at the end of the MEND 7-13 Programme or is above 17 at the start of the Programme with no post-program measurement we recommend that the delivery team should consider talking with the family to discuss consulting their GP regarding their children's well-being. In the report's Appendix you can find a list of participants who fulfill these criteria.

3.4 Dietary habits

n = 141



By the end of the Programme, children had a higher nutrition score compared to their pre-MEND 7-13 eating behaviour (14.7 vs. 22.2 out of 28), indicating more MEND-Friendly eating habits.

Throughout the MEND 7-13 Programme, children are taught several MEND-Friendly dietary habits such as eating breakfast daily, drinking 6-8 cups of water per day, choose MEND-Friendly as opposed to MEND-Unfriendly foods (they are given the criteria for food categorisation during the sessions), etc. Increases in MEND-Friendly habits are indicative of substantial improvements in eating habits and nutritional intake.



MEND 7-13 Portfolio Report

generated using post-programme measurement data

Welsh Government April 2011- March 2012



4. Appendix: Tables with MEND 7-13 results

4.1 Table of MEND Welsh Government April 2011- March 2012 Portfolio results

MEND Welsh Government April 2011- March 2012 Portfolio results									
		Before MEND		After MEND		Difference (Before vs. After MEND)			
	N	Mean	SD	Mean	SD	Mean	Lower CI	Upper CI	p-value
BMI (kg/m ²)	168	28.1	4.9	27.4	4.8	-0.7	-0.9	-0.6	<0.0001
Waist circumference (cm)	164	91.5	13.6	89.3	13.3	-2.2	-2.6	-1.8	<0.0001
Days doing physical activity (per week)	143	2.0	1.5	3.3	1.5	1.3	1.1	1.5	<0.0001
Physical activity (hours/week)	148	10.5	4.9	15.8	6.0	5.3	4.5	6.1	<0.0001
Sedentary activities (hours/week)	142	16.3	7.2	10.7	5.6	-5.6	-6.5	-4.7	<0.0001
Recovery heart rate (beats per minute)	130	108.0	17.5	99.1	12.0	-8.9	-11.1	-6.7	<0.0001
Total difficulties score (0-40)	132	14.1	7.4	10.9	7.2	-3.2	-4.1	-2.3	<0.0001
Nutrition score (0-28)	141	14.7	4.7	22.2	3.8	7.5	6.9	8.3	<0.0001
Attendance (%) ¹	153	89.8	16.5						
Drop outs (%) ²	15	9%							

BMI: Body Mass Index

CI: Confidence Interval

SD: Standard Deviation

p < 0.05 means that the difference is statistically significant

N: number of children

¹ Excluding drop-outs, non-starters or children with missing attendance

² Excluding non-starters or children with missing attendance



MEND 7-13 Portfolio Report

generated using post-programme measurement data
Welsh Government April 2011- March 2012



4.2 Tables of MEND's National Roll-out results

MEND 7-13 Roll-out 3-month results									
		Before MEND		After MEND		Difference (Before vs. After MEND)			
	N	Mean	SD	Mean	SD	Mean	Lower CI	Upper CI	p-value
BMI (kg/m ²)	10173	27.2	4	26.4	4.5	-0.8	-0.8	-0.8	< 0.0001
Waist circumference (cm)	10155	86.6	11.8	84.1	11.7	-2.6	-2.6	-2.5	< 0.0001
Days doing physical activity (per week)	8453	1.7	1.7	2.9	1.7	1.3	1.2	1.3	< 0.0001
Physical activity (hours/week)	8784	10.4	6.9	14.0	7.6	3.6	3.4	3.8	< 0.0001
Sedentary activities (days/week)	8637	16.1	10.8	10.3	7.4	-5.8	-6.0	-5.6	< 0.0001
Recovery heart rate (beats per minute)	8935	108.5	21.3	99.9	20.2	-8.7	-9.1	-8.3	< 0.0001
Total difficulties score (0-40)	8839	13.2	6.9	10.3	6.5	-2.9	-3.0	-2.8	< 0.0001
Nutrition score (0-28)	9031	16.5	4.5	22.8	3.8	6.3	6.2	6.4	< 0.0001
Attendance (%) ¹	10361	78.5	20.5						
Drop outs (%) ²	1336	11.4%							

BMI: Body Mass Index

CI: Confidence Interval

SD: Standard Deviation

p < 0.05 means that the difference is statistically significant

N: number of children

¹ Excluding drop-outs, non-starters or children with missing attendance

² Excluding non-starters or children with missing attendance

Sacher, P.M., et al. Evaluating the effectiveness of the scale-up and spread of the MEND 7-13 childhood obesity program: UK national data (2007-2010). *Obesity*. 2011;19(S1):S52.



