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READABILITY OF COVID-19 INFORMATION BY THE MALAYSIAN MINISTRY OF HEALTH

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ABSTRACT

Background and Purpose: COVID-19 pandemic has caused catastrophe to global health. To collectively break the chain of infection, the Malaysian Ministry of Health (MMoH) disseminates information about COVID-19 through its official websites. Since they are intended for the general public, this crucial information must be easy to comprehend. A textual analysis was conducted to assess the readability level of COVID-19 information by the MMoH.

Methodology: Out of 661 materials related to COVID-19 from four MMoH's websites, 14 texts were purposively selected for the analysis. The Formula Kebolehbacaan Khadijah Rohani (FKKR) and Sistem Kebolehbacaan Bahasa Melayu (SPIKE) were then employed to check their reading difficulty.

Findings: It was found that most of the texts were written above the recommended level, 6th grade or year 6. The findings suggest that this information is readable to three-quarters (78.7%) of Malaysian adults aged 15 and above. However, the remaining 21.3% of the same population, which equals 5.3 million Malaysian adults, may not be able to comprehend this information due to their illiteracy or minimal education. SPIKE Dyslexia scores revealed that nine texts are categorised as difficult. This could impede those with reading difficulties to understand the COVID-19 information provided by this ministry.

Contributions: These research findings are hoped to be useful for the improvement of health literacy among the general public by taking into account reading difficulty of health information.

Keywords: COVID-19, health literacy, health seeking information, readability, readability formulae.

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1.0 INTRODUCTION

On 31 December 2019, the World Health Organization (WHO) was notified of cases of pneumonia of unknown aetiology associated with those who visited an animal market in Wuhan City, Hubei Province of China (WHO, 2020a). A week later, the China authorities discovered that a new type of coronavirus was responsible for these (WHO, 2020b). The virus was confined to China on 12 January 2020 but became a global problem the next day (Amos, 2020). Officially named as SARS-CoV-2 (COVID-19), the virus has claimed 211, 202 lives (Worldometers, 2020) as of 28 April 2020 and put 4.5 billion people across the globe under some form of lockdown (AFP, 2020).

Due to its contagiousness and rapid spread, WHO (2020c) recommends all countries to beef up their readiness to combat the virus and those with imported cases and/or outbreaks of COVID-19 to "fully educate the general public on the seriousness of COVID-19 and their role in preventing its spread" (p. 21). The advent of the Internet allows information to be disseminated on a large scale. Thus, it is common for public health providers to use their official websites to educate and update the public on the current state of COVID-19. Since websites are intended for the general public, the information provided must be easy to comprehend. Writing at the recommended reading level can help achieve this.

2.0 LITERATURE REVIEW

2.1 Online Health Information Seeking

It is a fact that many Internet users search for health information online. This is because the health Internet "offers a wide range of benefits, to individual consumers and health professionals, as well as to national health systems and global public health" (WHO, 2015, para. 1). A 2003 report by Fox and Fallows (2003) revealed that about 93 million Americans have gone online to search for information on at least one major health topic. A more recent

study in the State revealed that those who are more educated, younger, higher socioeconomically and more IT literate are at an advantage of these sources (Jacobs, Amuta, & Jeon, 2017).

In Malaysia, 86.9% of 2,402 Internet users studied stated that they surfed the Internet to look for information. Of those, the majority searched for health information and surprisingly more than 80% believed that the information searched was credible regardless of the source (Malaysian Communications & Multimedia Commission, 2017). Another similar study conducted by the Institute for Health Behavioural Research National Institutes (2018) on 799 Malaysian elderly aged 60 and above, 89.4% of them indicated that they used the internet to search for health information due to three main reasons; personal health problems, free access and convenience. With the proliferation of health information and health seekers on the web, Chen, Li, Liang, and Tsai (2018) concluded, "the influence that online health information has on online health information seekers' medical decision making is visible" (p. 8). Therefore, websites that are too difficult to understand can negatively impact Internet users who go online to learn about and improve their health.

