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Collocation and Discursive Construction of Covid-19 in WHO Director General's Discourse: A Corpus-based Study

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Received 23/06/2021	Abstract
Received in revised form 13/08/2021 Accepted 03/10/2021	This research investigated the discursive construction of Covid-19 in WHO director general's discourse through the lens of corpus linguistics and critical discourse analysis. 255 speeches of the WHO director general were collected, forming a 234,149-words corpus. Collocations of 'Covid-19' were generated and analyzed in terms of the semantic categories and the representation of Covid-19. The results indicated that Covid-19 was discursively represented as posing severe multifaceted threats to the world. Furthermore, the discursive construction of Covid-19 was found to promote the image of WHO as an active and ethical organization. Thus, discourse was used not only for informational purposes, but it was also manipulated for self-promotion and legitimation.
Keywords Corpus Linguistics, Discourse, Covid- 19, World Health Organization, Speeches	

Introduction

The Covid-19 pandemic has been causing severe damages in every part of the world. The World Health Organization (henceforth WHO) declared it a global pandemic on 11 March 2020 (Cooper, 2020). According to Azamfirei (2020), the first case of the Covid-19 patient was officially identified in Wuhan, China, in December 2019. The number of cases continued to rise and in June 2021 there were more than 170 million cases around the world. The effect of this pandemic was not limited to health but also the economy and society. Asian hate crimes were escalating (Cabral, 2021) and the economy was negatively impacted (Nicola et al., 2020). Various countries implemented measures to control this outbreak, namely, travel restriction, social distancing, and the enforcement of facial masks in public places. In addition, vaccines were being developed and distributed to curb the virus. In light of this crisis, WHO had a key role to play as an international organization that investigated and communicated information related to Covid-19 to the world. However, WHO's response was not without criticism from the politicians and media. It was argued that WHO had been initially slow and mitigated the actual impacts of this global pandemic, rendering various countries unprepared for the urgency of this health crisis (Cooper, 2020).

Apart from being a health crisis, the Covid-19 pandemic was a discursive phenomenon. News, discussion, official documents associated with Covid-19 were circulated, constituting discourses about Covid-19 and influencing the public understanding of Covid-19. As Fairclough (2010) argued, discourse was influenced by society and it could reinforce social structure. Research has shown that discourse can frame public understanding of virus outbreaks and other health risks (cf. Liu & Zhang, 2018; Nerlich, 2007). Public discourses of Covid-19 played a crucial role in shaping our understanding of Covid-19 and it could influence how different countries respond to the pandemic. Various public discourses of Covid-19 were investigated such as politicians' speeches (Olimat, 2020; Castro Seixas, 2021) newspaper reports (Fariza et al., 2020; Yu et al., 2021) advertorial (Nasar et al., 2020) and other official documents (Yang & Chen, 2021).

Among various sites of Covid-19 discourses, the WHO director general's speeches were one of the most influential discourses, given the

central role of WHO in coping with the pandemic. WHO implemented measures to tackle Covid-19, offered guidelines to countries around the world, and kept the public informed of the situation. Furthermore, owing to criticisms leveled at WHO, WHO needed to justify its policy and restore its image as a competent organization. WHO director general. Dr. Tedros Adhanom Ghebreyesus, delivered speeches about Covid-19, which were recorded and published on the official (https://www.who.int/director-general/speeches) and the speeches could be quoted by the media. Thus, this discourse could reach vast audiences around the globe and inform governments' decisions on policies and measures to tackle the Covid-19 pandemic. Given the salience and influence of the WHO director general's speeches, they deserve further investigation.

The purpose of this paper was to investigate how the Covid-19 pandemic was discursively constructed in the WHO director general's speeches, using critical discourse analysis (Fairclough, 2010) and corpus linguistics as frameworks for research. Section 2 elaborates on critical discourse analysis and the discursive construction of Covid-19 while section 3 discusses corpus-assisted discourse analysis and the discourse of Covid-19. Section 4 provides information about data collection and research procedures. Section 5 presents the results of data analysis and section6 discusses and concludes this study.

Corpus-based Critical Discourse Analysis and the Discursive Construction of Covid-19

Critical discourse analysis (CDA) is a research program aiming at investigating how discourse plays a role in creating and perpetuating social inequality and domination (Wodak & Meyer, 2008). Critical discourse analysis views discourse as social practices (Fairclough, 2010). It is argued that discourse has a relationship with socio-cultural structures because it can play an important role in transmitting ideology, and discursive practices can be ideologically shaped by unequal power relations in society. When certain discourse and ideology become mainstream and reach the state of hegemony (Gramsci, 1971), they seem natural and common-sensical. Thus, society would not question. The relationship between discourse, ideology, and society is not always apparent. Thus, it is the goal of critical discourse analysis to demystify the

relationship between discourse, society, and ideology by unpacking how language is ideologically loaded to raise awareness and critically question the unequal power relation and the seemingly naturalized ideology (Fairclough, 2003).