MEND 7-13 Portfolio Report

generated using post-programme measurement data
Welsh Government April 2011- March 2012



4.3 Table of MEND's Published Research results

MEND 7-13 Research results									
		Before MEND		After MEND		Difference (Before vs. After MEND)			
	N	Mean	SD	Mean	SD	Mean	Lower CI	Upper CI	p-value
BMI (kg/m ²)	47	27.1	3.3	26.1	3.4	-0.9	0.7	1.1	<0.0001
Waist circumference (cm)	47	81.4	7.8	78.5	8.1	-2.9	2.3	3.6	<0.0001
Days doing physical activity (per week)	n/a								
Physical activity (hours/week)	47	7.1	4	12.7	5	5.6	-7.2	-4	<0.0001
Sedentary activities (hours/week)	47	20.6	9.2	17.9	7	-2.6	0.3	5	0
Recovery heart rate (beats per minute)	44	114	28.3	98.1	19.4	-15.8	6	25.6	0.002
Total difficulties score (0-40)	n/a								
Nutrition score (0-28)	n/a								
Attendance (%)	47	86							
Drop outs (%)	1	2							

BMI: Body Mass Index

CI: Confidence Interval

SD: Standard Deviation

p < 0.05 means that the difference is statistically significant

N: number of children

Sacher PM, Kolotourou M, Chadwick PM, Cole TJ, Lawson MS, Lucas A, Singhal A. Randomized controlled trial of the MEND program: a family-based community intervention for childhood obesity. *Obesity*. 2010;18(S1):S62-8.



MEND 7-13 Portfolio Report

generated using post-programme measurement data

Welsh Government April 2011- March 2012



5. Executive summary

The current portfolio included 35 programmes over a period of 14 months. The total number of participants in these programmes was 233 (51 % boys) and the average age was 10.5 years.

Average programme attendance rate was higher and drop-out rate was similar to the national average (89.8% and 8.9% respectively). On the whole, most of the results are similar to the MEND 7-13 national roll-out results.

In the current Welsh Government April 2011- March 2012 Portfolio, MEND 7-13 has demonstrated significant clinical results with Body Mass Index (BMI) decreasing from 28.1 kg/m² pre-MEND 7-13 to 27.4 kg/m² post-MEND 7-13, leading to a mean 0.7 BMI unit reduction. Also, waist circumference, an indicator of abdominal fat, was decreased by 2.2 cm post-programme for the Portfolio.

Post-programme levels of physical activity rose and children were doing moderate to vigorous activity for 1.3 additional days per week, whilst a 5.6-hour decrease in sedentary activities per week was also observed post-MEND 7-13, as television viewing and computer usage were reduced from 16.3 to 10.7 hours per week.

The Welsh Government April 2011- March 2012 MEND 7-13 Portfolio not only demonstrated "clinical attributes" that participants became healthier, MEND 7-13 Participants were also "fitter" by the end of the programme, as indicated by the 8.9 beats per minute decrease in recovery heart rate following the 3-minute step test.

Finally, the MEND 7-13 Programme had a positive impact on the psychological wellbeing of the participants. The SDQ is a parent-rated measure of common psychological symptoms in childhood. The mean score on the SDQ was within the borderline high/low needs range and it is encouraging to note that post-programme the average SDQ score was within the low needs range. This suggests that participating in the MEND 7-13 Programme is associated with improved psychological functioning.

Taken together, the results of this report indicate that the MEND 7-13 Programme is having positive healthy outcomes for the families participating in those programmes within the Welsh Government April 2011- March 2012 Portfolio.

In line with the recommendations of the National Obesity Observatory, MEND 7-13 strongly recommends that sites in this portfolio continue to monitor the anthropometric outcomes of the children who took part in these programmes for a further 12 months.



MEND 7-13 Portfolio Report

generated using post-programme measurement data

Welsh Government April 2011- March 2012



6. Appendix: Participants with high SDQ scores

In the table below you can see the Participant IDs of children with high needs score after MEND or those with high needs score before MEND when no post Strengths and Difficulties questionnaire was completed.

As the SDQ represents a parent-rated measure of common psychological symptoms in childhood we recommend that where children fall within the high needs range post programme, or where pre programme scores are within the high needs range with no post measurements, that the delivery team should talk to the family and discuss consulting their GP regarding their children's well-being.

Participant ID	sdscore-1	sdscore-2
47724	30	30
48387	30	30
53198	30	30
53200	30	30
28268	30	20
45778	29	29
44999	29	
47741	28	23
32680	28	
45085	28	
39511	28	
49319	28	
45759	27	24
50992	27	22
55140	25	25
49932	25	18
45810	24	
47825	24	
51027	24	
57867	23	19
43255	23	
44700	23	
51544	23	
53976	22	27
48646	22	21
43257	22	17
53941	21	
49039	21	
47722	20	20



MEND 7-13 Portfolio Report

generated using post-programme measurement data

Welsh Government April 2011- March 2012



50415	20	20
51430	20	19
41185	20	
45198	20	
45267	20	
44358	19	
51012	19	
47732	18	22
46917	18	22
45306	18	
44469	17	
49441	17	
50520	17	
31401	17	
44967	17	
54678	17	
53938	17	
50425	15	21
46012	15	20
49542	15	18
49360	11	20
50421	11	20
53197	10	20
50423	8	17
47740	2	29
53942		28
51649		26
46433		20
49957		19
45242		18
49583		18

Please note that some of the participants in this table may be excluded from other parts of this report if they were out of age or BMI range according to the filters shown in page 2.