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Arabic websites assessment of irritable bowel syndrome: How trustworthy are they? A cross-sectional study

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Abstract

Background and Aims: Irritable bowel syndrome (IBS) is a chronic GI disorder that affects people all over the world. Patients frequently look for information about their ailments online. Despite being widely and easily accessible, online information's quality and readability are under doubt. In this investigation, we assessed the effectiveness and usability of IBS Arabic websites found on significant search engines.

Methods: IBS-related search terms in Arabic were entered into two search engines (Google and YouTube), and the first 30 websites per word from Google, and the first 20 websites per word from YouTube were assessed for eligibility. Eligible Google websites were assessed for quality and readability, while YouTube websites were assessed for quality. Quality was assessed using the DISCERN score and the JAMA Benchmark. Readability was assessed using the automatic Arabic readability index (AARI). Associations between quality, readability, types of websites (medical/nonmedical), and video length were analyzed.

Results: *For Google*: A total of 48 websites were evaluated, mean DISCERN score was 40.4 (SD = 10.28) indicating fair quality. The mean JAMA score was 1.6 (SD = 0.69), with the readability being worse the higher the quality. Medical websites had higher quality scores than nonmedical ones. *For YouTube*: A total of 34 YouTube videos were evaluated, mean DISCERN score was 34.7 (SD = 7.35), indicating poor quality. The mean JAMA score was 1.4 (SD = 0.72). Medical websites had higher quality scores than nonmedical ones. There was no association between the quality of the videos and their length.

Conclusion: The majority of websites were of low to fair quality and required a high degree of readability. As a result, we advise (1) healthcare practitioners to offer helpful websites to their patients, and (2) the development of IBS-related websites under the guidance of experts, with the involvement of patients.

KEYWORDS

Arabic, assessment, Google, irritable bowel syndrome, websites, YouTube

Abbreviations: AARI, automatic Arabic readability index; IBS, irritable bowel syndrome; JAMA, Journal of the American Medical Association; R^2, coefficient of determination.

1 | INTRODUCTION

The prevalence of irritable bowel syndrome (IBS), a common digestive disorder, ranges from 10% to 20% globally.[1] Its annoying symptoms, including abdominal pain, bloating, constipation, diarrhea, and others, as well as its chronic nature affect a large number of people worldwide.[2] There are several ways to manage IBS, including by changing one's food, and lifestyle, or taking drugs that target the condition's symptoms.[3] Although IBS's pathophysiology and causation are becoming clearer it is still a hot study area where more research is needed and being conducted.

Patients frequently utilize the Internet to find health-related information since it makes health monitoring simpler, quicker, and remote.[4] Numerous studies indicate that a significant portion of people look for health-related information on websites, frequently in their mother tongue.[5,6] While many people seek information on the internet, not all encounter favorable outcomes. Adverse experiences may involve self-misdiagnosis, unwarranted anxiety, and a strained relationship between the patient and physician.[7,8]

IBS prevalence varies in the Arab globe but remains moderate to high when compared to the global prevalence. IBS prevalance in Palestine is 30%, which is higher than it is globally by a difference of 10%–20%.[9] Saudi Arabia has a prevalence of 18% for IBS compared to other Arabic-speaking nations.[10] In Lebanon, 20%,[11] 25% in Syria,[12] 27.5% in Egypt,[13] and 30.9% in Jordan.[14] A review of IBS-related content on Arabic websites will be helpful given the high incidence of IBS in Arab-speaking nations and the growing practice of looking for health information online. In this study, we evaluate the usefulness and readability of Arabic websites for IBS, focusing on Google and YouTube which are the most used websites in UAE,[15] morocco,[16] Kuwait,[17] Qatar,[18] Saudi Arabia,[19] and others, that is, the Arabic world.

2 | METHODS

We used an info-demiological approach, recreating the experience of every online searcher on May 2, 2022, by doing searches for specific Arabic phrases on YouTube and Google.

