Nutrition Screening in Preschoolers

Report on the results of the NutriSTEP® Tool

Middlesex-London, 2015-2017

ML
MIDDLESEX-LONDON
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Executive Summary

The Middlesex-London Health Unit (MLHU) promotes and distributes NutriSTEP®, a valid and reliable nutrition risk screening questionnaire for preschoolers aged three to five years old. The tool is used to promote healthy eating in the years when healthy habits are being formed.

Both paper-based (NutriSTEP®) and online (Nutri-eSTEP) questionnaires were completed by residents of Middlesex-London (ML), 2,261 in total, between 2015 and 2017. Registered dietitians and public health nurses administered 541 paper-based questionnaires with clients at a variety of schools and community-based organizations where families gather. Over the same time period, 1,720 questionnaires were completed online by residents of ML using the Nutri-eSTEP tool promoted by MLHU (www.nutritionscreen.ca). The ML questionnaires represented 25% of all Nutri-eSTEP questionnaires completed in the province of Ontario in that time frame.

Paper-based and online data of the completed questionnaires were compared for those who lived in ML area. All ML paper and online results were then combined and compared to the Ontario online results. The results were tested for statistically significant differences.

The proportion of low-risk respondents was higher in the paper-based approach compared to the online local and provincial Nutri-eSTEP results. The combined paper and online results for ML indicated 14% at high risk, which is consistent with the range of children expected to be at high risk in the population (10-17% of the population of young children aged 18 months to 5 years) (NutriSTEP®, 2018).

For those respondents from ML, the most meaningful areas where children were identified as 'at potential risk' were: screen time; number of fruit servings; number of vegetable servings; and, letting the child decide how much to eat. The areas where ML residents showed a significantly higher proportion of children 'at potential risk' than those in the province were: letting the child decide how much to eat; watching TV while eating; and, consumption of fast food. These areas represent potential topics for risk reduction in the population.

The Nutri-eSTEP approach yielded three times as many respondents as the paper-based approach in the 2015 to 2017time frame. Nutri-eSTEP also reached greater proportions of moderate and high risk respondents, more consistent with the population level of risk.

Introduction

MLHU implements NutriSTEP®, a valid and reliable nutrition risk screening questionnaire for preschoolers aged three to five years old. This tool is used by qualified professionals (e.g., public health nurses, registered dietitians) to assess nutritional risk. It is estimated that approximately 10-17% of the preschooler population will be at high nutritional risk (NutriSTEP®, 2018). The long-term health outcomes of the program are to provide: early identification of potential nutrition problems; parent referral to community resources; and, parental nutrition education to promote healthy eating habits in the early years when eating and other health habits are being formed.

Methods

Data was gathered using paper-based and online versions of the questionnaire between 2015 and 2017. Registered dietitians and public health nurses administered paper-based questionnaires with clients at a variety of schools and community-based settings where families gather. Data was also collected online using the Nutri-eSTEP tool. Paper-based and online results of the questionnaires were compared for the Middlesex-London (ML) population from 2015 to 2017. All ML responses from both online and paper sources were combined for the data collection (2015 to 2017) and compared to the Ontario Nutri-eSTEP results. Due to the large contribution of ML data to the Ontario numbers (25%), the Ontario rate excludes responses from ML.

Comparisons were done to detect statistically significant differences between ML and the province of Ontario for nutritional risk areas using chi-square and t-tests.

Results

Overall there were 541 paper copies of the NutriSTEP® questionnaire completed from the time the data was collected starting in 2015 to the end of 2017. Over the same time period 1,720 questionnaires were completed using the online version Nutri-eSTEP (Table 1).

Table 1: Number and percent of NutriSTEP® paper and Nutri-eSTEP questionnaires completed in ML, by year

Year	NutriSTEP®		Nutri-eSTEP	
	Count	Percent	Count	Percent
2015	186	34.4	484	28.1
2016	190	35.1	800	46.5
2017	165	30.5	436	25.3
	541		**1,720**	

Questionnaires were completed in many different settings, including schools and community locations where families gather. About 30% of questionnaires did not have a location recorded, all of which were completed in 2015 (data not shown).

A total of 1,720 Nutri-eSTEP questionnaires were completed by ML residents. The greatest proportion of the responses in ML came from those answering on behalf of three-year-olds. However, those in ML made up a higher proportion of responses on behalf of five-year-olds compared to ON. Mothers were the most likely to respond to the survey in ML. When comparing to Ontario, fathers were more likely to respond but health professionals and child care providers were less likely to respond in ML. The most common method ML respondents indicated they had heard about the tool was through advertising and promotion (56%). ML residents were more likely to have learned about the site from an internet search than those in Ontario.

