



Preschool NutriSTEP® Screening: 2017 Data Analysis Report



Southwestern Public Health - St. Thomas*

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*Elgin St. Thomas Public Health and Oxford County Health Unit merged into Southwestern Public Health on May 1, 2018. Since the following report is based on historical data, it refers to the Elgin St. Thomas region exclusively.

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Executive Summary

A total of 314 Preschool NutriSTEP® paper screens were completed by caregivers of Elgin St. Thomas in 2017. The parent-administered, validated and reliable nutrition screening tool was offered through the Healthy Babies Healthy Children program and through kindergarten registration within both school boards.

This information helps fill a void of data on the nutrition habits of Elgin St. Thomas preschool aged children (ages 3-5). Not only can it be used by caregivers to make healthy changes within their homes, it can also be used by public health to guide future public health programming.

This report includes a detailed analysis of the data collected. The following is a quick snapshot of what we learned:

- Elgin St. Thomas preschoolers are not eating a balanced diet according to the current Health Canada guidelines; inadequate intakes of grain products, fruit and vegetables are of greatest concern.
- Elgin St. Thomas preschoolers are at particular risk for their very high consumption of fast food.
- Parents may be exerting undue influence on their child's decision on how much to eat.
- Elgin St. Thomas preschoolers are spending too much time on screens.

1.0 Introduction

Eating patterns that are established in early childhood can last a lifetime. The first 2,000 days of a child's life—from conception to school entry—play a critical role in shaping a child's future health (1).

Good nutrition contributes to healthy growth and development, chronic disease prevention, strong school performance, and positive behaviours among children and youth (2). Poor nutrition in early childhood can lead to later health problems, including type 2 diabetes, hypertension, heart disease, arthritis and obesity (3). Although the physical problems related to weight issues tend to show up later in life, problematic social and emotional problems can start very early. Some overweight kids are bullied at school. Low self esteem, problems fitting in socially and a greater likelihood of experiencing depression are common (1).

Almost one in every three children in Ontario is now at an unhealthy weight (1), with the problem being more severe in boys than girls, and in Indigenous children. Children who are at an unhealthy weight are more likely to be overweight as adults (1). If nothing is done to change this trajectory, it is predicted that Ontarians will develop chronic illnesses much younger and be more affected as they age (4). The significance of childhood obesity on long-term population health rivals that of smoking in potential impact (5,6).

Parents in Ontario have stated clearly that their children's health is their top priority, but they need some support to help them to become and stay healthy (1). Parents and caregivers play the most important role in helping their young child to establish healthy eating habits. They influence their child's eating habits through the types of foods they buy and serve and by providing positive role modelling in the home. Parents make pivotal decisions to making eating a social and enjoyable time. They create structure by making family meals a priority and by trusting their child with decisions at the dinner table like how much to eat (7).

Nutrition risk screening can give parents the direction and support they've been asking for. Nutrition risk screening helps parents identify nutrition issues in their child before they become serious and refers those at risk for appropriate assessment and treatment. Nutrition screening results can also provide regional data to health units from a sample of area children. This data can help to evaluate current nutrition interventions, identify gaps in programming, and provide evidence for future interventions (8).

'Ontario's Food and Nutrition Strategy' and the Healthy Kids Panel Report 'No Time to Wait: The Healthy Kids Strategy' recommends screening using NutriSTEP® to identify children at risk of poor nutrition, physical inactivity, sedentary behaviours and other related health problems (1,8). NutriSTEP® is a valid and reliable tool used to assess nutritional risk in toddlers (18 to 35 months) and preschool aged children (3 to 5 years). Each questionnaire asks 17 questions and takes less than 10 minutes for a parent/caregiver to complete, and both have been designed for administration in a variety of settings, with or without assistance for completion. There is a hard-copy version of the screen and also an online version of the tool, Nutri-eSTEP® (9).

Dietitians of Canada provides aggregated data on user responses to the Toddler and Preschool Nutri-eSTEP® by health unit and all of Ontario. Comprehensive feedback messages for each of the 17 NutriSTEP® questions are used with parents to enhance their nutrition knowledge and attitudes and all children identified as high risk are referred on for complete individual nutrition assessments and treatment by local primary care providers (9).

