

Education and activity-based intervention in Grade 4 learners at primary schools in the Western Cape Province, South Africa

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Human Research Ethics Committee reference number: N09/02/068

“Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my original work and that I have not previously submitted it, in its entirety or in part, at any University for a degree.

Signature.....

Date.....”

ABSTRACT

Introduction

The development and implementation of education intervention programmes focusing on physical activity and nutrition is key to addressing the concern of the increase in diseases of lifestyle globally, and more specifically in South Africa. Of particular concern is the increase in childhood and adolescent obesity. There is a need for interventions focusing on translating good physical activity and nutrition knowledge into healthy behaviours. Additionally of importance is the development of controlled studies to evaluate whether these programmes have the desired improvement in health outcomes. This study is an attempt at evaluating the Making The Difference Programme (MTDP), an education and activity-based intervention in Grade 4 learners at primary schools in the Western Cape of South-Africa.

Methods

This is a cross-sectional observational study involving Western Cape primary schools during the 2009 school year. Schools were randomly sampled from two regions. Four intervention (active) and five control (non-participating) schools (N = 325 learners) were selected and a questionnaire named HealthKick was administered to the learners at the selected schools to determine quantitatively whether the MTDP changed the learners' knowledge, attitude and behavior towards nutrition and physical activity.

Results

A small significant improvement was demonstrated on 2 nutritional behaviours in the intervention group– eating vegetables and taking lunch boxes to school. However, these are not explained by differences in nutritional barriers, self efficacy or knowledge which were not different between the groups, or by social support which was actually significantly higher in the control group. Groups displayed no difference both in terms in physical activity or sedentary behavior (sitting in front of TV or computer). However results did show a significant difference between the groups in terms of reduced barriers to physical activity and increased self efficacy in the active group.

Conclusion

The MTD programme did not make a substantial impact on the nutrition and physical activity outcomes of the learners. There is more evidence of an impact on physical activity, than on nutrition. Further research is required to assess to make a definitive evaluation.

1. INTRODUCTION

There is global concern for the growing prevalence of chronic diseases of lifestyle such as hypertension, diabetes mellitus, cardiovascular disease and others associated with obesity and inactivity.¹⁻³ South Africa, despite being a developing country, has the same apparent rise in the prevalence of chronic diseases of lifestyle.⁴⁻⁶ In terms of risk factors, physical inactivity is estimated to have caused 3.3% of all South African deaths in 2000, with the majority attributed to ischaemic heart disease, and was ranked ninth compared to other risk factors for attributable deaths.⁷ Concurrently there is a global increase in childhood and adolescent obesity.^{8,9} The prevalence of overweight in children in South Africa is 17.1% (Body mass index (BMI) \geq 25).¹⁰

A recent survey found that 61% of South Africans are overweight, obese or morbidly obese. The factors which play a role are lifestyle, food, poverty and demographics. Children too are at risk with 17% of children aged one to nine years being obese. A South African survey found that 235 of parents do not know what their children eat during the day.¹¹

It is imperative that programmes to address these concerns are implemented.

Regular physical activity is associated with the prevention and reduction of chronic diseases of lifestyle.¹²⁻¹⁴ Participation in organized sports leads to opportunities for children and adolescents to increase their physical activity and develop physical and social skills. Participation of parents, educators and other adults in their children's sports influences the value of the experience for the child. Adolescent athletes have been shown to maintain healthier nutritional habits than non-athletes.¹⁵ As noted by Brown and Summerbell there is not sufficient evidence to assess the effectiveness of dietary versus physical activity interventions. The results of physical activity interventions are short-term and inconsistent, but may help children maintain healthy weights, prevent these children from becoming over weight and could be more beneficial to girls and younger children.¹⁶

Draper refers to the barriers that limit the promotion of healthy lifestyles in schools in low-income communities.¹⁷ Included are limited resources, the absence of policy relating to healthy lifestyles, and the availability of inexpensive foods of low nutritional value either from tuck shops or street vendors.¹⁸ Another study found that

barriers to healthy eating in adolescents include a lack of time, limited availability of healthy foods in schools and a general lack of concern about following healthy eating recommendations.¹⁹

Included in the literature are interventions such as The Child and Adolescent Trial for Cardiovascular Health (CATCH)²⁰, Pathways²¹, Action Schools! BC²², and the ‘Top Grub’ card game²³, which have shown to have positive effects on children's diet and physical activity behaviours.^{20, 24} Other positive effects include psychosocial variables such as self-efficacy on both nutrition and physical activity.²¹ These interventions are shown to be feasible, acceptable, and in some cases, sustainable interventions in the school environment.^{21, 25, 26}

It was found in a systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity that one out of three diet studies, five out of fifteen physical activity studies and nine out of twenty combined diet and physical activity studies demonstrated significant and positive differences between intervention and controls for reduction of BMI.¹⁶

There are arguments that the environment could be the driving force behind our lack of physical activity and poor eating habits.²⁷ There has been an increase in the number of studies on potential environmental determinants of nutrition and physical activity behavior. Preliminary evidence from the available systematic reviews indicates that social support and modeling, availability and accessibility of healthy and less healthy foods, socio-economic status, social-cultural and physical factors, are important for nutrition behaviours.²⁸ Schools and worksites offer good settings for improving healthy nutrition opportunities. It has also been suggested that a health protection approach be followed to promote healthy eating by changing the environment with regards to the exposure to food and the eating patterns, which contribute to chronic diseases of lifestyle.²⁸

Two studies showed that the primary psychosocial predictor of fruit, juice and vegetable consumption was preference^{29, 30} with availability being another substantial predictor.^{31, 32}

It is suggested that factors which influence eating behaviors need to be better understood to develop effective nutrition interventions tailored to individuals to improve their healthy eating.³³ Determinants such as habits, attitudes, self-efficacy, barriers to change and the meaning of “healthy” and “unhealthy” diet and food must be considered.³⁴ Self-efficacy is the ability and confidence of an individual to control his own practice of a particular behavior.^{35, 36}

A strong relationship exists between self-efficacy and both change and maintenance of behaviour.³⁷ This was supported by Rimal having pointed out that knowledge-behavior correlations were greater among those with high self-efficacy, when compared with those with low self-efficacy.³⁸

It was suggested that interventions are needed which assist adolescents in translating good nutritional knowledge into healthy behaviours.³⁴ One study highlighted in this systematic review showed that nutritional knowledge, dietary behaviours and lifestyle of adolescents improved greatly after a nutrition education program, changing students' unhealthy attitudes and dietary habits.³⁹

In South Africa physical education at schools became part of Life Orientation as one of the key outcomes of the school curriculum.¹⁷ The National Curriculum Statement defines Life Orientation as having a broader emphasis on the inculcation of positive skills, knowledge, values and attitudes which will lead to positive decision-making and actions with regards to health promotion, social development, personal development, physical and movement development and world of work. However, this physical education is not part of a structured Life Orientation intervention that targets lifestyle disease reduction. One intervention which does is the Making The Difference Program (MTDP) of the Woolworths Group of Companies in South Africa.

