2014

Nutrition Screening of Kindergarten Students in Wellington-Dufferin-Guelph: Results of NutriSTEP



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Executive Summary

There is currently a lack of information regarding the eating and activity habits of preschool children in Wellington-Dufferin-Guelph. In February and March 2014, through a partnership with the Upper Grand District School Board and Wellington Catholic District School Board, Wellington-Dufferin-Guelph Public Health embarked on a surveillance study of kindergarten students across the region using NutriSTEP^{*} (Nutrition Screening Tool for Every Preschooler). This tool is a valid and reliable, parent-administered nutrition screening tool. The goal of the surveillance was to determine kindergarten student risk for nutrition-related problems as well as to inform future Public Health programming and interventions.

Packages including a NutriSTEP[®] screening tool, *How to Build a Healthy Preschooler* educational brochure and a pre-paid, addressed envelope were distributed to kindergarten students with the help of both school boards and kindergarten teachers. Parents filled out NutriSTEP[®] at home and mailed the completed tool to Public Health where it was securely stored and analyzed.

A total of 5432 surveys were distributed with a sample rate of 22.85%. Overall risk for nutrition-related problems was relatively low; 4.7% of students scored high risk for nutrition-related problems, 11.1% were moderate risk and 84.2% were low risk. Primary areas of concern were consumption of grains, fruit and vegetables, use of supplements, exposure to TV while eating and parental control during meals. Notably, about 1 in 8 respondents indicated that they have difficulty buying food to feed their child at least sometimes. The level of food insecurity noted in this study (13.2%) is troubling as children who experience food insecurity are more likely to experience poorer overall health.

Few differences were found between priority and non-priority neighbourhoods. However, significant differences did exist between counties on a number of NutriSTEP[®] questions including intake of grains, fruit and fast food, recreational screen time, TV watching while eating and risk level. These results have led to the following recommendations.

Recommendations

- 1. Promote vegetable and fruit consumption and family meals, including awareness raising, education and skill building. Partner with other community groups for greater impact.
- 2. Create supportive environments for vegetable and fruit consumption where children live, learn and play, including child care centres, schools and recreation programs.
- 3. Continue to support collaborative partnerships with community groups who advocate for income security, and play a role in addressing food insecurity in Wellington-Dufferin-Guelph.
- 4. Champion public policies supportive of vegetables and fruit access and consumption.
- 5. Continue to promote and make NutriSTEP^{*} (or Nutri-eSTEP) available throughout the community.
- 6. Further explore parents' attitudes, beliefs, barriers and facilitators to getting their children to eat grains, vegetables and fruit.
- 7. Conduct a similar survey of kindergarten students in 3-4 years time.

Introduction

Children across Canada as well as in Wellington-Dufferin-Guelph are currently facing high rates of overweight and obesity resulting in immediate and future health problems¹. Along with this, many children may also be experiencing nutritional problems, putting them at risk for growth, behaviour and developmental issues. Inadequate or inappropriate intervention for children at-risk of nutritional problems can lead to overweight, failure to grow, iron deficiency, inadequate eating skills, and importantly, potential cognitive delays including reduced school readiness^{2,3}.

Currently, there is a lack of information regarding the eating and activity habits of preschool children in Wellington-Dufferin-Guelph. This information is essential to understand the underlying factors related to childhood obesity and overweight and school readiness. The Kindergarten Parent Survey which is administered every three years, reaches children entering senior kindergarten, but does not ask detailed questions regarding eating or activity habits, nor does it screen for individual risk for nutritional problems. However, we do know that by the time children reach middle and high school, their nutrition habits are not ideal. In the most recent 2011-2012 Youth Report Card for Wellington-Dufferin-Guelph students in grades 7 and 10, almost 60% of students consumed vegetables once a day or less compared to the recommended 6-8 daily servings of vegetables and fruit in Canada's Food Guide. In addition, approximately 45% consumed chocolate or candy once a day or more. Moreover, 42% and 41% of grade 10 and 7 students, respectively, did not consume milk the recommended two times a day, yet 50% of grade 10 students and 45% of grade 7 students reported consuming pop or sugary drinks at least once per day⁴. Early intervention is key, not only to reduce risk for nutrition related problems, but also to establish positive eating behaviours and preferences. As such, it is important to understand the eating and activity habits of preschoolers in order to effectively address any shortcomings.