During the period of this report, conducting the Preschool version of NutriSTEP® was a requirement for health units by the Ministry of Health and Long-Term Care. In response to this accountability requirement, in 2017 Elgin St. Thomas Public Health implemented the Preschool NutriSTEP® screen (see Appendix A) in the following ways:

1. Targeted promotion through the 'Healthy Babies Healthy Children Program' (HBHC). The Preschool NutriSTEP® screen was offered to caregivers of eligible children (ages 3-5 years). Those who chose to participate received guided assistance and tailored follow-up by health unit Public Health Nurses and Parent Resource Workers using the hard copy version of the tool.
2. Through prepared 'Preschool NutriSTEP® Kindergarten Registration packages', caregivers of registering preschoolers could complete a hard copy version of the screen. There was minimal guidance for completion of the screen by the caregiver as kindergarten registration staff were only trained to answer basic questions if required. The program was voluntary for schools to participate in and for parents to then complete the screen for their preschooler. All participating parents received a response in the mail that was tailored to their child's risk score and included resources and recommendations for next steps where needed (e.g., if screen was high risk the child was referred to a local Registered Dietitian for a full nutritional assessment).
3. Nutri-eSTEP® (the on-line version) was minimally promoted by the health unit in 2017 via the website.

2.0 Preschool NutriSTEP Questionnaires Included in the Data Analysis

2.1 Number of Preschool NutriSTEP® (paper) Questionnaires

A total of 314 paper Preschool NutriSTEP® screens were completed by caregiver of Elgin St. Thomas in 2017:

- 8 screens completed by clients of the Healthy Babies Health Children (HBHC) program.
- 306 completed through kindergarten registration
 - 83% of Elgin schools participated in the distribution of the screens.
 - 46% of caregivers participated in completing the screens (306 screens completed and returned out of 670 prepared packages).

As described above, the on-line version, Nutri-eSTEP®, was minimally promoted in 2017. As a result, the local uptake of the screen was very small during the 2017 timeframe compared to the previous year when a more comprehensive communication campaign was run. As a result of this minor contribution of data, the results are not included in this report. The Ontario data from the 2017 Nutri-eSTEP® report as collated by Dietitians of Canada, however, is referred to within this report as comparator data to the Elgin St. Thomas paper preschool NutriSTEP® data where appropriate.

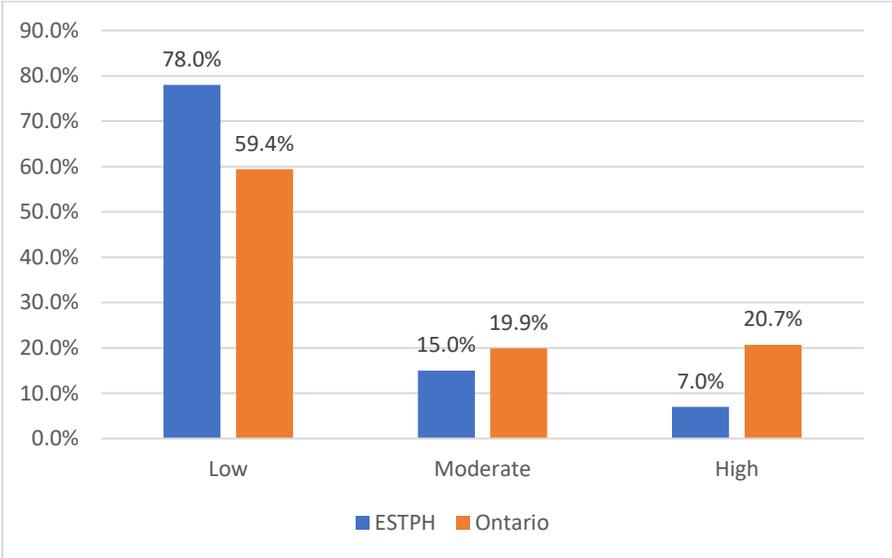
2.2 Child's Gender

Of the 314 completed screens in Elgin St. Thomas, 50.3% were for male and 49.7% for female preschoolers. This aligns with the Dietitians of Canada 2017 Preschool Ontario Data showing 52.3% male and 47.7% female.

3.0 NutriSTEP® Total Score

Each Preschool NutriSTEP® question has two, three, four or five possible responses with scores ranging from 0 to 4. The child’s overall score is determined by adding the scores for each of the 17 questions on the preschool NutriSTEP® questionnaire. The overall score is used to determine the level of nutrition risk: a total score of 20 or less indicates low nutrition risk; a total score of 21 to 25 indicates a moderate nutrition risk; and a total score of 26 or more indicates a high nutrition risk. The following chart shows the overall risk levels for preschoolers in Elgin St. Thomas compared to Ontario.

Figure 1 –Overall level of nutrition risk for preschoolers in Elgin St. Thomas compared to Ontario, 2017



Fewer preschoolers in the Elgin St. Thomas region fell into the ‘high’ risk nutrition category compared to the rest of Ontario.