Research on critical discourse analysis traditionally usually involves an in-depth manual reading of texts. Although this approach facilitates contextualized analysis of texts in a holistic manner, research using this approach tends to focus on a small amount of data that have been eclectically selected (Baker et al., 2008). Such limited data may not well represent the discursive phenomenon. Recently, corpus linguistic methods have been applied to the study of discourse, enabling analysis of large data, reducing subjectivity in the analysis, and facilitating analysis of repeated patterns that reflect crystalized or competing ideology (Baker, 2006; Hoey, 2005).

The corpus analysis tools can be used to analyze discourse in many ways. For example, keyword analysis is a tool to compare the words in two corpora to identify the words that are significantly more frequent in the source corpus than the reference corpus. These keywords can show the aboutness of the corpus, indicating salient themes and topics (Scott & Tribble, 2006). The collocation function computes the association between words that occur in proximity to each other (McEnery & Hardie, 2011). The co-occurrence has implications for meanings and discourse. In linguistics, collocation is a concept that word meanings are influenced by frequent occurrences with other words or grammatical structures. This pattern of frequent co-occurrences can have an impact on the evaluative meaning of the word in question, an effect which is termed semantic prosody (Louw, 1993). Within critical discourse analysis, Baker (2006) has argued that collocates discursively construct the concept that is instantiated as a word. Based on lexical priming theory (Hoey, 2007), the cumulative exposure to the collocation patterns of a word can prime readers to make a psychological association between the word and its collocates not only in terms of grammatical structure but also evaluative meaning and discourses associated with it. If such cumulative exposure 'primes' and 'crystalizes' the meanings and discourses of the words, it follows that collocation constitutes naturalized ideology.

Corpus linguistics research has investigated Covid-19 discourse in the media in different countries. Yang & Chen, (2020) analyzed Chinese official discourse in the context of the Covid-19, using a corpus linguistic approach. Examining official news media, it identified globalist and nationalist discourse to enhance its public image at the national and international level. While they seemed paradoxical, they were employed in support of each other. That is, China portrayed itself as a key supportive player in the global community fight against the Covid-19 pandemic. In addition, it criticized the US response to the pandemic and its lack of support to the global community, forming the "us" and "them" dichotomy to strengthen nationalist ideology.

From a cross-cultural perspective, Yu et al., (2021) used a corpus linguistic approach to compare Covid-19 news reports in China Daily and the Guardian before and after the lockdown. This research focused on key terms that represented salient topics and how these terms discursively construct discourse on Covid-19. It found that cultural differences influenced the representation of Covid-19. While the Covid-19 situation was sensationalized in the Guardian, it was more neutral in China Daily. In addition, after the lockdown, the Guardian contained more keywords related to control, restriction, and social problems. On the other hand, China Daily contained words related to experience and cooperation, which construct the image of China as supporting international collaboration to tackle Covid-19. The authors argued that such differences were attributable to the conflict mode of discourse of the western media and the harmonious mode of discourse of the Chinese media.

Furthermore, Joharry et al., (2020) examined Letters to Editors in Malaysian newspaper in English during the government's restriction on movement, using corpus-assisted discourse analysis. This research analyzed how the Covid-19 outbreak was discussed in Letters to Editors. It was found that the letters mainly presented the pandemic in a negative light, especially in terms of the severity, impacts, and struggles that the pandemic caused. Moreover, it looked at example letters in detail. Figurative expressions and emotionally charged words were frequently found to intensify the negative evaluation of the Covid-19 pandemic.

In addition, Semino (2021) investigated metaphors about Covid-19, using a corpus linguistic approach. Data were based on the #ReframeCovid collection of the Covid-19 metaphors submitted by various participants from several language backgrounds and a large corpus of Covid-19 news in English. The study argued against the use of

war metaphor and suggested the fire metaphor as an alternative as it was more versatile and effective.

Apparently, corpus linguistic analysis of Covid-19 discourse offered a stronger empirical basis and quantitative findings while yielding insights into the qualitative aspect of Covid-19 discourse analysis. However, the WHO discourse, to the best of my knowledge, has not been investigated from the corpus linguistics and critical discourse analysis perspective even though it is a major organization for global health and it plays an important role in the Covid-19 crisis. Consequently, this paper aims to address this research gap and cast light on how WHO discursively represented Covid-19.

Methodology

Data Collection

To compile a corpus, the WHO director general's speeches which were published throughout the year 2020 on the WHO official website (https://www.who.int/director-general/speeches) were collected. The researcher manually checks that only the speeches that mentioned the Covid-19 pandemic were included in the corpus. There were 255 speeches in total and the size of the corpus was 234,149 word tokens.

