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Development and testing of an online training module on celiac disease for public school personnel

UH 498: Honors Thesis Project

Undergraduate Student: Nancy Childers

Faculty Advisor: Dr. Melissa Hansen-Petrik, PhD, RD, LDN

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BACKGROUND

Celiac disease, a disorder affecting the small intestine and characterized by a destructive autoimmune reaction to gluten, occurs in approximately one out of every one-hundred thirty-three people in the United States, many of whom are children (1). However, the vast majority of those with celiac disease are undiagnosed (1). With the development of screening tools such as blood testing and intestinal biopsies, diagnoses are now made earlier, many times in young children who are suffering from symptoms such as abdominal pain, constipation, diarrhea, weight loss, and fatty stools (1). This diagnosis requires life-long adherence to a gluten-free diet, which presents challenges in the school environment where school personnel, including teachers and foodservice workers, may be unfamiliar with the dietary restrictions. In order to provide a safe gluten-free school environment for these children, school personnel must be knowledgeable regarding celiac disease and the gluten-free diet and lifestyle. However, training opportunities specific to the school environment are not readily available or convenient to school personnel. This project aimed to address this gap by undertaking the development of an online training module that covers basic information about celiac disease and the gluten-free diet and lifestyle specifically designed to meet the needs of school personnel.

INTENDED AUDIENCE

This online training module was developed for use by all public school personnel working with children who have celiac disease. This includes, but is not limited to, teachers, nurses, foodservice personnel, administrators, and school volunteers.

OBJECTIVES

The objectives of this project were 1) to provide a celiac disease training tool for school personnel by developing a brief (twenty minute) online training module (see appendix A) that includes basic information about celiac disease and the gluten-free diet and lifestyle and 2) to evaluate the effectiveness of this training tool using a post-test to quantify knowledge level after module completion.

MODULE LEARNING OBJECTIVES

The objectives for the completed online learning module were: 1) describe celiac disease and how it differs from gluten sensitivity and wheat allergy, 2) define gluten and dietary sources of gluten, 3) identify gluten-free foods that are safe to eat with celiac disease, 4) describe cross-contamination and how to avoid it, 5) identify hidden sources of gluten, and 6) identify ways to best support the needs of children with celiac disease.

METHODS

Module Development | Key stakeholders within the local school system, a registered dietitian with expertise in celiac disease, a pediatric psychologist, and a faculty member in the UT Nutrition Department with expertise in clinical nutrition were consulted during conceptualization and all phases of development of the online learning module. The narrated learning module was developed in Adobe Captivate for posting on a pediatric gastroenterology website with a link from the school system web page for easy access by public school system employees.

Evaluation| The module includes a brief online survey and twenty-three item optional post-test to provide participants with feedback and to help the researcher evaluate quality and potential need for module modifications. Post-test questions were developed based on the six learning objectives and were reviewed for content and design by the registered dietitian and faculty advisor. A self-rating of celiac disease knowledge prior to module completion is included to provide some indication as to effectiveness of the module itself.

Implementation| A link to the training module will be available on the GI for Kids, PLLC, website, which is a local pediatric gastroenterology clinic that provided support to this project. Data collection is set to begin at the start of the 2012-13 academic year, when school administrators and personnel will be notified of module availability through intra-school system email notifications by the foodservice director. Data collection will continue through the 2012 calendar year.

Approval| Approval for this project was granted by the University of Tennessee Institutional Review Board and by the public school system prior to implementation.

RESULTS

The post-test results, which will be collected in fall 2012, will provide an indication as to the effectiveness of this learning module. This information will also inform the researchers about the general effectiveness and feasibility of using online training modules as teaching tools for public school system employees. Results will be stratified based on gender, age, position in the school system (teacher, nurse, administrator, foodservice employee, volunteer, etc.), type of school affiliated with (elementary, middle, high school), and self-rated prior knowledge of celiac disease. Additionally, basic descriptive statistics will be used to evaluate overall post-test performance and performance on questions linked to each of the learning objectives.

DISCUSSION

This study employs a pre-experimental design and therefore is not able to establish a causal relationship between completion of the learning module and knowledge ascertained by post-test performance. However, results will indicate the utility of further exploring training modules as a time efficient and effective means by which to educate public school personnel on a variety of topics. Celiac disease is an emerging and important issue for individuals who work with children, but it is rarely addressed to this target audience. A training module is a tool that may have the potential to meet this need in a manner that encroaches minimally on the time and schedules of public school personnel.

REFERENCES

1. National Digestive Diseases Information Clearinghouse (NDDIC). Celiac disease. Available at: <http://digestive.niddk.nih.gov/ddiseases/pubs/celiac/#symptoms>. Accessed on April 27, 2012.