The English translations of the Arabic words used are: Irritable bowel syndrome, neurologic colon, the colon, bowel movement disorder, abdominal pain, constipation, and diarrhea. Although some of these translations may not be what English speakers may refer to as “IBS,” in Arabic communities they are widely used. Also please refer to the supplementary material with this paper to see the original Arabic search terms employed in the utilized search engines, alongside their above corresponding English translations.

In each search, we initially retrieved the first 30 consecutive results from Google and 20 consecutive results from YouTube. Subsequently, we conducted checks for duplication, relevancy, context, and language; excluding unmatched websites (Figure 1). The remaining websites were then subjected to evaluation for quality and readability. Relevancy pertains to the alignment of a website's title with the topic at hand, namely, IBS. Context considers whether the information within the website is pertinent to IBS; it's worth noting that a website may be relevant based on its title but excluded if its content does not relate to IBS. Language criteria were applied to include websites presented exclusively in Arabic. Lastly, the duplication criterion focused on identifying and removing duplicated websites from consideration.

Two authors (H. M. I. A. and R. B. A.) assessed the included website's quality using the DISCERN instrument[20] and the Journal of the American Medical Association (JAMA) benchmark.[21] Readability was assessed the Automatic Arabic Readability Index (ARRI).[22]

The DISCERN instrument[20] is a trusted, effective scoring system that uses a 16-question questionnaire. Each question is scored from 1 to 5, where the higher the score the better the website. The overall score ranges from 16 to 80, which can be categorized to three categories based on quality: 16–32 is poor, 33–64 is fair, and 65–80 is high.

The JAMA Benchmark[21] score is a four-question tool that evaluates the following criteria: (1) authorship, (2) attribution, (3) disclosure, and (4) currency. For each fulfilled criterion, the website scores 1 point. Scoring ranges from 0 to 4. It assesses the quality of websites and is used as an adjunct to other quality metrics. To minimize subjectivity, both authors discussed the items of the two quality tools together to resolve any discrepancies.

The guidelines of the American Medical Association (AMA) recommend that patient-oriented literature to be written at a fourth- to sixth-grade level so it can be understood by the general public.[23] The readability of the websites material were assessed using AARI,[21] which is a readability metric specifically made for the Arabic language. It assesses the comprehensibility of a text using the AARI equation, outputting a number that estimates the grade level needed to understand the evaluated text. The AARI equation is composed of the number of characters, the average number of characters per word, and the average number of words per sentence to come up with a score based on a grade level from 1st to 10th grade, and higher. An online counter[24] was used to come up with the equation variables, then the grade level was calculated.

For Google websites associations between DISCERN scores and grade levels, and JAMA scores and grade levels were assessed; to discover whether higher-quality websites need a higher educational grade level.

For YouTube websites the association between DISCERN scores and videos length were measured; to determine if longer videos correlate with better quality.

For Both Google and YouTube, websites were categorized into medical and nonmedical websites to identify whether medical websites have a higher quality of information.

Medical websites are those administered by health-related entities such as hospitals or pharmaceutical companies. In contrast, nonmedical websites are managed by entities unrelated to health, such as personal blogs or newspaper articles.

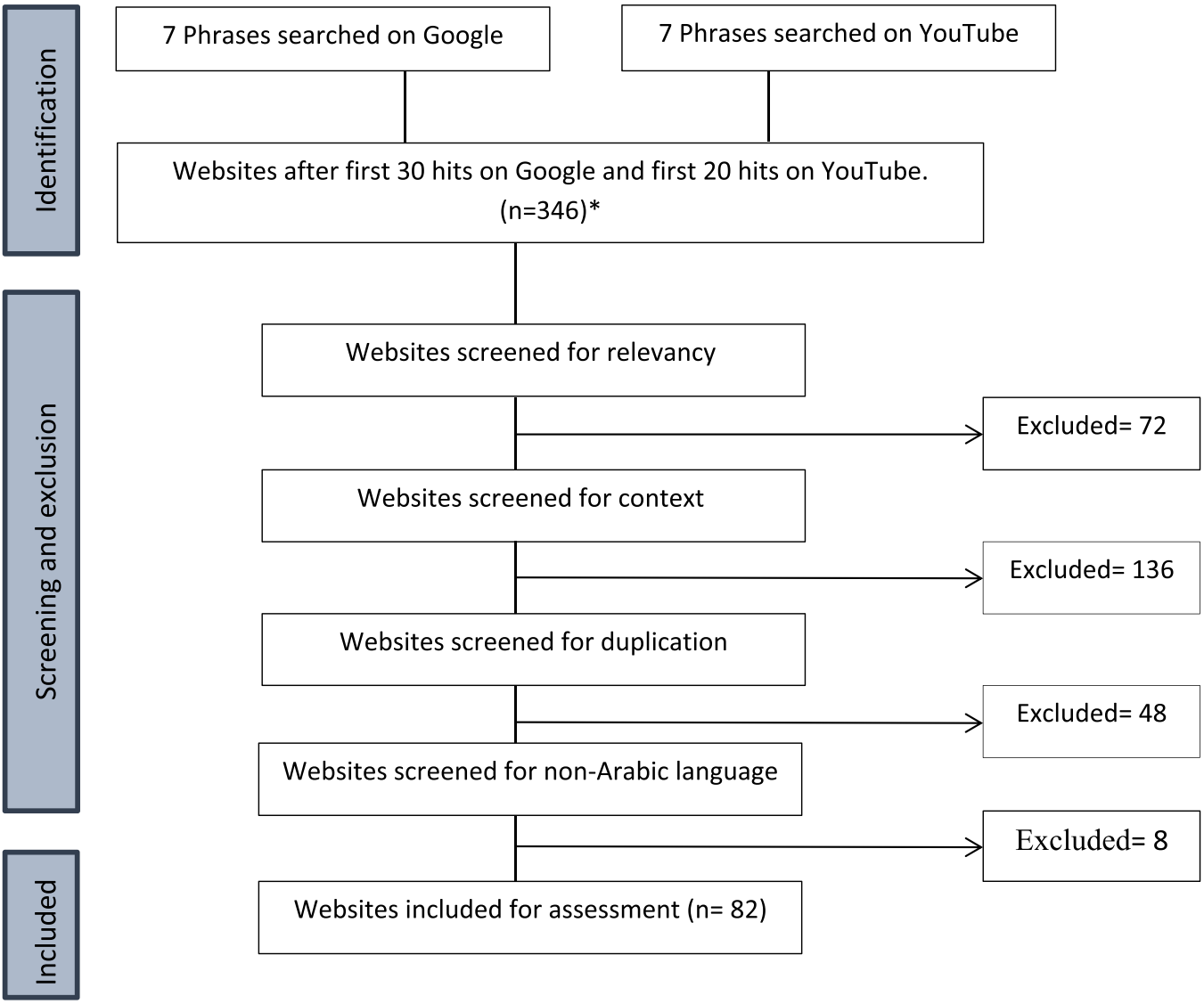


FIGURE 1 Flow chart depicting website inclusion process for online information regarding IBS. *Total number of websites should be 350. However, four websites were missed.

X and *Y* scatter charts, box plot chart and bar charts were generated for a visual demonstration. The coefficient of determination (R^2) and *p* value using the Spearman *ρ* test for nonparametric data, were determined for the potential associations. We used Microsoft Excel and SPSS version 25 for graphing and analysis.

3 | RESULTS

Out of the 346 websites that were initially selected, 264 websites were excluded as they were not eligible based on the above-mentioned criteria. As a result, a total of 82 websites were qualified for quality and readability assessment (Figure 1). Forty-eight of them were Google websites (59%, 48/82); 24 of them (50%) were medical websites, while the other 24 (50%) were nonmedical. Thiry-four websites were for YouTube (41%, 34/82); 20 of them (59%) were medical, while the other 14 (41%) were nonmedical.

