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Validity and Reliability Test of The Indonesian Version of the Gastrointestinal Symptom Rating Scale (GSRS) and Correlation of Sleep Quality, Stress Level, and Diet with Gastrointestinal Symptoms among Medical Students

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Abstract

Background: The prevalence of gastrointestinal symptom in the world (5-11%), Western (10-40%), and Asian countries (5%-30%) is almost half of the entire population. Medical students are a vulnerable group of the general public who have prolonged study hours, reduced hours of sleep and free activities, as well as the many exams that must be passed to be able to graduate. Medical students have higher stress level than other students. This study aims to quantitative validity and reliability test of the Indonesian version-GSRS questionnaire and assess sleep quality, stress level, and diet with gastrointestinal symptom among medical students.

Methods: The research study design is a cross-sectional study and simple random sampling. Other questionnaires used in this research are PSQI to assess sleep quality, MSSQ to assess stress level, and FFQ to assess diet. The data analysed using Kendall's tau_b bivariate correlation test at SPSS version 24 software.

Results: The result from 136 respondents, quantitative validation with item validity method and reliability tests is valid (P<0.05) and reliable (α=0.900) for the Indonesian version-GSRS questionnaire. The majority of respondents had mild severity of gastrointestinal symptom (N=111; 81.6%), bad sleep quality (N=116; 85.3%), moderate stress level (N=56; 41.2%), and excessive dietary pattern (N=65; 47.8%).

Conclusion: The Indonesian version-GSRS questionnaire can be used as an initial measurement tool for symptoms of gastrointestinal disorders in the Indonesian community. There is a relationship between gastrointestinal symptoms and sleep quality, stress level, and diet in medical students.

Keywords: Medical Students, Gastrointestinal Symptom, Sleep Quality, Stress Level, Diet

Conflicts of Interest: None declared
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Introduction

Functional gastrointestinal symptom is disorder of the gut-brain interaction characterized by chronic gastrointestinal symptom, such as abdominal pain, dyspepsia, and diarrhea, in the absence of demonstrable pathology on conventional testing (1). Functional gastrointestinal symptom is very common, with a worldwide prevalence of 40%. Occur more frequently in women than men and decrease with age (2). Two most common gastrointestinal disorders are functional dyspepsia and irritable bowel syndrome (3). The prevalence of functional dyspepsia varies throughout the

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↑What is "already known" in this topic:
Gastrointestinal symptom is correlated with sleep quality, stress level, and diet. Physical and psychological engagement are key assets for medical students in carrying out activities during their studies. The relationship between these variables was examined in this study.

→What this article adds:
These findings indicate that the Indonesian version-GSRS is valid and reliable. Next, there is a relationship between gastrointestinal symptoms and sleep quality, stress level, and diet in medical students.

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world, with the highest rates being 10-40% in Western countries, including the United States (US). Global prevalence ranges from 5-11%. In Asian countries, the prevalence is 5-30% (4). Meanwhile, the prevalence of irritable bowel syndrome is estimated at 8.2–10% in the United States (5). In Europe, the prevalence rate is 1.1–6.1%, with France having the lowest prevalence and England having the highest prevalence (6). Similar studies conducted in Asia showed a prevalence of 20.9%, 12.9%, 4.6%, 5.4%, and 4% in Singapore, Bangladesh, China, Hong Kong, and India, respectively (7).

Wheat and dietary fats may play key roles in the generation of Functional Dyspepsia (FD) symptom and reduction or withdrawal of eased symptom (8). The relationships between diet and dyspepsia complaints are complex and, except for fat, no clear recommendations based on randomized trials can be proposed to patients (9). Upper gastrointestinal symptom is more common in subjects with a higher consumption of spicy foods, younger age, and female gender, regardless of TRPV1 genotypes and the H. pylori infection status. Capsaicin-rich foods may induce stomach fullness (10). Bidirectional effect between gut and brain; individuals with functional dyspepsia at baseline were more likely to experience anxiety or depression during follow-up, and individuals with anxiety and depression at baseline were more likely to experience functional dyspepsia (11) and irritable bowel syndrome (12).