This study seeks to evaluate the MTDP that was initiated as an extension of the “MySchool” program at Primary Schools in South Africa by the Woolworths Company. The “MySchool” program was an initiative to raise funds for schools by clients earning additional funds for their nominated schools by swiping their MySchool cards at the pay point each time they make a purchase at a Woolworths store. The MTDP is collaboration between Woolworths and the Sport Science Institute of South Africa, in conjunction with the Provincial Department of Education, which has as its aim to develop ‘a healthy mind in a healthy body’. The program is implemented, administered, monitored and evaluated by Okuhle Media, which is a private company commissioned by Woolworths as their service provider. All data was also collected by Okuhle Media and presented in spreadsheet form. The programme targets Grade 4 learners, educators and learners’ parents. It entails 4 distinct entities with specific outcomes, namely:

1. Schools receive a resource pack of learning materials to be used by educators (outcomes-based education modules around healthy eating, nutrition, physical activities environmental awareness and sustainable development). This is based on the present curriculum for grade 4 learners and is intended to achieve most of Outcomes 1 to 4 of the Revised National Life Orientation Curriculum.
2. An EduPlant (Project Green) program to empower educators and learners by teaching them the life skills of growing their own food, enabling them to meet their own nutritional needs thereby

contributing to poverty alleviation. This is achieved by 60 one-day permaculture workshops for all South African schools who are invited to attend.

3. Supplier, store and distribution centre tours intended to enable educators to add value to the school curriculum and give learners first-hand experience of the manufacturing process of products they use on a daily basis, the retail process, the importance of food safety, hygiene, handling practices, the importance of the cold chain, the use of technology in retail.
4. Parent talk workshops that focus on providing educational and practical advice on healthy lifestyles both to encourage and support such a healthy lifestyle.

The purpose of the study was to determine quantitatively whether the MTDP had an impact on the learners' knowledge, attitude and behaviour towards nutrition and physical activity. This was the first time that this programme was evaluated and the urgent need for such programmes in South Africa necessitated the evaluation. Concurrently there is another study to establish the reach, effectiveness, adoption, implementation and maintenance of the programme which will be reported on subsequently.

The objectives were:

1. To assess whether any differences exist between an intervention (students in schools with the MTDP programme) and a non-intervention group (students in schools without the programme) using the following constructs:

- Socio-economic status
- Nutrition social support
- Nutrition barriers
- Nutrition self-efficacy
- Physical activity barriers
- Physical activity self-efficacy
- Physical activity and nutrition knowledge
- Categorical variables such as the consumption of vegetables and bringing lunch boxes to school

2. METHODS

This was a cross-sectional observational study.

2.1 The study setting and MTDP

The MTDP was initiated in 2003 (as determined from the data obtained from Okuhle) and rolled-out to primary schools in South Africa as follows:

- 2004 – 150 schools in Gauteng Province (GP) and Western Cape Province (WC)
- 2005 – 300 schools GP and WC
- 2006 - 600 schools GP, WC and KwaZulu Natal (KZN)
- 2007 - 800 schools GP, WC and KZN
- 2008 - 800 schools GP, WC and KZN

In 2010 the number of primary schools reached per Province was:

- Gauteng Province 430
- Western Cape 478
- KwaZulu Natal 200

The schools included in the MTDP were initially selected by Woolworths from a list of ‘MySchool’ schools, which were situated close to Woolworth’s stores. Unfortunately this selection was biased in favour of schools serving more affluent communities (70% affluent schools and 30% under-resourced schools) and selection was therefore adjusted to bring the representation to 50% each of affluent and under-resourced schools (as informed by data from Okuhle Media).

Routine data was collected by Okuhle Media from all provinces between 2003 and 2008, including feedback from the educators and parents after each workshop.

2.2 Study population

Two educational regions in the Western Cape Province, the urban Northern Metropole of Cape Town and the rural Cape Winelands were purposefully selected for the study. These were regions where the MTDP and researchers had a close relationship with the Education Department that would facilitate implementation of the study.

A list of schools from these selected regions was obtained from the Western Cape Education Department. The schools in these two regions (52 in Northern Metropole and 38 in Cape Winelands) were then divided into two clusters: Active (15 Northern Metropole, 17 Cape Winelands) and Non-participating (37 Northern Metropole, 21 Cape Winelands). The definitions as provided by Okuhle Media were:

- An **active school** is one which not only registers and receives curriculum modules of the MTDP, but also has visits to Woolworths supplier warehouses and parent talks, or schools where the teachers have undergone training.
- A **non-participating school** is a school which had never enrolled or taken part in the MTDP.

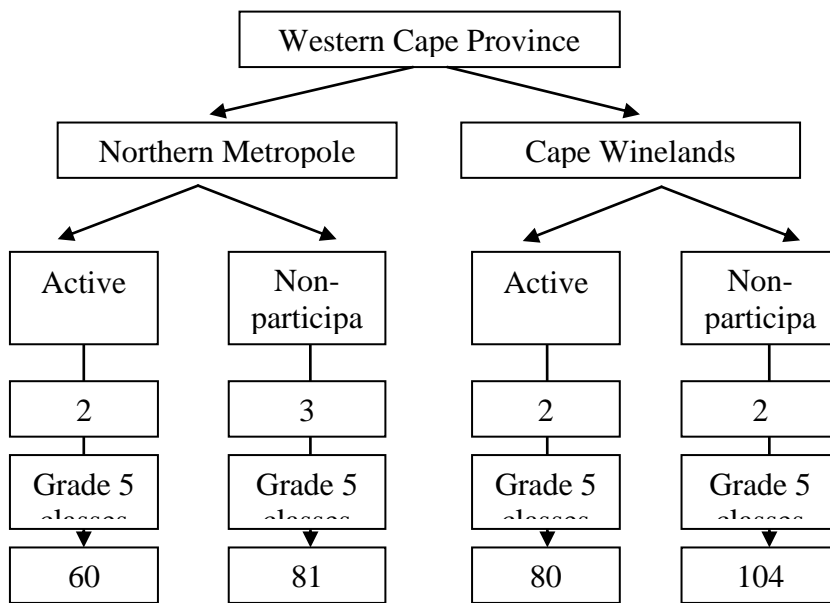
Schools were then randomly selected from each cluster, within each region. In order to achieve a statistically significant sample (to reach a power of 90%, delta of 0,25 and Type I error of 5%) the eventual sample was four intervention schools and five control schools. Entire classes were then randomly selected from these schools to reach a final number of learners tested of 325, with 140 in the active schools compared to 185 in the non-participating schools (Table 1).

