Prevalence of Irritable Bowel Syndrome among Medical Students of Puerto Rico

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Objective: Irritable bowel syndrome (IBS) is characterized by chronic abdominal pain and altered bowel habits. A high prevalence has been reported in medical students around the globe. This study aimed to investigate the prevalence of IBS and associated risk factors in medical students in Puerto Rico (PR).

Methods: A cross sectional study was conducted in a sample of medical students from first to fourth year currently enrolled at the University of PR School of Medicine. Participants completed a self-administered, anonymous questionnaire that contained questions about general socio-demographic data, lifestyle habits, degree of subjective psychological stress and the Rome III criteria: IBS Module.

Results: 314 medical students were included for analysis. The mean age was 24.8±3.25; 48.1% were females. The prevalence of IBS was 36.3%. Among the IBS subjects, 78 (24.8%) were classified as IBS mixed. Family history of IBS and psychological stress were significantly associated to IBS (p<0.05), whereas cigarette smoking was found to be protective for IBS (OR = 0.26 + .17, P=.04).

Conclusion: This is the first study to describe the prevalence of IBS in medical students in PR. A higher prevalence of IBS was found as compared to that reported for medical students in other countries. Additional studies aimed at estimating the impact of IBS on quality of life and academic performance of the medical students are essential. [*P R Health Sci J 2021;40:38-44*]

Key words: Irritable Bowel Syndrome, Medical students, Hispanics

Irritable bowel syndrome (IBS) is a gastrointestinal disorder characterized by chronic abdominal pain and altered bowel habits in the absence of any organic cause (1). It is one of the most commonly diagnosed gastrointestinal conditions and it is associated to poor quality of life in patients (2, 3), increased health care costs (4) and high work absenteeism (5). Worldwide prevalence rates range from 9–23% (6). In the United States, the prevalence is around 10 to 15 % (7). In Latin America, the reported prevalence is between 9 and 18% (8).

The clinical presentation and symptoms experienced by patients with IBS include abdominal pain, diarrhea, and/or constipation. These symptoms are non-specific and are common to other gastrointestinal conditions, making the diagnosis of IBS one of exclusion (9). Although diagnostic criteria have not been standardized, several diagnostic tools and criteria have been developed to aid in the detection of IBS. Throughout the years, the Manning criteria, the Rome I criteria, the Rome II criteria and the Rome III criteria have all been used for clinical and investigation purposes. Currently, the Rome III criteria is one of the most commonly used.

Common risk factors for IBS include female gender, younger age, emotional and psychological stress (10), and sleep disturbances (11-12). Interestingly, some studies have reported a high prevalence of IBS amongst particular populations, such as medical students and other health care workers (13).

Furthermore, in recent years, the number of research papers relating IBS to medical students has increased substantially (14-18). This may be due to the uniqueness and lifestyle behaviors of medical students, characterized by unhealthy eating habits, sleep disturbances, long study hours, competition, and overall high stressful conditions (14).

However, there is little data on the prevalence and the associated risk factors of IBS in the population of Puerto Rico, particularly among medical students. Our proposal aimed to investigate the prevalence of IBS in the medical students of the University of Puerto Rico School of Medicine. Moreover, we compared first and second year medical students, who spend most of their time attending to classes and workshops during working hours and have no overnight call, with the third and fourth year medical students, whose schedule revolves mostly on inpatient and outpatient clinical rotations and do have overnight call. Finally, we proposed to determine the relationship between IBS and variables such as age, gender,

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BMI, stress levels and lifestyle habits, such as sleeping hours, smoking, diet and caffeine and alcohol consumption. Data on this topic is necessary and important to further guide research and to improve patient education and clinical practice.

Methods

Study participants. A convenience sample of 314 medical students from first to fourth year, currently enrolled in the University of Puerto Rico School of Medicine, Medical Sciences Campus were recruited during August 2015 to May 2016.