NutriSTEP^{*} (Nutrition Screening Tool for Every Preschooler) is a valid and reliable, 17-question, parent administered, screening tool that can provide information on the eating and physical activity habits of children aged three to five. NutriSTEP^{*} provides an overall score and assigns each child a level of risk for nutrition-related problems based on their score. In addition, NutriSTEP^{*} is also an educational and referral tool for parents. Previous studies have demonstrated that completion of NutriSTEP^{*} can improve parental nutrition awareness, knowledge and behaviours^{5,6}. Conducting nutrition screening with NutriSTEP^{*} is a required activity for public health as outlined in the *Public Health Accountability Agreement* with the Ontario Ministry of Health and Long-Term Care.

In spring 2014, in partnership with the Upper Grand District School Board (UGDSB) and Wellington Catholic District School Board (WCDSB), a copy of NutriSTEP[®] and the educational resource *How to Build a Healthy Preschooler* were distributed to kindergarten students. Parents were asked to fill out NutriSTEP[®] and return it to Wellington-Dufferin-Guelph Public Health in a postage paid envelope. The goal of this surveillance was to determine the level of risk for nutrition-related problems in kindergarten students in Wellington-Dufferin-Guelph. Furthermore, information on the eating and activity habits of kindergarten students will help to inform future Public Health programming and interventions.

Methods

NutriSTEP[®]Distribution

It was determined that all kindergarten students, both JK and SK, would form the sample population (N=5432). During the fall term, the vast majority of kindergarten students would be between the ages of three and five, thus falling into the appropriate age for which NutriSTEP[®] was validated⁷. Permission to conduct the research in February and March 2014 was granted by the Upper Grand District School Board's Research Liaison Committee and the Wellington Catholic District School Board.

In February 2014, NutriSTEP[®] packages were created that included a parent letter, NutriSTEP[®] screening tool, *How to Build a Healthy Preschooler* educational tool and pre-paid, addressed envelope. Individual packages were delivered to each school board office. Packages were then distributed to each school (78 schools in total) via the Boards' internal mail system. School staff were asked to distribute the packages to each kindergarten class. Kindergarten teachers were asked to distribute the NutriSTEP[®] package to all children using whatever method is typically used to send documents home to parents. This method of distribution resulted in minimal disruption to class time and required minimal administration by either teachers or the Boards.

Children took the package of information home and parents^{*} filled out the NutriSTEP^{*} tool when time permitted. If parents consented, they mailed the screening tool to Public Health in the pre-paid, addressed envelope. Parents could keep the educational tool for future reference and referral if indicated. Parents who completed the screen could then go online to be entered into a draw to win one of six, \$50 grocery gift cards. To ensure anonymity, only the child's age, sex and school name were collected.

Completed NutriSTEP^{*} screens were collected by Public Health staff from March to June 30, 2014, with the majority of screens being received in March, April and early May 2014. As a result of the timing, a certain number of children were over the age of five. Given that the screening tool was only validated in children aged three to five, responses of six year olds were compared to the remaining sample to see if any differences were present. It was determined that the six year olds were similar to the other respondents. By retaining the six year olds in the sample, the sample size remained robust and reflected all kindergarten students. Despite the fact that the screening tool was only validated in children aged three to five, there is no specific nutritional or physiological reason why the screening tool wouldn't apply to children who had recently turned six.

NutriSTEP®

NutriSTEP^{*} is a 17-item, valid, reliable, nutrition risk screening tool that can be completed by a parent of a three to five year old in about five minutes⁷. A copy of NutriSTEP^{*} is included as Appendix 1. It is available in eight languages (English, French, traditional and simplified Chinese, Punjabi, Spanish, Tamil and Vietnamese). Only the English language version was distributed in the current study.

^{*} The term parent is being used to represent both parents and caregivers.

A rigorous and extensive development process for NutriSTEP^{*} began in 1997 by researchers at the University of Guelph and Sudbury District Health Unit. Validation was established in 2007 based on comparison of nutritional risk as assessed by Registered Dietitians in 269 preschoolers⁷. NutriSTEP^{*} fills a gap in surveillance and screening needs by assessing food and nutrient intake, physical growth, developmental and physical capabilities, physical activity, food security and the feeding environment of children. When completed accurately, NutriSTEP^{*} helps parents identify the nutritional risk of their child and offers suggestions about where parents can go for additional information and to get professional help for their child.

Each NutriSTEP[®] question has two to five possible responses, with each response corresponding to a score of zero to four. Scores for each question are added up to give a total score for the 17-item screening tool. Total scores of 20 or less are considered low risk, 21 to 25 are considered moderate risk and those 26 or above are considered high risk for nutrition-related problems.