4.0 Nutrition Risk, by Question

Every question from the Preschool NutriSTEP® questionnaire has two to five possible answers. Every answer is associated with an answer score of 0 to 4. Nutrition risk is determined by the answer score of a question in the Preschool NutriSTEP® questionnaire. In most cases, an answer score equal to or greater than 2 (cut point) indicates a potential nutrition risk pertaining to that specific question. The following table presents the nutrition risk for each of the 17 questions found in the Preschool NutriSTEP® questionnaire and compares it to the Ontario data.

The cut points from the Preschool NutriSTEP® questionnaire are used to identify potential nutrition risk; the terms Potential Risk and No Risk are used to identify scores above and below cut points. See Table 1 for the proportion of preschoolers with Potential Risk and No Risk by question for Elgin St. Thomas and Ontario.

Table 1 – Proportion of preschoolers with potential risk and no risk by screening question for Elgin St. Thomas and Ontario

NutriSTEP® Question	Answer Option	Percentage of ESTPH total that chose option(%)	Percentage of ONT total that chose option(%)
Q. 1 Number of grain products.	Potential risk	70.1%	61.4%
Risk cut point= score of less than 2	No risk	29.9%	38.6%
Q. 2 Number of Milk and Alternatives.	Potential risk	28.7%	36.8%
Risk cut point= score of less than 2	No risk	71.3%	63.2%
Q. 3 Number of Fruit Servings.	Potential risk	45.9%	54.5%
S Risk cut point= score of less than 2	No risk	54.1%	45.5%
Q. 4 Number of Vegetables Servings.	Potential risk	33.8%	46.4%
Risk cut point= score of less than 2	No risk	66.2%	53.6%
Q. 5 Number of Meat and Alternatives.	Potential risk	27.7%	42.7%
Risk cut point= score of less than 2	No risk	72.3%	57.3%
Total			100.0%
Q. 6 Consumption of Fast Food.	Potential risk	44.3%	12.6%
Risk cut point= score of 2 or less	No risk	55.7%	87.4%
Q. 7 Food Security.	Potential risk	9.9%	24.6%
Risk cut point= score of less than 2	No risk	90.1%	75.4%

Q. 8 Problems chewing, swallowing, gagging or choking when eating.			
	Potential risk	3.8%	7.8%
Risk cut point= score of less than 2	No risk	96.2%	92.2%
Q. 9 Not hungry at mealtimes because he/she drinks all day.			
	Potential risk	19.7%	25.6%
Risk cut point= score of less than 2	No risk	80.2%	74.4%
Q. 10 My child usually eats (# of times per day)			
	Potential risk	15.6%	17.1%
Risk cut point= score of less than 2	No risk	84.4%	82.9%
Q. 11 I let my child decide how much to eat.			
	Potential risk	32.5%	35.8%
Risk cut point= score of less than 2	No risk	67.5%	64.2%
Q. 12 Watches TV while eating.			
	Potential risk	6.4%	18.4%
Risk cut point= score of 2 or less	No risk	93.7%	81.6%
Q. 13 Intake of supplements (multi-vitamins, iron, cod liver oil).			
	Potential risk	23.2%	32.9%
Risk cut point= score of 2 or less	No risk	76.7%	67.1%
Q. 14 Physical activity.			
	Potential risk	12.4%	20.8%
Risk cut point= score of less than 2 [ie. = 0]	No risk	87.6%	79.2%
Q. 15 Screen time.			
	Potential risk	73.6%	64.4%
Risk cut point= score of 0	No risk	26.4%	35.6%
Q. 16 Comfortable with growth.			
	Potential risk	1.9%	11.1%
Risk cut point= score of less than 2 [ie. = 0]	No risk	98.1%	88.9%
Q. 17 Weight.			
	Potential risk	4.5%	21.3%
Risk cut point= score of less than 2 [ie. = 0]	No risk	95.5%	78.7%

Within the potential nutrition risk category (i.e. question score equal to or greater than the cut points), a high prevalence of potential nutrition risk has been defined as $\geq 25\%$ and a very high prevalence of potential nutrition risk has been defined as $\geq 50\%$. Based on the data from Table 1, the following summarizes high and very high prevalence of potential nutrition risk for Elgin St. Thomas preschoolers versus Ontario by question:

High proportion ($\geq 25\%$) of answer scores within the potential risk category

- Question 2: Number of Milk and Alternatives (28.7%); Ontario comparator (36.8%).
- Question 3: Number of Fruit Servings (45.9%); Ontario comparator (54.5%).
- Question 4: Number of Vegetable Servings (33.8%); Ontario comparator (46.4%).
- Question 5: Number of Meat and Alternatives (27.7%); Ontario comparator (42.7%).
- Question 6: Consumption of Fast Food (44.3%); Ontario comparator (12.6%).
- Question 11: I let my child decide how much to eat (32.5%); Ontario comparator (35.8%).