Medical students are a vulnerable group of the general public and are considered to be at risk of experiencing various psychosocial problems. This can be caused by students' poor social lives, prolonged study hours, reduced hours of sleep and free activities, as well as the many exams that must be passed to be able to graduate (13–14). Medical students have higher level of stress than other students (13). Medical students also take longer to study than students in other majors, which is associated with high level of anxiety, self-doubt, and low self-confidence (14). There is a valid and reliable GSRS questionnaire to assess gastrointestinal symptoms in English as its native language, but there is not yet one in Indonesian, so this study aims to validate the reliability of the Indonesian version of the GSRS questionnaire and assess sleep quality, stress levels, and eating patterns with gastrointestinal symptoms in medical students.

Methods

Study design and sample size

The research population was all medical students aged 17–25 years, Faculty of Medicine, Airlangga University. The research study design was a cross-sectional study conducted in 2024 in a single observation. The minimum sample size was calculated using the Lemeshow formula (15), amounting to 136 subjects. The sampling technique used simple random sampling from a reachable population willing to participate in the study. The research inclusion criteria were 1) Active medical students at the Faculty of Medicine, Airlangga University, and 2) Competent to communication with Indonesian Language. The research exclusion criteria were 1) Students who suffered from serious illnesses, and 2) Answers to the questionnaire were incomplete. Medical students were selected based on inclusion and exclusion criteria. Demographic characteristics of students such as age and gender, gastrointestinal symptom, sleep patterns, stress disorder, and diet pattern were recorded in those questionnaires. Before conducting validity and reliability tests on the Indonesian version-GSRS questionnaire, we translated it into Indonesian and back into English. After obtaining an appropriate Indonesian translation, we conducted validity and reliability tests in two interviews: a pre-test and a post-test. Next, all participants were interviewed by the chairman and 2 other research members using 4 questionnaires: (1) Indonesian version-GSRS questionnaire to determine the severity of symptom of gastrointestinal disorder; (2) Pittsburgh Stress Quality Index (PSQI) to determine the severity of sleep disorders; (3) Medical Student Stress Questionnaire (MSSQ) to determine the severity of stress levels; (4) Food Frequency Questionnaire (FFQ) to determine the patterns of diet.

Data collection

All questionnaires were self-administered to all research subjects so that interviewer bias can be reduced. In this research, biases such as recall bias and self-reporting were minimize because of (1) data collection: we collected only for Gastrointestinal (GI) tract symptom in one week ago; (2) using documentation: we used notes or documentation to verify information; (3) specific questions: we used specific and focused questions to reduce reliance on potentially inaccurate memories; (4) we used valid and reliable instrument; (5) we guaranteed the anonymity and confidentiality of participant data to encourage more honest and accurate reporting; (6) data triangulation: we used multiple data collection methods (e.g., questionnaires, interviews, observations) to verify and strengthen results, reducing reliance on a single self-reporting method.

Data analysis

The data analysed using statistics according to the method using SPSS version 24 software. Data analysis stages included: 1) Descriptive statistical test, 2) Normality test (α=0.05), 3) Homogeneity test using Levene's test if the sample was normally distributed, 4) Correlation test using the Pearson test if the distribution was normal and Kendall's tau test if the distribution was not normal. Correlation analysis was used to prove the existence of a relationship between two or more variables. The relationship was proven by a p-value (significance) < 0.05, so there was a relationship between the two variables analysed. If the correlation coefficient value was 0.00-0.25, it means the relationship was very weak; 0.26-0.50 means the relationship was quite close; 0.51-0.75 means a strong relationship; 0.76-0.99 means the relationship was very strong; and a correlation coefficient of 1 means a perfect relationship.

Results

The data characteristics of research respondents can be seen in Table 1. All respondents were recorded, and the majority reported poor sleep quality, moderate stress level, and excessive dietary pattern. The study also showed a minority of respondents reported good sleep quality, very high stress level, and adequate dietary pattern.