Table 1: Active and Non-participating Schools

Active		Non-Participating	
Urban Schools	No of Learners	Urban Schools	No of Learners
Boston Primary	30	Goeie Hoop Primary	36
Mikro Primary	30	Parow East Primary	31
		Attie Van Wyk Primary	14
Rural Schools		Rural Schools	
Paarl Zicht Primary	40	St Albans Primary	70
William Lloyd Primary	40	Newton Primary	34

The process of sampling is shown in Figure 1.

Figure1. Sampling of learners



2.3 Data collection: Research instrument

The research instrument, which is a learner-centered questionnaire, was developed by the HealthKickTeam which is a research team from the University of Cape Town. This questionnaire is aimed at Grade 4-6 learners. The questions in the tool were developed by experts in the field and previously tested on South African children¹⁹ to give the questionnaire content and face validity.

The questionnaire (see appendix for full questionnaire) was administered to the learners in both the active and non-participating schools. The learners were in Grade 5 at the time of the assessment after having received the MTDP intervention in Grade 4.

The themes of the questionnaire were (a) tell us about your family; (b) all about food; (c) fruits and veggies; (d) healthy choices; (e) healthy eating before and during school; (f) activities at school and home and in-between. The questionnaire (tool) was available in three languages, namely English, Afrikaans and Xhosa which are the three main languages in the WC. The tool was not adapted in any way and was delivered to the learners in their medium of instruction.

Description of constructs

Within the development of the questionnaire certain themes were explored. These were knowledge, attitudes (self-efficacy) and behaviours in terms of nutrition and physical activity and were accounted for on different

levels- at home, at school, and time spent in-between. After collecting all the data from the questionnaires the researchers on this paper discussed the various constructs and performed an item analysis to obtain the “best-fitting” items to create a scale for each construct.

Socio-economic status (SES)

The SES refers to the relative socio-economic status and could also be viewed as an asset index as the more assets the learner describes in the household the greater the SES is assumed, e.g. does your family own a car or an oven.

Nutritional social support

This scale refers to the support from home in terms of healthy eating. For example is eating fruits and vegetables encouraged and/or enforced, e.g. do your parents tell you to eat veggies, do people at home tell you to eat veggies.

Nutrition barriers

This scale refers to particular barriers the learner may be facing, such as eating brown bread, taking a lunch-box to school or eating breakfast.

Nutrition self-efficacy

Self-efficacy refers to the confidence and ability a person feels at completing a particular task. Therefore within the nutrition self-efficacy scale, the questions refer to ones confidence in performing desirable nutrition behaviours, such as eating more fruit or drinking less cool drinks.

Physical activity barriers

This scale refers to particular barriers the learner may be facing in terms of their physical activity, such as friends not playing sport, no sport at school or it is too expensive to buy kit/sports equipment.

Physical activity self-efficacy

Self-efficacy refers to the confidence and ability a person feels at completing a particular task. Therefore within the physical activity self-efficacy scale, the questions refer to one’s confidence to participate in physical activity.

Physical activity and nutrition knowledge

This construct refers to questions on the learners’ knowledge of nutrition and physical activity. There are questions on healthy fats, consequences of eating too much fat and sugar, importance of fats and oils as well as

fibres. In terms of physical activity questions are aimed at assessing whether learners know what qualifies as physical activity.

For the purposes of the study a reliability of Cronbach's Alpha of 0.65 was considered to be sufficient for between-group comparisons (Filinchescu, 2002). The data for the items for the various constructs in the questionnaire was analysed for reliability and those particular items which gave sufficient reliability were selected for further analysis (Table 2).

Table 2: Constructs, number of items selected and the Cronbach's Alpha

Scale	Number of items	Cronbach's Alpha
Socioeconomic status (SES)	9	0.65
Physical activity self-efficacy	3	0.67
Nutrition and physical activity knowledge	19	0.65
Nutrition social support scale	4	0.74
Nutrition self-efficacy	10	0.78
Barriers to nutrition	6	0.67
Physical activity barriers	9	0.68

2.4 Data collection: Procedure

The field workers were a retired school teacher and two managers who were qualified and employed in office management and administration. In order for the field workers to familiarize themselves with the questionnaire and to ensure reliable standards of delivery, pilot testing was done. This pilot testing was done with two different groups of eight learners each, of the same grade, from a school which was not selected to participate in the research study.

The questionnaire was delivered to the learners in a classroom setting by the field workers in the language of that particular class (English or Afrikaans). This was done in two sessions of 40 minutes each with a 15 minute rest

period between sessions. All questionnaires were reviewed in the classroom immediately post-testing to ensure that all questions were answered and any omissions could then be corrected.

2.5 Data analysis

In order to compare the active with the non-participating schools several independent sample t-tests were conducted. There are two assumptions with this test, first that the data is normally distributed. Secondly, that there is homogeneity of variances. All data was checked against these assumptions, all the data was found to be normally distributed and where equal variances could not be assumed the alternate p value was then reported.

2.6 Ethical considerations

Written permissions were first obtained from the Western Cape Education Department and thereafter from the principals of the selected schools. The researcher visited each school to obtain the written permission from the principal and to have the parent information and consent leaflet delivered to the learners.

All parents of the learners of the selected classes were provided with information pamphlets pertaining to the study and were requested to inform the principal of the school or the researcher should they have any objection to their child participating in the study.

One parent telephoned the researcher to obtain further information after which she consented to the participation of her child in the study.

Ethical approval for the study was obtained from the Human Research Ethics Committee of Stellenbosch University – reference number N09/02/068.

3. RESULTS

Characteristics of the learners

The mean age of the 325 learners was 11.0 years (SD 0.8) and the majority was Afrikaans speaking (Table 3). This significantly larger percentage of Afrikaans speaking learners can be attributed to the region since both the Northern Metropole and the Boland areas are mainly Afrikaans speaking populations. The Xhosa speaking learners were in either English or Afrikaans speaking classes since no schools which are predominately Xhosa speaking were selected during randomization.

