

Health Literacy in the Hispanic Population

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# DIABETIC HEALTH LITERACY IN HISPANICS

## Introduction

Diabetes affects more than 285 million adults worldwide and is estimated to increase to nearly 440 million people by 2030 (Cavanaugh, 2011). In the United States, over 29 million Americans have diabetes with Latino adults comprising 15%, compared to 9 % of non-Hispanic whites (American Diabetes Association, 2013; Coffman, Norton, & Beene, 2012). The side effects associated with diabetes are complicated leading to blindness, amputations, renal disease, cardiovascular disease, and ultimately premature death (Zhang et al., 2010). As such, diabetes proves to have a lasting impact on the patients and the healthcare system leading to an increase in outpatient visits, the use of more medications, higher propensities to be hospitalized, and a greater chance of utilizing long-term care or emergency services than people without the disease (Zhang et al., 2010). In the United States, people with diabetes spent 2.5 times more on medical care than people without the condition (Zhang et al., 2010). Yet, despite innovations in medical technology that serve to advance our understanding and treatment methodologies, the burden of the disease continues to escalate with treatment often remaining substandard (Cavanaugh, 2011).

While there are many determinants that contribute to the process of care and health outcomes for patients living with chronic diseases, recent efforts over the past two decades have focused on the concept of health literacy as a pivotal determinant to diabetes health outcomes. According to Cavanaugh (2011), "In the United States, it has been estimated that more than 90 million people have basic or below-basic literacy skills and more than 110 million have poor mathematical skills" (p. 191). More specifically, poor health literacy represents a major public health concern for Latinos, who represent the largest and fastest-growing minority population in the United States (Calderon et al., 2014). According to the 2010 U.S. Census, the Hispanic population grew by 43 percent, rising from 35.3 million in 2000 to 50.5 million in 2010, making

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Hispanics the nations largest ethnic minority (Ennis, Rios-Vargas, & Nora, 2011). Furthermore, the *National Assessment of Adult Literacy* (as cited by White et al., 2013), estimates that approximately 66% of Hispanics have basic or below basic health literacy skills. This can likely be attributed to cultural factors and lower socioeconomic status reported among this minority population (Hatcher & Whittemore, 2007). Complicating the situation is that Hispanics tend to be largely *fatalistic* and therefore less inclined to seek out preventative services or any consistent form of professional health care (Larkey, Hecht, Miller, & Alatorre, 2001). As a result, a large knowledge gap concerning the benefits of early detection and prevention exists among those of lower socioeconomic status, and in effect result in less follow-up upon the presentation of symptoms (Larkey et al., 2001).

### **Background and Significance**

Type 2 Diabetes is a progressive and chronic disease that disproportionately affects the Hispanic population (Valen, Narayan & Wedeking, 2012). It is estimated that among Hispanic adults age 20 or older, more than 2.5 million adults are afflicted with this lifelong disease, suffering higher rates of morbidity and mortality than non-Hispanic white individuals (Hatcher & Whittemore, 2007; Valen, Narayan & Wedeking, 2012). According to Hatcher and Whittemore (2007), "Hispanics are 50% more likely to develop diabetic retinopathy, 4.5-6.6 times more likely to develop diabetes related kidney disease, and 1.8 times more likely to suffer from a lower limb amputation" (p. 536).

It is paramount for clinicians and healthcare officials alike to focus efforts and interventions on improving the health literacy of the Hispanic population as a means to bridge the gap in diabetic knowledge and help patients achieve optimal glycemic control. Health literacy can be defined as the degree to which individuals have the capacity to obtain, process,

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and understand basic health information and services needed to make appropriate health decisions (White et al., 2013). Low health literacy has been well documented in Hispanic patients with diabetes (White, et al., 2013). This can make it difficult for patients to comply with written medication, instructions or educational materials (Timmerman, 2006). As such, this population is afflicted by poorer outcomes leading to less than optimal glycemic control evolving into higher instances of retinopathy and other diabetic associated co-morbidities (Timmerman, 2006).