Very high proportion ($\geq 50\%$) of answer scores within the potential risk category

- Question 1: Number of Grain Products (70.1%); Ontario comparator (61.4%).
- Question 15: Screen Time (73.6%); Ontario comparator (64.4%).

5.0 Nutrition Risk by Question - Highlights

From Table 1 and the above prevalence summary, the questions that assess preschooler adherence to Canada's Food Guide (CFG) show that a high prevalence of preschoolers in Elgin St. Thomas are not eating a balanced diet according to the Health Canada guidelines. The greatest deviations are with the grain products (70.1% potential risk; considerably higher than the Ontario risk at 61.4%); fruit servings (45.9% at potential risk); and vegetable servings (33.8% at potential risk).

Based on the data and Ontario comparators, Elgin St. Thomas preschoolers are at particular risk for their very high consumption of fast food (44.3% at potential risk for Elgin St. Thomas preschoolers versus only 12.6% for Ontario preschoolers).

An unexpected observation from the data is that only 9.9% of Elgin St. Thomas caregivers reported food insecurity risk (potential risk 9.9% for Elgin St. Thomas Preschoolers versus Ontario preschoolers at 24.6% potential risk).

Although similar to Ontario, the data suggests that parents may be exerting undue influence on their child's decision on how much to eat (potential risk 32.5% for Elgin St. Thomas preschoolers).

The data shows a significant concern with Elgin St. Thomas preschoolers and the time they spent using screens. Although it is a problem province wide, Elgin St. Thomas preschoolers are at particular risk (potential risk for Elgin St. Thomas preschoolers 73.6%; for Ontario preschoolers 64.4%).

Another observation of interest is that the vast majority of Elgin St. Thomas caregivers answering the preschool NutriSTEP® screen are comfortable with how their preschooler is growing (potential risk only 1.9% for Elgin St. Thomas preschoolers versus Ontario preschoolers at 11.1%) and comfortable with their preschooler's weight (potential risk only 4.5% for Elgin St. Thomas preschoolers versus Ontario preschoolers at 21.3%).

6.0 Discussion

6.1 Implementation and Data Collection

The total number of paper Preschool NutriSTEP® screens collected and analyzed in 2017 was quite satisfactory for seeing some trends within our preschool community (314 screens). The gender divisions of 50.3% male and 49.7% female preschoolers aligns with the Dietitians of Canada 2017 Preschool Ontario Data showing 52.3% male and 47.7% female.

The most successful avenue for screening preschoolers was through kindergarten registration. The 'Healthy Babies Healthy Children' setting did not have a large number of completed screen, but this can be explained by the relatively low numbers of preschool aged children rostered in that setting (the vast majority of their clients are babies and toddlers). Although the numbers are too small to conclude unequivocally, it is hypothesized that the preschool questionnaires done through the 'Healthy Babies Healthy Children' setting would have been more successful at reaching our priority population, so that makes them worthwhile doing.

The administration of the paper preschool NutriSTEP® through kindergarten registration was labour and resource intensive. Data entry using the paper tool for both settings is also very time consuming, prohibiting our ability to increase the number of children screened within other settings. Now that it appears that the online version reports will continue to be made available through Dietitians of Canada, we need to look at alternate implementation methods (e.g., targeted online screening through the use of iPads for HBHC clients, universal promotion of Nutri-eSTEP® through kindergarten registration). With this strategy, we would have greater capacity to add toddler NutriSTEP® to the 'Healthy Babies Healthy Children' setting and increase the number of settings (e.g. targeted on-line screening using iPads in oral health screening clinics). By screening children earlier, we may be able to circumvent some poor lifestyle habits from forming in the preschool years.

6.2 Overall Risk Score

Elgin St. Thomas Public Health is very concerned that the overall risk scores are vastly different from Ontario and also much different from the prevalence calculated in the original NutriSTEP® research (9). This difference in risk prevalence, especially when combined with only 9.9% reporting potential risk for food insecurity in Elgin St. Thomas (knowing that 1 in 5 children live in poverty in the region), suggests that our methods for data collection may be more appealing to the higher income, higher educated parents who may be more likely to afford healthy food. This suggests that more targeted NutriSTEP® screening strategies should be used and efforts in universal strategies should be decreased.

6.3 Food Guide Servings and Fast Food

Elgin preschoolers are not consuming a balanced diet according to Canada's Food Guide; this is consistent for all food groups but particularly inadequate for the grain and fruit/vegetable groups.