Table 3: Characteristics of the learners

Characteristics	All schools	Active schools N=140	Non-participating schools N=185	p-value
Age Mean (SD)	11.00 (0.8)	10.94 (0.75)	11.05 (0.86)	0.75
Socio-economic status score (SD)	6.87(1.86)	7.24 (1.83)	6.6 (1.84)	0.002
Home Language				
Xhosa n (%)	20 (6.2)	6 (4.3)	14 (7.6)	0.30
English n (%)	87 (26.8)	44 (31.4)	43 (23.2)	
Afrikaans n (%)	213 (65.5)	88 (62.9)	125 (67.6)	
Other language n (%)	5 (1.5)	2 (1.4)	3 (1.6)	

SD = Standard deviation

Assessment of changes in knowledge, self-efficacy and barriers to change

Table 4 shows the scores for the scales that measured the constructs relating to knowledge, self-efficacy and barriers to the desired behavior. The ranges of the possible scores are:

Nutrition support 0-8

Nutrition barriers 0-12

Nutrition self-efficacy 0-20

Physical activity barriers 0-18

Physical activity self-efficacy 0-6

Physical activity and nutrition knowledge 0-19

As there was a significant difference between the socio-economic statuses of learners in the two groups (Table 3), with the active schools having a higher status, the key nutritional and physical activity outcomes were adjusted for socio-economic status. The adjusted results are shown in Table 4.

Table 4. Comparison of Knowledge, Self-efficacy and Barriers to Change in Nutrition and Physical Activity in Active and Non-participating schools adjusted for Socio-Economic Status

Construct Variable	Active schools N =140 Mean score (SE)	Non-participating schools N=185 Mean score (SE)	p-value
Nutrition social support	2.33 (0.22)	3.39 (0.19)	< 0.001*
Nutrition barriers	2.14 (0.23)	2.72 (0.21)	0.07
Nutrition self-efficacy	16.14 (0.37)	16.37 (0.32)	0.62
Physical activity barriers	5.43 (0.35)	6.64 (0.31)	0.01*
Physical activity self-efficacy	4.46 (0.17)	3.92 (0.15)	0.02*
Physical activity and nutrition knowledge	11.49 (0.24)	10.90 (0.21)	0.07

SE= Standard Error *p<0.05

There was no difference in knowledge related to physical activity or nutrition. Social support for healthy nutrition was significantly higher in the non-participating schools. There were no significant differences in terms of self-efficacy for healthy eating or barriers to healthy eating. Barriers to physical activity were significantly lower in the active schools, as was self-efficacy in relation to physical activity.

Nutrition and physical activity behaviours

Table 5 shows the outcome measurements for actual behavior in relation to nutrition and physical activity. It is not possible to adjust for SES with this type of analysis (chi-squared – measuring frequency). Significantly more learners in the active schools brought their own lunch box and ate vegetables. None of the other nutritional or physical activity measures differed between the groups.

Table 5. Nutritional behaviours and physical activity in Active and Non-participating Schools

Characteristic	Active schools N = 140 Mean score (%)	Non-participating schools N = 185 Mean score (%)	All schools	p-value
Nutrition				
Lessons about healthy eating	130 (92.9)	179 (96.8)	309 (95.1)	0.11
Eat fruit	134 (95.7)	175 (94.6)	309 (95.1)	0.76
Like fruit	112 (80)	159 (85.9)	271 (83.4)	0.36
Like veggies	72 (51.8)	108 (58.7)	180 (55.7)	0.27
Eat breakfast	107 (76.4)	138 (74.6)	245 (75.4)	0.93
Eat vegetables	113 (80.7)	134 (72.4)	247 (76.0)	0.04*
Bring lunch boxes to school	103 (73.6)	120 (64.9)	223 (68.6)	0.01*
Physical activity				
Participate in school sport	92 (65.7)	123 (67.6)	215 (66.8)	0.94
Liked playing with friends as favourite activity	76 (54.3)	102 (55.1)	178 (54.8)	0.94
Spend >2hrs per day in front of TV/Computer during the week	31 (22.1)	48 (25.9)	79 (24.3)	0.10
Spend >2hrs per day in front of TV/Computer during the weekend	51 (36.4)	64 (34.8)	115 (35.5)	0.80

*p<0.05

DISCUSSION

Impact on healthy nutritional behavior

Overall, the study shows a small but significant improvement in two nutritional behaviours in active schools – eating vegetables and taking lunch boxes to school. These improvements are not explained by differences in barriers, self-efficacy or knowledge (which were not different between the groups), or by social support, which was actually significantly higher in the control group. The finding of higher social support in the control group could be explained by feeding schemes at school or within the communities, by the parents of these children not being able to afford luxury foods and therefore providing bread and cooked foods more regularly at home and children of lower socioeconomic status tend to prepare food for themselves more often. However, as these two

outcomes on nutritional behaviors were not adjusted for SES, they may not be valid. This is a limitation of the study and the apparent impact on nutritional behaviour may not be a definite finding although many other studies support the positive impact suggested by this study. In one such study by Fahlam, where trained individuals were used to deliver the Michigan Model Nutritional Curriculum, revealed that the intervention group was significantly more likely to eat fruits and vegetables and less likely to eat junk food than the control group.⁴⁰ Another study which has shown success in improving dietary habits among participants is the Planet Health study.⁴¹ Not only did the intervention lead to reduced television hours among both girls and boys, but also to an increase of fruit and vegetable consumption and resulted in a smaller increment in total energy intake among girls. The suggestion is made that lack of an intervention effect among boys might be due to different causal factors between boys and girls, that girls could be more attuned to issues of diet and activity. There is little published scientific evidence to support this hypothesis although boys are much more likely to report trying to gain weight and girls to report trying to lose weight. A study with adolescents showed an increase in the adolescent's level of self-efficacy toward healthy lifestyle behaviors, between pre-test and post-test, with nutrition choices and social pressures. It was concluded that the intervention helped the students overcome the barriers of making poor lifestyle choices associated with peer pressure.⁴²

Impact on exercise

Groups displayed no clear difference in their engagement with physical activity or sedentary behavior. However there was a significant difference between the groups in terms of reduced barriers and increased self-efficacy in the active group. This is a positive outcome for the MTDP. However, this may not translate into actual weight loss.