2.2 Health Literacy and Recommended Reading Levels of Health Information

According to Henry (2006), content developers play a pivotal role in ensuring web accessibility for users with and without disabilities. This can be a concern for those with limited health literacy because they tend to engage in riskier health practices which could lead to worse health outcomes such as increased morbidity and premature death (WHO, 2013). A nationwide study on health literacy by the Institute for Public Health (2015) revealed that the level of adequate health literacy among Malaysian adults was only 6.6%. To improve health literacy, information provided must be easy to read if it is intended for the general public. To reach them, the content imparted should not exceed 6th to 7th grade reading levels (Backinger & Kingsley, 1993). However, the Joint Mission recommends patient education materials (PEMs) to be written at 5th grade or lower. These two recommendations are based on the average reading skills of US adults, 8 to 9th grades (Wallace & Lennon, 2004; Davis & Wolf, 2004).

Unfortunately, studies on the reading levels of printed and online health materials show that many were written above the recommended level. For example, websites on varicose pain (Nair & Menezes, 2014), professional radiation oncology (Byun, 2013), adult reconstruction (Polishchuk, Hashem, & Sabharwal, 2012), online physical activity, exercise and sport information for people with schizophrenia (Gorczynski, Patel, & Ganguli, 2013), asplenic patients (Downing, Omar, Sabri, & McCarthy, 2011) and medical tourism hospital websites

(Daud & Ab Hamid, 2014), most of the materials studied were written at 11th grade and above which were suitable for a sophomore in college. However, Wong, Saddki, and Tin-Oo, (2019) found that oral health education pamphlets in the Malay language were suitable and readable to most Malaysians.

2.3 Health Literacy and Readability Formulae

Health literacy can be improved by writing in plain language (National Partnership for Women & Families, 2009; WHO, 2013). Gilliver (2015) defines plain language as "writing in clear, concise language that is easy to read and understand" (p. 1) and further claims it is part of readability. Readability, on the other hand, is "what makes some texts easier to read than others" (Dubay, 2004, p. 3). Readability formulae can be used to estimate the relative reading difficulty of texts (Fry, 2002) and they "offer the healthcare provider an easy-to-use method to assess the reading difficulty of most print materials" (Doak, Doak, & Root, 1985, p. 44). The National Partnership for Women and Families (2009) recommend using readability formulae to revise the written health materials. Among popular readability formulae are Fry Readability Graph, Simple Measure of Gobbledygook and Flesch Reading Ease.

Despite numerous criticisms reported on the accuracy, consistency and usability of these reading formulae (Janan & Wray, 2014; Begeny & Greene, 2014; Redish, 2000), these formulae remain useful 'to increase readership and comprehension on a large scale' (Fry, 2002, p. 290). In fact, Friedman (2006) discovered that older adults' comprehension and the readability of cancer information on the Internet correlated significantly. When the readability of health information was improved, the comprehension of a group of medical students and middle-class patients on the selected pamphlets increased (Baker, Newton, & Bergstresser, 1988). Thus "an approach that considers the literacy level of the readers and the readability of the text should prove beneficial in the development of a health literate student" (Schutten & Mcfarland, 2009, p. 5).

2.4 Readability Formulae for Malay Text

Most of the existing formulae were designed for English text. Realising this gap, Md Yunus (1982) in her doctoral study proposed a readability formula for Malaysian prose. The formula is more commonly known as Formula Kebolehbacaan Khadijah Rohani (FKKR). The scores gained correspond to the educational level and duration of formal education in Malaysian (Wong et al., 2019). The FKKR has been used to assess the reading difficulty of various

discourses (Hazawawi, Zakaria, & Hisham, 2016; Hashim, 1998; Janan, 2003). Based on this equation;

Khadijah Rohani's Readability Level = A -13.988, where

$$A = \left(\frac{Number\ of\ words}{Number\ of\ sentence} \times 0.3793\right) + (\text{no. of syllables} \times 0.0207)$$

Md Yunus (1982) concluded that vocabulary and word factors are two variables that could excellently predict text difficulty.