Grain products, particularly whole grains, are an important source of fibre and contribute carbohydrate, B vitamins (e.g., thiamin, riboflavin, niacin and folate), iron, zinc and magnesium to the diet. A diet rich in whole grains may provide satiety (helping to control appetite), improve bowel function and may help to reduce the risk of cardiovascular disease (10).

The problem of inadequate intakes of vegetables and fruits is not new, so this data confirms this as a major issue. It has been reported elsewhere that the overall fruit and vegetable intake is low among children and youth in Ontario, with average intakes of 4.43 servings a day, with 64% consuming less than 5 servings daily (11,12). Fruit and vegetable intake can help to prevent or lower the risk of non-communicable diseases such as cardiovascular disease, obesity, diabetes and some types of cancer (13). The protective factor of fruit and vegetables on overweight and obesity has been observed in Canadian children and adolescents (2 to 17 years) when consumed five or more times daily (14). Additionally, fruit and vegetables are an important source of vitamins, minerals and dietary fibre, each of which are essential to supporting a child's healthy growth and development (13).

Elgin preschoolers are consuming fast food (defined as food that can be served ready to eat fast) at a much higher prevalence than their Ontario counterparts, which is concerning. Fast food does not generally align with Canada's Food Guide since it is typically high in unhealthy fat, salt, and sugar and low in vegetables and fruit. These factors may contribute to obesity and other chronic diseases such as high blood pressure (15). The causes for rising fast food intake among families appears to be a response to time challenges, rising availability of fast food that is relatively cheap and convenient, gaps in food skill knowledge among parents, and pressure on parents to purchase fast food as the result of insidious food and beverage marketing to children (1, 16, 17).

Ontario's 'Healthy Menu Choices Act' came into effect on January 1, 2017 (18). This Act was designed to communicate to individuals and families the calories in the food and drinks served within food-service chains with 20 or more locations with the intent to help consumers to make informed choices when eating out (17). It is unknown if individuals and families understand enough of this information to make it useful. Along with investigating why Elgin St. Thomas preschoolers consume particularly high levels of fast-food in general, assessing caregiver knowledge of the new menu boards requires further research.

6.4 Allowing Preschoolers to Decide How Much to Eat

Although not as significant as the Ontario comparator, parents continue to exert undue influence on their preschoolers' food intake. Pressuring children to eat causes them to ignore their internal hunger and satiety cues, disrupting a child's natural appetite control system. This can lead to some children not eating enough and others eating too much. Pressuring children to eat may also increase a child's dislike for that food, resulting in children consuming a more restricted and less nutritionally balanced diet. Finally, restricting food may lead children to have increased preference for the restricted food and increased eating in the absence of hunger, potentially driving excess calorie consumption (19). Campaigns have been done by the health unit to teach local parents the importance of allowing a child to decide how much and what to eat among the healthy foods provided by the family but based on this result another campaign may be indicated ('Trust me. Trust my Tummy' campaign).

6.5 Hours of Screen Time

Although the prevalence of excess screen time among preschoolers is very apparent throughout Ontario, it is especially profound in Elgin St. Thomas. 'Screen time' is the time spent using a screen-based device, such as a smartphone, tablet, computer or TV (20). Although not all screen time is unhealthy (e.g., can be an important way to learn and communicate), excess screen time can be. While the evidence on screen time and its effects on health are still emerging, what is available so far suggests that screen time can harm a child's early development (higher screen time linked to poor brain development, language development and attention skills in the early years)(21), physical health (higher screen time is linked to lower levels of physical fitness, higher weight and higher risks of cardio-metabolic disease e.g., insulin resistance, high blood pressure)(22), and psychosocial well-being (higher screen time is linked to behavioural issues, lower self-esteem and lower psychological well-being)(21).

Young children are especially vulnerable to food and beverage advertising on their screens. Cartoon characters, video and online games, toy giveaways and famous athletes and celebrities pushing unhealthy food and beverages on children and youth greatly influences their food preferences, purchase requests and food choices (17). Meanwhile, eating in front of a screen can lead to mindless or distracted eating and can lead children and adults to consume excess calories and promote unhealthy weight gain. Significant work is being done to advocate for the restriction of commercial marketing of foods and beverages to children and youth. Parents can also counter the detrimental effects of screen time on their child's health by reducing eating and drinking in front of screens, encouraging screen-free family meals, and replacing screen time with other activities (e.g., playing outside, planning and preparing meals, gardening etc.)(17).

Although some recent work has been done by this health unit and the community to address the concerns of excess screen time, these screening scores highlight the need for ongoing resources and attention to this continuing problem.

6.6 Parental Satisfaction with Child's Growth and Weight

Considering that one-third of Canadian children and youth are overweight or obese and Elgin County children and youth follow the same trend, it is of note that most parents completing the preschool screen reported being comfortable with how their preschooler was growing and satisfied with their preschooler's weight. This data suggests a discrepancy between what we know about the population's weight and parental perception and/or knowledge. Previous research has shown that half of parents tend to underestimate their child's overweight/obese status (23), so its possible we are seeing a similar trend with our data. Parental perceptions of their child's weight play an important role in obesity prevention (23).

It is hypothesized that beyond infancy, parents may not be taking their child to their primary care provider for serial weight measurements as recommended. Serial weight measurements by primary care providers at prescribed intervals (once per year after the age of 2) is essential to identifying early growth concerns. Identifying changes to a child's normal growth curve using the appropriate growth charts and followed up with sensitive healthy behaviour approaches could address unexpected growth deviations before they become a problem (24). Using a nutrition screen such as NutriSTEP® could be an excellent tool for identifying health behaviours that could be addressed with the caregiver as the result of unexpected weight changes up or down (9). This data suggests that we may need to do more education to caregivers, and possibly health care providers, with regards to the importance of serial growth monitoring and the weight sensitive behaviour-based approaches needed to manage any identified growth problems.

7.0 Recommendations

7.1 Seek Alternate Data Collection Methods to ensure the most vulnerable in our population are represented (i.e. high/moderate/low nutrition risk more closely aligns with the Ontario averages) but are collected in a manner that would require fewer human and hard copy resources:

- Expand screening to include the toddler NutriSTEP® through the 'Healthy Babies Healthy Children' program in addition to the preschool version; this will ensure that more of our most vulnerable children are targeted for earlier interventions and the region will benefit from the additional surveillance data collected. To create capacity for increased screening, move to the online screening version (Nutri-eSTEP®), using iPads to complete the screens in the homes of HBHC clients.
- Add toddler and preschool NutriSTEP® to the oral health screening clinics; this new targeted approach will ensure more of our most vulnerable Elgin St. Thomas children are reached (families living in poverty, New Canadians). To create capacity for this addition to the oral health screening procedure, complete the online version of the two screens (Nutri-eSTEP®) using iPads in the clinic.
- Switch from the paper preschool NutriSTEP® at kindergarten registration to the general promotion of the online preschool Nutri-eSTEP®. This switch will significantly reduce the costs for both human resources and hard-copy packages and mailed responses (this change has already been implemented for the 2018/19 school year). It frees up staff time and monetary resources to allow for expansion into other programs where high-risk children can be reached.
- Investigate the feasibility of adding an electronic version of NutriSTEP® into the local health care providers 'Electronic Medical Record'.

7.2 Investigate Creative Approaches to Helping Caregivers Plan and Cook Healthy Food at Home while Divesting from a Heavy Reliance on Fast Food:

- Monitor the release of Health Canada's revised 'Canada's Food Guide' (due out in 2018) and plan for extensive education to the caregivers of young children and pertinent partners that are invested in the health of young children (e.g., health care providers, child care centres, schools). Based on the evidence, particular attention should be placed on increasing the vegetable and fruit consumption of young children through education and increased access (e.g., continued support of programs like the Ontario Student Nutrition Program, the Elgin St. Thomas Good Food Box, food gardens and towers in schools).
- Continue to provide programs and services that help parents develop the knowledge, shopping skills and cooking skills needed to choose and prepare healthy, easy to make food in the home more often (e.g. You're the Chef program that emphasizes cooking with vegetables and fruit).
- Help parents understand the *Healthy Menu Choices Act* to give them the knowledge they need to make healthier food selections when visiting food services premises and to drive fast food establishments to improve the food choices for busy families.

- Continue to advocate for restrictions on the marketing of food and beverages to children and encourage parents to do the same.
- Educate people about the risks associated with unhealthy food and beverage consumption through public awareness campaigns.
- Do research to help understand the particularly high intake of fast food among Elgin St. Thomas families (e.g. environmental causes). For example, conduct a review of food and beverage marketing in child-focused settings or review zoning restrictions close to child-focused settings including schools, libraries and recreation centres.

7.3 Refresh the 'Trust Me. Trust My Tummy' Communication Campaign which promotes the psycho-social aspects of feeding young children using the World Health Organization's Responsive Feeding and Ellen Satter's Division of Responsibility (25-26).

7.4 Work with Parents and Partners to Address Excess Screen Time by preschoolers:

- Continue to provide education around the recommended screen time limits to reduce associated health risks.
- Emphasize powering off during important parts of the day like during all meals and snacks and at least one hour before bedtime.
- Teach caregivers and children ways to replace screen time with alternate healthy activities like outdoor play, face-to-face social interaction and other fun and educational activities like learning to cook.