A systematic review by Brown and Summerbell showed that there was insufficient evidence to assess the effectiveness of interventions on diet versus physical activity. They suggest that school-based interventions to increase physical activity and reduce sedentary behavior may help children to maintain healthy weight but the results are inconsistent and short-term. They also suggest that physical activity interventions may be more successful in younger children and in girls although the results of the comparison between boys and girls in terms of effectiveness in the age group 10-14 were inconsistent and various (some showing improvement in BMI in boys and others again in girls). It may be that genders respond differently to different elements of the interventions in this age group.¹⁴ Greater emphasis was placed on nutritional behavior in the MTDP and less focus on physical activity, nevertheless there appears to have been more significant impact on the physical activity component. The need for comprehensive programmes is underscored by Salmon.⁴³ They concluded that

interventions which incorporated school and family based components could be successful in increasing at least some elements of children's physical activity. The KOPS study in Germany showed that the intervention resulted in a reduced cumulative 4 year incidence in overweight only in children from families with high socio-economic status.⁴⁴ Our study also shows that the schools which had taken up the intervention programme (active) schools have a higher socioeconomic status. This could be due to many factors, e.g. that these schools have better administration, more progressive approaches, are more school and learner-centered or just simply feel more empowered by having better access to resources.

Strengths and limitations of the study

The study demonstrates a number of key strengths. The most important of these is the use of a measuring instrument that is highly youth (child) friendly. The pictorial nature of a few of the items provides for easy administration and scoring. Clarity of comprehension is enhanced, resulting in fewer respondents becoming frustrated with the process. The other strengths of the study are the large sample size and the fact that the HealthKick questionnaire was developed by experts in the field. A low error rate was possible due to the standard protocol for data entry and data checking. However, although the psychometric properties of the scales used during the study were tested using item analysis, no formal validity or reliability data exist for these scales.

The lack of a pre-test baseline makes it difficult to account for how the groups may have differed at baseline and the extent to which they may have changed. This limitation in the design was due to the request by Woolworths for an evaluation after the programme had already been implemented and was therefore unavoidable. Clearly the groups differed in terms of SES and this is particularly important if we follow recent literature on the close connection between socio-economic status and nutritional habits.¹⁷ The behavioural outcomes were not adjusted for this difference in SES.

Despite the research evidence that supports the efficacy of this type of short term intervention on healthy lifestyles¹⁶, this researcher is of the opinion that a longer-term programme may have produced more definitive results.

Finally, other possible confounding factors include the duration of the programme, and the attitudes and competence of educators and field workers.

Recommendations for future research

Future research into the availability and accessibility of healthy food as determinants of nutrition behaviours and physical activity participation is urgently required so that programmes can be developed and implemented to prevent lifestyle diseases amongst school going youth. Any intervention programmes initiated at schools should include at least nutrition and physical activities and should be of a pre-test, post-test design. Questions can also be raised on the delivery of interventions:

1. Was the programme delivered and implemented as intended by the teachers?
2. Were the learners participating actively in the programme?
3. Would any benefit be derived from using trained professionals versus teachers for delivery of interventions at schools?

A more in-depth study, such as a pragmatic clustered randomized controlled trial, is required to test the effectiveness of the MTDP. Such a study should also develop and validate properly the tools used to measure the key variables and outcomes. Future research should also use mixed methods to evaluate the qualitative process as well as the quantitative outcomes. Other aspects that can be included in future evaluations include the influence of the environment (school, home and recreational), policy relating to healthy lifestyles and school curricula with emphasis on healthy nutrition, regular and compulsory participation in physical activity and sports programmes.

CONCLUSION

This study did not show that the MTDP has made a substantial impact on the nutrition behaviours and physical activity outcomes of learners. It did not show any impact on healthy nutrition behavior and showed only a small difference in terms of reduced barriers and increased self-efficacy towards physical activity. It therefore provides possible evidence of an impact on physical activity more than on nutrition. More research is needed to evaluate the effectiveness of the MTD programme.

REFERENCES

1. The world health report 2002: Reducing risks, promoting health life. Geneva, World Health Organisation, 2002. Available from <http://www.who.int/whr/2002/en/index.html>

2. The world health report 2003: Shaping the future. Geneva, World Health Organisation, 2003. Available from http://www.who.int/whr/2003/en/whr03_en.pdf
3. The world health report: Global strategy on diet, physical activity and health. Geneva, World Health Organisation, 2004. Available from <http://www.who.int/dietphysicalactivity/en/>
4. Kruger HS, Puoane T, Senekal M, van der Merwe MT. Obesity in South Africa: Challenges for government and health professionals. *Public Health Nutr.* 2005; 8: 491-500.
5. Senekal M, Steyn NP, Nel JH. Factors associated with overweight/obesity in economically active South Africa populations. *Ethn Dis.* 2003; 13:109-116.
6. Walker AR, Walker BF, Segal I. Some puzzling situations in the onset, occurrence and future of coronary heart disease in developed and developing populations, particularly such in sub-Saharan Africa. *J R Soc Health.* 2004; 124:40-46.
7. Joubert J, Norman R, Lambert EV, Groenewald P, Schneider M, Bull F, Bradshaw D, South African Comparative Risk Assessment Collaborating Group. Estimating the burden of disease attributable to physical inactivity in South Africa in 2000. *S Afr Med J.* 2007; 8:725-731.
8. Technical report series: Obesity. Preventing and managing the global epidemic. Report 894. Geneva: World Health Organisation, 2000. Available from www.who.int/entity/nutrition/publications/obesity/WHO_TRS_894/en/
9. Seidell JC. Obesity: A growing problem. *ActaPediatr* 1999; 88:46-53.
10. Steyn NP, Labadarios D, Maunder E, Nel J, Lombard C, Directors of the NFCS. Secondary anthropometric data analysis of the National Food Consumption Survey in South Africa: The double burden. *Nutrition.* 2005; 21:4-13.
11. Bizcommunity.com. Available from <http://medical.bizcommunity.com/Article/196/148/51963.html>
12. Pate RR, Pratt M, Blair SN, Haskell WL, Macera CA, Bouchard C, Buchner D, Ettinger W, Health GW, King AC. Physical Activity and public health. A recommendation from the Centres for Disease Control and Prevention and the American College of Sports Medicine. *JAMA.* 1995; 273:402-407.
13. Bouchrad C. Physical activity and health: Introduction to the dose-response symposium. *Med Sci Sports Exerc.* 2001; 33:347-350.