A more contemporary formula is Sistem Kebolehbacaan Bahasa Melayu (SPIKE) by Hazawawi et al. (2016). The SPIKE formula is claimed to be an extension of Md Yunus formula (Hazawawi et al., 2016). According to Hazawawi et al. (2016), the formula can process two types of readability scores, scores for normal readers and scores for readers with dyslexia by taking into account potential difficult words (reduplications, diphthongs, loan words and letter reversals). The formula for this is as follows:

SPIKE Readability Level = A -13.988, where

$$A = \left(\frac{Number\ of\ words}{Number\ of\ sentence} \times 0.3793\right) + (\text{no. of syllables + potential difficult words} \times 0.0207)$$

Based on their studies on young adults with dyslexia, Hazawawi et al. (2016) concluded that SPIKE can 'benefit [the] general public particularly people with reading difficulties including dyslexics in measuring their reading competencies and to check whether a reading material is suited for their age' (p. 123). The formula can be accessed at http://spikeutem.azurewebsites.net/Home/DyslexiaCalculator.

The objective of this study was to evaluate the readability level of COVID-19 information provided by the MMoH on their websites. There are four websites linked to the MMoH which are www.infosihat.gov.my (managed by the Health Education Division), http://www.myhealth.gov.my (as one of the MSC Telehealth Flagship Applications)**,** http://www.moh.gov.my (the main page) and https://www.doctoroncall.com.my (MMoH in partnership with DoctorOnCall) which have served as platforms by the MMoH to educate the public on COVID-19. Among the contents and services provided are infographics, e-pamphlets, FAQs, articles on various health topics and virtual consultations.

3.0 RESEARCH DESIGN

This textual analysis employed two readability formulae designed for Malay text, which are FKKR (Md Yunus, 1982) and SPIKE (Hazawawi et al., 2016). According to Cronin (2007), using several readability formulae can present a more comprehensive assessment. Purposive sampling was done to select health articles or texts related to COVID-19 from four websites linked to the MMoH, www.infosihat.gov.my, http://www.myhealth.gov.my, http://www.moh.gov.my and https://www.doctoroncall.com.my. Since each website has dedicated a specific page on COVID-19, any information related to COVID-19 from these pages was retrieved, tabulated and categorised according to its type and the language used. The sampling was done until 1 May 2020. Table 1 below presents the details of the information:

Table 1: Details of COVID-19 related information from the four MMoH websites

	Infosihat	**MOH**	**Myhealth**	**Doctoroncall**
Title	Wabak Coronavirus COVID-19	Novel Coronavirus (nCov)	Wabak Coronavirus (COVID-19)	Virtual Health Advisory Portal Novel Coronavirus (COVID-19)
Articles				Malay (10)
Infographics, Pamphlets, Posters,	Malay (163), English (24), Mandarin (4), Multi (3)	Malay (32), English (11), Mandarin (1), Multi (2)	Malay (102), English (12)	
Videos (Education & Press)	Malay (21), English (3), Mandarin (1), Tamil (1)	Malay (78), English (1), Mandarin (1), Tamil (1)	Malay (13)	
Media (Statements & News Excerpts)	Malay (2)	Malay (108), Multi (9)		
Frequently asked questions (FAQs)	Malay (1)		Malay (1)	Malay (1)
Guidelines or Procedures for Health Workers	Malay (2)	Malay (11), English (41), Multi (1)		
Others (links, services & web pages)		Collaboration (1) Online appointment (1)		Services from other hospitals (1), Virtual Consultations (1), Self assessment (1)
Total	Malay (189), English (27), Mandarin (5), Tamil (1), Multi (3)	Malay (229), English (53), Mandarin (2), Tamil (1), Multi (12)	Malay (116), English (12)	Malay (11)

Overall, there were 661 materials inclusive of redundant ones related to COVID-19 with five categorised as others (links to various websites, hospitals and services, virtual consultations and self-assessment). These 661 materials were then grouped according to their information