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Table 1. Characteristic of research respondents

Variable		Mean (SD)/n (%)
Age(year)		20 (1.3)
Gender	Male	54 (39.7%)
	Female	82 (60.3%)
Sleep Quality	Good	20 (14.7%)
	Bad	116 (85.3%)
Stress Level	Mild	40 (29.4%)
	Moderate	56 (41.2%)
	Severe	35 (25.7%)
	Very Severe	5 (3.7%)
Diet	Less	58 (42.6%)
	Enough	13 (9.6%)
	More	65 (47.8%)

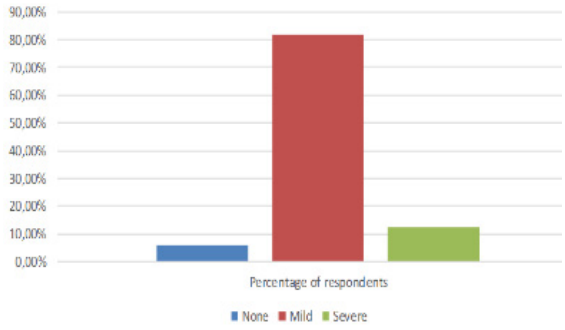

Figure 1. Symptom Severity of Gastrointestinal based on GSRS Score

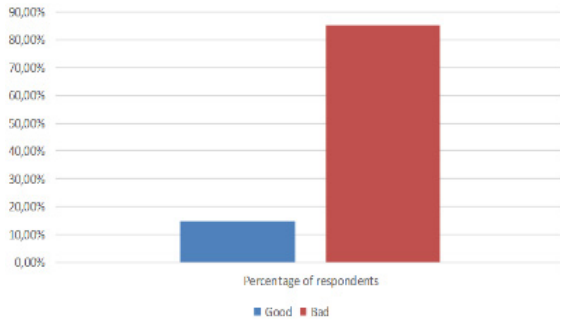

Figure 2. Sleep Quality on PSQI Score

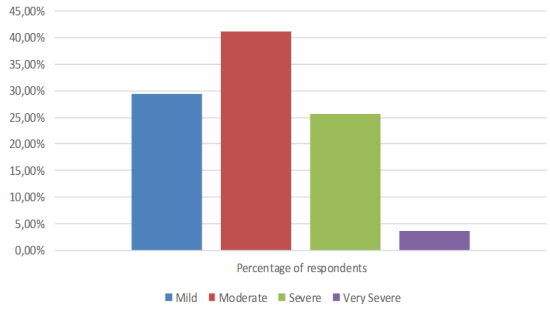

Figure 3. Stress Level Based on MSSQ Score

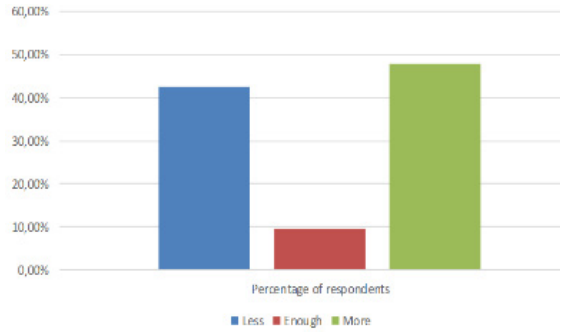

Figure 4. Dietary Pattern based on FFQ Score

The results of Kendall's tau_b bivariate correlation test prove the relationship between the GSRS score (Figure 1) and the PSQI score (Figure 2), as well as the MSSQ score (Figure 3) and the FFQ score (Figure 4). Of the three variables related to symptom of gastrointestinal disorder, stress level has a fairly close relationship (τb=0.307) compared to sleep quality and diet, which have a very weak relationship (τb=0.154 and τb=0.197).

During the study period, 136 subjects met the inclusion criteria. Subject characteristics can be seen in Table 1.

Validity testing was conducted using the Pearson correlation test. The results of the correlation calculation for the validity test of the Indonesian version-GSRS questionnaire, with 15 questions, all showed a value less than 0.05. The reliability test in this study used the Cronbach's alpha coefficient. The reliability of the 15-question Indonesian version-GSRS questionnaire obtained α=0.900. Based on this statistical analysis, the Indonesian version-GSRS questionnaire is valid and reliable.