14. Haskell WL, Wolfe JB. Memorial Lecture: Health consequences of physical activity: Understanding and challenges regarding dose-response. *Med Sci Sports Exerc.* 1994; 26:649-660.
15. Cavadini C, Decarli B, Grin J, Narring F, Michaud PA. Food habits and sport activity during adolescence: Differences between athletic and non-athletic teenagers in Switzerland. *Eur J Clin Nutr.* 2000; 54:16-26.
16. Brown T, Summerbell C. Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: An update to the obesity guidance produced by the National Institute for Health and Clinical Excellence. *Obesity reviews.* 2009; 10:110-141.
17. Draper CE, de Villiers A, Lambert EV, Fourie J, Hill J, Dalais L, Abrahams Z, Steyn NP. Healthkick: A nutrition and physical activity intervention for primary schools in low-income settings. *BMC Public Health* 2010; 10:1-12.
18. Temple NJ, Steyn NP, Myburgh NG, Nel JH. Food items consumed by students attending schools in difference socioeconomic areas in Cape Town, South Africa. *Nutrition* 2006; 22:252-258.
19. Croll JK, Neumark-Sztainer D, Story M. Healthy eating: What does it mean to adolescents? *J Nutr Educ* 2001; 33:193-198.
20. Luepker RV, Perry CL, McKinlay SM, Nader PR, Parcel GS, Stone EJ, Webber LS, Elder JP, Feldman HA, Johnson CC. Outcomes of a field trial to improve children's dietary patterns and physical activity. The Child and Adolescent Trial for Cardiovascular Health. CATCH collaborative group. *JAMA* 1996; 275:768-776.
21. Stevens J, Story M, Ring K, Murray DM, Cornell CE, Juhaeri, Gittelsohn J. The impact of the Pathways intervention on psychosocial variables related to diet and physical activity in American Indian schoolchildren. *Prev Med* 2003; 37(Suppl 2):70-79.
22. Naylor PJ, MacDonald HM, Zebedee JA, McKay HA. Lessons Learned from Action Schools! BC: An 'active school' model to promote physical activity in elementary schools. *J Sci Med Sport* 2006; 9:413-423.
23. Lakshman R, Sharp S, Ong K, Forouhi N. A novel school-based intervention to improve nutrition knowledge in children: Cluster randomised controlled trial. *BMC Public Health* 2010; 10(1):123.
24. Day ME, Strange KS, McKay HA, Naylor PJ. Action Schools! BC-Healthy Eating: Effects of a whole-school model to modifying eating behaviours of elementary school children. *Can J Public Health* 2008; 99:328-331.
25. Stickler A, Ethelbah B, Martin CJ, Stewart D, Pardilla M, Gittelsohn J, Stone E, Fenn D, Smyth M, Vu M. Pathways process evaluation results: A school based prevention trial to promote healthful diet and physical activity in American Indian third, fourth and fifth grade students. *Prev Med* 2003; 37(2):80-S90.
26. Perry CL, Sellers DE, Johnson C, Pedersen S, Bachman KJ, Parcel GS, Stone EJ, Luepker RV, Wu M, Nader PR, Cook K. The Child and Adolescent Trial for Cardiovascular Health (CATCH): Intervention, implementation, and feasibility for elementary schools in the United States. *Health Educ Behav* 1997; 24:716-735.

27. Ball K, Timperio AF, Crawford DA. Understanding environmental influences on nutrition and physical activity behaviours: Where should we look and what should we count? *Int J Behav Nutr –Phys Act* 2006; 3:33-42.
28. Brug J. Determinants of healthy eating: Motivation, abilities and environmental opportunities. *FamPract* 2008 Dec 1; 25(1):i50-i55.
29. Domel SB, Baranowski T, Thompson WO, Davis HC, Leonard SB, Baranowski J. Psychosocial predictors of fruit and vegetable consumption among elementary school children. *Health Education Research, Theory & Practice* 1996; 11:299-308.
30. Resnicow K, Baranowski T, Hearn M. Social-cognitive predictors of fruit and vegetable intake in children. *Health Psychol* 1997; 16:272-276.
31. Hearn MD, Baranowski T, Baranowski J. Environmental influences on dietary behaviour among children: Availability of fruit and vegetables enable consumption. *J Health Educ* 1998; 29:26-32.
32. Baranowski T, Davis M, Resnicow K, Baranowski J, Doyle C, Lin LS. Gimme 5 Fruit, Juice and Vegetables for Fun and Health: Outcome Evaluation. *Health Education & Behaviour* 2000 Feb 1; 27(1):96-111.
33. Story M, Neumark-Sztainer D, French S. Individual and environmental influences on adolescent eating behaviours. *J Am Diet Assoc* 2002; 102(Suppl 3):S40-S51.
34. Turconi G, Guarcello M, Maccarini L, Cignoli F, Setti S, Bazzano R. Eating Habits and Behaviours, Physical Activity, Nutritional and Food Safety Knowledge and Beliefs in an Adolescent Italian Population. *J Am Coll Nutr* 2008; 27(1):31-43.
35. Bandura A. Health promotion by social cognitive means. *Health EducBehav* 2004; 31:143-164.
36. Bandura A, Caprara GV, Barbaranelli C, Gerbino M, Pastorelli C. Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. *Child Dev* 2003, 74:769-782.
37. Strecher VJ, De Vellis BM, Becker MH. The role of self-efficacy in achieving health behaviour change. *Health Educ Q* 1986; 12:73-92.
38. Rimal RN. Closing the Knowledge-behaviour gap in health promotion. The mediating role of self-efficacy. *Health Commun* 2000; 12:219-237.
39. Zhao L, Zhai F, Li D, Li Y. A survey on the effects of “Dietary Guideline” nutrition education project. *Wei Sheng Yan Jiu* 2001; 30:176-179.
40. Fahlam MM, Dake JA, McCaughtry N, Martin JA. Pilot: Study to Examine the Effects of a Nutrition Intervention on Nutrition Knowledge, Behaviours, and Efficacy Expectations in Middle School Children. *Journal of School Health* April 2008; 78(4):216-222.

41. Gortmaker S, Petersen K, Wiecha J, Sobol A, Dixit S, Fox M, Laird N. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet health. *Archives of Pediatrics & Adolescent Medicine* 1999; 153:409-418.
42. Belcher ST. Adolescents' self-efficacy toward healthy lifestyle behaviours after attending a school-based intervention course focused on physical activity and healthy eating. A thesis presented in Partial Fulfillment of the Requirements for the Degree Master of Science in the Graduate School of The Ohio State University.
43. Salmon J & King A (2005) Population approaches to increasing physical activity among children and adults. In *Obesity Prevention in the 21st Century: Public Health Approaches to Tackle the Obesity Epidemic*, pp. 129-152. D Crawford and R Jeffrey, editors. Oxford: Oxford University Press.
44. Plachta-Danielzik S, Pust S, Asbeck I, Czerwinski-Mast M, Langase K, Fisher C, Bossy-Westphal A, Kriwy P, Muller M. Four-year follow-up of school-based intervention on overweight children: The KOPS study. *Obesity* 2007; 15:315-3169.