3.1 | Quality

The quality of the 82 websites was assessed using the DISCERN score and the JAMA Benchmark score. Mean DISCERN score for Google websites was 40.4 (SD = 10.28), with Medical websites having a higher mean score of 44.1 (SD = 9.98) compared to nonmedical websites 36.6 (SD = 9.17). Google Websites were categorized into three categories (poor, fair, and excellent), with most of the websites residing in the fair category (Figure 2).

The mean DISCERN score for YouTube websites was 33.7 (SD = 8.52), with medical websites having a higher mean score of 37.4

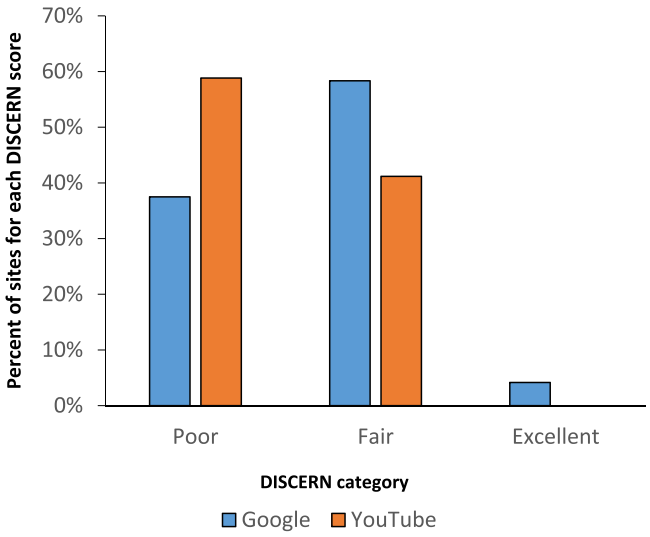


FIGURE 2 Bar chart of the percentage for each DISCERN category among each of Google and YouTube.

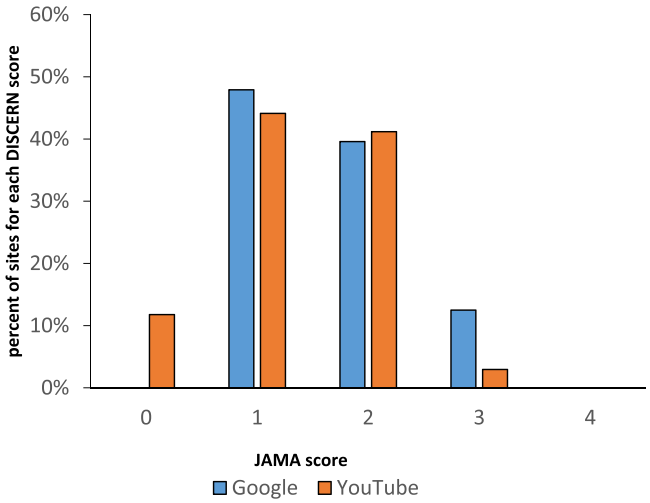


FIGURE 3 Bar chart of the percentage for each JAMA score among each of Google and YouTube.

(SD = 3.93) compared to nonmedical websites 30.8 (SD = 9.14). YouTube websites were categorized into three categories (poor, fair, and excellent), with most of the websites residing in the poor category and none in the excellent category! (Figure 2).

Regarding the JAMA score, none of the websites met all the JAMA criteria (i.e., scored 4 out of 4). The majority of the analyzed websites had a score of 1–2 (Figure 3). The mean scores were 1.6 (SD 0.69) for Google, and 1.4 (SD 0.72) for YouTube.

3.2 | Readability

The readability of Google websites was assessed using the AARI. The majority of websites (58%, 28/48) required above tenth-grade reading skills (Figure 4A), implying that the content was not easy for the general public to understand. Most of the websites below 10th grade scored between 6th and 10th grade (85%, 17/20) (Figure 4B).