Discussion

The Indonesian version-GSRS questionnaire (Appendix 1) tested for validation and reliability with valid (P<0.05) and reliable (α=0.900). The double-check translation stage is carried out by internal medicine experts in Indonesia. The results of this study from 136 respondents showed that the majority experienced gastrointestinal symptom (94.1%) and the remainder do not experience gastrointestinal symptom (5.9%). The severity of those experiencing gastrointestinal symptom is mostly mild (81.6%) and the remainder severe (12.5%). This is in line with previous research that symptom of dyspepsia syndrome in pre-clinical medical students is 73.3%, Gastroesophageal Reflux Disease (GERD) is 15.3% and mild gastrointestinal symptom is 66.7% (16–18).

The Pittsburgh Sleep Quality Index (PSQI) questionnaire is known as a standard instrument and has been translated into various languages. And is reported to have a good level of validity and reliability, has been translated into Indonesian and validated (19). Sleep quality is divided into two classifications, if the score is less than 5, it is said to have good sleep quality, and if the score is above 5, it is said to have poor sleep quality (20). Of the 136 respondents who were studied, the majority had poor sleep quality (85.3%) and the rest had good sleep quality (14.7%). In medical students, this is very common, as has been mentioned in previous research that medical students are

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susceptible to poor sleep quality (21) as well as the global trend that says that teenagers and adults are vulnerable to experiencing sleep disorder (22–25).

The academic stress experienced by the majority of medical students is also measured using the Medical Student Stressor Questionnaire (MSSQ), which has been validated and translated into Indonesian (26). Stress has 4 levels, namely mild, moderate, severe, and very severe (27). In this study, the majority had moderate stress level (41.2%), the same as previous research, around 53.85% of medical students had moderate stress level (26). Meanwhile, the prevalence of stress among medical students in Indonesia in the first year was 28% mild stress, 59% moderate stress, and 13% severe stress (28).

Dietary pattern has very diverse forms of measurement. This is influenced by what type of measurement you want to take. Broadly speaking, measuring dietary pattern is divided into two types of measurements: qualitative and quantitative (29). One of the questionnaires most often used to measure dietary pattern and validated in Indonesia is the Food Frequency Questionnaire (FFQ) (30). In this study, the majority of respondents have excessive dietary pattern (47.8%).

Analysis of the Kendall's tau hypothesis test for the relationship between the severity of symptom of gastrointestinal disorder and sleep quality obtained a significance value of 0.030 and a correlation coefficient of 0.154, which is a very weak relationship. Previous research results showed that patients with gastrointestinal disorder, such as functional dyspepsia, more often experienced poor sleep quality (79.2%) (31). It is a fact that, other than gastrointestinal problems, sleep quality depends on multiple factors such as intensity of daily working routine and lifestyle. We assume that a higher variation in prevalence of poor sleep quality among dyspepsia patients could be due to differences in different populations and their lifestyles (31). Sleep disorder such as obstructive sleep apnea are also associated with the presence of gastrointestinal symptom disorder such as chronic gastritis (32). A healthy sleep score shows a dose-response relationship with a reduced risk of gastrointestinal disease, and a healthy sleep pattern is associated with a lower risk of gastrointestinal disease in participants from all levels of genetic risk (33). Even though the relationship is very weak, these results are a good first step in making recommendations for young adults to always maintain the quality of their sleep in order to minimize symptom of gastrointestinal disorder. The possibility of a very weak relationship may occur in this study in evaluating sleep patterns. Surveys via interviews are not as good as when physiological data is measured in evaluating sleep. The gold standard in evaluating sleep is polysomnography (PSG) (34).

Meanwhile, the analysis of Kendall's tau hypothesis test for the relationship between the severity of symptom of gastrointestinal disorder and stress level obtained a significance value of <0.001 and a correlation coefficient of 0.307, which is a fairly strong relationship. Previous research on health nurses who work under contract shows that night shift stress significantly and positively predicts sleep disorder (35). Higher perceived stress level is associated with poorer sleep quality (36). Another study was conducted on students and showed a significant influence of academic anxiety on sleep disorder (37).