Data collection instrument. A self-administered, anonymous survey was distributed in person to participants. Survey contained questions about general socio-demographic data, including age, gender, weight, height and year of medical school. The survey also included questions about family history, past medical history, and lifestyle habits, including: alcohol consumption, where one drink of alcohol has been defined as a 4-oz glass of wine, an 8-oz beer, or 1 shot of liquor; caffeine consumption, which includes caffeinated coffee, soft cola drinks and energy drinks; smoking status; fast food consumption; and sleeping hours per day. The degree of subjective psychological stress was evaluated using a visual analogue scale (VAS) with responses ranging from 0 (none) to 10 (unbearable). The VAS is well-known in the clinical assessment used empirically to assess stress. The VAS is a suitable tool for clinical activity because it permits the detection of worker distress, the assessment of stress in a rapid and simple way and allows for the detection of collective stress in a group of workers or a high level of stress in a whole organization (19).

IBS was diagnosed according to Rome III Criteria. The Rome III criteria defines IBS as recurrent abdominal pain or discomfort for at least 3 days per month during the last 3 months, associated with two or more of the following features: (a) improvement with defecation, and/or (b) onset associated with a change in frequency of stool, and/or (c) onset associated with a change in form (appearance) of stool. The patients who were diagnosed as having IBS were further categorized into constipation pre-dominant IBS (IBS-C) if they had hard or lumpy stools>25% and loose, mushy or watery stools <25% in the past 3 months; diarrhea pre-dominant IBS (IBS-D) if they had loose, mushy or watery stools >25% in the last 3 months with hard or lumpy stools <25%; mixed IBS (IBS-M) if they had both loose stools >25% and hard stools >25% in the past 3 months and unsubtyped IBS (IBS-U) if insufficient abnormality of stool consistency to meet criteria IBS-C, D, M (20). The sensitivity of the Rome Criteria combined with the absence of red flag symptoms is 65%, specificity is 100%, the positive predictive value is 100% and the negative predictive value is 76%. Although these criteria have not been formally validated, they are the guidelines most frequently used in clinical practice to diagnose IBS. The author RRA reviewed all the surveys and using the Rome III criteria determined the presence and subtypes of

IBS. All study procedures were reviewed and approved by the Institutional Review Board of the University of Puerto Rico Medical Sciences Campus.

Statistical Analysis. For data entry purpose, an electronic survey was prepared using the program EPI-INFO v 7. For analysis purpose the subjects were classified in two groups, based on their year of medical studies: first and second year were on the preclinical students group and third and fourth year students were on the clerkship students group. Descriptive analysis for the distribution of population was conducted. Categorical data was summarized as frequencies with percentages. Continuous data was summarized with measures of central tendency and dispersion. Chi-square (X^2) and t tests were conducted to observe and quantify possible associations between IBS and predictors variables. Logistic regression analysis was also conducted. For all tests, a p value <0.05 was considered statistically significant. Statistical analysis was performed using STATA software v. 11.1.

Results

A total of 314 medical students were included for analysis, 48.1% were females. One hundred thirty-seven (44%) were preclinical students and 177 (56%) were clerkship students. Table 1 shows the demographic and lifestyle characteristics of study participants. The mean age was 24.8 years (±3.25), and the average BMI was 24.8 (±12.27). Family history of

Table 1. General characteristics of study participants

General characteristics	
Age (mean ±SD)	24.79 ± 3.24
Gender (n, %)	
Female	151 (48.1)
Male	163 (51.9)
BMI (mean ±SD)	24.84 ± 12.26
Family history of IBS (n, %)	33 (10.5)
Previous diagnosis of IBS (n, %)	19 (6.1)
Lifestyle Habits	**n (%)**
Sleep hours	
<8 hours/day	281 (89.5)
>8hours/day	33 (10.5)
Fast food	
1-3 times/week	154 (49.0)
>3 times/week	103 (32.80)
No fast food at all	57 (18.2)
Cigarette smoking	
Non-smoker	294 (93.6)
Current smoker	20 (6.4)
Alcohol	
1-3 drinks/week	156 (49.7)
>3 drinks/week	62 (19.8)
None	96 (30.6)
Caffeine	
1-3 drinks/week	187 (59.6)
>3 drinks/week	75 (23.9)
None	52 (16.6)

IBS was reported in 10.5% of the participants and 6.1% of the participants reported that a diagnosis of IBS had been previously made by a physician. Most participants (281, 89.49%) reported sleeping less than 8 hours a day and 154(49.04%) reported eating from a fast food restaurant one to three times a week. In addition, most (294, 93.63%) denied cigarette smoking at present, about 50% (156) reported one to three drinks of alcohol a week, and 60% reported one to three drinks of caffeine intake daily. Stress levels on a scale from 0 to 10 showed a mean of 5.86 + 1.85 in students without IBS and 6.68 + 1.83 in those with IBS (P= 0.002).