3.3 | Associations

We have assessed the relationship between DISCERN scores and grade levels for Google websites, which came out to be a positive direct relationship ($p = 0.01$, $R^2 = 0.41$), indicating that the better the quality, the harder it is to read (Figure 5). Medical websites had a stronger positive correlation ($p = 0.001$, $R^2 = 0.5$) than nonmedical websites ($p = 0.008$, $R^2 = 0.25$) (Figure 6).

Between JAMA scores and grade levels (Figure 7), there was a significant relationship for medical websites ($p = 0.017$), but not for nonmedical websites ($p = 0.854$). We have also assessed the relationship between YouTube's DISCERN scores and video length in minutes, which came out to be a nonsignificant weak correlation ($p = 0.312$, $R^2 = 0.043$) (Figure 8), with almost no difference between medical and nonmedical websites; so longer videos do not mean more quality information.

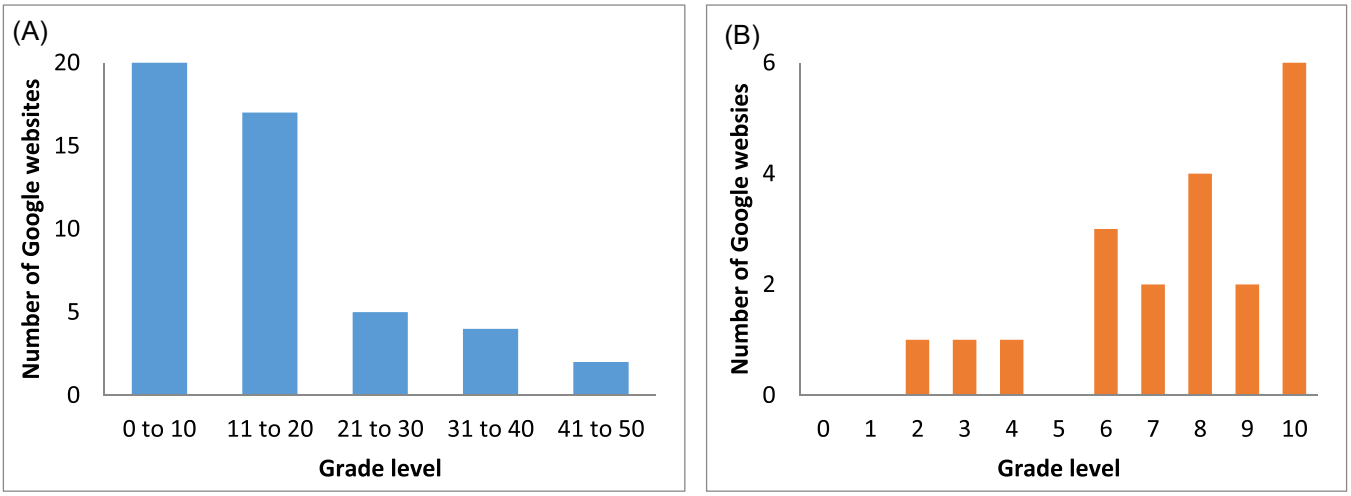


FIGURE 4 Bar charts demonstrate the number of included websites for each grade level.

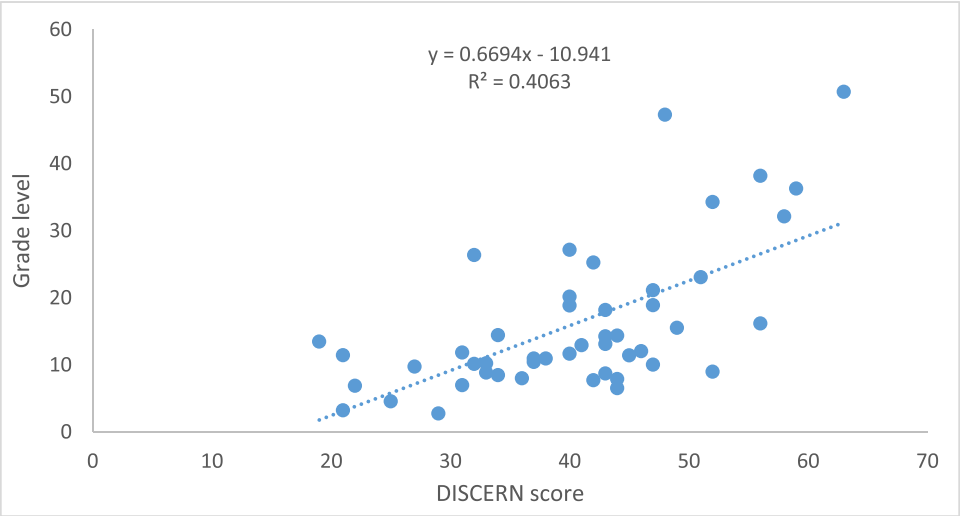
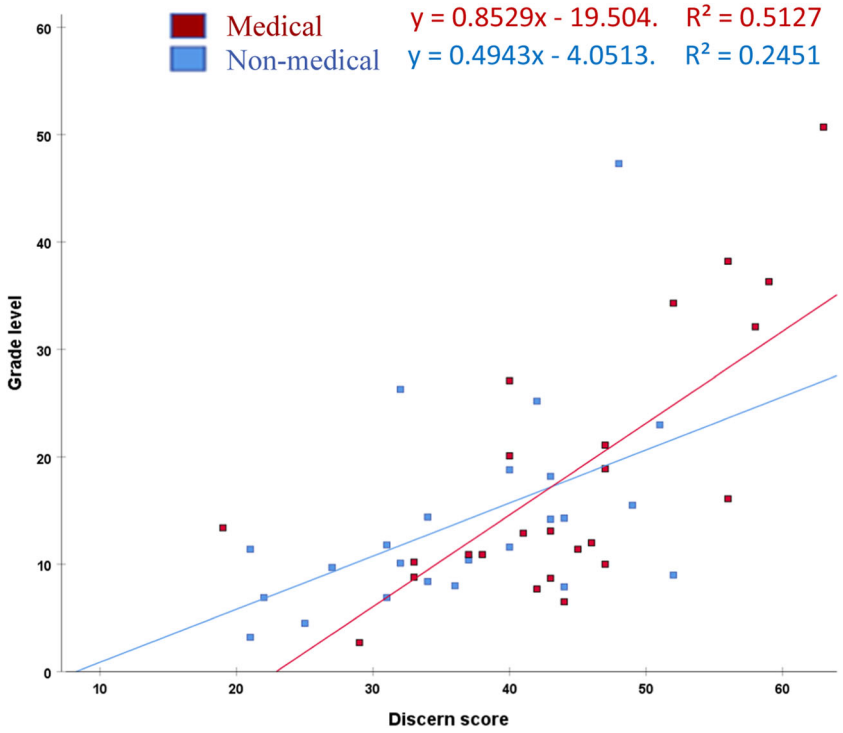


FIGURE 5 *X*, *Y* scatter chart demonstrates the positive correlation between grade level and DISCERN score.

FIGURE 6 *X*, *Y* scatter chart grade level versus DISCERN score. Red squares and regression line are for medical sites and blue squares and regression line are for nonmedical websites.



4 | DISCUSSION

The majority of the websites in our study were of poor or fair quality, according to our findings. Additionally, the quality of the website declined the easier it was to read. Finding appropriate websites becomes tough as a result for both the patient and the doctor. It is challenging to discover websites that are both high-quality and easy to read, but if you manage to find them, the benefits can be significant!

Numerous studies have demonstrated the effectiveness of using online patient education resources, including websites, in the treatment of illnesses like diabetes,[25] cancer,[26] traumatic brain injury,[27] and cardiovascular disease.[28] Due to the rise in website usage, evaluations may become more and more important to find gaps and enhance the user experience. Assessment of Arabic websites has been proven in numerous research, including those on COVID-19,[29] breast cancer,[30] epilepsy,[31] and type II diabetes.[32] There has been no research conducted in the Arabic language to assess websites discussing IBS yet.