More information on NutriSTEP[®] can be found at <u>www.nutristep.ca</u>

Data Analysis

Returned screening tools were entered into a secure online survey tool (FluidSurveys) by a trained data entry clerk. All surveys were entered by the same data entry clerk for consistency. Surveys with multiple answers per question, crossed out answers or any other uncertain answers were set aside for review by the study coordinator. Surveys with missing data were still entered into the online survey tool, with missing data left blank in the online survey. Data was checked periodically by the survey coordinator to ensure accuracy.

Data was exported from the online survey tool into an Excel file for cleaning and analysis. Duplicate entries were removed and a numerical risk score was assigned to each question using the scoring from the original NutriSTEP[®] survey. To assign a total score and risk level, entries with missing data for any screening question were removed. A risk level was assigned to each respondent according to the NutriSTEP[®] risk levels; low risk (20 or less), moderate risk (21 to 25) and high risk (26 or greater).

When analyzing individual questions, entries with missing data for that specific question were removed. Individual question scores ranged from a score of zero to four. Answers were considered higher risk if the score was two or greater⁷.

Entries were assigned priority neighbourhood status using Public Health's Addressing Social Determinants of Health in Wellington-Dufferin-Guelph report⁸. School was used as a proxy for respondents' address when assigning priority neighbourhood status. Priority neighbourhoods were identified through a system of ranking neighbourhoods according to eight social determinants of health indicators. These indicators were chosen based on evidence from existing literature and the data

examined in the report. Assigning priority neighbourhood status to NutriSTEP[®] respondents allowed for comparison by priority neighbourhood which could allow for targeting of interventions by Public Health. Priority neighbourhoods are:

Brant (City of Guelph) Minto (Wellington County) Onward Willow (City of Guelph) Orangeville (Dufferin County) Shelburne (Dufferin County) Two Rivers (City of Guelph) Wellington North (Wellington County) West Willow Woods (City of Guelph)

Basic descriptive statistics were conducted in Excel. Chi-square analysis was performed to determine if differences between sex, county and priority neighbourhood status were due to chance alone.

Results

Respondents⁺

A total of 5432 surveys were distributed with 1241 surveys returned, representing a sample rate of 22.85%.

Appendix 2 provides an overview of respondent demographics and sample rates. Sample rates were very similar for Wellington, Dufferin and Guelph, as well as for each school board. Furthermore, when we considered priority neighbourhood status, sample rates were again very close. As expected, approximately half the respondents were female. Due to the fact that the screening tool was distributed in the latter half of the school year, just over 9% of respondents were six years old.

NutriSTEP[®] Results

Appendix 3 describes the percent of respondents who had higher risk answers to individual NutriSTEP^{*} questions. Also included in the table are the current recommendations for each behaviour.

Over 50% of respondents indicated consuming grain products three or less times per day and just under 50% indicated consuming fruit two or less times per day (Figure 1). For this age group, Canada's Food Guide recommends four servings of grain products a day and five servings of vegetables and fruit⁹. Furthermore, more than a quarter of respondents had a higher risk answer for consumption milk products (and alternatives), vegetables and meat or alternates (Figure 1).

[†] Throughout this report, the term respondent will be used when referring to the child whom the NutriSTEP[®] screening tool represents, despite the fact that the actual respondent was the parent.



Figure 1: Percent of respondents with higher risk answers for various food groups.

There were significant differences noted between counties for both grain and fruit consumption (Figure 2). Additionally, respondents from priority neighbourhoods were more likely (p=0.06) to eat fruit two or less times per day (51.6%) compared to respondents from non-priority neighbourhoods (45.6%).

Figure 2: Percent of respondents in each county with a higher risk answer for grain and fruit consumption



Almost a quarter of respondents reported eating fast food one or more times per week. Over 13% of respondents have difficulty buying food to feed their child at least sometimes because of the cost. There was a significant difference between priority and non-priority neighbourhoods with almost 72% of

respondents from non-priority neighbourhoods indicating that they never have difficulty buying food to feed their child compared to only 64% of priority neighbourhood respondents. Furthermore, significant differences (p=0.03) were noted between counties (Figure 3).



Figure 3: Percent of respondents in each county who have difficulty buying food to feed their child

According to *Satter's Division of Responsibility*¹⁰, it is the parent's responsibility to determine what, where and when food is offered to a child. It is the child's responsibility to decide if they will eat and how much they will eat of the food offered. This helps to promote self-regulation. According to our study, over 30% of parents do not follow this division of responsibility and do not let their child decide how much to eat all the time. In further contradiction to *Satter's Division of Responsibility, o*ver a third of parents allow their child to watch TV while eating at least sometimes.

Despite the recommendation to get nutrients from foods instead of supplements, almost 60% of respondents indicated taking supplements at least sometimes.

Even though 35% of parents reported that their child watches TV while eating, most parents (86%) felt that their child was getting enough physical activity and approximately 81% of children were watching TV, playing video games or using the computer the recommended two hours or less per day. Significant differences were found between counties for percent of respondents that watched TV while eating (p=0.008) and for amount of recreational screen time (p=0.04).

The vast majority of parents were comfortable with how their child was growing (almost 98%) and thought their child was at the right weight (93%).

Overall Score and Risk Level

With respect to overall nutritional risk, 4.7% of respondents screened as high risk for nutrition-related problems, 11.1% as moderate risk and 84.2% as low risk. There were no apparent differences between age or sex. There appears to be a possible relationship between risk level and county, though statistical significance wasn't achieved (p = 0.07) (Figure 4).



Figure 4: Percent of respondents at each risk level in each county

Discussion

Risk Level

In this study, less than 5% of respondents screened as high risk for nutrition-related problems. This is comparable to a study conducted in Thunder Bay¹¹ and slightly less than studies conducted in Haldimand and Norfolk Counties¹² and Calgary¹³. Other studies in Chatham-Kent¹⁴ and York Region¹⁵ have shown a higher proportion of high risk respondents; however the York Region study had a large proportion of newcomers to Canada which may have impacted their results. Our results for individual questions as well as mean total score are comparable to the validation study of NutriSTEP^{*7}. Comparison with other studies for individual questions is difficult due to variations in how results were presented. That said, most previous studies showed low intakes of grains, fruit, vegetables and a similar consumption of fast food.

Food Intake[‡]

Even though less than 5% of children were considered high risk for nutrition-related problems, there were a number of concerning findings related to children's food intake. In particular, it is concerning

^{*} Using the threshold established by Randall Simpson during the validation of NutriSTEP^{*7}, only those questions with higher risk responses greater than 30% will by highlighted.

that over 55% of children consume grain products three or less times per day. If it is assumed that each time a child eats a grain product they are eating one serving, then children are not meeting the recommendation in Canada's Food Guide of four grain product servings a day⁹. This is troubling given grains provide needed energy, fibre and important nutrients at a time of increased growth and development.

This finding may be due, in part, to the recent shift in our society towards gluten-free, wheat-free and low carbohydrate diets. However, even if a person is following a gluten-free diet, gluten-free grains such as rice, quinoa, oats and buckwheat should still comprise an important component of their diet. Additionally, the grain product examples provided on the screening tool are not an exhaustive list of all grain products that would fall under this category. It is possible that when parents responded to this question they only considered the example grain products listed. This would lead to underreporting of grain consumption by this question. Further research would have to be carried out to gain a better understanding of the results of this question.

Similarly, it is troubling to find that just under 50% of children are eating fruit two or less times per day and 30% are eating vegetables once a day or less. Again, if it is assumed that each time a child eats a vegetable or fruit they are eating one serving, it appears children are falling short of the recommendation in Canada's Food Guide of five servings a day⁹. This data corresponds to a previous study that found 70% of four to eight year olds did not meet the Canada's Food Guide recommendation of five servings of vegetables and fruit per day¹⁶. Vegetables and fruit provide vitamins A, B₆, C, folate, magnesium and potassium as well as antioxidants and fibre. Furthermore, children who eat at least five servings of vegetables and fruit have been shown to be less likely to be overweight or obese¹⁷.

There are a number of potential explanations for children's low intake of vegetables and fruit. A study of Ontario middle school students points to the possibility that "other " foods (those foods that do not fit within Canada's Food Guide food groups) may displace healthier options, including vegetables and fruit¹⁸. Similar findings were found in US adults¹⁹. Previous studies of children slightly older than the current sample have noted that taste preferences, availability, accessibility as well as parental intake all impact children's intake of vegetables and fruit^{20,21}. The lower intake of fruit in priority populations is consistent with the literature that shows socioeconomic status is correlated with fruit and vegetable intake. Potential explanations are cost and accessibility to larger grocery stores²¹.

Food Insecurity

This study shows 13.2% of respondents have difficulty purchasing food at least sometimes for their child. This corresponds relatively well to the findings presented in a recent report titled Household Food Insecurity in Canada, 2012 that indicates 16.4% of households in the city of Guelph experience some level (marginal, moderate, severe) of food insecurity²². In the whole region of Wellington-Dufferin-Guelph, 7.4% of households experience either moderate or severe levels of food insecurity²³.[§] The

[§] Although the Household Food Insecurity in Canada Report, 2012 uses CCHS 2011/2012 data, the definition of food insecurity used is different from what is typically used in other reports. The Household Food Insecurity in

NutriSTEP^{*} question related to food insecurity focuses specifically on the child's access to food. It has been shown previously that parents will typically go without food to ensure that their child(ren) have adequate food²⁴. This would indicate that our findings are likely an underrepresentation of the overall problem of food insecurity in our region.

The level of food insecurity found in our study is troubling, given that access to sufficient, safe, nutritious food is a basic human need and human right. Additionally, food insecurity is associated with inadequate intake of key nutrients as well as behavioural and cognitive problems in preschool aged children²⁵. Furthermore, children who experience food insecurity are more likely to experience poorer overall health²⁶. Food insecurity can also impact parenting and infant feeding practices which can have a further impact on children's health²⁷.

Priority neighbourhoods in this study were more likely to indicate difficulty buying food for their child. This is likely due to economic differences between priority and non-priority neighbourhoods. Food insecurity is rooted in poverty and is mainly an issue of inadequate income. Traditionally, the local response to food insecurity has been focused on access to food through food banks and meal programs, however these are largely ineffective as a long-term solution to food insecurity ²⁸. In order to create sustained change, food insecurity work should largely focus on income-based solutions such as income security. This will require systematic changes through policies to support income adequacy and address the factors that constrain food purchasing^{26,29}.

Feeding Environment

*Satter's Division of Responsibility*¹⁰ suggests that parents are responsible for providing regular meals and snacks in a pleasant eating environment free from distractions. Parents are also responsible for ensuring the food options available at meal and snack times. According to this approach, it is the child's responsibility to decide if they will eat and how much they will eat of the food offered. This helps reduce tensions and battles over food and allows the child to self-regulate, responding to their own feelings of satiety and hunger. Too much or too little parental control can negatively affect a child's ability self-regulate³⁰.

In the present study, almost a third of parents indicate that they don't let their child decide how much to eat at meal times. This is troubling because there is evidence that children who are better able to self-regulate as preschoolers are less likely to be overweight as they age³¹. Additionally, parents who exert too much control over a child's food intake can lead children to prefer less healthy foods affecting their intake of healthier options^{30,32,33}. It is imperative that parents trust their children's ability to self regulate and not pressure children to eat certain types or amounts of food, as forcing children to eat can have negative consequences.

Canada Report defines food insecurity by including all three levels of food insecurity (marginal, moderate and severe) compared to only two levels (moderate and severe) usually included in other reports.

In contradiction to *Satter's Division of Responsibility*, over 35% of parents allow their child to eat while watching TV. This is problematic as eating while watching TV can lead to overeating³⁴. Additionally, TV watching is associated with lower intakes of fruits and vegetables²⁰ and an increase in consumption of unhealthy foods^{35,36,37}.

Supplement Use

Just under 60% of respondents report using supplements at least sometimes. The current recommendation is that nutrients in a child's diet should come from foods first. Supplements are not generally recommended for healthy children⁹ due to potential issues of excess intake. Unfortunately, the wording of the question in NutriSTEP[®] does not provide specific information about how often or what type of supplements parents are giving their children. Parents could be providing multivitamins or specific vitamins such as vitamin D. Additionally, it is unknown if these supplements are recommended by medical professionals or if parents are self-determining their child's need for a supplement. Further exploration is needed to better understand the relevance of these findings.

Weight Status

An interesting finding from the Well-Being of Children Ages Birth to Six Report Card for this region is that 27% of kindergarten students were overweight or obese according to self-reported heights and weights³⁸. However, in this current study, almost 93% of parents believe their child is at an appropriate weight and approximately 98% are comfortable with how their child is growing. This points to a disconnect between parents' perceptions of what a healthy weight is for their child. It may also highlight that children's weight may not be a good motivator for physical activity and healthy eating behaviour change given that most parents do not feel that weight is an issue with their child. This disconnect has been reported elsewhere^{39,40}.

Differences between Counties

Significant differences on a number of NutriSTEP[®] questions were discovered including intake of grains, fruit and fast food, recreational screen time, TV watching while eating and risk level. In many cases it appeared as though respondents from Dufferin County had a greater percentage of higher risk responses than either Wellington County or the City of Guelph. This could be due to the fact that the two largest residential areas in Dufferin County (Orangeville and Shelburne) are considered priority neighbourhoods in Public Health's Addressing Social Determinants of Health in Wellington-Dufferin-Guelph report⁸. This would indicate that these neighbourhoods have differences in terms of socio-economic status, unemployment, education, lone parents, affordable housing and recent immigrants. These differences offer one explanation as to why variation is seen between the Dufferin County, Wellington County and the City of Guelph, however, further research is needed to more fully understand the differences found in the current study and their relevance.

Additionally, Dufferin County does not have a poverty task force such as the Guelph Wellington Task Force for Poverty Elimination and only relatively recently established the Headwaters Food and Farming Alliance to address issues of food access and availability in the community. In contrast, the Guelph Wellington Food Round Table has been addressing issues of food access and availability for a number of years. Having established, community driven, collaborative organizations addressing food issues in Wellington County and Guelph may have had a positive impact in some of the NutriSTEP[®] indicators.

Strengths and Limitations

Despite not collecting demographic data on respondents beyond age and sex, and thus not being able to tell exactly who completed and returned the NutriSTEP[®] screening tool, these results are strengthened by similarities in sample rate between various sub-groups within our sample. For example, the sample rates between priority neighbourhoods and non-priority neighbourhoods are quite close. Additionally, the sample contains equivalent amounts of respondents for each school board and county compared to the total kindergarten population. That said, it is still possible that the results are biased towards a certain segment of the population who are more motivated to complete and return a survey. In particular it should be noted that a certain level of fluency in English is required to complete NutriSTEP^{*} and therefore non-English speakers would likely not be represented in this sample.

Interpretation of NutriSTEP[®] is difficult as the screening tool asks for the number of times foods are eaten per day. There is no reference to serving size as part of NutriSTEP[®]. This makes comparison to current dietary guidelines challenging as Canada's Food Guide uses defined serving sizes and recommends a specific number of serving sizes per day.

An additional limitation is that NutriSTEP[®] relies on self-reported behaviour and is also self-scoring. Parents filling out the screening tool know what the recommended behaviours are and thus may report more positive behaviours than are actually occurring. It is possible that the results reported here are actually an under representation of children with higher risk eating and activity behaviours.

Conclusions

While fewer than 5% of children screened as high risk for overall nutrition-related problems, many more had higher risk behaviours for specific questions, which could lead to future poor health outcomes. In particular, low fruit, vegetable and grain intake warrant further investigation. Furthermore, our results indicate a need to address children's feeding environment. Of particular note, is the number of respondents indicating difficulty buying food for their child. While further work would provide greater clarity and understanding for some of the findings, this report provides valuable information across Wellington-Dufferin-Guelph that will inform Public Health and community partners' work.

Recommendations

- 1. Increase Awareness and Develop Personal Skills
 - a. Promote Vegetable and Fruit Consumption

This could be its own strategy or done in partnership with promoting family meals. When creating this strategy, tasting vegetables and fruit as well as increasing skills for preparing vegetables and fruit should be considered. Emphasis should be on the family (i.e. not only children).

b. Promote Family Meals

Create a strategy in partnership with other key stakeholders in Public Health to promote family meals, highlighting the multiple positive outcomes of family meals in addition to improved nutrition. Family meals have been shown to be healthier and have increased vegetables and fruit in addition to improving academics and reducing likelihood to use drugs and alcohol for youth. The messages should support having the TV turned off and promote the Division of Responsibility.

- c. Both of these strategies could include:
 - i. Education and awareness raising through current Public Health, school and community programs
 - ii. Social marketing using online media
 - iii. Skill building. This could be done using a peer-to-peer approach or possibly using Community Food Advisors (CFAs). Community Food Advisors are trained volunteers through WDG Public Health that offer education and food skills demonstrations to community groups – including schools.

2. Create Supportive Environments

- a. Increase access to vegetables and fruit where children live, learn and play. This could include schools, before and after school programs, child care centres, recreation facilities, as well as snack and breakfast programs. Vegetables and fruit should be highlighted in these environments not just through access, but also through opportunities to grow, cook and taste vegetables and fruit. The emphasis of these activities should be on how the foods taste, not their health benefits. Possible activities could include:
 - i. Work with select licensed child care centres to pilot a vegetable and fruit strategy, looking at tasting opportunities, new recipes, onsite gardens and a parent component.
 - ii. Work with home child care providers to increase access to vegetables and fruit
 - iii. Work with select schools to pilot a vegetable and fruit strategy, including after school programs, breakfast programs and parents.
 - iv. Work with recreation facilities to pilot a vegetable and fruit strategy that could include a snack, vending and concession component.

3. Strengthen Community Action

- a. In order to affect the large scale change needed, it is critical to partner with other community groups as well as with other stakeholders within Public Health to implement a community wide strategy focusing on increasing vegetable and fruit consumption and family meals. Partners could include, but are not limited to schools, Ontario Early Years Centres, family health teams, community health centres, neighbourhood groups, local food organizations and farm to table groups. It is important to build these partnerships as Public Health alone cannot offer all of these elements.
- b. Continue to support collaborative partnerships with the Guelph Wellington Task Force for Poverty Elimination, Guelph Wellington Food Round Table, The Seed Community Food Hub Committee and Headwaters Food and Farming Alliance as well as other community groups who advocate for income security, and play a role in addressing food insecurity in Wellington-Dufferin-Guelph.

c. Partner with community organizations to ensure ongoing access and promotion of NutriSTEP[®] (or Nutri-eSTEP).