### **Methods**

#### **Setting and Sample**

A convenience sample of 16 Spanish speaking Latinos, ranging in age from 39 to 79 years, whom were diagnosed with type 2 diabetes and had a hemoglobin A1c (HbA1c) greater than 6.0% were interviewed for this descriptive qualitative study. Patients recruits included those living in federally designated medically underserved areas that utilize health care services offered at Clinton Family Health Center, a family practice located in the Spanish sector of Rochester, New York. Exclusion criteria was set to exclude those with moderate or severe cognitive impairment. Recruitment consisted of the clinician's verbal invitation to participate and brief explanation of the research. Lastly, three clinicians were surveyed to assess the patient needs at Clinton Family Health Center.

#### **Data Collection**

Data was collected during patient visits by a nurse practitioner student in patient rooms to assure that confidentiality was maintained. Due to the low literacy rates, structured interviews were used and questions were read aloud to all patients. The demographic data collected, included age, sex, race, years with diabetes, and last HbA1c. In addition, patients answered a

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questionnaire concerning their understanding of the signs and symptoms of hypoglycemia and hyperglycemia, symptom management during illness, the amount of carbohydrates that should be consumed during meals, and lastly questions addressing their understanding of how to properly read a nutrition label. Patients were given immediate feedback on their responses to increase their understanding of proper diabetes management. Lastly, clinicians were surveyed using a 5 point Likert scale to identify the challenges and knowledge deficits encountered when trying to get patients to achieve optimal glycemic control.

### **Results**

The patients were predominantly female (62.5%) with a mean age of 55.7 years. The majority were Puerto Rican (87.5%) with the remainder being Cuban (12.5%). The surveys revealed patients were able to successfully identify and manage bouts of hypoglycemia and hyperglycemia, with 90% being able to accurately report the symptoms and corresponding treatment for hypoglycemia. While the treatment modalities varied, many patients chose to use fruit juice, candy, or a piece of fruit to bring their blood sugar levels to a stable level. Conversely, 62.5% percent of patients were able to accurately identify the signs and symptoms associated with hyperglycemia and treat accordingly. The remaining patients denied having any hyperglycemic symptoms. With respect to diabetic management during sick days, about half of patients (56.3%) were well aware of the need to continue their diabetic medication regimen despite a lack of food consumption. Lastly, all of the patients understood that drinking was absolutely contraindicated as a diabetic, with their knowledge residing on the premise that alcohol proves to be toxic to a diabetic patient.

The survey results concerning the patient's understanding of how to interpret a nutrition label revealed that 81.3% of patients did not know how to accurately interpret a nutrition label.

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The nutrition label utilized included "2 servings per container" to assess if patients were aware of the need to double the amount of carbohydrates when asked to state the *total* amount of carbohydrates present in the item provided. Many were well aware of what serving size represented but were unaware of its association to the number of servings listed and the need to adjust the carbohydrate amount accordingly. Secondly, when asked if they were aware of the amount of carbohydrates they should aim to not exceed during each meal, only one of the patients could report an actual number.

The clinician surveys revealed that the greatest challenge in getting patients to achieve compliance was a lack of time during visits, nutritional knowledge deficits, and a lack of easy to read resources in the patients native language. Additionally, some of the knowledge deficits highlighted by clinicians were related to patients properly understanding portion sizes, meal planning, and how to read a nutrition label.

### **Discussion**

According to the Symptom Interpretation Model (as cited by Coffman, Norton, & Beene, 2012), proper and effective self care of diabetes commences with the ability to recognize and understand the underlying symptoms of diabetes. The patient population surveyed, had an accurate understanding of the symptoms associated with hypoglycemia along with its respective treatment modalities. Many patients cited the common symptoms of "shaking, sweating, and dizziness." While the patients rarely reported following the recommended protocol of checking their blood sugar upon the presentation of symptoms, the majority seemed confident in their ability to recognize their body reaching a hypoglycemic state and treat themselves accordingly by consuming their juice, candy, or piece of fruit. Likewise, patients were also able to accurately

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identify symptoms associated with hyperglycemia and cited taking an additional amount of their insulin as a means of treatment.