Patient education helps patients make decisions and engages them.[33] Health providers must be able to give patients dependable information, which may include internet resources for healthcare. To

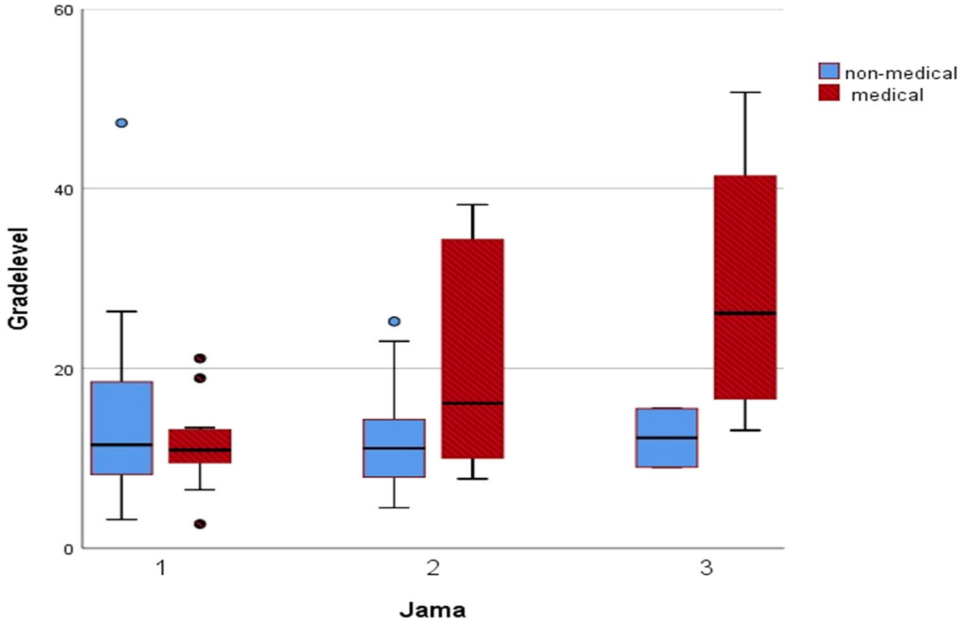


FIGURE 7 Clustered box plot of grade level versus JAMA score among medical and non medical websites.

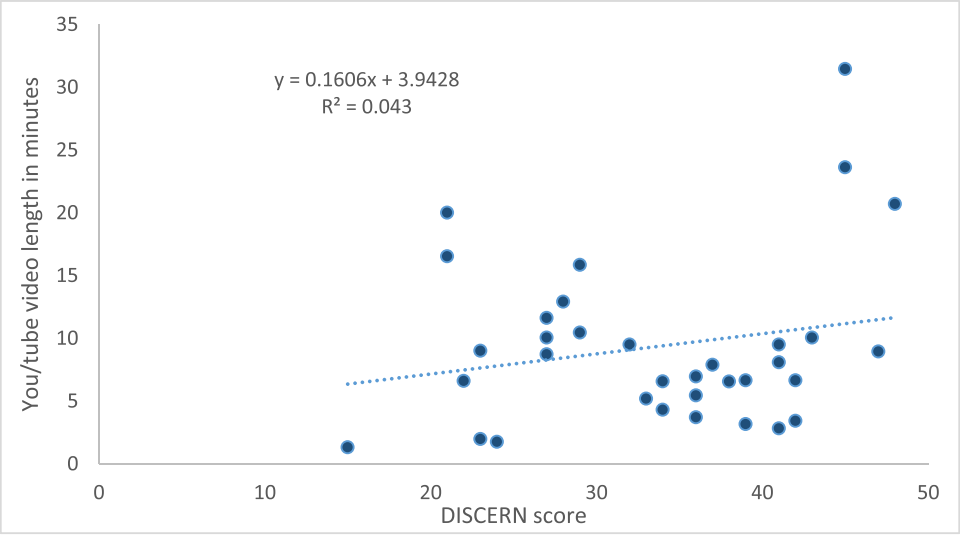


FIGURE 8 *X*, *Y* scatter chart demonstrates the correlation between YouTube video length in minute and DISCERN score.

prevent misinformation and strengthen the doctor–patient connection, this is essential. Given the chronic nature of IBS, arming patients with solid information will help them understand the condition better and make life easier. To provide their patients with the greatest possible online resource experience, doctors need to constantly stay up to date given the quick growth of internet websites and the introduction of new online pages.

Based on how well they performed in the literature, we selected the quality and readability metrics that we used. A technique called the DISCERN score20 was created to assess information on medical condition treatment choices. Its use in the majority of the included research in a recent systematic review demonstrates how trusted it is.[34] However, because the evaluator rates each question according to what is considered to be most appropriate, the DISCERN score is arbitrary and subject to user prejudice. A less biased quality test is the JAMA Benchmark.[21] It is frequently used in addition to other quality measurements, not in place of them. Arabic-specific reading metrics include the AARI.[22] It is simpler to apply the metric to the general population because it provides the grade level. The original manuscript's equation, which we used, made grade calculation simple for us.

In our study, only two authors reviewed and assessed eligible websites, which may not be completely representative. In future studies, we encourage including more reviewers. Moreover, we did

not assess the ranking of websites on the search engines, so we do not know if websites that come first have higher quality and readability in comparison to lower websites. In future studies, we recommend evaluating the ranking of websites, as people tend to enter the first websites they find on search engines. Algorithms may influence the results displayed for different individuals. To mitigate this effect, we collected a substantial number of websites for analysis, specifically the top 30 websites for each word on Google and the top 20 videos for each word on YouTube. This approach allowed us to encompass a wide range of the most frequently encountered search results within the population. Furthermore, we did not gather data from the general population regarding their specific search results or preferred search engine usage, a practice we recommend for future studies of a similar nature.

Due to the intricacy and wackiness of IBS, we did not examine any specific treatment modalities or elaborated complex pathways in our evaluation of IBS information websites. Instead, we concentrated on rating websites according to general criteria that are likely to affect patients. Future research may be needed to examine particular therapeutic modalities, such as pharmaceutical dosages and regimens, illness pathways, and the enteric nervous system. Patients find answers to these questions by investigating two key areas: (1) the frequency, dosage, and timing of drug intake, and (2) understanding how the disease and its symptoms relate to the physiology of the gut.

Finally, we support the suggestion of suitable websites that have already been evaluated, or the development of online resources for IBS with some guidance from medical professionals, decision-makers, and, most importantly, patient input; this will result in suitable websites that are of excellent quality and readability.

5 | CONCLUSION

It is challenging for Arabic-speaking persons to consume and benefit from the majority of the available Arabic health information about IBS since it does not adhere to quality or readability requirements. It is critical to have resources available that offer high-quality, simple-to-read health information because of the discomfort, chronicity, and frustration that are associated with IBS. This might be accomplished by recommending websites that have already been reviewed by experts in the field or by developing new websites under the direction of medical professionals, policymakers, and patients. Better healthcare and a stronger patient-physician relationship will result from this.

AUTHOR CONTRIBUTIONS

Hamzeh M. I. Abugharbieh: Conceptualization; data curation; investigation; methodology; project administration; writing—original draft. **Raneen Bilal Alshareef**: Data curation; investigation; project administration; writing—original draft. **Robin Abu Ghazaleh**: Formal analysis; writing—review and editing. **Afnan W. M. Jobran**: Visualization; writing—review and editing. **Hazem Al Ashhab**: Supervision; writing—review and editing.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

All the data collected will be available to everyone through the DOI: 10.17632/m5pb22f782.1, the statistical analysis will be provided via contacting the email of the corresponding author.

TRANSPARENCY STATEMENT

The lead author Hamzeh M. I. Abugharbieh affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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