7.5 Investigate Ideas for the Promotion of Regular Growth Monitoring from infants to the teen years. Provide primary care providers with the training and confidence to respond with unbiased, weight sensitive behaviour-based approaches:

- Research actual local practices regarding serial growth measuring trends of caregivers.
- Fill any identified gaps in serial growth monitoring through education to both caregivers and health care providers.
- Research health care providers comfort with interpreting growth trends and addressing any growth difficulties with weight sensitive, behaviour-based interventions.
- Fill any identified gaps in health care providers comfort and knowledge RE: interpreting and addressing growth difficulties.

8.0 Conclusion

Preschool NutriSTEP® screening (2017) in the Elgin St. Thomas region has provided insight into the nutritional status and physical activity practices of local preschoolers. Along with giving health guidance and pertinent referral recommendations to the caregivers that completed the screen, the data collected from the screens will also help to inform our future health unit programs and services. The author does acknowledge, however, that the sample size is relatively small and that the screen may not have captured as many high-risk children as it should have, necessitating the need to investigate alternative settings and delivery models in the future.

9.0 References

1. Healthy Kids Panel. *No Time to Wait: The Healthy Kids Strategy*. 2013. Available from: http://www.health.gov.on.ca/en/common/ministry/publications/reports/healthy_kids/healthy_kids.pdf.
2. Alberta Health Services. *Healthy Eating and School Performance: An Evidence Summary*. Available from: http://school.cbe.ab.ca/School/Repository/SBAttachments/fd2939ac-5b4c-4fe7-8cf3-eab1f2d612a9_AHS-Healthy-Weights-Initiative.pdf.
3. Freedman, D., Khan, L., Serdula, M., Dietz, W., Srinivasan, S., & Berenson, G. *The Relation of Childhood BMI to Adult Adiposity: The Bogalusa Heart Study*. *Pediatrics*, 2005; 115, 22-27.
4. Reilly JJ, Kelly J. *Long-term impact of overweight and obesity in childhood and adolescences on morbidity and premature mortality in adulthood: systematic review*. *Int J Obes (Lond)* Jul 2011; 35 (7): 891-898.
5. Homer CJ, & Baron RJ. *How to scale up primary care transformation: What we know and what we need to know?* *J Gen Intern Med*. 2010; 25 (6): 625-629.
6. US Department of Health and Human Services, Public Health Service, Office of the Surgeon General. *The surgeon general's call to action to prevent and decrease and decrease overweight and obesity*. Rockville, MD: Department of Health and Human Services. 2001.
7. Practice-Based Evidence in Nutrition (PEN). *Toddler and preschool nutrition: key practice points*. 2018. Available from: <https://www.pennutrition.com/KnowledgePathway.aspx?kpid=6750&tkid=20323>.
8. Ontario Food and Nutrition Strategy. *A comprehensive evidence-informed plan for healthy food and food systems in Ontario*. 2017. Available from: https://sustainontario.com/custom/uploads/2017/01/PCC_1939_OFNS_Draft_WEB_AODA.pdf.
9. The Sudbury & District Health Unit. *NutriSTEP® Implementation Toolkit*. 2015. Available from: http://www.nutristep.ca/en/toolkit_resources.aspx#download.
10. Health Canada. *Eating well with Canada's Food Guide: A Resource for Educators and Communicators*. 2007. Available from: <https://www.canada.ca/en/health-canada/services/food-nutrition/reports-publications/eating-well-canada-food-guide-resource-educators-communicators-2007.html>
11. Statistics Canada. *Trends and correlates of frequency of fruit and vegetable consumption, 2017 to 2014*. 2018. Available from: <https://www.statcan.gc.ca/pub/82-003-x/2018001/article/54901-eng.pdf>.
12. Garriguet D. *Nutrition: findings from the Canadian community health survey—overview of Canadians' eating habits*. Ottawa: Government of Canada. 2016. Available from: <http://publications.gc.ca/Collection/Statcan/82-620-M/82-620-MIE2006002.pdf>.
13. World Health Organization. *Fruit and vegetable promotion initiative: a meeting report (Internet)*. Geneva: World Health Organization. 2003. Available from http://www.who.int/dietphysicalactivity/publications/f&v_promotion_initiative_report.pdf.