Table 2: Demographics of respondents of the Nutri-eSTEP questionnaire, ML and Ontario, 2015 to 2017 combined

		Middlesex-London		Ontario (excluding ML)	
		Number (n)	Percent (%)	Number (n)	Percent (%)
Nutri-eSTEP Questionnaires completed 2015-2017		1,720		5,037	
Age	36-47 mo. (3 years old)	704	40.9	2,140	42.5
	48-59 mo. (4 years old)	479	27.8	1,703	33.8
	60-71 mo. (5 years old)*	537	31.2	1,194	23.7
Child's gender	Male	868	50.5	2,650	52.6
	Female	852	49.5	2,387	47.4
Is this your first visit to the site?	Yes	1,618	94.1	4,689	93.1
	No	102	5.9	348	6.9
Who is completing the survey?	Mother	1,488	86.5	4,191	83.2
	Father*	131	7.6	274	5.4
	Other relative	57	3.3	202	4.0
	Health professional^	16	0.9	144	2.9
	Child care provider (e.g. day care)^	11	0.6	145	2.9
	Other	17	1.0	81	1.6
How did you learn about this site?	Friend	121	7.0	329	6.5
	Health Professional	78	4.5	876	17.4
	Internet Search*	431	25.1	918	18.2
	Advertise/Promotion	954	55.5	2,515	49.9
	Other	136	7.9	399	7.9

*Higher in ML and statistically significant compared to ON
^Lower in ML and statistically significant compared to ON

The paper-based approach in ML yielded a higher proportion of respondents with a low risk score (76.5%) compared to the ML Nutri-eSTEP responses (63.5%). This difference was statistically significant. When all of the paper and electronic responses from ML were combined and compared to the Ontario Nutri-eSTEP results, ML showed a significantly higher proportion of low-risk respondents.

However, it should be noted that the overall rates of high-risk preschoolers in ML (14.6%) was in the expected range of high-risk preschoolers in the population of 10-17% (NutriSTEP®, 2018).

Table 3: Comparison of overall risk score between different methods of administration of the questionnaire, Middlesex-London and Ontario, 2015 to 2017 combined

| | | Middlesex-London | | | | | | | Ontario (excluding ML) | | |
| | | Paper Copy | | Nutri-eSTEP | | | Paper + Nutri-eSTEP | | Nutri-eSTEP | | |
	Answer Option	Number (n)	Percent (%)	Number (n)	Percent (%)	Statistically Significant Difference (paper vs. Nutri-eSTEP)	Number (n)	Percent (%)	Number (n)	Percent (%)	Statistically Significant Difference (ON vs. ML)
Total		541	100.0	1,720	100.0		2,261	100.0	5,037	100.0	
Overall risk level scored											
20 or less	Low	414	76.5	1,093	63.5		1,507	66.7	3,010	59.8	
21-25	Moderate	79	14.6	346	20.1	Yes	425	18.8	965	19.2	Yes
26 or more	High	48	8.9	281	16.3		329	14.6	1,062	21.1	

The elements of the NutriSTEP® questionnaire with the highest proportion of children at risk in ML were:

- Number of grain products (66.9%)
- Screen time (56.4%)
- Number of fruit servings (52.5%)
- Number of vegetable servings (44.1%)
- Letting the child decide how much to eat (39.4%)

The areas where ML residents showed a significantly higher proportion of children at risk than those in the province were:

- Number of grain products (66.9 vs. 60.1%)
- Watching TV while eating (25.3 vs. 17.4%)
- Consumption of fast food (16.5 vs. 12.2%)
- Letting the child decide how much to eat (39.4% vs. 35.4%)

Table 4: Proportion of children at potential risk by NutriSTEP® question, Middlesex-London and Ontario, 2015 to 2017 combined

NutriSTEP ® Question*	ML (Paper & Nutri-eSTEP)	ON (Nutri-eSTEP)
	% at potential risk$^\alpha$	
Number of grain products*	66.9	60.1
Number of Milk and Alternatives	34.3	35.6
Number of fruit servings^	52.5	55.6
Number of Vegetable Servings	44.1	46.3
Number of Meat and Alternatives^	38.6	41.9
Consumption of Fast Food*	16.5	12.2
Food Security^	20.0	22.8
Problems chewing, swallowing, gagging or choking when eating^	5.4	8.1
Not hungry at mealtimes because he/she drinks all day	23.9	25.8
My child usually eats	16.0	17.5
I let my child decide how much to eat*	39.4	35.4
Watches TV while eating*	25.3	17.4
Intake of supplements (multi-vitamins, iron, cod liver oil)	34.1	34.2
Physical Activity^	18.4	22.8
Screen time^	56.4	65.2
Comfortable with growth^	6.3	12.4
Weight^	15.7	21.9

$^\alpha$The cut points from NutriSTEP® questionnaire are used to identify potential nutrition risk; this report uses terminology of Potential Risk/No Risk to identify scores above and below cut points
*Higher in ML and statistically significant compared to ON
^Lower in ML and statistically significant compared to ON

Discussion

NutriSTEP® is a tool that is available across Canada at www.nutritionscreen.ca and promoted at the local level to understand nutrition risk in the preschool population. It also provides parents and caregivers with feedback and resources to assist them in making positive changes in the eating habits of their preschoolers.