The second part of the survey commenced with questions addressing the patients ability to accurately interpret the information presented on a nutrition label. It was during this portion of the survey where the challenges facing this population were quickly realized. When patients were shown a picture of the nutrition label and were questioned if they had seen such a depiction before, their response time was delayed eliciting uncertainty as they responded to the survey questions. The first challenge encountered was due to over 25 percent of patients having poor vision and being unable to clearly see the nutrition label despite its large font size. The second challenge, stemmed from a lack of literacy and being unable to read the content presented. The third challenge was associated with the patients not understanding how to accurately interpret the nutrition label to determine the total amount of carbohydrates despite an ability to read.

The problems facing this vulnerable population and their ability to successfully comprehend the intricacies of a nutrition label are nothing short of a culmination of factors including visual handicaps, literacy issues, and having an elementary understanding of how to interpret a nutrition label. Seeing the limitations of this patient population, it was very apparent why only 1 patient was able to report the amount of carbohydrates that were not to be exceeded per meal. Furthermore, clinicians at Clinton Family Health Center function with an extremely high patient load that comes with not only physical ailments and concerns but with an immense amount of psychosocial issues that must be addressed in a very short time period. In that time clinicians must seek to provide the most essential information concerning diabetes and proper management in a matter of minutes. Often this does not allow for the amount of time necessary to delve into the logistics of properly explaining the appropriate amount of carbohydrates that

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patients should fall below during meal times, as well as the corresponding amount of carbohydrates present in the array of food options available, especially given the inherent level of health literacy and patient handicaps already present in this population.

### **Recommendations**

Provided that majority of patients at Clinton Family Health Center present with low levels of literacy combined with visual handicaps, efforts should be placed on utilizing culturally sensitive visual images and animations as a means of addressing critical topics that prove to be vital in maintaining the wellbeing and livelihood of the diabetic patients. While the majority of patients had a sound understanding of the symptoms and respective management of their hypoglycemic and hyperglycemic states, it would be beneficial for clinicians to continue providing reinforcement regarding the two states, especially hyperglycemia where more patients reported not experiencing any symptoms and treatment modalities were more ambiguous. Secondly, considering the majority of the patient population was well aware of the contraindication regarding the consumption of alcohol as a diabetic, more focus can be placed on relaying the specific adverse effects of alcohol consumption with those that openly admit to binge episodes of alcohol consumption. Lastly, it would be beneficial for clinicians to continue addressing the importance of diabetic medication adherence during times of illness despite a lack of food consumption.

With respect to nutritional education, it can be reasonable for clinicians to focus their efforts in utilizing an array of images that offer size comparisons to allow visualization of appropriate portion sizes. This is especially important with respect to portion sizes concerning their beverage, fruit, and rice consumption. As, many of the patients surveyed expressed their profound appeal for large quantities of orange juice, rice, and a variety of fruits. One patient in

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particular, who has struggled for several years with HbA1c levels greater than 10, presented with a blood sugar greater than 400 the morning of the survey, and admitted to having her glass of orange juice in the morning. Furthermore, if possible, re-establishing monthly nutritional classes that provide the basics tenets of how to interpret a nutrition label for the sole purpose of focusing on carbohydrate amounts can prove to be beneficial for a subset of the population. As many patients, presented with the information were eager to learn about ways to better manage their diabetes and avoid the debilitating consequences resulting from uncontrolled blood sugar levels.

### **Conclusion**

Issues concerning health literacy prove to be important and vital in achieving adequate glycemic control for type 2 diabetics at Clinton Family Health Center. Surveying patients regarding their health literacy helped to uncover areas where knowledge deficits existed and where further resources can be utilized. While the challenges associated with this vulnerable population are deeply rooted, taking time to utilize resources that are culturally appropriate with the use of pictures and animations can allow patients to achieve portion control in a way that is low in complexity and feasible for those with low literacy to comprehend. Addressing the aforementioned criteria will be fundamental for this vulnerable population to close the gap between diabetic mismanagement and the attainment of optimal glycemic control in the near future.

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## Appendix

Table 1. Demographics of patients based on sex, age, race, years with diabetes, and last HbA1c.

<b>Sex</b>	<b>Average Age</b>	<b>Race</b>	<b>Yrs with diabetes</b>	<b>Last HbA1c</b>
Female (10)	55.7 years	Puerto Rican (14)	5.5 years	8.2
Male (6)		Cuban (2)		

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Figure 1.

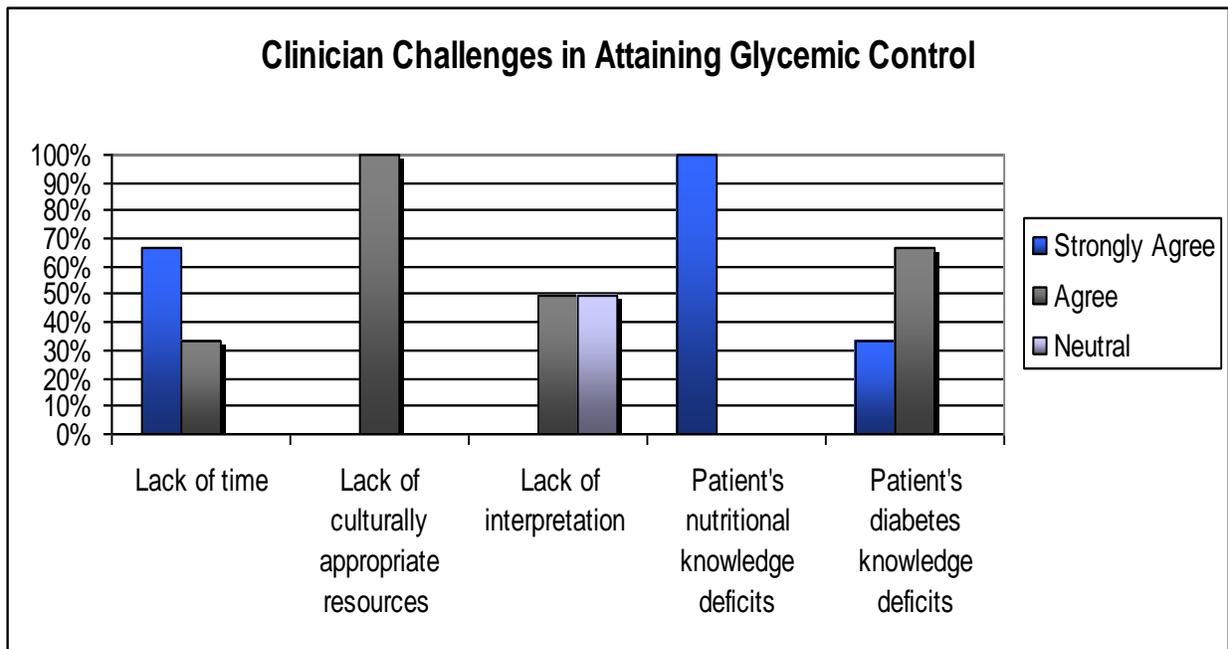
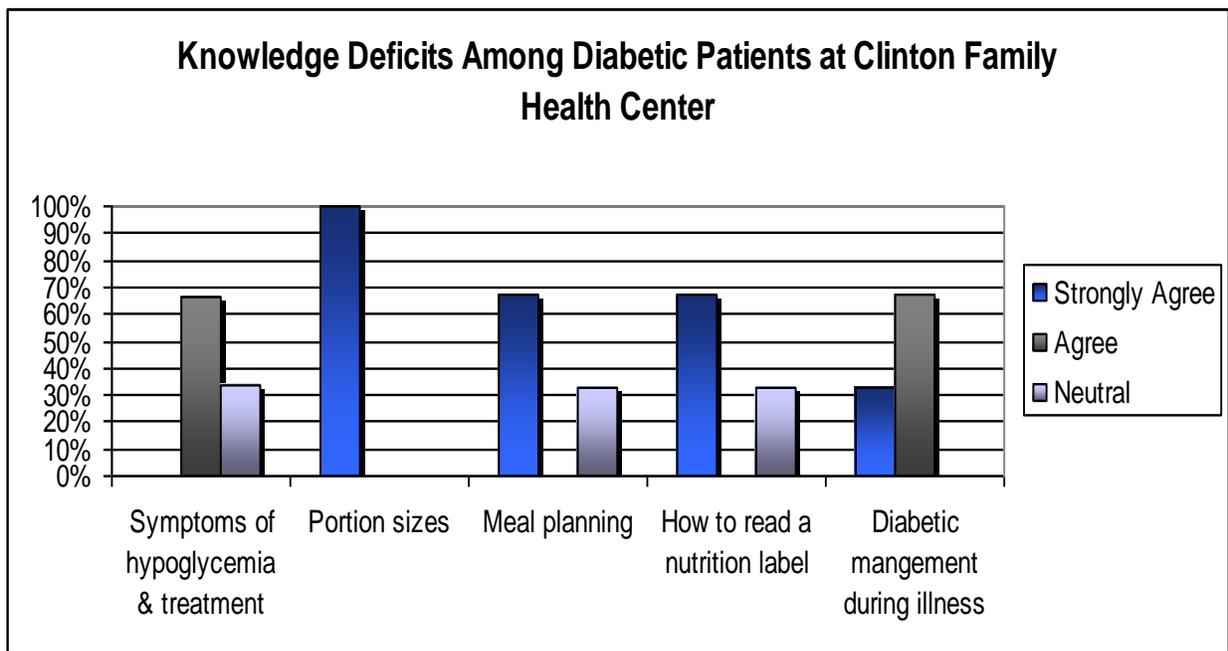


Figure 2.



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Figure 3.

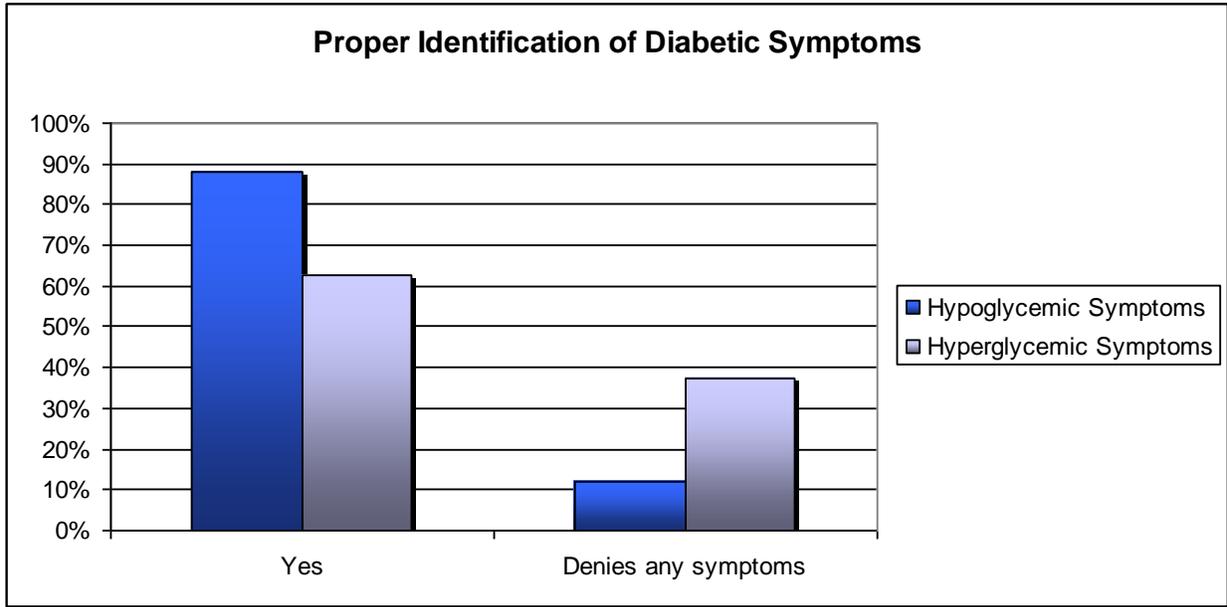


Figure 4.