4. Build Healthy Policy

- a. Champion policies supportive of vegetables and fruit access and consumption such as:
 - i. Vegetable and fruit fundraising at schools
 - ii. Mobile farmer's markets
 - iii. Expansion of the Good Food Box model to child care centres or schools

5. Reorient Health Services

- a. Continue to promote and make NutriSTEP[®] (or Nutri-eSTEP) available throughout the community as a means of raising awareness and educating parents. This could include:
 - i. Schools (e.g. kindergarten registration package)
 - ii. Physician offices/Family Health Teams
 - iii. Ontario Early Years Centres
 - iv. Licensed child care centres
 - v. Recreation facilities/Libraries
 - vi. Dental offices

6. Learn More

Further explore parents' attitudes, beliefs, barriers and facilitators to getting their children to eat grains, vegetables and fruit. This would offer insight into why these numbers are so low and inform future work in this area.

7. Reassess

In order to determine the success of these initiatives, conduct a similar survey of kindergarten students in 3-4 years time.

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APPENDIX 1

Child's Name:	Phone Number:	-
Child's Gender:	Postal Code:	P
Child's DOB:	Screen Date:	
Screen Location/Organization:		Natr



Nutrition Screening Tool for Every Preschooler

Instructions

Below are questions about your preschool child's (3 to 5 year old) eating and other habits.

- Think about your child's every day habits when answering. Check ($\sqrt{}$) only one answer for each question.
- There is a number from 0 to 4 beside each answer. This number is a score for that question. At the bottom of each page is a box for the score for the page. For each page, add up the scores for each question.
- At the end of the questionnaire, you will add the page scores to get the total score.
- 1. My child usually eats grain products: Examples are bread, bagel, bun, cereal, pasta, rice, roti and tortillas.
 - $_{0}$ More than 5 times a day
 - $_1\square$ 4 to 5 times a day
 - $_2\square$ 2 to 3 times a day
 - $_4\square$ Less than 2 times a day
- 2. My child usually has milk products: Examples are white or chocolate milk, cheese, yogurt, milk puddings or milk substitutes, such as fortified soy beverages.
 - $_{0}$ More than 3 times a day
 - $_1\square$ 3 times a day
 - $_2\square$ 2 times a day
 - $_4\square$ Once a day or less
- 3. My child usually eats fruit:
 - $_{0}$ More than 3 times a day
 - $_1\square$ 3 times a day
 - $_2\square$ 2 times a day
 - $_{3}$ Once a day
 - $_4\square$ Not at all

Total Score for Page 1

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- 4. My child usually eats vegetables:
 - $_{0}\square$ More than 2 times a day
 - $_1\square$ 2 times a day
 - $_{3}$ Once a day
 - $_4\square$ Not at all

5. My child usually eats meat, fish, poultry or alternatives: Alternatives can be eggs, peanut butter, tofu, nuts, or dried beans, peas and lentils.

- $_{0}\square$ More than 2 times a day
- $_1\square$ 2 times a day
- $_2\square$ Once a day
- $_{3}\square$ A few times a week
- $_4$ Not at all
- 6. My child usually eats "fast food":
 - $_4\square$ 4 or more times a week
 - $_{3}$ 2 to 3 times a week
 - $_2\square$ Once a week
 - $_{1}\square$ A few times a month
 - $_{0}$ Once a month or less
- 7. I have difficulty buying food to feed my child because food is expensive:
 - $_4\square$ Most of the time
 - $_2\square$ Sometimes
 - $_1\square$ Rarely
 - ₀ Never
- 8. My child has problems chewing, swallowing, gagging or choking when eating:
 - $_4\square$ Most of the time
 - ₂ Sometimes
 - $_1\square$ Rarely
 - ₀ Never
- 9. My child is *not* hungry at mealtimes *because* he/she drinks all day:
 - $_4\square$ Most of the time
 - ₂ Sometimes
 - 1 Rarely
 - $_{0}$ Never