ACKNOWLEDGMENTS

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Appendix A: Learning Module Slides

Celiac Disease:
An educational module for school personnel

Learning Module developed by
Nancy Childers

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Jon Dickl, MBA, SNS Director, School Nutrition Knox County Schools	Melissa Hansen- Petrik, PhD, RD, LDN Clinical Assistant Professor The University of Tennessee	Lisa Wagoner, RN, BSN, NCSN Supervisor Health Services Knox County Schools

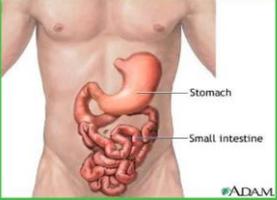
- ### Learning Objectives
- 1) Describe Celiac Disease and how it differs from gluten sensitivity and wheat allergy.
 - 2) Define gluten and dietary sources of gluten.
 - 3) Identify gluten-free foods that are safe to eat with Celiac Disease.
 - 4) Describe cross-contamination and how to avoid it.
 - 5) Identify hidden sources of gluten.
 - 6) Identify ways in which you can best support the needs of children with Celiac Disease.

Celiac Disease

What is Celiac Disease?

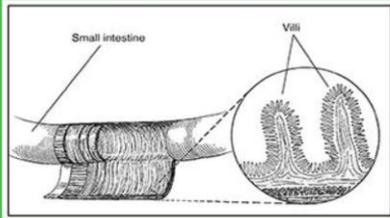
Celiac Disease

Celiac Disease is a chronic (life-long) digestive disease that affects the small intestine.



- ### What causes celiac disease?
- A genetic background that makes someone prone to celiac disease combined with gluten, a component of many foods
 - In these individuals, the immune system responds to gluten by attacking the small intestine, resulting in:
 - Damage to the small intestine
 - A variety of symptoms

Celiac Disease



Celiac Disease

Celiac Disease can be diagnosed several ways...

- Genetic Test: CANNOT diagnose Celiac Disease, but it can let you know if you're more likely to develop Celiac Disease.
- EGD and/or Colonoscopy and Biopsy: The doctor looks at the small intestine and takes a sample. This test CAN diagnose Celiac Disease and is the "gold standard".

Gluten Sensitivity and Wheat Allergy

- Gluten Sensitivity:
 - NOT the same as Celiac Disease
 - Symptoms are present, but there is no damage to the small intestine
- Wheat Allergy:
 - NOT the same as Celiac Disease
 - Allergic reaction to wheat only

Gluten

What is gluten?

Gluten

Gluten is a protein that is present in wheat, rye, barley, and contaminated oats.



Gluten's job is to hold the product together, much like glue holds things together.

The Gluten-Free Diet

What is Safe to Eat?

The Gluten-Free Diet

- Only treatment for Celiac Disease
- Gluten (even in the smallest amount) causes damage to the small intestine
- The gluten-free diet is a NECESSARY lifestyle change.



Ingredients List



The ingredients list is an essential tool in managing a gluten-free diet.

- 1) Know which foods are "safe" and "unsafe".
- 2) Read the ingredients list on all pre-packaged foods and food items.

Basic Guidelines

- Avoid wheat, barley, rye, or contaminated oats.
- Do not get comfortable with food products
- Call the manufacturer
- For more tips: http://www.csaceliacs.info/label_reading_1_01.jsp



What is "unsafe"?



- "Safe" and "unsafe" food lists can be found on the internet, in books, at the doctor's office, and in educational handouts.
- This module provides a list of "unsafe" foods and "safe" foods, but these lists should not be considered comprehensive.

The Gluten-Free Diet

The following GRAINS contain gluten and should be avoided...

Barley	Barley Malt	Bran	Bulgar	Couscous
Durum	Einkorn	Emmer	Farina	Faro
Graham Flour	Kamut	Matzo Flour/Meal	Orzo	Panko
Rye	Seitan	Semolina	Spelt	Triticale
Udon	Wheat	Wheat Bran	Wheat Germ	Wheat Starch

The Gluten-Free Diet

The following FOODS should be avoided...

All-Purpose Flour	Bread	Buns	Cake/ Cupcakes	Cereal	Cheese Sauces	Chocolate with Cream or Cookies	Cookies
Crackers	Doughnuts	Enriched White Flour	Flavorings	Food Coloring (Verify)	Hot Dogs (Verify)	Gravy	Ice Cream (Verify)
Margarine	Malt Vinegar	Mayonnaise	MSG	Parfaits	Pasta Noodles	Pie	Poptarts
Pretzels	Processed Cheese	Salad Dressing	Spices (Verify)	Soup	Spaghetti	Twizzlers	Waffles

“Safe” Grains

The following GRAINS are “safe” to eat...