The overall prevalence of IBS was 36.3% (33.1% for females and 39.3% males; P=0.291). Among the IBS subjects, 11 (3.50%) were classified as IBS-C, 20 (6.37%) as IBS-D, 78 (24.8%) as IBS-M and 5(1.59%) as IBS-U (Table 2). Although there was no significant difference in the presence of IBS between preclinical and clerkship students (45 of 137 [32.85%] versus 69 of 177 [38.98%], P=0.262) (Table 3), logistic regression showed that third year medical students were more likely to report IBS than the other medical students (Table 4).

Table 2. Frequency of IBS sub-types

IBS Subtypes	N (%)
IBS-Constipation	11 (3.50%)
IBS-Diarrhea	20 (6.37%)
IBS-Mixed	78 (24.84%)
IBS-Unspecified	5 (1.59%)
Total	114 (100%)

Table 3. IBS by medical school year

Medical Student Classification	Current year of medical school	IBS positive n (%)	IBS negative n (%)	P-value
Pre-clinical	First Year	21 (28.4)	53 (71.6)	0.327
	Second year	24 (38.1)	39 (61.9)	
Clinical	Third year	36 (42.4)	49 (57.7)	
	Fourth year	33 (35.9)	59 (64.1)	

Table 4. Odds Ratios for IBS when adjusted for selected sociodemographic and lifestyle variables

Variable	Odds Ratio	[95% CI]	P Value
Years in medical school			
1	1.70	0.82-3.54	0.157
2	2.21	1.10-4.45	0.026
3	1.88	0.87-4.08	0.109
Age	0.95	0.87-1.05	0.321
Gender	1.17	0.71-1.91	0.544
BMI			
Normal	2.03	0.38-10.98	0.410
Overweight	1.48	0.26-8.44	0.662
Obese	2.50	0.40-15.75	0.329
Cigarette smoking	0.26	0.074-0.94	0.040

OR: Odds Ratio; CI: Confidence Interval. BMI: Body mass index. Years in medical school: 1-Second year medical students, 2-Third year medical students, 3-Fourth year medical students

Family history of IBS and psychological stress were significantly associated to IBS (p<0.05). Logistic regression confirmed a protective effect of smoking in relation to IBD (OR= 0.26 + 0.17, P=0.04). When controlling for the variables of year of medical school, age, gender and BMI category, the participants who reported a current smoking status were less likely to have IBS. This finding remained unchanged when stratified by pre-clinical versus clinical years of study.

IBS was not related (p>0.05) to age, gender, BMI, eating habits, exercise frequency, and caffeine consumption (Table 5).

Table 5. Association between IBS and selected characteristics

Characteristic	IBS-Positive n (%)	IBS-Negative n (%)	P-value
Gender			
Female	50 (33.1)	101 (66.9)	0.257
Male	64 (39.3)	99 (69.7)	
BMI			
Underweight	2 (28.6)	5 (71.4)	
Normal weight	75 (38.9)	118 (61.1)	0.492
Overweight	25 (30.1)	58 (69.9)	
Obesity	12 (41.4)	17 (58.6)	
Family members with IBS			
Yes	23 (69.7)	10 (30.3)	<0.001
No	91 (32.4)	190 (67.6)	
Sleep hours			
<8hrs/day	101 (35.9)	180 (64.1)	0.697
>8hrs/day	13 (39.4)	20 (60.6)	
Fast food			
1-3 times/week	60 (38.9)	94 (61.0)	0.219
>3 times/week	39 (37.9)	64 (62.1)	
No fast food at all	15 (26.3)	42 (73.7)	
Cigarette smoking			
Non-smoker	111 (37.8)	183 (62.2)	0.041
Current smoker	3 (15.0)	17 (85.0)	
Alcohol			
1-3 drinks/week	61 (39.1)	95 (60.9)	0.259
>3 drinks/week	17 (27.4)	45 (72.6)	
None	36 (37.5)	60 (62.5)	
Caffeine			
1-3 drinks/week	75 (40.1)	112 (59.9)	0.078
>3 drinks/week	27 (36.0)	48 (64.0)	
None	12 (23.1)	40 (76.9)	
	Mean ±SD	Mean ±SD	
Stress	6.67± 1.81	5.86 ±1.85	0.002