type and the language communicated. Once grouped, 545 were found to be written in Malay, 92 in English, 15 are multilingual and the remaining four either in Mandarin or Tamil. Of these, only 14 were analysed because of the following reasons: 1) Since readability studies are concerned with text difficulty, only information that was textual in nature was studied. Therefore, the videos related to COVID-19 were excluded from the analysis; 2) The information must be health-related and educational. Thus, web pages that promote services in general, press updates and appreciation notes were automatically omitted; 3) The information must be written in Malay because the FKKR and SPIKE are designed for Malay text. It is true that there is a plethora of readability indices for English text. However, this study focused on the Malay language since it is the official language of Malaysia in line with Wong et al. (2019) approach; 4) The information is intended for the public in general. Hence, guidelines for health workers and virtual consultations that were meant for specific individuals but shared online in the case of Doctor on call were deemed irrelevant; and 5) The text must contain at least 300 words. This is required by the FKKR. According to Wong et al. (2019, p. 313), "if the number of words in the text is less than 300, the resultant score would become negative and hence rendered irrelevant". Because of this requirement, almost all the infographics, pamphlets and posters were not included in the analysis.

3.1 Readability Assessment

To calculate the FKKR scores, the following steps were taken (Md Yunus, 1982; Wong et al., 2019; Hazawawi, Zakaria, & Hisham, 2015);

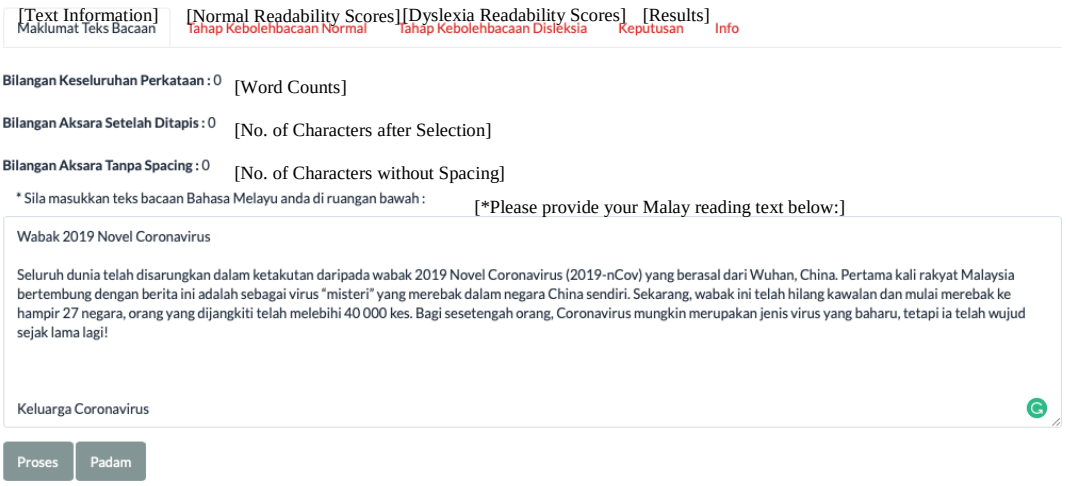
1. For short passages, each passage studied should consist of at least 300 words.
2. If the text was long, a sample of 100 words would be taken from the beginning, middle and end of the text.
3. Samples that contained too many numbers, proper nouns, abbreviations or any non-words were avoided.
4. The number of words, sentences and syllables were counted.
5. All the words would be studied.
6. Once the above completed, the following equation was applied:
   Y (Readability index) = -13.988 + 0.3793 × (words per sentence) + 0.0207 × (no. of syllables)
7. If there was a decimal point, the number would be rounded to the nearest tenth.
8. The scores gained would, then, be matched according to Table 2 below:

Table 2: Readability level according to the FKKR and the corresponding education level and duration of formal education in Malaysia

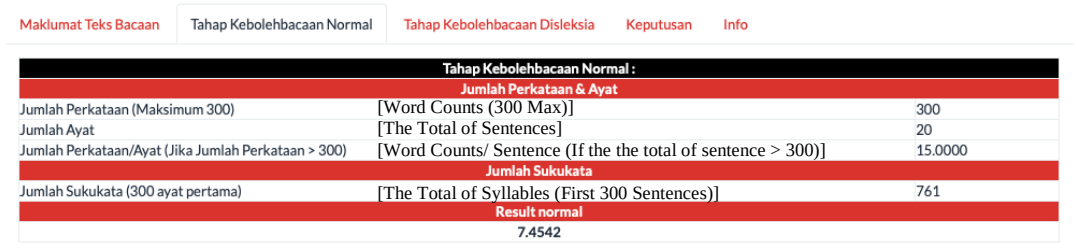
Readability Level	**Primary or secondary level**	**Duration of formal education**
1	Primary 1	1
2	Primary 2	2
3	Primary 3	3
4	Primary 4	4
5	Primary 5	5
6	Primary 6	6
7	Secondary 1	7
8	Secondary 2	8
9	Secondary 3	9
10	Secondary 4	10
11	Secondary 5	11

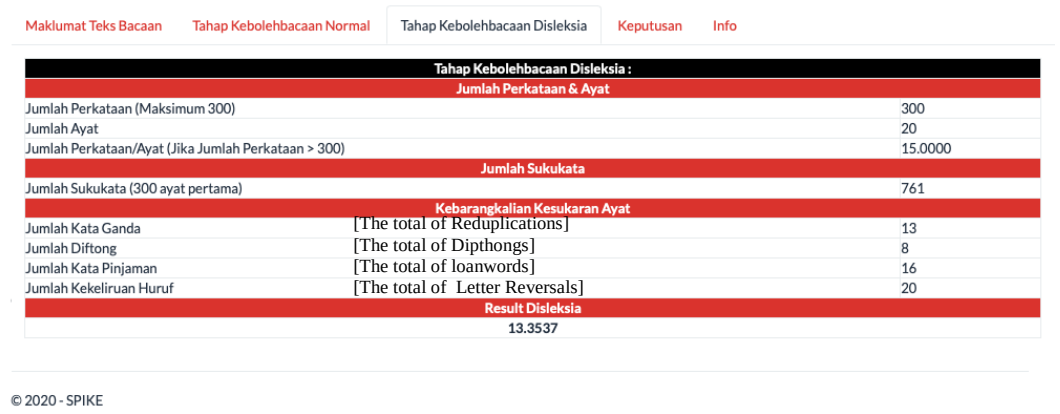
To calculate the SPIKE scores, the following step were taken (Hazawawi et al., 2015)

1. Since SPIKE is an extension of FKKR, the steps 1 to 3 outlined above were followed.
2. When logging in, the page http://spikeutem.azurewebsites.net/Home/DyslexiaCalculator would provide an option (*pengiraan disleksia*) to calculate the texts.
3. The texts studied would then be pasted to the screen as illustrated below. Please note that the authors provided English translations in the square brackets for the convenience of English readers. This may change the original layout of the pages.



4. Once processed, the page would display three kinds of result as shown below;





[The text is for 7to 12 years]
[The texts is for 13 to 17 years]
[The text is for 18 years and above]

[Difficult Text/ Essay]

Pearson correlation analysis was run to determine the inter-relationship between the indices used which is presented in Table 3.

4.0 ANALYSIS AND DISCUSSION

The main objective of this study was to assess the readability level of COVID-19 information by the Malaysian Ministry of Health. Tables 3 and 4 below present the readability scores for FKKR and SPIKE and their correlations.

Table 3: FKKR and SPIKE readability scores

No	Title	Sources	FKKR	SPIKE	
				Normal	Dyslexia
1.	Peristiwa Penting Dalam Dekad Baru 2020 - Wabak 2019 Novel Coronavirus [Major event in the Year of 2020 – Novel Coronavirus 2019]	https://www.doctoroncall.com.my	8	7	12 (Intermediate)
2.	Dua Cara Utama 2019-nCoV tersebar. Haiwan Ke Manusia vs Manusia Ke Manusia [Two main ways of nCov 2019 transmission: Animal to Human vs Human to Human]	https://www.doctoroncall.com.my	10	9	15 (Difficult)
3.	Ketahui Gejala, Tanda & Simptom Penyakit Coronavirus Sebelum Terlambat! [Learn the Signs & Symptoms of Coronavirus Before It's Too Late]	https://www.doctoroncall.com.my	11	8	13 (Intermediate)
4.	Bagaimanakah nCoV Didiagnos? Apakah Ujian Saringannya? Layari DoctorOncall. [How is nCoV diagnosed? How is it screened? Visit DoctorOncall]	https://www.doctoroncall.com.my	9	9	16 (Difficult)
5.	Beberapa Komplikasi Berbahaya Disebabkan Oleh Jangkitan Coronavirus [Several Serious Complications caused by Coronavirus]	https://www.doctoroncall.com.my	9	7	13 (Difficult)
6.	Adakah Coronavirus Boleh Dirawat & Apakah Cara Untuk Mencegahnya? [Is Coronavirus Curable & How to Prevent?	https://www.doctoroncall.com.my	11	10	17 (Difficult)

7.	Pelajari Tentang Sejarah Wabak Coronavirus, MERS-CoV dan SARS-CoV. [Learn the History of Coronavirus Outbreaks, MERS-CoV and SARS-CoV.]	https://www.doctoroncall.com.my	9	8	14 (Difficult)
8.	Ketahui Mitos & Fakta Tentang Coronavirus Yang Mungkin Anda Tidak Tahu [Must-know Myths & Facts about Coronavirus that You Might Overlook]	https://www.doctoroncall.com.my	8	8	14 (Difficult)
9.	Untuk Kegunaan Rumah Ibadat Di Negeri [For State Houses of Worship]	https://www.infosihat.gov.my	8	6	10 (Intermediate)
10.	Soalan Lazim: Penyakit *Novel Coronavirus* (Covid-19) [FAQs: Novel COVID-19]	https://www.infosihat.gov.my	9	8	13 (Difficult)
11.	Pertanyaan Lazim *Novel Coronavirus* (Covid-19) [FAQs: Novel COVID-19]	https://www.doctoroncall.com.my	7	6	11 (Intermediate)
12.	Soalan Lazim: Penyakit *Novel Coronavirus* (Covid-19) [FAQs: Novel COVID-19]	http://www.myhealth.gov.my	9	9	15 (Difficult)
13.	Kad Amaran [Health Alert Card]	https://www.infosihat.gov.my	6	6	10 (Intermediate)
14.	Garis Panduan Pembersihan dan Disinfeksi di Tempat Awam [Guidelines on Cleaning and Disinfecting the Public Places]	http://www.moh.gov.my	9	7	14 (Difficult)

Table 4: Pearson Correlation between reading results using FKKR and SPIKE indices

		FKKR	SPIKE (Normal)	SPIKE (Dyslexia)
FKKR	Pearson Correlation	1	.761**	.725**
	Sig. (2-tailed)		.002	.003
	N	14	14	14
SPIKE (Normal)	Pearson Correlation	.761**	1	.939**
	Sig. (2-tailed)	.002		.000
	N	14	14	14
SPIKE(Dyslexia)	Pearson Correlation	.725**	.939**	1
	Sig. (2-tailed)	.003	.000	
	N	14	14	14

**. Correlation is significant at the 0.01 level (2-tailed).

Overall, 14 texts: DoctoronCall 64.3% (9), Infosihat 21.4% (3), MOH 7.1% (1), Myhealth 7.1% (1) were analysed to measure their readability level. The mean readability level of the FKKR scores is 8.9. It was found that only 7.1 % of the information is suitable for primary 6 students. While the remaining 92.9% is suitable for secondary school students: 7.1% (secondary 1 & 4), 21.4% (secondary 2), 42.9% (secondary 3), and 14.3% (secondary 5). Using the same source of information, the SPIKE scores for normal and dyslexic people were obtained. For the SPIKE Normal scores, 21.4% of the information is suitable for primary school students and the remaining (78.6.3%) for secondary school students. As for SPIKE Dyslexia scores, 9 out of 14 texts (64.3%) are categorised as difficult and the rest are intermediate. The correlation of each readability formula is at 0.01 level using the correlation test. The correlation between FKKR and SPIKE Normal is 0.761 while the correlation between FKKR and SPIKE Dyslexia is 0.725.

There are different recommendations with regards to the reading levels for the general public, 5th to 7th grade or even lower (Backinger & Kingsley, 1993). This study concurs with the findings by the Health Literacy Innovation (n.d.) where most of the states surveyed in the US requested a 6th grade reading level for printed Medicaid materials. This is equivalent to primary six or year 6 of elementary school in Malaysia. Although these recommendations were mostly based on the average reading skills of US adults, 8 to 9th grade (Wallace & Lennon, 2004; Davis & Wolf, 2004), they can nevertheless be generalised to the Malaysian population.