Amaranth	Arrowroot	Buckwheat
Corn	Flax	Flours made from nuts, beans, and seeds
Millet	Montina	Potato flour
Potato starch	Quinoa	Rice
Rice Bran	Sago	Sorghum
Soy	Tapioca	Teff

“Safe” Foods

- In addition to pre-packaged foods that are labeled “gluten-free”, these FOODS are “safe” for people with Celiac Disease...

Butter	Coke /Pepsi Products	Eggs	Fresh Fruit	Fresh Vegetables
Heinz Catsup	Jams and Jellies	Jello	Jello Pudding	Juice (Verify)
Meat	Milk	Peanut Butter	Popcorn (Verify)	Potatoes

Cross-Contamination

What is it? And how can it be avoided?

What is Cross-Contamination?

Cross-contamination occurs when something from one food product touches another food product and causes it to become contaminated.



Preventing Cross-Contamination

- Purchase two sets of small appliances or cutting boards
- Or, clean small appliances thoroughly after each use
- Do not share condiment jars
- Clean all surfaces and equipment thoroughly
- Wash hands and change gloves
- Educate everyone working with the food



Cross-Contamination in Manufacturing



If you are unsure whether or not a product is “safe”, call the manufacturer.

Ask whether or not gluten-containing foods are manufactured in the same factory as the gluten-free food.

Gluten particles can linger in the air and contaminate gluten-free foods.

Hidden Gluten

Protecting children against gluten in non-food items

Gluten in the Classroom

Gluten is not just found in foods. It can also be found in school and art supplies, such as:



- Play-Dough
- Glue/Glue Sticks
- Finger Paints
- Ink Pads
- Papier Maché
- Silly Putty
- Markers
- Crayons
- Straw
- Colored Pencils

ALWAYS CHECK THE LABELS. If you're not sure about whether or not a product is gluten-free, visit the product's website or call the manufacturer.

Gluten in Hygiene Products

Gluten may be found in some common hygiene products, such as:

- Cosmetics
- Lip Gloss/Balm
- Lotion
- Hair Products
- Toothpaste
- Soap/Body Wash



As always, **CHECK THE LABEL** before assuming that a hygiene product is gluten-free. Call the manufacturer if you're not sure.

Life with Celiac Disease

Helping children to thrive in school with permanent dietary restrictions

Encourage Positive Thinking



- It is normal for the child to miss old foods.
- Allow time for the child to learn & adjust.
- Focus on foods the child CAN enjoy.
- Focus on how much better the child feels.

Play Your Part at School

Parents may request to...

- Meet with the principal, teacher, school nurse, or foodservice director.
- Provide special foods and treats for their child.
- Discuss Celiac Disease-related issues that may arise in the classroom.
- Discuss laws, policies, and procedures that apply to children with chronic illnesses.



Helping Children Address their Peers

For some children, telling peers about their diagnosis is difficult:

-Have the child explain his or her diagnosis as someone would explain an allergy.

-Help the child be assertive.



Teachers

Informed teachers are a powerful source of support:

- Educate yourself.
- Be supportive of the diet. Resist the urge to feel sorry for the student.
- Be in contact with parents and the school nurse.
- Be flexible with bathroom breaks, snacks, and visits to the nurse.
- Know the laws and policies of the school that relate to children with chronic health problems.



School Nurses

School Nurses provide support for students and teachers:

-Educate yourself.

-Be a student advocate.

-Be a parent-teacher liaison.



Foodservice Employees

School Foodservice Employees can help:

- Educate yourself.
- Advocate for gluten-free options and preparation methods.
- Be aware of cross-contamination.
- Set up procedures to ensure safe gluten-free foods.



Resources

Local Resources:

- GI for Kids, PLLC- www.giforkids.com
- Celi-ACT Knoxville- www.celi-act.com

Organizations:

- Celiac Disease Foundation- www.celiac.org
- Columbia University- www.celiacdiseasecenter.columbia.edu
- Celiac Sprue Association- www.csaceliacs.org
- Gluten Intolerance Group of North America- www.gluten.net
- Gluten-Free Drugs- www.glutenfreedugs.com

References

- Celiac Sprue Association:
http://www.csaceliacs.info/label_reading_101.jsp
- National Digestive Diseases Information Clearinghouse (NDDIC):
digestive.niddk.nih.gov/ddiseases/pubs/ceciac_ez
- "Quick Start Diet Guide for Celiac Disease" Gluten Intolerance Group Educational Handout
- "Your Child's Health: Celiac Disease" Educational Packet-GI for Kids, PLLC

This Learning Module is
Complete



Please proceed to the post-test, which
will help you evaluate your level of
knowledge about Celiac Disease: