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Effects of Income and Language on Health Literacy: A study between a Student-Run Free Clinic & a Family Medicine Office

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Background

- Health literacy involves the ability to comprehend and apply information from textual, numerical, and document-based sources, such as medication labels and medical forms.[1]
- Unfortunately, over one-third of the US population, accounting for 80 million individuals, exhibit limited health literacy, leading to negative health outcomes and lifestyle choices.[1,2]
- To evaluate health literacy in primary care settings, healthcare professionals use the validated Newest Vital Sign (NVS) assessment, a short survey that can efficiently screen for limited health literacy.[3]
- Rowan-Virtua Community Health Center (RCHC) is a student-run clinic situated in Lindenwold, NJ, which aims to offer primary care services free of cost, irrespective of income, insurance, or legal status.
- By employing the NVS assessment, RCHC sought to compare the health literacy levels of uninsured patients at their facility with those of insured patients at the Rowan Family Medicine (FM) office in Hammonton, NJ. This study aimed to assess specific factors that may influence health literacy levels.

Over 1/3 of the US population exhibit limited health literacy

Limited health literacy can lead to...

- Increased likelihood of visiting the emergency room
- Increased number of hospital stays
- Increased mortality rates
- Increased risk for poor management of chronic diseases

Methods

READ TO SUBJECT:
This information is on the back of a container of a pint of ice cream.

ANSWER CORRECT?
yes | no

1. If you eat the entire container, how many calories will you eat?
   Answer: 1,000 is the only correct answer

2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?
   Answer: Any of the following is correct: 1 cup (or any amount up to 1 cup), half the container. Note: If patient answers "two servings," ask "How much ice cream would that be if you were to measure it into a bowl?"

3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?
   Answer: 33 is the only correct answer

4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?
   Answer: 10% is the only correct answer

READ TO SUBJECT:
Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings.

5. Is it safe for you to eat this ice cream?
   Answer: No

6. (Ask only if the patient responds "no" to question 5): Why not?
   Answer: Because it has peanut oil.

Number of correct answers:

Interpretation
Score of 0-1 suggests high likelihood (50% or more) of limited literacy.
Score of 2-3 indicates the possibility of limited literacy.
Score of 4-6 almost always indicates adequate literacy.

Figure 1: NVS Assessment*

*if pt answered Q1-4 correct, stop survey due to almost certainty of adequate literacy

*If pt answered Q5 incorrect, do not ask Q6

- This is an IRB approved study which surveyed 75 patients enrolled at the RCHC (n = 35) and Rowan Family Medicine Office (n = 40) between February 2021 and March 2023
- After informed consent and demographic information was obtained, patients were given a nutrition label (Figure 2) and verbally answered the NVS Assessment (Figure 1)
- Data was recorded via Qualtrics forms, and analysis was conducted with Fisher's Exact Test in IBM SPSS Statistics

Nutrition Facts
Serving Size ½ cup
Servings per container 4

Amount per serving
Calories 250   Fat Cal 120

%DV
Total Fat 13g — 20%
Sat Fat 9g — 40%
Cholesterol 28mg — 12%
Sodium 55mg — 2%
Total Carbohydrate 30g — 12%
Dietary Fiber 2g
Sugars 23g
Protein 4g — 8%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.
Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

Figure 2: Nutrition Label

Results

- Statistically significant increase in prevalence of limited literacy (score ≤3) compared to adequate literacy (score ≥4) among **patients below the poverty line** (p=0.038) and **Spanish speaking patients** (p=0.041)

- No significant difference between limited literacy (score ≤3) and adequate literacy (score ≥4) based on:
  - RCHC vs. FM office (p=1)
  - Insurance status (p=0.342)
  - Gender (p=0.808)
  - Education level (p=0.18)

score	RCHC	FM	total
0-1	14	11	25
2-3	7	14	21
4-6	14	15	29

Figure 3: Number of patients in each population based on NVP score

Conclusion

- Income below the poverty line and Spanish as a primary language played a significant role in health literacy in our patient population.
- We determined that a language barrier was not a factor in our Spanish speaking patients because an interpreter and a Spanish nutrition label was available.
- Since limited health literacy is highly prevalent in the US, it is important that physicians allot more time to explain medical terms to patients whose primary language is not English or who are from a low socioeconomic status. Additionally, they should utilize simple infographics and pamphlets.[1]
- Limitations: small sample sizes, no current interventions for limited health literacy
- Next steps: RCHC hopes to design and implement a health literacy course for patients.

References

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