Discussion

This is the first study to describe the prevalence of IBS in medical students in Puerto Rico. The prevalence of IBS found in our study population was higher (36.4%) than that reported for medical students in other countries. For instance, reported prevalence of IBS among medical students from Mexico (24.7%) (21), Saudi Arabia (31.8%) (15) and Beijing, China (33.3%) (17) were all lower than what found in our study. Moreover, when comparing to the general population of North America and other Hispanic groups in both Central and South America, the prevalence rate of IBS in our Hispanic students was also relatively higher. In Venezuela for example,

the prevalence in the general population is around 16% (22). The discrepancy between ethnic groups and geographical areas strongly emphasizes the important role that both genetics and environmental factors, such as dietary habits, play in the manifestation of gastrointestinal symptoms. In addition, access to health care services vastly differs from one region to another (14). Furthermore, when comparing prevalence of IBS, we must take into consideration differences in the diagnostic criteria used for the diagnosis of IBS and cultural effect in understanding standardized questionnaires (23).

One of the most interesting findings of our study is the positive correlation between those diagnosed with IBS using the Rome III criteria and the presence of a family member with the diagnosis of IBS. This association has been observed in several other studies. Locke et al. reported that the relative risk of IBS is twice as high in individuals with a biological relative with IBS (24). In addition, history of abdominal pain or bowel problems in first-degree relatives appears to be associated with both persistent and fluctuating irritable bowel syndrome (25). Although genetics may play a pivotal role in the pathogenesis of IBS, an association between specific genes and IBS is still under investigation. On the other hand, others, for example, attach a more central role to social learning that to the genetics in the development and manifestations of IBS (26).

In our study, psychological stress was significantly associated to IBS. It is well known that stress may lead to dysfunction of the brain-gut axis, which in turn leads to disturbances in gastrointestinal motility, visceral perception, gastrointestinal secretion, intestinal permeability, and intestinal microbiota (27), which in turn leads to abdominal pain and altered bowel habits. This notion has been well documented and described throughout the medical literature. Naeem et al. had demonstrated that medical students who more frequently suffer with mental stress and anxiety are more associated with IBS (16). Popa et al conclude that IBS symptoms are often exacerbated during periods of stressful events (28). It may come as no surprise that medical students report more symptoms of IBS, since they are constantly being exposed to stressful conditions due to a variety of reasons that include extensive study hours, frequent exams, long shifts, high parental expectations, lack of time for recreation, and overall competitive academic conditions, among others (29, 30).

Interestingly, only 6% of our study population reported a previous diagnosis of IBS. This value contrasts significantly with the 36% of prevalence of IBS found in our population using the Rome III criteria. Sayuk et al found that approximately 40 % of individuals who meet diagnostic criteria for IBS do not have a formal diagnosis (31). This substantial difference can be explained by several factors. Community physicians may be unaware or less familiar with diagnostic criteria of IBS, making them unaware or uncomfortable with making the diagnosis based on clinical presentation alone (32). Furthermore, the plethora of gastrointestinal symptoms associated to IBS may make the diagnosis hard to make, since the clinical presentation

may be similar to other gastrointestinal conditions, such as celiac disease and inflammatory bowel disease, among others (33). Lastly, medical students are characterized by low health care seeking rates (34). Barriers associated to health care seeking include lack of time, concerns about confidentiality, assuming the role of the patient while being a student and the stigma associated to certain health problems (35).

Cigarette smoking affects several gastrointestinal functions (36), including secretion, motility and defense mechanisms, reason for which it is involved in the pathogenesis and flares of other gastrointestinal conditions such as gastroesophageal reflux and Crohn's disease (37). However, its role in IBS is not clearly defined. Some studies have shown an association of smoking and IBS (10) while others have failed to document such association (38). In our study population, current cigarette smoking was shown to be protective for IBS. One may argue that the active exercise of cigarette smoking may help to mitigate stress levels. This notion has been well described in the literature. Nichter et al described that cigarette smoking facilitated social interaction in college students and smoking was used to manage stress (39). If smoking helps to cope with stress (40), one of the most important and described risk factors for IBS, this may help to explain the protective effect of active smoking in our study population.

This study has several limitations that warrant consideration. First, our study population was the medical students from the University of Puerto Rico School of Medicine, so the generalizability of our results is limited. Second, data was collected in self-reporting questionnaires, which may lead to a reporting bias. Lastly, due to the nature of the study, logistic constraints prevented studies to rule out organic structural pathology. Notwithstanding these limitations, this is the first study to describe prevalence of IBS in Puerto Rican Hispanic medical students. Our data shows that the prevalence of IBS in medical students from Puerto Rico is significantly higher than that found in medical students of other countries. Additional studies aimed at estimating the impact of IBS on quality of life and academic performance of the medical students are essential. Barriers that limit medical students from seeking help and medical evaluation must also be identified and addressed accordingly. Furthermore, we must provide the necessary tools and mechanisms so that medical students can cope and properly handle the stress associated with medical school. Studies focusing on determining the prevalence of IBS in the general population of PR as well as identifying other associated factors are also needed.

Resumen

Objetivo: El síndrome del intestino irritable (SII) se caracteriza por dolor abdominal y alteración en los hábitos intestinales. Altas tasas de prevalencia se han reportado en estudiantes de medicina de todo el mundo. Este estudio tuvo como objetivo investigar la prevalencia del SII y los factores

de riesgo asociados en los estudiantes de medicina de Puerto Rico (PR). Métodos: Se realizó un estudio de corte transversal en una muestra de estudiantes de medicina actualmente matriculados en la Escuela de Medicina de la Universidad de PR. Los participantes completaron un cuestionario anónimo que contenía preguntas sobre datos sociodemográficos generales, hábitos de estilo de vida, grado subjetivo de estrés psicológico y los criterios de Roma III: Módulo SII. Resultados: Se incluyeron 314 estudiantes de medicina. La edad media fue de 24.8 ± 3.25. El 48.1% eran mujeres. La prevalencia de SII fue de 36.3%. Entre los sujetos con SII, 78 (24.8%) fueron clasificados como SII mixto. Los antecedentes familiares de SII y el estrés psicológico se asociaron significativamente con SII (p <0.05), mientras que fumar cigarrillos fue protectivo (OR = 0.26 + .17, p=.04). Conclusión: Este es el primer estudio que describe la prevalencia del SII en estudiantes de medicina en PR. Se encontró una mayor prevalencia de SII en nuestra población en comparación con la reportada para estudiantes de medicina en otros países. Estudios adicionales dirigidos a estimar el impacto que tiene el SII en la calidad de vida y el rendimiento académico de los estudiantes de medicina son esenciales.

Acknowledgments

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Supplementary Material. Questionnaire

I. General and socio-demographic data
 1. What is your age? _____
 2. What is your gender?
  (1) Male
  (2) Female
 3. How much do you weight? _____ pounds
 4. What is your height? _____ Feet _____ Inches
 5. Currently, in what year of medical school you are?
  (1) 1st year
  (2) 2nd year
  (3) 3rd year
  (4) 4th year
 6. For women: Are you on menopause?
  (1) Yes   (2) No

II. Family and Past medical history
 7. Do you have any family members that have been diagnosed with Irritable bowel syndrome (IBS)?
  (1) Yes   (2) No
 8. Have you ever been diagnosed with Irritable Bowel Syndrome (IBS) by a physician?
  (1) Yes   (2) No
 9. Have you ever been diagnosed with any organic gastrointestinal disorder by a physician?
  (1) Yes ➡ Continue to question number 9.
  (2) No ➡ Skip next question. Continue to question number 10.
 **10.** If yes, what is the diagnosis? _____