Total Score for Page 2

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- 10. My child usually eats:
 - $_4\square$ Less than 2 times a day
 - $_{3}$ 2 times a day
 - $_1\square$ 3 to 4 times a day
 - $_{0}$ 5 times a day
 - $_2\square$ More than 5 times a day
- 11. I let my child decide how much to eat:
 - $_{0}$ Always
 - $_1\square$ Most of the time
 - ₂ Sometimes
 - ₃ Rarely
 - ₄ Never
- 12. My child eats meals while watching TV:
 - $_4\square$ Always
 - $_{3}$ Most of the time
 - $_2\square$ Sometimes
 - 1 Rarely
 - ₀□ Never
- 13. My child usually takes supplements: Examples are multivitamins, iron drops, cod liver oil.
 - 4 Always
 - $_{3}$ Most of the time
 - ₂ Sometimes
 - 1 Rarely
 - ₀□ Never
- 14. My child:
 - ⁴ Needs more physical activity
 - $_{0}\Box$ Gets enough physical activity
- 15. My child usually watches TV, uses the computer, and plays video games:
 - $_4\square$ 5 or more hours a day
 - $_{3}$ 4 hours a day
 - $_2\square$ 3 hours a day
 - $_1\square$ 2 hours a day
 - $_{0}$ 1 hour or less a day

Total Score for Page 3

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16. I am comfortable with how my child is growing:

- ₀□ Yes
- ₄ No

17. My child:

- $_4\square$ Should weigh more
- $_{0}\square$ Is about the right weight
- ² Should weigh less



To get a total score, add the scores for each page.

_____ Score for Page 1 + _____ Score for Page 2 + _____ Score for Page 3 + _____ Score for Page 4

= Total Score

What does your NutriSTEP[®] score mean?

If the total score is 20 or less:

Your child's eating and activity habits are good. There may be things that you want to work on; check out the educational material provided for tips and more information.

If the total score is 21 to 25:

Your child's eating and activity habits can be improved by making some small changes. Check out the educational material provided or contact your local public health department for tips and more information.

If the total score is 26 and greater:

Your child's eating and activity habits can be improved by making some changes. For suggestions, talk to a health professional such as a registered dietitian, your family doctor or paediatrician or contact your local public health department for more information.

May 2009.

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APPENDIX 2

Respondent demographics and sample rate

Characteristic	Number of Respondents*	Percent of sample	Sample Rate
Gender	1228		N/A
female	597	48.6	N/A
male	631	51.4	N/A
Age	1233		N/A
3	1	0.1	N/A
4	474	38.4	N/A
5	646	52.4	N/A
6	112	9.1	N/A
Location	1149		
Dufferin	215	18.7	19.8
Wellington	284	24.7	20.6
City of Guelph	650	56.6	21.9
Priority Neighbourhood	1150		
Yes	347	30.2	20.4
No	803	69.8	21.5
School Board	1214		
UGDSB	987	81.3	22.2
WCDSB	227	18.7	23.1

*Number does not always equal 1241 due to missing data.

APPENDIX 3

Percent of respondents scoring higher risk for individual NutriSTEP[®] questions

Qu	estion	Recommended	Higher Risk Response (NutriSTEP [®] score ≥ 2)	Percent Higher Risk Response
1.	Grain Products	4 servings per day ⁹	≤ 3 times per day	56.8
2.	Milk Products	2 servings per day ⁹	≤ 2 times per day	28.1
3.	Fruit	5 servings of vegetables and fruit ⁹	≤ 2 times per day	47.8
4.	Vegetables	5 servings of vegetables and fruit ⁹	≤ 1 time per day	30.1
5.	Meat or alternates	1 serving per day ⁹	≤ 1 time per day	28.9
6.	Fast food	Limit fast food	≥ 1 time per week	24.0
7.	Difficulty buying food	N/A	Sometimes/most of the time	13.2
8.	Problems chewing, swallowing, gagging, choking	N/A	Sometimes/most of the time	3.3
9.	Not hungry because drinking all the time	Only offer water between meals and snacks ¹⁰	Sometimes/most of the time	8.5
10.	Usually eats (# times per day)	5 times	≤ 2 times a day or more than 5	12.0
11.	Child decides how much	Always ¹⁰	Sometimes/rarely/never	30.9
12.	Eats watching TV	Never ¹⁰	Sometimes/most of the time/always	35.5
13.	Takes supplements	Nutrients should come from foods ⁹	Sometimes/most of the time/always	58.3
14.	Physical activity	4 y/o: 180 min per day 5-6 y/o: 60 min of moderate to vigorous activity per day ⁴¹	Needs more	13.9
15.	Watches TV, computer, video games	2 hours a day or less ⁴¹	≥ 3 hours a day	18.7
16.	Comfortable with growth	N/A	No	2.2
17.	Weight	N/A	Should weigh less/weigh more	6.8