According to prior studies, stress can change sleeping and diet habits, which makes stomach problems worse by boosting acid production and reducing the efficiency of gastric mucosal regeneration (38). Stress-induced vagus nerve activation is another mechanism underlying this connection, as it can accelerate inflammation of the gastric mucosa and increase the generation of stomach acid. Therefore, while inadequate diet certainly contributes to gastritis, stress plays a major role in aggravating gastrointestinal diseases (39). The results of this strong relationship can then become a reference for young adult medical students to always maintain mental health and manage stress to minimize symptom of gastrointestinal disorder.

Fatty foods also can stimulate the production of gastric juices and worsen GERD symptom by increasing the volume of acid available for reflux into the oesophagus (40). There were also significant and unidirectional relationships between diet and stomach ulcers in final semester medical students (41). This finding is consistent with previous research, which showed a correlation between diet habits and the incidence of stomach ulcers in a group of teenagers in Jakarta, Indonesia (42).

Conclusion

The Indonesian version-GSRS questionnaire has good validity and reliability. Most medical students at the Faculty of Medicine, Universitas Airlangga, experience mild symptom of gastrointestinal disorder, poor sleep quality, moderate stress level, and excessive dietary pattern. There is a relationship between sleep quality, stress level, diet pattern, and symptom of gastrointestinal disorder in medical students. Only stress level has a fairly close relationship, while sleep quality and diet have a very weak relationship in medical students. The limitation of this study is that it does not confirm the presence of gastrointestinal disorder by physical and laboratory examination. Suggestion for future research can be using a longitudinal design method in clinical diagnosis or objective biomarkers (such as cortisol, inflammatory markers) related to gastrointestinal symptom, and comparing with medical and non-medical students.

Authors' Contributions

Raden Argarini contributed to the study design, and drafting of the initial manuscript. M. Nabiel Firdausi, Emilda Puteri Aulia and Muhammad Naufal Razzan Maghribi contributed to data collection. Eka Arum Cahyaning Putri supervised the project, conducted data analysis, and critically reviewed the final manuscript. Rimbun Rimbun, Hayuris Kinandita Setiawan were responsible for statistical analysis and interpretation of the results. Annisa Zahra Mufida and Amie Vidyani performed the literature review. Misbakhul Munir contributed to manuscript editing. All authors read and approved the final version of the manuscript.

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Ethical Considerations

This research has been approved by the Ethics Committee No.64/EC/KEPK/FKUA/2024, which was placed in the Faculty of Medicine, Universitas Airlangga, Indonesia. Informed consent was obtained from all participants before data collection.

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Conflict of Interests

The authors declare that they have no competing interests.

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Appendix 1. SKALA PENILAIAN GEJALA GASTROINTESTINAL (SPGG)

Silakan baca ini dulu:

Survei ini berisi pertanyaan tentang apa yang Anda rasakan SELAMA SEMINGGU TERAKHIR. Tandai pilihan yang paling sesuai menurut Anda dan situasi Anda dengan tanda "X" di dalam kotak.

Silakan baca ini dulu:
Survei ini berisi pertanyaan tentang apa yang Anda rasakan SELAMA SEMINGGU TERAKHIR. Tandai pilihan yang paling sesuai menurut Anda dan situasi Anda dengan tanda "X" di dalam kotak.

1. Pernahkah Anda merasa terganggu dengan RASA NYERI ATAU TIDAKNYAMAN DI PERUT BAGIAN ATAS ATAU ULU HATI selama seminggu terakhir?
   - ☐ Tidak ada rasa tidak nyaman sama sekali
   - ☐ Hanya sedikit tidak nyaman
   - ☐ Sedikit tidak nyaman
   - ☐ Cukup tidak nyaman
   - ☐ Agak cukup tidak nyaman
   - ☐ Tidak nyaman
   - ☐ Sangat tidak nyaman
2. Apakah Anda merasa terganggu dengan MAAG selama seminggu terakhir? (Yang kamimaksud dengan maag adalah rasa terbakar di dada.)
   - ☐ Tidak ada rasa tidak nyaman sama sekali
   - ☐ Hanya sedikit tidak nyaman
   - ☐ Sedikit tidak nyaman
   - ☐ Cukup tidak nyaman
   - ☐ Agak cukup tidak nyaman
   - ☐ Tidak nyaman
   - ☐ Sangat tidak nyaman

