SJP Sarawak Journal of Pharmacy

Journal Homepage: http://jknsarawak.moh.gov.my/spj/

Intelligent and affectively aligned evaluation of online health information for older adults

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ABSTRACT

Evaluating the quality of online health information has been a primary concern for many years due to its unregulated nature. Individuals living with life-threatening and chronic diseases search online for health information. This information exert influence on their health beliefs, health behaviours, intentions and health care decision making. Type 2 Diabetes Mellitus (T2DM) is a major public health concern in Malaysia which is closely related to increased macro- and microvascular complications, as well as higher hospitalisation and mortality rate. The overall prevalence of T2DM in Malaysia is increasing. Quality Evaluation Scoring Tool (QUEST) employed in this study to evaluate the online health information on the management of T2DM. It quantitatively measures six aspects of the quality of online health information including authorship, attribution, conflict of interest, currency, complementarity and tone. Attribution is measured through two items, yielding a seven-item evaluation for six measures of health information quality. Most of the websites demonstrated moderate quality (n= 50) with median quality score of 18 (IQR= 9). The remaining websites were distributed evenly into group of excellent quality (median quality score, 27 [IQR= 3]) and group of very poor quality (median quality score, 11 [IQR= 0]). Among all the websites providing information on management of T2DM, websites owned by private holders

accounted for the most (n=30) with median quality score of 17.5 (IQR=9). There were no statistically significant differences found in comparison among website affiliations (P=0.939). The adjusted means for scores of the first three pages and next three pages of search results were 20.8 and 15.1, respectively and the mean difference was -5.6 (95% CI: -9.0, -2.3). First three pages of search results scored significantly better than the next three pages. (P= 0.001)

Keywords: Evaluation, health information, QUEST

INTRODUCTION

Evaluating the quality of online health information has been a primary concern for many years due to its unregulated nature. Individuals living with life-threatening and chronic diseases search online for health information. The information exert influence on their health beliefs, health behaviours, intentions and health care decision making (1). Type 2 Diabetes Mellitus (T2DM) is a significant public health concern in Malaysia which is closely related to increased macro- and microvascular complications, as well as higher hospitalisation and mortality rate. The overall prevalence of T2DM in Malaysia is increasing. By the year 2020, the prevalence among the adult population in Malaysia will be 21.6%. For patients older than 60 years old, the prevalence in 2012 was 23.8% (2). These group of individuals are at higher risk of exposure to the plethora of online resources of highly variable quality while searching the information (3).

Internet can be a source for both valuable information and misinformation (3). There are more than 200 evaluation studies which proposed that the overall quality of consumer-oriented health information on the Internet is low and varies greatly. Decisions made based on low-quality health information (e.g. incomplete, biased or inaccurate information) may cause detrimental consequences such as delayed treatment or extreme anxiety and subsequently increase consumer vulnerability (1). T2DM is a complex chronic disease that starts with silent metabolic changes that usually precede symptoms and frank hyperglycemia by 7 to 10 years. It is ubiquitous and growing prevalence, management of T2DM is the focus of many consumer-targeting health information websites (3).

The public's potential vulnerability heightens the risk of getting access to low-quality online health information to it. A desperate desire for cure, dissatisfaction with traditional health care or limited health literacy are some factors which may increase an individual's vulnerability. Health literacy is defined as the degree to which individuals able to obtain, process, and perceive necessary health information and services required to create appropriate health decisions (4). Health literacy-related knowledge and skills are particularly deficient among vulnerable populations, such as the elderly (3).

Currently, there is no clear universal standard for evaluation of online health information quality. Thus, several instruments created in response to the requirement for evaluating online health resources quality. These instruments consist of several criteria for the evaluation of static online content and must be applied manually by the Internet user. Currently available instruments generally targeted to a specific: a) health condition, b) aspect of a condition such as treatment or c) audience. Examples of these tools include the HONCode, the DISCERN and the LIDA instruments. Limitations of existing tools include narrow scope of application (e.g., only for treatment information), length of application (e.g., 15 or more criteria), insufficient quantitative results, making it difficult to compare different sources of information, and deficits in evaluations of the reliability and validity of the instruments themselves. In order to address these limitations, Dr Robillard and her team developed the Quality Evaluation Scoring Tool (QUEST) instrument which provides a reliable, quantitative and valid quality evaluation tool to evaluate broad range of health information. QUEST measures six aspects of the quality of online health information (authorship, attribution, conflict of interest, currency, complementarity, tone) and demonstrates higher levels of inter-rater reliability as well as convergent validity with other established quality evaluation instruments (5).

Therefore, this study aims to evaluate the quality of health-related Web pages likely to be viewed by individuals with T2DM by using QUEST and to compare the quality of online resources for T2DM among different website affiliations as well as the quality of T2DM -related online information between the first three pages and the next three pages of search results.

METHODS

Sample

In this study, we used T2DM as the reference health condition due to the high prevalence in Malaysia and an abundance of online articles. In order to avoid localised results, we retrieved online articles containing T2DM information using a location-disabled search on Google.com/ncr (no country redirect) (6). We obtained articles from the first three pages of search results. The reason is, based on analyses of the aggregate data of online activity patterns indicating that most Internet users tend not to view past the third page of search results (7). Each page of search results was comprised

of ten articles, totalling 30 articles for each keyword combination. Inclusion criteria for the articles were: 1) the article is in the English language; 2) no payment or login is required to access the article and 3) management of T2DM is the main focus of the article as determined by the content of the headline and lead paragraph (6). We excluded websites meeting the following criteria; were general newspaper reports that did not discuss information on management, duplicate websites, and websites presenting videos only. Websites were classified into five affiliation categories using the following method: 1) websites with ".org" domains that were not affiliated with academic hospitals were treated as non-profit organisations; 2) websites with ".edu" domains treated as academic websites; 3) websites with ".gov" domains treated as government websites; 4) websites with news portals treated as communication media websites; and 5) websites that did not disclose affiliation or that disclosed affiliation to a private holder were treated as private.

Evaluation Tool

We employed the QUEST in this study for the evaluation of online health information on the management of T2DM. It quantitatively measures six aspects of the quality of online health information including authorship, attribution, conflict of interest, currency, complementarity and tone. Attribution is measured through two items, yielding a seven-item evaluation for six measures of health information quality. The criteria were chosen based on a review of existing tools used to evaluate the quality of online health information (6). Table 1 details the QUEST criteria applied in this study.

When applying the QUEST, each of the seven quality items was assigned a weighted score, yielding overall quality score between 0 and 28. The weighting of each criterion was developed based on two factors: (i) how critical it is to the overall quality of the article, established by a preliminary analysis of a sample of websites, and (ii) consideration of the criterion's ethical implications. One of the criteria, attribution, is measured through a two-step process by identifying: 1) the presence of references to scientific studies and, 2) the type of studies referenced, if any (e.g., animal models, observational studies, meta-analyses, clinical trials).

Table 1: QUEST Criteria (6)

Authorship (Score x 1)

0 No indication of authorship or username
1 All other indications of authorship
2 Author's name and qualification clearly stated

Attribution (Score x 3)

0 No sources
1 Mention of expert source, research findings (though with insufficient information to identify the specific studies), links to various sites, advocacy body, or other
2 Reference to at least one identifiable study, regardless of format (e.g., information in text, reference list)
3 Reference to mainly identifiable scientific studies, regardless of format (in > 50% of claims)

For all articles scoring 2 or 3 on Attribution: (Score x 1)

Type of study
0 In vitro, animal models, or editorials
1 All observational work
2 Meta-analyses, randomised controlled trials, clinical studies

Conflict of interest (Score x 3)

0 Endorsement or promotion of intervention designed to prevent or treat the condition (e.g., supplements, brain training games, foods) within the article
1 Endorsement or promotion of educational products & services (e.g., books, care home services)
2 Unbiased information

Currency (Score x 1)

0 No data present
1 Articles is dated but five years or older
2 Articles is dated within the last five years

Complementarity (Score x 1)

0 No support of the patient-physician relationship
1 Support of the patient-physician relationship

Tones (includes title) (Score x 3)

0 Fully supported (authors fully and unequivocally support the claims, strong vocabulary such as "cure", "guarantee", and "easy", mostly use of non-conditional verb tenses ("can", "will"), no discussion of limitations
1 Mainly supported (authors mainly support their claims but with more cautious vocabulary such as "can reduce your risk" or "may help prevent", no discussion of limitations
2 Balanced/ cautious support (authors' claims are balanced by caution, includes statements of limitations and/ or contrasting findings)

The second item, the type of studies referenced, which assigns a ranking based on the types of studies included, following the GRADE criteria for clinical evidence. This item was scored as a support to the overall quality of the health information presented, not as a judgment of the referenced studies' quality (6).

Statistical Analysis

We performed descriptive statistics and comparison of quality scores among different website affiliations analysed with ANOVA or Kruskal-Wallis test, whereas Multifactorial ANOVA for comparisons between first three pages and the next three pages of search results, controlling for types of website affiliations. We used SPSS Statistics Version 21 for the analysis and treated the quality score as a continuous variable and set the statistical significance at $P \leq 0.05$.

We classified the overall quality of online resources on T2DM Management based on classification by the previous study (8): (a) very poor if the total score is < 12/28; (b) moderate if the score is 12-23/28 and (c) excellent quality if the score is > 23/28.

Ethical Consideration

This study was registered with the National Medical Research Register (NMRR-19-2417-50511) and ethical approval for this study obtained from the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia.

RESULTS

The Seven Aspects of QUEST

Quality scores for seven aspects of QUEST were expressed as minimum, maximum and median scores. Table 2 summarises the results. From the aspect of authorship, most websites showed all the other indications of authorship (median score, 1 [IQR= 1]). In term of attribution, most of the websites had reference to mainly identifiable scientific studies, regardless of format in more than 50% of claim (median score, 3 [IQR=6]). Given the type of study, most references used by the websites involved include vitro studies, animal models or editorials (median score, 0 [IQR= 2]). From the perspective of conflict of interest, most websites included endorsement or promotion of educational products and services such as books and care home services (median score, 3 [IQR=0]). In terms of currency, most articles were dated within the last five years (median score,

2 [IQR= 1]). For complementarity, all of the websites displayed support of patient-physician relationship (score= 1). Lastly, from the aspect of tone, most articles were mainly supported by their authors but with more cautious vocabulary such as 'can reduce your risk' or 'may help prevent' with no discussions of limitations (median score, 3 [IQR= 0]).

Table 2: Quality Scores for 7 Aspects of QUEST [a]

Aspects	Scores		
	Minimum	**Maximum**	**Median (IQR)**
Authorship	0	2	1 (1)
Attribution	0	9	3 (6)
Type of Study	0	2	0 (2)
Conflict of Interest	0	6	3 (0)
Currency	0	2	2 (1)
Complementarity	All the web pages score 1 for complementarity.		
Tone	0	6	3 (0)

a. skewed data

Overall Quality of Webpages

Table 3 summarises the overall quality of web pages on Management of T2DM. Most of the websites demonstrated moderate quality (n= 50) with median quality score of 18 (IQR= 9). The remaining websites were distributed evenly into group of excellent quality (median quality score, 27 [IQR= 3]) and group of very poor quality (median quality score, 11 [IQR= 0]).

Table 3: Overall Quality of Web pages on Management of T2DM [a]

Aspects	n	Quality Scores		
		Minimum	**Maximum**	**Median (IQR)**
Excellent	5	25	28	27 (3)
Moderate	50	13	23	18 (9)
Very Poor	5	10	11	11 (0)

a. skewed data

Quality Scores for Different Website Affiliation

Table 4 displays the quality scores for different website affiliations. Among all the websites providing information on management of T2DM, websites owned by private holders account for the most (n=30) with median quality score of 17.5 (IQR=9). Secondly, non-profit websites contributed to 17 of all of the websites available with median quality score of 18 (IQR=10), followed by academic websites (n=7) with median quality score of 22 (IQR=10). Government websites only accounted for 5 of all types of websites with a median quality score of 20 (IQR=14). Lastly, communication media related websites contributed the least (n=1) with a quality score of 14.

Table 4: Quality Scores for Different Website Affiliations [a]

Type of Affiliations	n	Quality Scores		
		Minimum	Maximum	Median (IQR)
Non profit	17	11	28	18 (10)
Academic	7	11	28	22 (10)
Government	5	10	27	20 (14)
Private	30	11	25	17.5 (9)
Communication Media	1	The score of communication media is 14.		

a. skewed data

Comparison of Quality among Different Website Affiliations

Table 5 shows the comparison of quality scores among different website affiliations. In our study, there was no statistically significant differences found in comparison among website affiliations (P=0.939).

Table 5: Comparison of Quality Scores among Different Website Affiliations

Variable	Type of Affiliations	N	x^2 statistics (df) [a]	P-value [a]
Website Affiliations	Non profit	17	6.873 (14)	0.939
	Academic	7		
	Government	5		
	Private	30		
	Communication media	1		

a. Kruskal Wallis Test

Comparison of Quality Scores between First 3 pages and Next three pages of Search Results

Table 6 shows the comparison of quality scores between the first three pages and the next three pages of search results. The adjusted means for scores of the first three pages and next three pages of search results were 20.8 and 15.1, respectively and the mean difference was -5.6 (95% CI: -9.0, -2.3). First three pages of search results scored significantly better than the next three pages. (P= 0.001)

Table 6: Comparison of Quality Scores between First 3 Pages and Next 3 Pages of Search Results

Search Results	**N**	**Adj. mean (95% CI) [a]**	**Adj. mean diff. (95% CI) [b]**	***F* stat. (df) [a]**	**P-value [c]**
First 3 pages	30	20.8 (18.7, 22.9)	- 5.6	12.16	0.001
Next 3 pages	30	15.1 (12.5, 17.7)	(- 9.0, - 2.3)	(1, 51)	

a. Adjusted Mean while the effect of website affiliations were adjusted

b. Bonferroni adjustment for 95% confidence interval for difference

c. Multi-factorial ANOVA

DISCUSSION

According to study conducted by Robillard et al. on the QUEST for quality online health information: validation of a short quantitative tool, their findings supported the QUEST as a reliable and valid tool to evaluate online articles about health. The study results supported it by providing evidence that the QUEST integrates the strengths of existing tools and evaluates quality with equal efficacy using a short, seven-item questionnaire. Their study concluded that the QUEST could serve as a rapid, effective, and accessible method of appraising the quality of online health information for researchers and clinicians alike (5).

In terms of content, Robillard et al. suggested that the QUEST tool is differentiated from the three other tools included in their analysis (DISCERN, HONcode and Sandvik) in its weighted measurement of tone, conflict of interest, and complementarity. These criteria address factors such as potential bias linked to the promotion of a product or intervention, whether support of the patient-physician relationship is referenced, and whether the information is presented in a balanced way. According to our study, from the aspect of tone, the authors support most articles, but

with more cautious vocabulary such as ‘can reduce your risk’ or ‘may help prevent’ with no discussions of limitations. From the perspective of conflict of interest, most websites include endorsement or promotion of educational products and services such as books and care home services. Meanwhile, from the aspect of complementarity, all of the websites display support of patient-physician relationship (6).

A study on quality assessment of the information available on the Web on gum disease conducted by Isabella et al. found that journalism with significantly higher JAMA scores were the most reliable as they usually provided with author and date, while commercial websites had lower JAMA score due to lack of crucial information in terms of authors’ name, date and references. Similar to our study, whereby higher quality scores were obtained by online health information which provide higher scores for the aspects of authorship, attribution and currency (9).

A cross-sectional study published in 2014 on the quality of online information on T2DM conducted by Weymann et al. assessed formal quality, usability and quality of decision support in English and German language websites on T2DM. They found that most of the websites met basic formal quality criteria such as disclosure of ownership and copyright information. Majority of the websites (83%) also had been updated in 2011 or 2012, which is within the last five years from the date of publish. Similar to our study, whereby most web pages dated within the last five years (median score, 2 [IQR= 1]). Other than that a study on evaluation of the quality and contents of DM patient education on Internet conducted by Thakurdesai et al. has found that the evaluation of Health Summit Working Group (HSWG) criteria compliance showed that most of the web-sites are good in credibility criteria like currency (10).

Conforming to our study, most of the web pages on Management of T2DM demonstrated moderate quality (n= 50) with median quality score of 18 (IQR= 9), while the remaining websites are distributed evenly into group of excellent quality (median quality score, 27 [IQR= 3]) and group of very poor quality (median quality score, 11 [IQR= 0]). Study on evaluation of the quality and contents of DM patient education on Internet conducted by Thakurdesai et al. has demonstrated considerable variability in quality of diabetic patient education web-sites concerning core educational concepts and HSWG criteria (10).

A study of assessment of the readability, quality and accuracy of online health information for patients with low anterior resection syndrome following surgery for rectal cancer conducted by Garfinkle et al. had a hypothesis that governmental websites may score the highest in overall suitability and quality as governmental organisations have more designated funding and infrastructure to construct a website that is well suited for patients than do academic or private institutions (11). This hypothesis is in contrast with our study whereby most academic websites had the best quality with median quality score of 22 (IQR= 10), while governmental websites had the second-best quality with median quality score of 20 (IQR= 14). In addition to that, Thakurdesai et al. also found that among the best sites obtained in K-mean cluster analysis, majority of the sites were hosted by non-profit organisations, which provides best quality patient education concerning the content and design. This observation is understandable in the background of the previous report on the accessibility of information on the web by Lawrence et al. that health-related web sites represent one of the most popular non-commercial websites in the world.

In our study, we found that there is no association between website affiliations and quality of websites providing information on the management of T2DM. This finding is contrary to the study conducted by Isabella et al. which assessed the quality of websites on gum diseases by using JAMA criteria and HONCode. According to their study, JAMA score of websites varied according to their affiliation with score ≥ three is considered high quality. From their results, journalism websites scored the highest, followed by Health Portals, while Commercial and Other websites scored the lowest. The study suggested that journalism websites demonstrated better quality as they usually provided with author and date.

On the other hand, commercial websites had a lower JAMA score due to lack of crucial information in terms of authors' name, date and references (9). Apart from that, another study conducted by Garfinkle et al. also stated that overall quality of websites were affected by affiliation. According to their study, governmental websites scored highest in overall suitability and quality. Nevertheless, there are a small number of studies showing that quality of websites is not correlated with website affiliations (11).

A study conducted by Weymann et al. stated that there was no significant difference between sites with commercial or non-commercial affiliation regardless of the quality domain. Most probably it is due to the heterogeneity of non-commercial websites. Non-commercial category comprises websites that are run by private holders or non-profit organisations as well as government or university sites and is heterogeneous concerning financial and personnel capacities, aims and scope (12).

Apart from that, another study conducted by Khazaal et al. also stated that there was no association between the origin of the websites and the quality of its content which be due to the smaller number of sites in other categories than commercial site. However, both studies compared quality between commercial and non-commercial websites, but our study did not include commercial websites (13).

Besides that, we also found that the quality of websites in the first three pages of search results were significantly better than that of in the next three pages of search results. This finding is consistent with findings proposed in the study conducted by Isabella et al. Their findings stated that The JAMA score of the top 10 websites returned by Google was significantly higher ($P<0.001$) than that of the remaining 186 websites of the Google. Top 10 results also had a higher proportion of websites with a JAMA score ≥ 3. Besides, the study also discovered that most of websites returned by Google with the HONCode accreditation are in the top 10. The study concluded that search algorithm in Google in some way considers some features that are indicators of trustworthiness and credibility. One of the essential attributes for a website to rank well in Google is its structure. Therefore, there is a possibility that websites with higher quality are structurally better organised as most Internet users tend not to view past third page of search results (9).

Meanwhile, a study conducted by Weymann et al. stated that formal quality of websites and website traffic are significantly correlated. Web traffic is defined by the number of visitors and visits a website received. The fact that they are associated might be due to common underlying principles such as clarity of the website, or both might be associated to a third factor like the degree of professionalism of the website author(s). However, this study did not specify coverage of Search Engine Results Pages (SERP) while evaluating the quality of web traffic (12).

The study has some limitations: Our study used only a type of search engine, which is Google. However, search results may be different with different search engines and may change over time. Another issue is that the previous search history may affect the results, a phenomenon which is called the "filter bubble", by which we received a search result tailored to what we like. Besides, our study only included 60 websites returned by Google, and this is a relatively small number. On the other hand, there were limited number of researches conducted to evaluate the quality of online health information by using QUEST, as well as researches on evaluation of T2DM information by other tools which imposed a great challenge for us to correlate with our studies.

CONCLUSION

The Internet can be a very powerful tool to help patients become better informed and more involved in their healthcare. For patients with T2DM where self- management is crucial for successful control of symptoms, the availability of right quality information is essential. QUEST provides a reliable, quantitative and valid quality evaluation method that can be applied to a broad range of health information. It measures six aspects of the quality of online health information (authorship, attribution, conflict of interest, currency, complementarity, tone) and demonstrated higher levels of inter-rater reliability as well as convergent validity with other established quality evaluation instruments. Based on our study, we found that the overall quality of online information for patients with T2DM is sub-optimal (mostly falls under moderate category). Apart from that, we also found that the quality of web pages are not affected by the website affiliations which is in contrary to many findings showing that websites affiliations influenced the quality of websites. Besides, we also found that the first three pages of search results displayed good quality website.

ACKNOWLEDGEMENT

We thank Miss Shirlie Chai for her assistance with this write-up and for comments that improved the manuscript.

REFERENCES

1. Sun Y, Zhang Y, Gwizdka J, Trace CB. Consumer Evaluation of the Quality of Online Health Information: Systematic Literature Review of Relevant Criteria and Indicators. Journal of Medical Internet Research [Internet]. 2019 Feb;21(5):1–21.

Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6521213/#__ffn_sectitle

2. Muhamad Radzi A, Draman N, Mohd Yusoff SS, Muhamad R. Depression and potential risk factors among the elderly with Type 2 Diabetes Mellitus in Kedah, Malaysia. Med J Malaysia [Internet]. 2019 Apr;74(2):103–7. Available from: http://www.e-mjm.org/2019/v74n2/depression.pdf
3. Keselman A, Smith CA, Murcko AC, Kaufman DR. Evaluating the Quality of Health Information in a Changing Digital Ecosystem. Journal of Medical Internet Research [Internet]. 2019;21(2):1–10. Available from: https://www.jmir.org/2019/2/e11129/PDF
4. Quick Guide to Health Literacy fact sheet [Internet]. U.S. Department of Health and Human Services Office of Disease Prevention and Health Promotion; 2019 Aug 4 [cited 2019 Aug 4]. Available from: https://health.gov/communication/literacy/quickguide/factsliteracy.htm
5. Robillard J, Alhothali A, Varma S, Hoey J. Intelligent and Affectively Aligned Evaluation of Online Health Information for Older Adults [Internet]. 2017 [cited 2019Aug]. Available from: https://cs.uwaterloo.ca/~jhoey/papers/Robillard-aaai2017.pdf
6. Robillard J, Jun J, Lai JA, Feng T. The QUEST for quality online health information: validation of a short quantitative tool. BMC Medical Informatics and Decision Making [Internet]. 2018Oct19;18(1). Available from: https://bmcmedinformdecismak.biomedcentral.com/articles/10.1186/s12911-018-0668-9
7. Beitzel S, Jensen E, Chowdhury A, Frieder O, Grossman D. Temporal analysis of a very large topically categorized Web query log. Journal of the American Society for Information Science and Technology [Internet]. 2006;58(2):166–78. Available from: http://ir.cs.georgetown.edu/downloads/beitzel-jasist-2007.pdf
8. Robillard J, Feng T. Health Advice in a Digital World: Quality and Content of Online Information about the Prevention of Alzheimer's Disease. Journal of Alzheimers Disease [Internet]. 2016;55(1):219–29. Available from: https://content.iospress.com/articles/journal-of-alzheimers-disease/jad160650
9. Bizzi I, Ghezzi P, Paudyal P. Health information quality of websites on periodontology. Journal of Clinical Periodontology [Internet]. 2017;44(3):308–14. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/jcpe.12668

10. Thakurdesai P, Kole P, Pareek R. Evaluation of the quality and contents of diabetes mellitus patient education on Internet. Patient Education and Counseling [Internet]. 2004;53(3):309–13. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0738399104000722?via=ihub
11. Garfinkle R, Wong-Chong N, Petrucci A, Sylla P, Wexner S, Bhatnagar S, et al. Assessing the readability, quality and accuracy of online health information for patients with low anterior resection syndrome following surgery for rectal cancer. Colorectal Disease [Internet]. 2019;21(5):523–31. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/codi.14548
12. Weymann N, Harter M, Dirmaier J. Quality of online information on type 2 diabetes: a cross-sectional study. Health Promotion International [Internet]. 2014;30(4):821–31. Available from: https://academic.oup.com/heapro/article/30/4/821/2355541
13. Khazaal Y, Chatton A, Cochand S, Zullino D. Quality of web-based information on cocaine addiction. Patient Education and Counseling [Internet]. 2008;72(2):336–41. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0738399108001675?via=ihub