

Quality evaluation of child feeding related websites on complementary feeding in Malaysia

Zi Jie Lim, Kanimolli Arasu, Seong Ting Chen

Introduction: The internet is widely used by parents to access child feeding related information. The accuracy and reliability of information available online remain uncertain. The objective of this study was to evaluate the quality of child feeding related websites on complementary feeding for children aged 6-24 months in Malaysia.

Methods: A cross-sectional study was conducted between December 2021 to April 2022 to evaluate complementary feeding-related websites in the Bahasa Malaysia (BM) language. The key terms were entered into Google Chrome and the first 30 websites were screened. Websites that could not be accessed due to broken links, duplicated websites and not freely accessible websites were excluded from the study. The quality was evaluated using Health-Related Websites Evaluation Form to appraise content, accuracy, author, currency, audience, navigation, external links, and structure of the web-based information. The website was rated as excellent (at least 90% of the total possible score), adequate (75-90%) and poor content (<75%).

Results: Twenty-one websites out of 1006 websites screened were selected for evaluation. 81% of the websites were rated as excellent while 19% were with adequate quality. Websites with excellent quality ratings had higher scores for currency ($p=0.039$) and navigation ($p=0.039$) as compared to adequate quality websites.

Conclusions: This study highlighted that complementary feeding practices websites in the BM language were generally of good quality. The accuracy, currency and content of these websites can be further improved by including the resources developed by

dietitians to optimise child feeding practices for optimal growth and development of children between 6–24 months.

Keywords: *Child feeding information, evaluation, internet, quality, websites*

Introduction

The internet has become a vital mass medium for consumers to seek health-related information online.¹ There are growing numbers of internet users in Malaysia. The Department of Statistics Malaysia (DOSM) showed that in 2020, 91.7% of Malaysian households were using the internet.² In addition, the percentage of the Malaysian population that uses the internet to search for health-related information and services increased from 45.2% in 2019 to 61.9% in 2020.³ Among all internet search engines, Google Chrome is the most used browser by Malaysians.⁴

Parents are increasingly accessing the internet to seek information on supporting the growth and development of their children in different life stages.⁵ Child feeding information obtained from multiple resources leads to confusion,⁶ especially since the websites chosen are not evidence-based.⁷ This leads to difficulties in distinguishing between trusted and untrusted websites or reliable and unreliable information. Unusually, parents rated unreliable information as helpful⁸ which leads to detrimental feeding practices.

Inappropriate complementary feeding practices such as solids not introduced after six months of age cause long-term feeding problems.⁹ In the local setting, a study of 300 children between 6–24 months of age

Division of Nutrition and Dietetics, School of Health Sciences, International Medical University, Malaysia.

Corresponding author:

Dr Seong Ting Chen – Division of Nutrition and Dietetics, School of Health Sciences, International Medical University, Malaysia.
Email: ChenSeongTing@imu.edu.my Telephone: 016-9900986

showed only 68.8% of breastfed infants and 34.6% of non-breast-fed infants had a minimally acceptable diet.¹⁰ Children's first foods and feeding experience can impact their immediate survival as well as over their lifetime.¹¹ Thus, it is crucial to ensure that parents obtain reliable and trusted information on child feeding practices to prevent any potential risks.¹² However, the wide access to multiple information online with no known credibility can be detrimental.¹³ There is limited information on the quality of the websites providing information regarding child feeding practices. Hence, this study was conducted to evaluate the quality of child feeding related websites on complementary feeding for children aged 6–24 months in Malaysia.

Methods

Study design

This study was a cross-sectional study conducted from December 2021 to April 2022. Ethical approval was obtained from the IMU Joint Committee on Research and Ethics [BDN I-2021 (07)].

Inclusion and exclusion criteria

The inclusion criteria included websites that provide child feeding information in the Bahasa Malaysia (BM) language and with the latest updated content from 2014 onwards. Websites with advertising content and related to industries were also included. The exclusion criteria were duplicate websites, websites that require payment for access, websites that involve research output (journals) and websites that provide child feeding information in other languages.

Data collection

Stage 1: Website Selection

Google Chrome was used to search for child feeding related websites. The relevant key search terms in the Bahasa Malaysia language used were “*memperkenalkan makanan pelengkap* (introducing complementary food), *makanan pelengkap* (complementary food), *kanak-kanak berusia 6–24 bulan* (children between 6-24 months), *alahan pemakanan* (food allergies), *rumusan bayi* (milk formula), *makanan jejari* (finger food), *jadual makanan bayi 6–24 bulan* (meal plan for 6–24 months), and *makanan separa pepejal* (semi solid food)”. The first 30 websites in the Google Chrome search engine were screened. This was based on the consideration that most users usually clicked and looked through the search output within the first three pages.¹⁴ Websites that met the inclusion criteria were selected for evaluation. The searching of websites was done by one researcher while the selection of the websites for evaluation was done by all the researchers.

Stage 2: Website Evaluation

The selected websites were evaluated using the Health-Related Website Evaluation Form (HRWEF)¹⁵ to assess the quality of selected websites. The evaluation components of this form included website information, content, accuracy, author, currency, audience, navigation, external links, and structure. Two (2) points were given if the website met the criteria of the subcomponent, 1 point if it did not meet the criteria and 0 point if the criteria did not apply to the respective website. The rating

of websites was based upon the Malaysian Dietary Guidelines for Children and Adolescents 2013 and the Recommended Nutrient Intake 2017. A total possible point was computed to determine the overall rating of the website. If the website scored at least 90%, it was rated as “Excellent”, indicating this website is an excellent source of information that can be recommended to the readers. Readers can easily access and understand the information contained on this site. The website that scored at least 75% was rated as “Adequate”, indicating the website provides relevant information and can be navigated without much trouble. However, it might not be the best website possible. Care should be taken to discuss what information was found on this website and what information is still needed. The website that was rated “Poor” was those with score < 75%, indicating the website should not be recommended. The validity and reliability of the information that appeared on these websites cannot be confirmed.¹⁵

Statistical Analysis

The data collected was analysed using SPSS version 28.0. Descriptive statistics were used to describe the evaluation components’ scores and quality categories of the websites. Independent student t-test and Mann-Whitney test were used to assess the difference in total percentage score of the evaluation components between website quality categories. The Spearman Correlation was used to examine the correlation between

each evaluation component of the HRWEF. The correlation coefficient (r-value) greater than 0.3 represented a positive correlation. The significance level was set at $p < 0.05$ with a 95% of the confidence interval.

Results

By inserting the key search terms into the Google Chrome, the first 30 websites were reviewed and a total of 1006 websites were selected for screening. Only 69 websites met the inclusion criteria, and these websites were further screened. Forty-eight websites were eliminated due to insufficient information for evaluation criteria to evaluate the quality of the complementary feeding practices. Twenty-one websites were eligible for evaluation (Figure I).

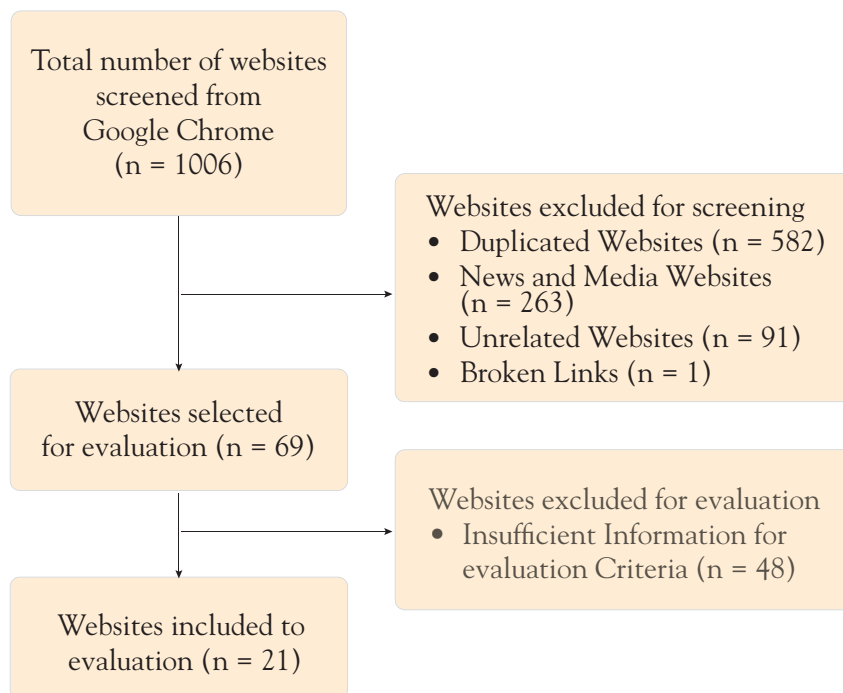


Figure I: Flow chart of website selection for evaluation

Website Quality

The 21 websites evaluated had an average score of 92.38 ± 3.65 . The majority of the websites (81%) were categorised as excellent (mean score: 93.65 ± 0.61). There were four websites which were categorised in the adequate category (mean score: 87.00 ± 1.41). There was no website with poor quality.

Percentage Score for Evaluation Components

Table I presents the mean percentage score for evaluation components of websites. The component

of whether the information was suitable for the intended audience (100.0 ± 0.00) and the ease of navigation (99.52 ± 2.18) scored the top two highest percentage scores. The audience can understand the website’s information as limited jargon was used and the reading level was suitable for the target audience. Besides, the majority of the websites could be easily found and navigated by using search mechanisms. On the other hand, the websites that had lower scoring on external links (31.05 ± 41.42) as a majority of these websites did not provide the reliable external links that connect to reliable information or sources.

Table I. Percentage Score for Evaluation Components of the 21 selected websites

EVALUATION COMPONENTS	TOTAL PERCENTAGE SCORE (MEAN ± SD)
Content	88.10 ± 6.80
Accuracy	95.24 ± 10.06
Author	88.33 ± 26.14
Currency	95.24 ± 21.82
Audience	100.00 ± 0.00
Navigation	99.52 ± 2.18
External Links	31.05 ± 41.42
Structure	85.24 ± 5.12

The data is presented in mean ± SD

The difference in the websites categorised as “excellent” and “adequate”

As shown in Table II, there was a significant difference ($p = 0.039$) between the excellent and adequate quality websites in terms of the latest updated information (currency) and ease of navigation. The

other evaluation components did not differ between the excellent and adequate quality websites ($p > 0.05$). A higher number of websites in the excellent category had the latest updated information (currency) and were easier to navigate compared to the adequate quality websites ($p=0.039$).

Table II. Difference of Total Percentage Score of the Evaluation Components between Website Quality Categories

EVALUATION COMPONENT	EXCELLENT (n=17)		ADEQUATE (n=4)		P-VALUE
	MEAN±SD	MEDIAN (IQR)	MEAN±SD	MEDIAN(IQR)	
Content	89.41±6.59		82.50±5.00		0.065
Accuracy	97.06±8.30		87.50±14.43		0.087
Author	91.47±25.36		75.00±28.87		0.267
Currency ^a		100.00 (0.00)		100.00 (75.00)	0.039*
Audience ^a		100.00 (0.00)		100.00 (0.00)	1.000
Navigation ^a		100.00 (0.00)		100.00 (8.00)	0.039*
External Links	30.82±43.40		32.00±37.27		0.961
Structure	85.29±5.15		85.00±5.77		0.921

SD: Standard deviation; IQR: Interquartile Range.

Data expressed as mean ± SD unless otherwise stated. Independent sample t-test was used for normally distributed data.

^a Presented as median (IQR). Mann-Whitney test was used for statistical analysis of skewed data.

* P < 0.05 was considered statistically significant.

Discussion

This study found that child feeding related websites in the BM language were mostly of excellent quality. This is a contrasting finding to the results of the systemic review which states that the majority of infant feeding websites were scored poor quality.¹³ However, the systemic review evaluated 600 English websites while our study only evaluated 21 BM websites. It is pertinent that the child feeding related websites need to be of good quality as in recent years mobile health technologies and digital nutrition promotion through websites are considered as promising strategy to improve child feeding practices.^{16,17}

Besides being of good quality, the websites evaluated in this study scored highly in the “accuracy” component. Comparatively, a local study done by Mohd Shukri N *et al* (2022) showed that almost half of the data on the Facebook posts on breastfeeding information was deemed to be misleading and inaccurate.¹⁸ However, these were based on Facebook posts which can be posted by any individuals compared to the websites we evaluated which were managed by non-governmental organisations and industries. The accuracy of data on websites related to feeding practices is important as inaccurate information can adversely influence and mislead parents on their understanding of children’s nutritional needs.¹⁹

Additionally, the evaluated websites in this study provided current and relevant information as this was evident through high scores obtained for the evaluation component of “currency”. The websites posted the publication date and updated the information according to any changes in the field. This is important as outdated information is a noteworthy obstacle towards education and could be easily misled by the information obtained from internet resources.²⁰

Even though most of the websites had a good quality rating, we found that the website could be further improved in several evaluation components. For example, a moderate percentage score was obtained in the evaluation component of “author”. Most websites did not have information of the name, educational background, the author’s credibility, and the institution associated with the authors. This is crucial as identification of authorship is important as readers would trust a particular website if they recognised the authorship to be trustworthy.²¹

Majority of the readers (83%) would rate trusted websites based on their “content” instead of the “design” of the websites.²² Similarly in our study we found that the percentage score in “content” was higher than the “structure” component. The moderate scoring was due to most of the websites evaluated did not clearly state or infer the purpose and the external links were not fully provided. This can be further supported by the observation on the lowest score for the evaluation component of “external links”. External links are important as they help to increase visibility and relevance of website, add value to user experience and increase back linking opportunities which in return optimises ranking in various search engine resource page.²³

Another important finding was the differences in the excellent quality and adequate quality website in terms of “currency” and “navigation” evaluation components. The total percentage score of both “currency” and “navigation” were higher for the “excellent” quality of websites as compared to “adequate” quality. Not all websites in the adequate quality group managed to revise their information in line with the latest guidelines such as the Malaysian Dietary Guidelines for Children and Adolescent (2013).²⁴ For instance, the website did not follow the accurate information according to the guideline on the recommended daily food intake according to different age groups that can influence the nutritional needs of the children. Additionally, for the “navigation” component, the internal links provided by the “adequate” quality websites did not really add to the usefulness of the websites, as compared to “excellent” websites.

There were a few limitations in our study. Firstly, the websites were limited to Bahasa Malaysia-based websites which were not representative of all websites accessed by Malaysian parents. Next, the selection of the websites was based upon the specific keywords in the official BM language. This study did not include other ethnic language and non-proper or slang terms in BM language. Hence, the websites chosen may not reflect the whole child feeding related information available. Additionally, the researchers did not evaluate the readability of the information on the selected websites which may limit the accessibility especially for individuals with a lower educational background.^{5,11}

Conclusion

In short, the quality of child feeding websites in the BM language for children aged 6–24 months in Malaysia is generally of good quality. The study findings also identified the areas for improvement to increase the

quality and usability of the information on child feeding related websites. Organisations and website creators should include healthcare professionals to ensure the content in the websites is evidence-based and accurate to prevent child feeding malpractices among the parents.

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