HealthKick

Questionnaire for Learners

What is your name and surname?

How old are you today?

Learner code

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Tell us about yourself and your family!

1. How many people are there living in your home, including you? _____ People
2. Who helps you with your homework **MOST of the time**? (Tick next to the **ONE** answer you think is correct)
 - Mother
 - Father
 - Grandmother
 - Sister or brother / cousin
 - Aunt
 - Uncle
 - Other: _____
3. How many rooms do you have in your home for sleeping? _____
4. Which of these do you have at home? (You can tick **MORE THAN ONE** answer)
 - Television Radio
 - Computer Cell phone

Ordinary phone

5. Do you have a car at your home?

Yes

No

6. Which of these are used for cooking at your home? (You can tick **MORE THAN ONE** answer)

Fridge

Paraffin stove

Microwave

Stove with oven

Hot plate

Gas stove

Open fire

7. Does your family ever grow vegetables at home?

Yes

No

8. Which language is spoken at home **MOST of the time**? (Tick next to the **ONE** answer you think is correct)

English

Xhosa

Afrikaans

Other: _____

9. How well do you understand your home language? (You can tick **MORE THAN ONE** answer)

I understand my home language

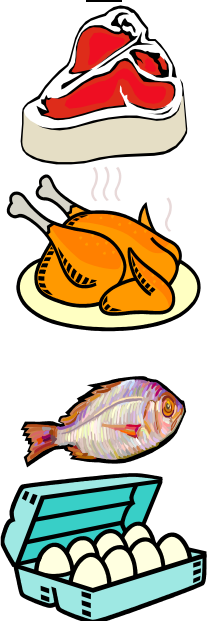

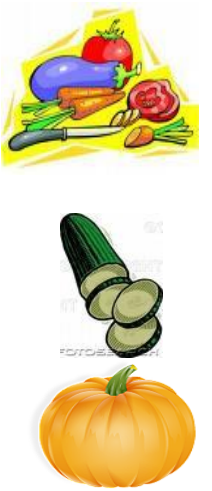


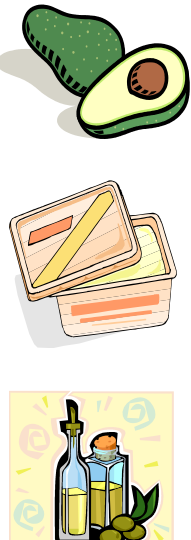

I can speak my home language

I can write my home language

I can read my home language

All about food





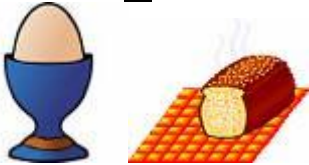



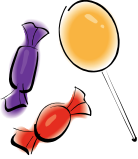





1. Look at the following pictures and fill in the LETTER of the food group you think best fits the answer to the questions below
(You can choose a group more than once)

Meat, Chicken,Fish, Eggs <u>A</u>	Brown Bread, Rice, Samp, Mealie meal <u>B</u>	Vegetables <u>C</u>	Fruit <u>D</u>	Sugar, Sweets <u>E</u>	Fats, oils <u>F</u>	Milk, Maas, Yoghurt, Cheese <u>G</u>
						

- 1.1. Choose the food group that you should eat the **MOST** of every day
- 1.2. Choose the food group that you should eat the **LEAST** of every day
- 1.3. Choose a food group that contains foods with **LOTS OF FIBRE (roughage)**
- 1.4. Choose the food group that best provides the body with **ENERGY**
- 1.5. Choose the food group that best **BUILDS THE BODY'S MUSCLES**

1.6 Choose the food group that best **PROTECTS THE BODY AGAINST ILLNESSES**

2. In this question we are showing you two sets of pictures. Write the letter of the one you CHOOSE MOST OFTEN in the FIRST box and the letter of the one that is the HEALTHIEST (the best for you) in the SECOND box

			FIRST↓	SECOND↓	
2.1	<p><u>A</u></p>  <p>Milk</p>	or	<p><u>B</u></p>  <p>Coffee creamer</p>	<p>CHOOSE</p> <input type="checkbox"/>	<p>HEALTHIEST</p> <input type="checkbox"/>
2.2	<p><u>A</u></p>  <p>Plain popcorn</p>	or	<p><u>B</u></p>  <p>Packet of chips</p>	<input type="checkbox"/>	<input type="checkbox"/>
2.3	<p><u>A</u></p>  <p>Brown bread with a boiled egg</p>	or	<p><u>B</u></p>  <p>Brown bread with a fried egg</p>	<input type="checkbox"/>	<input type="checkbox"/>
2.4	<p><u>A</u></p>  <p>Cool drink</p>	or	<p><u>B</u></p>  <p>Water</p>	<input type="checkbox"/>	<input type="checkbox"/>
2.5	<p><u>A</u></p>  <p>Sweets</p>	or	<p><u>B</u></p>  <p>Peanuts & raisins</p>	<input type="checkbox"/>	<input type="checkbox"/>
2.6	<p><u>A</u></p>  <p>Banana</p>	or	<p><u>B</u></p>  <p>Cookies / Biscuits</p>	<input type="checkbox"/>	<input type="checkbox"/>
2.7	<p><u>A</u></p>  <p>Bread & Jam</p>	or	<p><u>B</u></p>  <p>Bread & Peanut butter</p>	<input type="checkbox"/>	<input type="checkbox"/>

For the following 3 questions, tick next to **ONE** answer only.

3. Are you allowed to choose what you want to eat at home?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
4. Do you only choose foods that you like?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Do you have lessons where you talk about healthy eating at school?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Fruits and “veggies”

1. **To keep your body healthy, how many helpings of fruit and vegetables should be eaten every day?** (Tick next to the **ONE** answer you think is correct)

- At least 1
 - 3 or 4
 - 5 or more
 - It doesn't matter how many
-

2. **Why do you think eating fruit and vegetables every day is important?**

2.1 Because they help our bodies to fight against illnesses like colds and flu	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
2.2 Because they help us see better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 Because they help to protect our bodies against illness such as heart disease and diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Do you eat vegetables?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
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4. **Why do you eat vegetables?**

4.1 Because I like the taste	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
4.2 Because vegetables are healthy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3 Because people at home eat vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4 Because I am told to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Do you eat fruit?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
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6. Why do you eat fruit?