This is consistent with Wong et al. (2019) study when they set their standard recommended level by considering literacy and educational attainment of the Malaysian population. In the Malaysian context, literate people are those who have attended or are currently attending school (UNESCO, 2014; Malaysian Ministry of Education, 2019). According to a 2019 report by the Malaysian Ministry of Education (MMoE), out of 24.8 million Malaysians aged 15 and above, 4.1% were illiterate. For the remaining 95.9%, 17.2% managed to complete their primary education, 52.6% continued their secondary education and 26.1% graduated with tertiary education. Moreover, the actual reading skills could be four or five grades lower than the years of schooling attained (Doak & Doak, 1980). Thus, 6th grade or year 6 as the standard recommended level is deemed relevant in the context of Malaysia.

Generally, 93% of the texts on COVID-19 by the MMoH were above the recommended levels thus supporting the previous studies (Nair & Menezes, 2014; Byun, 2013; Polishchuk, Hashem, & Sabharwal, 2012; Gorczynski, Patel, & Ganguli, 2013; Downing et al., 2011; Daud & Ab Hamid, 2014). Based on the educational attainment statistics by the MMoE and the findings, it can be concluded that three-quarters (78.7%) of Malaysian population Malaysian adults aged 15 and above would be able to read this information. This is similar to what Wong et al. (2019) found when studying the oral health education (OHE) pamphlets by the MMoH. However, this discovery also indicates that a small portion (4.1%) of this population may not be able to understand or even read the information due to their illiteracy. If combined with those who only completed their elementary education, 21.3% or 5.3 million Malaysian adults may not be able to comprehend this information at ease since most was written at 8th grade which is suitable for Standard 2 secondary school students. As a result, this population may be exposed to poorer health outcomes.

Hazawawi et al. (2016) improvised the FKKR by adding potential difficult words to its mathematical operations. This would allow the formula, SPIKE, to gauge the reading difficulty for dyslexic readers (Hazawawi et al., 2016). The SPIKE will yield two types of scores, Normal and Dyslexia. It can be assumed that the scores of FKKR and SPIKE (Normal) should be close since both are based on the same mathematical operations. This is evidenced by the strong positive correlation between the two (0.761). However there were telling differences for a few articles. The article 'Ketahui Gejala, Tanda & Simptom Penyakit Coronavirus Sebelum Terlambat!' [Learn the Signs and Symptoms of Coronavirus Before It's Too Late!], for example, was graded 11 by the FKKR but 8 under the normal SPIKE scoring. This study is consistent with Grabeel, Russomanno, Oelschlegel, Tester, and Heidel's (2018) study and the cautionary note by the US Department of Health and Human Services

(2010) that hand scoring is more reliable and accurate than computer scoring. One possible explanation is that the SPIKE would regard certain linguistic categories such as proper nouns, reduplications, dates, prepositions, and compound words as unique individual words. In the following sentence "Penemuan virus di China telah memaksa setiap negara mengeluarkan nasihat perjalanan sementara dan menyebabkan Pertubuhan Kesihatan Sedunia untuk memanggil mesyuarat kecemasan mengenai perkara itu…" [Malay for The discovery of COVID-19 in China has forced every country to impose restrictions on travelling and urged the World Health Organization to call for an urgent meeting] the SPIKE score was 24 words. When hand scored, the FKKR score was 21 words because of the proper noun "Pertubuhan Kesihatan Sedunia" [World Health Organization] was considered as one linguistic category.