14. Shields M. *Overweight and obesity among children and youth*. Health Rep. 2006; 17 (3): 27-42.
15. Singh AS, Mulder C, Twisk JWR, VanMechelen W, Chinapaw MJM. *Tracking of childhood overweight into adulthood: a systematic review of the literature*. Obes Rev. 2008; 9 (5): 474-88.
16. Academy of Nutrition and Dietetics. *Total Diet Approach to Healthy Eating*. 2013. Available from [https://jandonline.org/article/S2212-2672\(12\)01993-4/pdf](https://jandonline.org/article/S2212-2672(12)01993-4/pdf).
17. Heart and Stroke. *Protecting our children's health: restricting food and beverage marketing*. 2017. Available from: https://www.heartandstroke.ca/-/media/pdf-files/canada/2017-position-statements/protectingourchildrenshealthrestrictingmarketingtochildren.ashx?la=en&h_ash=B8D7FF2261A612E14A79BA005AE103061E80D156
18. Ontario Regulation. *Healthy Menu Choices Act*. 2015, S.O. 2015, c.7, Sched. 1. 2015. Available at: <https://www.ontario.ca/laws/statute/15h07>
19. Practice-based Evidence in Nutrition. *Toddler and preschool nutrition—influences on appetite and eating behaviour*. Available from: <http://www.pennutrition.com/KnowledgePathway.aspx?kpid=7699&pgcatid=146&pqid=7627>.
20. Tremblay, M., Aubert, S., Barnes, J.D., Saunders, T.J., Carson, V., Latimer-Cheung, A.E. *Sedentary behaviour research network (SBRN)-Terminology consensus project process and outcome*. International Journal of Behavioural Nutrition and Physical Activity 2017; 14:75.
21. LeBlanc, A.G., Spence, J.C., Carson, V., Gorber, A.C., Dillman, C., Janssen, I., et al. (2012). Systematic review of sedentary behaviour and health indicators in the early years. *Appl Physiol Nutr Metab*, 2012; 37 (4): 753-72.
22. Carson, V., Hunter, S., Kuzik, N., Gray, C.E., Poitras, V.J., Chaput, J.P., et al. *Systematic review of sedentary behaviour and health indicators in school-aged children and youth: an update*. *Appl Physiol Nutr Metab*, 2016; 41:S24-S265.
23. Lundahl, A., Kidwell, K.M., Nelson, D. (2014). *Parental underestimates of child weight: a meta-analysis*. *Pediatrics* 2014; 133 (3): 1-15.
24. Dietitians of Canada. *Promoting optimal monitoring of child growth in Canada: Using the new World Health Organization Growth Charts. Collaborative Public Policy Statement*. 2010. Available from: <https://www.dietitians.ca/Downloads/Public/tcg-position-paper.aspx>.
25. World Health Organization. *Guiding Principles for Complementary Feeding of the Breastfed Child*. 2003. Available from: http://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed.pdf
26. Satter, E. *The division of responsibility in feeding*. 2018. Available from: <https://www.ellynsatterinstitute.org/how-to-feed/the-division-of-responsibility-in-feeding/>

Appendix A

Nutrition Screening Tool for Every Preschooler: Page 1

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



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 (✓) 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 4 to 5 times a day
- ₂ 2 to 3 times a day
- ₄ 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 3 times a day
- ₂ 2 times a day
- ₄ Once a day or less

3. My child usually eats fruit:

- ₀ More than 3 times a day
- ₁ 3 times a day
- ₂ 2 times a day
- ₃ Once a day
- ₄ Not at all

Total Score for Page 1

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4. My child usually eats vegetables:

- More than 2 times a day
- 2 times a day
- Once a day
- 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.

- More than 2 times a day
- 2 times a day
- Once a day
- A few times a week
- Not at all

6. My child usually eats "fast food":

- 4 or more times a week
- 2 to 3 times a week
- Once a week
- A few times a month
- Once a month or less

7. I have difficulty buying food to feed my child because food is expensive:

- Most of the time
- Sometimes
- Rarely
- Never

8. My child has problems chewing, swallowing, gagging or choking when eating:

- Most of the time
- Sometimes
- Rarely
- Never

9. My child is **not** hungry at mealtimes **because** he/she drinks all day:

- Most of the time
- Sometimes
- Rarely
- Never

Total Score for Page 2

10. My child usually eats:

- ₄ Less than 2 times a day
- ₃ 2 times a day
- ₁ 3 to 4 times a day
- ₀ 5 times a day
- ₂ More than 5 times a day

11. I let my child decide how much to eat:

- ₀ Always
- ₁ Most of the time
- ₂ Sometimes
- ₃ Rarely
- ₄ Never

12. My child eats meals while watching TV:

- ₄ Always
- ₃ Most of the time
- ₂ 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 Gets enough physical activity

15. My child usually watches TV, uses the computer, and plays video games:

- ₄ 5 or more hours a day
- ₃ 4 hours a day
- ₂ 3 hours a day
- ₁ 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:

Yes

No

17. My child:

Should weigh more

Is about the right weight

Should weigh less

Total Score for Page 4

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.