	Yes	No	Sometimes
6.1 Because I like the taste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Because fruit makes me healthy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3 Because people at home eat fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4 Because I am told to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. When you feel like a snack, what do you eat?

	Yes	No	Sometimes
7.1 Chips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2 Sweets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3 Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.4 Sandwich or cereal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Healthy choices

1. Eating small amounts of healthy fats and oils is important...

	True	False	Don't know
1.1 Because fats give us energy and keep us warm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Because it helps our body to build muscle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Because fats help us to absorb certain important nutrients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. When you eat too much fat...

	True	False	Don't know
2.1 You can become fat (overweight)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 You can get high blood pressure when you are older	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 You can have a heart attack when you are older	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4 You can develop diabetes as you get older	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

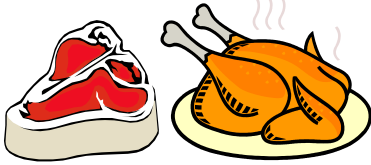


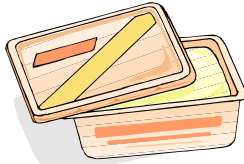
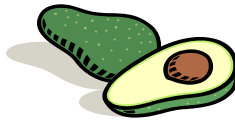





3. Eating a lot of sugar, sweets and sweet food...

	True	False	Don't know
3.1 Is not good for health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Can make people fat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Is bad for teeth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4 Can cause diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5 Does not matter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Eating enough fibre (roughage) is important...

	True	False	Don't know
4.1 Because it helps us go to the toilet regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.2 Because it protects us against diseases like heart disease and diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. The following foods contain **HEALTHY** fats:

Red meat and chicken with skin		True <input type="checkbox"/>	False <input type="checkbox"/>	Don't know <input type="checkbox"/>
Chips, crisps and papa bites		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soft margarine in tub		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Avocado pear		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mayonnaise		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cookies/Biscuits		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vetkoek and doughnuts		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pilchards/Sardines		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Polony		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Can you change your behaviour and eat less fat by...

	Yes	No	Not sure
6.1 Putting less margarine on your bread?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Eating fewer chips?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3 Buying fruit instead of chips?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Will it be difficult for you to eat less fat...

	Yes	No	Not sure
7.1 Because the people at home make fried food every day?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2 Because you like fatty food too much?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Can you change your behaviour and eat less sugar by...

	Yes	No	Not sure
8.1 Putting less sugar in your tea or coffee?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2 Putting less sugar on your cereal/porridge?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.3 Eating sweets less often?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.4 Drinking cool drinks less often?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Can you change your behaviour and eat more fibre by...

	Yes	No	Not sure
9.1 Eating brown bread instead of white bread?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.2 Eating more vegetables?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.3 Eating more fruit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Will it be difficult for you to eat brown bread...

	Yes	No	Not sure
10.1 Because the people at home only eat white bread?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2 Because the shops close to your house only have white bread?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.3 Because you do not like the taste of brown bread?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.4 Because most of your friends prefer eating white bread?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Healthy eating before and during school

1. Do you eat breakfast before school?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
<hr/>			
2. Do you bring a lunchbox to school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
3. Do most of your friends bring lunchboxes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
4. Do you bring money to school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1 IF YES, how many days per week?	Every day <input type="checkbox"/>	2-3 times/wk <input type="checkbox"/>	
4.2 How much money do you bring at a time? R _____			
<hr/>			
5. Do you believe it is important for you to have a morning meal...			
5.1 Because it helps me to concentrate better at school?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
5.2 Because it gives me energy for the day?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
6. Can you do the following to have breakfast at home?			
6.1 Make my own breakfast	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
6.2 Get up early enough to have breakfast at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
8. Will it be difficult for you to eat breakfast at home...			
8.1 Because the people at home do not eat breakfast?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
8.2 Because you are not hungry early in the morning?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.3 Because there is no food in the house to eat for breakfast?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
9. Will it be difficult for you to take a lunchbox to school...			
9.1 Because other children will want your food?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
9.2 Because the food at school is enough for the whole day?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.3 Because there is nothing at home to put in your lunchbox?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.4 Because no one at home can help you to make a lunchbox?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.5 Because you do not have a nice container to put it in?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Activities at school and home and in-between

1. Are you doing physical activity when you play sport, or going to the gym?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
2. Are you doing physical activity when you play games, e.g. skipping, soccer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are you doing physical activity when you are walking, e.g. walking to school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is it important to do physical activity every day in order to keep your body healthy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is watching more than two hours of TV every day good for your body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Can you do physical activity that makes you sweat and breath hard?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Do you have to stop doing physical activity because you get too tired?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Do you have fun when you are doing physical activity?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Sometimes <input type="checkbox"/>
9. Do you like doing physical activity whenever you can?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do your teachers encourage you to do physical activity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Does your family encourage you to do physical activity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Do you go with your family to physical activity events at your school or in your neighbourhood, e.g. a fun run / walk?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Do you take part in sport at school or for a club, e.g. soccer, netball?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Do you do physical activity at home or in your neighbourhood after school and on weekends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	True	False	Don't know
15. There is no organised sport at my school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. It is too expensive to buy sports gear / kit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. My friends do not do sport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. My parents do not allow me to do sport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I do not like sport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I prefer to watch sport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. I am not good enough to be on a sports team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Sport is too difficult for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. There are no parks or sports fields near my home to play outdoors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. It is not safe for kids to play outdoors where I live	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. I can't do physical activity at home or in my neighbourhood because I have to look after my brothers and sisters or do chores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. I can't do physical activity at home or in my neighbourhood because there is too much traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. I would rather watch TV or just sit and talk than do physical activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. I do not know how to play sports and games very well, I am sometimes chosen last for games	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Sometimes my friends make fun of me when I play sports and games outdoors with them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. **On a normal weekday, how long do you spend on the computer, watch TV or sit and listen to the radio?** (Tick next to the **one** answer you think is correct)

- Less than 30 minutes per day
- 30-60 minutes per day
- 1-2 hours per day
- More than 2 hours per day

31. **On a normal day on the weekend, how long do you spend on the computer, watch TV or sit and listen to the radio?** (Tick next to the **one** answer you think is correct)

- Less than 30 minutes per day
- 30-60 minutes per day
- 1-2 hours per day
- More than 2 hours per day