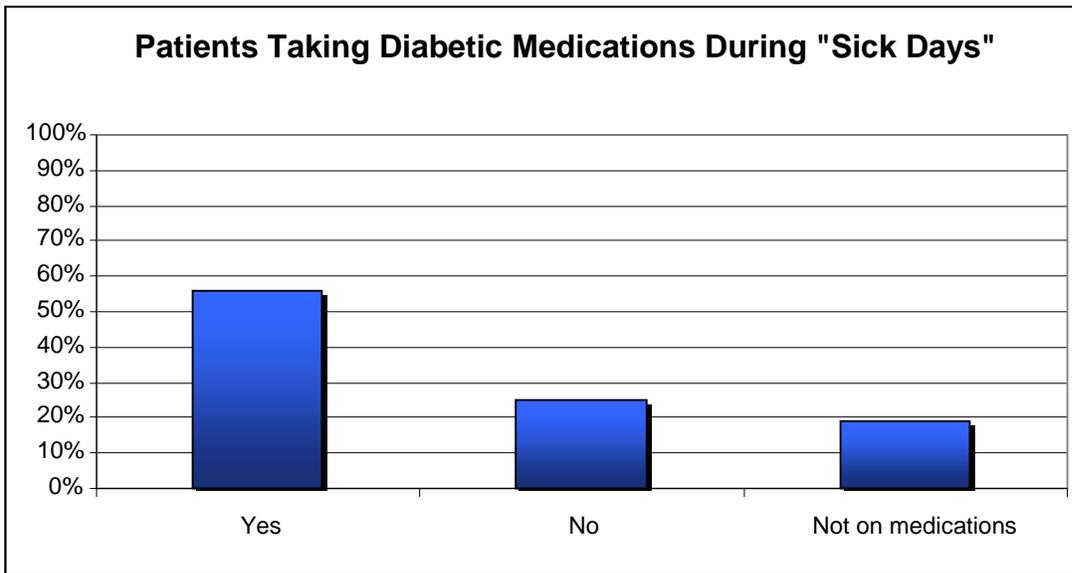


Figure 5.

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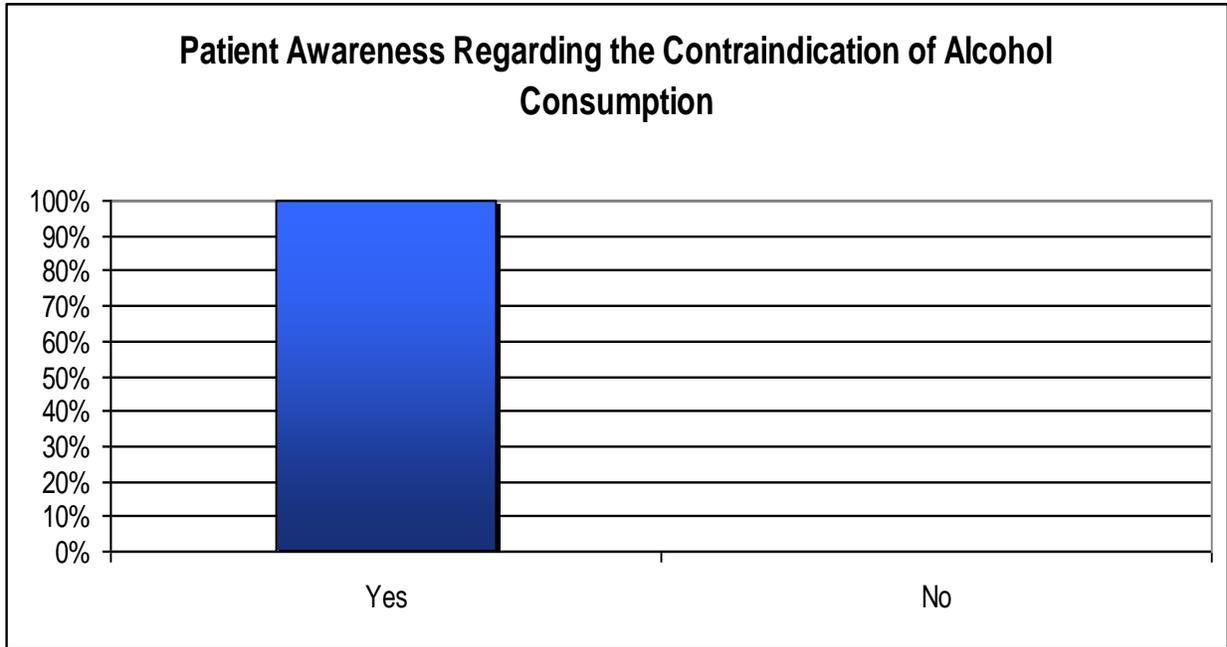