Of 14 texts studied, nine are categorised as difficult under the SPIKE Dyslexia scoring. According to Kassim (2012), 4 to 8% school students suffer from dyslexia. Mohd Noor (2017) reported that dyslexia should be known as learning disabilities (LD) and claimed 420, 000 children until the age of 18 in Malaysia suffered from it. Later, Hazawawi and Hisham (2014) discovered that many young adults who were potentially dyslexic were not properly screened. Despite reaching an outstanding 95.9% of adult literacy (Malaysian Ministry of Education, 2019), UNESCO (2014) suggested to "identify a more effective way of assessing literacy levels amongst the adult population in Malaysia other than by using educational attainment as the proxy" (p. 79). One potential explanation to this is that it may not be representative of the actual reading abilities of these adults in harmony with Doak and Doak (1980)'s discovery. Thus, the findings suggest many adults especially those with LD may not able to comprehend or even read this information despite having completed their secondary school.

64.3% of the texts were retrieved from https://www.doctoroncall.com.my. The other three websites do provide information on COVID-19 but mostly in the form of infographics, banners and guidelines. Most of them were excluded because they contained less than 300 words as required by the FKKR. Claiming to be the first online medical video-consultation platform (Doctor On Call, n.d.), it epitomises the current trend in the healthcare industry. Echoing the past literature on health seeking behaviour of Internet users, this kind of platform deserves more attention. When the country was locked down due to COVID-19 outbreaks, this platform played an important role for the public to have their COVID-19 concerns addressed ("Info on Covid-19", 2020). "This Virtual Health Advisory is hoped to help disseminate the latest, correct and accurate information about COVID-19, reduce congestion at medical facilities and provide preliminary Virtual Health Advisory screening/triage to the public before they come

to any health facility," said the General-Director of MMoH ("Virtual health advisory", 2020). However, the readability level of the texts studied from this website ranging from 7th to 11th grade which are above the recommended level. It is undeniable that keeping the public updated is important, but ensuring that they can understand and engage in correct health practices should take precedence.

5.0 CONCLUSION

It is no accident that 17,735 citizens were caught for violating the Movement Control Order (MCO) imposed by the Malaysian government and another 1236 individuals were charged in court for the same course (Ibrahim & A. Rosli, 2020). It is also no accident that so-called remedies for COVID-19 such as garlics (Mia, 2020), *Ketum* leaves (Aling, 2020) *Semambu* leaves (Azizi, 2020) or other greens (Kassim, 2020) went viral in communities. Limited health literacy could be the leading factor to these scenarios. It is well elucidated in the literature that those with limited health literacy may put their lives at stack. Thus, readability formulae, when used carefully, offer solutions to enhance understanding of the public in times of emergency like COVID-19 pandemics.

This study, however, has several limitations. The first limitation lies in most general readability formulae in which they do not consider how readers interact with the text (Md Yunus, 1982; Janan & Wray, 2014; Redish, 2000). Due to that, many guidelines such as "Using readability formulas: A cautionary note" by the US Department of Health and Human Services (2010) urges the users of these indices to be more careful when interpreting the scores gained because they do not measure comprehension. Hence, it is suggested for future researchers to assess the relationship between the COVID-19 information and the comprehension of the public. The Cloze test is an ideal comprehension test for this purpose as carried out by Arifin, Halim, and Bakar (2013) on an Arabic textbook used in Malaysia. Janan's (2011) approach to text difficulty is more holistic because it considers both the reader factor and text factor.

Md Yunus (1982) clarified in the Limitations of her doctoral study where "comparisons of the readability scores of several formulae on the same materials were traditionally used to determine the concurrent validity of a formula" (pp. 81-80). However, she could not do so because there were no other compatible readability indices available. Although the SPIKE can measure reading difficulty of Malay text, it is an extension of the FKKR which yields two types of results, normal and dyslexia (Hazawawi et al., 2016). Thus, this study rests on the assumption that FKRR and Spike Normal scores are algorithmically the same, one is hand scored and the other is computerised.

Finally, as far as the local standard recommended reading is concerned, it is not available to the best of our knowledge. It is true that data on adult literacy and education attainment are easily accessible, but they do not really portray the actual reading abilities of the locals as concerned by UNESCO (2014). As a matter of fact, the actual comprehension could be lower than the formal education attained (Doak & Doak, 1980). Since most of the recommendations are based on the average reading skills of US adults (Wallace & Lennon, 2004; Davis & Wolf, 2004), it is deemed paramount to localise this standard. Hopefully, future researchers should consider looking into this aspect when readability studies are concerned.

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