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3. Apakah Anda merasa terganggu dengan REFLUKS ASAM selama seminggu terakhir?(Yang kami maksud dengan refluks asam adalah rasa naiknya asam ke atas; rasa pahit/asam di rongga mulut, dan rasa panas di tenggorokan.)
   - ☐ Tidak ada rasa tidak nyaman sama sekali
   - ☐ Hanya sedikit tidak nyaman
   - ☐ Sedikit tidak nyaman
   - ☐ Cukup tidak nyaman
   - ☐ Agak cukup tidak nyaman
   - ☐ Tidak nyaman
   - ☐ Sangat tidak nyaman
4. Apakah Anda merasa terganggu dengan RASA SAKIT KARENA LAPAR selama seminggu terakhir? (Perasaan lapar di perut ini terkait dengan kebutuhan untuk makan di antara waktu makan.)
   - ☐ Tidak ada rasa tidak nyaman sama sekali
   - ☐ Hanya sedikit tidak nyaman
   - ☐ Sedikit tidak nyaman
   - ☐ Cukup tidak nyaman
   - ☐ Agak cukup tidak nyaman
   - ☐ Tidak nyaman
   - ☐ Sangat tidak nyaman

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5. Apakah Anda merasa terganggu dengan MUAL selama seminggu terakhir? (Yang kamimaksud dengan mual adalah perasaan ingin muntah.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

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6. Apakah Anda merasa terganggu dengan PERUT KERONCONGAN selama semingguterakhir? (Keroncongan mengacu pada getaran atau kebisingan dalam perut.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

7. Apakah perut Anda terasa KEMBUNG selama seminggu terakhir? (Rasa kembung mengacu pada pembengkakan yang sering dikaitkan dengan sensasi gas atau udara diperut.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

8. Apakah Anda merasa terganggu dengan SENDAWA selama seminggu terakhir? (Bersendawa mengacu pada mengeluarkan udara atau gas dari perut melalui mulut, seringkali dikaitkan dengan meredakan rasa kembung.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

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9. Apakah Anda merasa terganggu dengan KELUARNYA GAS/KENTUT ANDA selama seminggu terakhir? (Keluarnya gas atau kentut mengacu pada kebutuhan untuk mengeluarkan udara atau gas dari usus, sering kali dikaitkan dengan meredakan rasakembung.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

10. Apakah Anda merasa terganggu dengan SEMBELIT selama seminggu terakhir?(Sembelit mengacu pada berkurangnya kemampuan mengosongkan usus.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

11. Apakah Anda merasa terganggu dengan DIARE selama seminggu terakhir? (Diaremengacu pada buang air besar yang terlalu sering.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

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12. Apakah Anda merasa terganggu dengan TINJA ENCER selama seminggu terakhir? (Jika tinja Anda keras dan encer secara bergantian, pertanyaan ini hanya mengacu pada sejauhmana Anda merasa terganggu dengan tinja yang encer tersebut.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

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13. Apakah Anda merasa terganggu dengan TINJA KERAS selama seminggu terakhir? (Jikatinja Anda keras dan encer secara bergantian, pertanyaan ini hanya mengacu pada sejauh mana Anda merasa terganggu dengan tinja yang keras tersebut.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

14. Apakah Anda merasa terganggu dengan KEBUTUHAN MENDESAK UNTUK PERGI KETOILET selama seminggu terakhir? (Sensasi mendesak untuk buang air kecil.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

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15. Saat ke toilet selama seminggu terakhir, apakah Anda merasakan SENSASI TIDAK MENGOSONGKAN USUS SEPENUHNYA? (Rasa tidak tuntas setelah buang air besar.)

- ☐ Tidak ada rasa tidak nyaman sama sekali
- ☐ Hanya sedikit tidak nyaman
- ☐ Sedikit tidak nyaman
- ☐ Cukup tidak nyaman
- ☐ Agak cukup tidak nyaman
- ☐ Tidak nyaman
- ☐ Sangat tidak nyaman

MOHON PERIKSA BAHWA SEMUA PERTANYAAN TELAH DIJAWAB! TERIMA KASIH ATAS KERJA SAMA ANDA.

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