Figure 6.

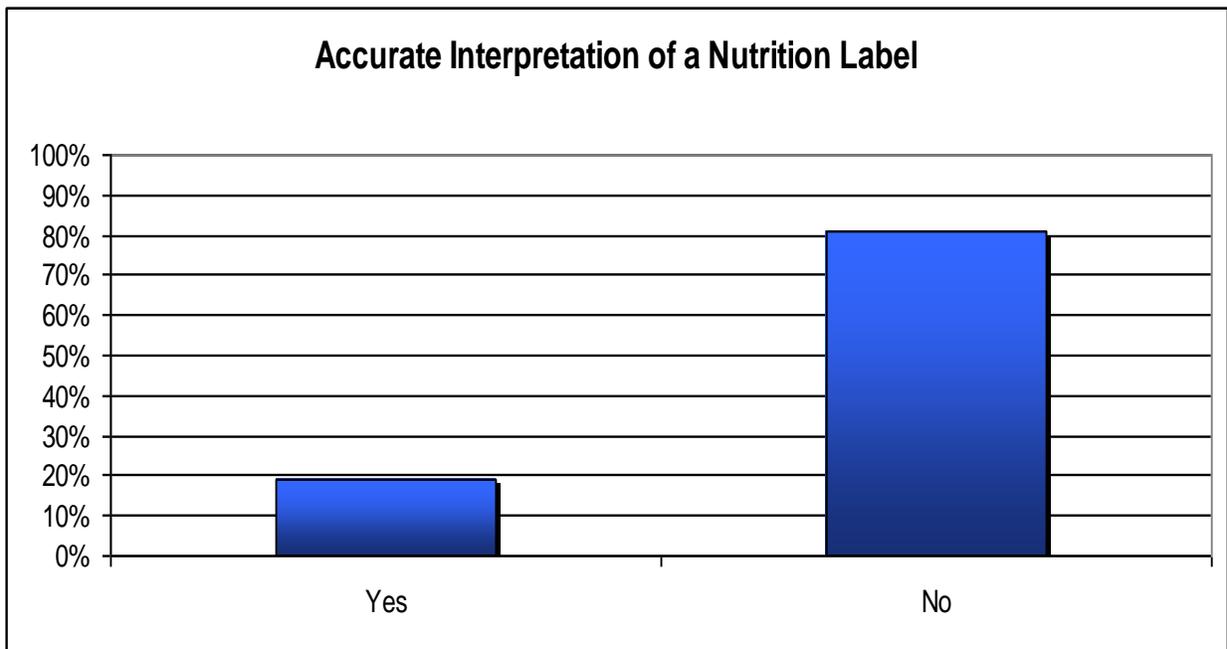


Figure 7.

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