MLHU developed a strategy for parents to complete the paper tool in person at community locations such as schools and Family Centres. Using social media campaigns, the Middlesex-London Health Unit also successfully promoted use of the online Nutri-eSTEP tool from 2015 to 2017. The responses in ML were 25% of the total responses in Ontario, ranging from 19% to 27% across the three years. This is a higher than average uptake in ML compared to Ontario and more than 3 times the number completed in paper format.

Of the ML parents who completed the NutriSTEP® survey, 53% indicated that her or his preschooler was not eating enough fruit (2 times per day or less). Similarly, 44% of preschoolers were not eating enough vegetables (once per day or less). Diets high in vegetables and fruit are associated with many health benefits and parents are encouraged to offer a variety of raw and cooked vegetables and/or fruit at most meals and snacks.

The results also showed that 17% of the ML preschoolers who responded ate fast food one or more times per week compared to 12% in Ontario. Restaurant meals are often low in nutritional value with higher amounts of fat, sodium and sugar. The healthier choice is for parents to offer simple healthy meals at home.

The ML data revealed that 25% of preschooler respondents ate their meals while watching TV. The use of screens during meals can negatively impact food choices. It can also lead to overeating causing people to tune out hunger and satiety cues. Sharing meals provides families an opportunity to talk with children about their day, role model healthy eating behaviours and demonstrate family traditions. It also teaches children about healthy foods choices. Overall, 56% of ML preschoolers who responded were using screens 3-5 or more hours per day, while the Canadian recommendation for screen time for preschoolers should be limited to 1 hour per day.

About 40% of ML parents who responded reported not letting their child decide how much to eat at meals and snacks. The division of responsibility of eating encourages parents to choose where meals will be served, what foods to serve to their children, and when meals and snacks will take place. It is the child's decision whether or not to eat and how much they need to eat. It is critical for parents to trust a child's hunger and fullness cues.

Note that although 66.9% of preschoolers in ML were found not to be eating the recommended number of grain products per day, this was excluded as a meaningful result. There may have been perceived confusion about the question with respect to the specific examples provided (e.g., bread, cereal, pasta, rice, roti, and tortillas). These examples may not be representative of other grain based foods that preschooler may be consuming (e.g., more processed grains like crackers, grain based bars, cookies etc.) and therefore may under represent grain intake. If in fact preschoolers are eating more processed grains, the goal is a shift toward an emphasis on whole grains.

Limitations

While the in-person process was undertaken to reach children at high risk, the results showed a lower proportion of high-risk preschoolers than expected. The reasons for this could be due to lower recruitment of high-risk individuals or respondents responding favorably to questions, even if not true. When completing a survey about practices that are considered healthy or unhealthy in the presence of a health care provider, respondents may be less likely to indicate that their child engages in the unhealthy practice. This could partly explain why those answering online were more likely to show a moderate- or high-risk score compared to those who completed the form with a registered dietitian or public health nurse present. The Nutri-eSTEP results are more consistent with the expected population level of risk. In

addition to reaching greater proportions of moderate- and high-risk respondents, the use of Nutri-eSTEP online yielded three times as many respondents as the paper-based approach.

The people who completed the survey were not selected using a sampling strategy to ensure representation of the whole population. The results represent those who answered the survey but cannot be generalized to the whole population of ML. However, these results may be useful to inform future public health messaging and programming.

Conclusions

The findings presented in this analysis of the data assisted in delineating the most cost effective and successful method to promote the NutriSTEP® screen in Middlesex-London. Nutri-eSTEP results are more consistent with the expected population level of risk and proved to be more effective and efficient in garnering participation from the local population.

Given the significant staff resource requirements to administer NutriSTEP® in our community and a decreased ability to reach higher risk people with this strategy, moving forward, the Middlesex London Health Unit will focus on the promotion of the online Nutri-eSTEP tool. Targeted paper-based administration will be reserved for populations without access or ability to complete the online questionnaire.

Although the nutrition-related findings cannot be generalized to the to the entire ML preschooler population, these results are useful to inform future public health messaging and resource development about preschooler nutrition.

References

NutriSTEP®. (n.d.). Retrieved November 13, 2018, from http://www.nutristep.ca/en/about.aspx.