III. Lifestyle habits
 11. In average, how many hours do you sleep a night?
  (1) < 8hrs/day
  (2) > 8hrs/day
 12. In average, how many times per week do you eat food from a fast food restaurant?
  (1) 1-3 times/week
  (2) >3 times/week
  (3) No fast food at all
 13. At present, with regards of cigarette smoking, are you a….?
  (1) Non-smoker
  (2) Current smoker
 14. In average, how many drinks of alcohol (one drink of alcohol: a 4-oz glass of wine, an 8-oz beer, or 1 shot of liquor) do you consume a week?
  (1) 1-3 drinks/week
  (2) >3 drinks/week
  (3) None

 15. In average, how much caffeine (1 cup of caffeinated coffee, 1 can of soft cola drink, 1 can of energy drink) do you consume in a day?
  (1) 1- 3 drinks/daily
  (2) >3 drinks/daily
  (3) None

IV. Subjective psychological stress
 16. On a scale from 0 to 10, circle the number that best represents your actual level of psychological stress, with 0 being none and 10 being unbearable.

  0 1 2 3 4 5 6 7 8 9 10
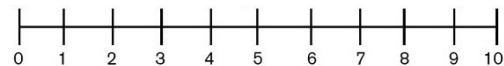
V. ROME III Adult Questionnaire: IBS Module
 1. In the last 3 months, how often did you have discomfort or pain anywhere in your abdomen?
  (0) Never ------------------------➡ Skip remaining questions.
  (1) Less than one day a month
  (2) One day a month
  (3) Two to three days a month
  (4) One day a week
  (5) More than one day a week
  (6) Every day
 2. For women: Did this discomfort or pain occur only during your menstrual bleeding and not at other times?
  (0) No
  (1) Yes
  (2) Does not apply because I have had the change in life (menopause) or I am a male
 3. Have you had this discomfort or pain 6 months or longer?
  (0) No
  (1) Yes
 4. How often did this discomfort or pain get better or stop after you had a bowel movement?
  (0) Never or rarely
  (1) Sometimes
  (2) Often
  (3) Most of the time
  (4) Always
 5. When this discomfort or pain started, did you have more frequent bowel movements?
  (0) Never or rarely
  (1) Sometimes
  (2) Often
  (3) Most of the time
  (4) Always

6. When this discomfort or pain started, did you have less frequent bowel movements?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

7. When this discomfort or pain started, were your stools (bowel movements) looser?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

8. When this discomfort or pain started, how often did you have harder stools?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

9. In the last 3 months, how often did you have hard or lumpy stools?
(0) Never or rarely
(1) About 25% of the time
(2) About 50% of the time
(3) About 75% of the time
(4) Always, 100% of the time

10. In the last 3 months, how often did you have loose, mushy, or watery stools?*
(0) Never or rarely
(1) About 25% of the time
(2) About 50% of the time
(3) About 75% of the time
(4) Always, 100% of the time

RED FLAG QUESTIONS

11. In the last 3 months, how often you noticed blood in your stools?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

12. In the last 3 months, how often have you noticed black stools?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

13. In the last 3 months, how often have you vomited blood?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

14. Have you been told by your doctor that you are anemic (a low blood count or low iron)? (If female, not due to your menstrual period.)
(0) No
(1) Yes

15. In the last 3 months, how often have you taken your temperature and found it to be over 99 degrees Fahrenheit (38 degrees Centigrade) on different days?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

16. In the last 3 months, have you unintentionally lost 10 pounds (45 kilograms)?
(0) No
(1) Yes

17. If you are over age 50, have you had a recent major change in bowel movements (change in frequency or consistency)?
(0) No
(1) Yes
(2) Does not apply

18. Do you have a parent, brother, or sister who has (or had) one or more of the following:
18.1. Cancer of the esophagus, stomach or colon
(0) No
(1) Yes
18.2. Ulcerative colitis or Crohn's disease
(0) No
(1) Yes
18.3. Celiac disease
(0) No
(1) Yes

19. In the past 3 months, how often did you have persistent or worsening hoarseness of the voice?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

20. In the past 3 months, how often did you have persistent or worsening neck or throat pain?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

21. In the past 3 months, how often did you have chest pain on exertion, or chest pain related to heart problems?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always

22. In the last 3 months, how often have you had difficulty swallowing?
(0) Never or rarely
(1) Sometimes
(2) Often
(3) Most of the time
(4) Always