Data Analysis

The corpus was analyzed using AntConc Version 3.5.8 (Anthony, 2020). To determine the search term for the analysis, words potentially referring to Covid-19 were searched in the corpus. The frequencies of possible search terms are shown in Table 1. Although several potential search terms could point to Covid-19 discourse, corpus searches reveal that they either have a low frequency as in 'coronavirus' or 'Wuhan virus,' sometimes they tend to co-occur with the term 'Covid-19' as shown in excerpt 1 or, in some cases, they refer to other diseases as shown in excerpt 2. As can be seen from the table, 'Covid-19' has the highest frequency and the search unambiguously point to the Covid-19 pandemic, unlike 'virus', 'disease' or 'outbreak' which can refer to other diseases as shown in excerpt 2. This may also be due to the fact that Covid-19 was established as the official term by WHO on February 11,

2020 (Center for Disease Control and Prevention, 2021). Thus, the search was only based on the search term 'Covid-19.'

Table 1

Frequency of Potential Search Terms

Search term	Frequency
Covid-19	1,440
coronavirus	61
Wuhan virus	0
pandemic	1,034
outbreak	316
virus	505
disease	235

- (1) The <u>COVID-19</u> pandemic continues to take a heavy toll on families, communities and nations the world over. (WHO Director-General's opening remarks at the media briefing on COVID-19 6 April 2020)
- (2) [...] if you have an underlying condition like <u>cardiovascular</u> <u>disease</u>, a respiratory condition or diabetes [...] (WHO Director-General's opening remarks at the media briefing on COVID-19 28 February 2020)

Collocates within the span of 3 words to the left and 3 words to the right were generated based on the mutual information statistics with the threshold level of 3 (Hunston, 2002) and they needed to occur at least 5 times in the corpus. Only content words were analyzed in terms of meaning groups since function words do not carry semantic contents that serve to discursively construct Covid-19. The resulting 93 collocate types were shown in appendix 1. The collocates were categorized into semantic groups and concordances of these collocates were then generated to show more context and cast light on the representation of the Covid-19 pandemic.

Collocation Analysis and the Representation of Covid-19

This section presents the analysis of collocation and how the collocates of Covid-19 discursively constructed Covid-19. Data analysis

indicated that Covid-19 was discursively constructed as a dangerous and complex phenomenon, affecting all people in many dimensions. In addition, it was found that WHO was discursively represented as an active and ethical organization in relation to its response towards the Covid-19 pandemic. Thus, it is argued that the WHO director general's speeches did not only serve the purpose of communicating information to the public. They also served to persuasively enhance the image of WHO, which can arguably be a move in response to criticisms on WHO's handling of the pandemic.

The analysis of collocation indicated that the collocates can be divided into 4 categories: 1) *response*, 2) *effects*, 3) *identification*, 4) *others*. Table 2 shows the example collocates in each category and the collocate token frequencies. It should be noted that collocates shown in all the tables are lemmas. The section that follows discusses each category in more detail and provides concordances of selected collocates and excerpts to illustrate how the collocates were used in context and how they discursively represent Covid-19.

Table 2

Semantic Groups of Collocates

Semantic groups of	Example words	Frequency (tokens)
collocates		
Response	access, response, tool	748
Effects	pandemic, patient, severe	467
Identification	case, report, testing	274
Others	current, ebola, influenza	87

Response

Collocates related to *response* concerned various aspects and measures to cope with the Covid-19 pandemic. These aspects and the collocates are shown in Table 3. The first aspect involved collocates that were associated with WHO or other agents do with the Covid-19 situation. Based on these collocates, Covid-19 was presented as a phenomenon that needed to be 'prevented,' 'controlled,' and ended. The

response to Covid-19 was also framed, using militaristic terms, including 'combat' and 'fight. 'These collocates framed the response in an aggressive manner and discursively constructed Covid-19 as an enemy that needed to be defeated. This is consistent with (Ivic, 2021), who argued that international organizations such as WHO and UNICEF tended to employ an aggressive approach to handling Covid-19.

Table 3
Sub-categories of Response

Sub-categories	Collocates
What to do with Covid-19	combat, control, defeat, end, face, fight,
	prevent, respond, response, tackle, treat
Tools and facilities to deal with Covid-19	accelerator, capacity, courses, fund,
	platform, pool, portal, portfolio, technology,
	therapeutics, tools, treatment, vaccine
Implementation of tools and facilities	access, develop, include, launch, supply
Knowledge and policy	guidance, preparedness, recovery,
	resolution, solidarity, understanding
The manner to deal with Covid-19	effective, equitable, potential, strategic

In addition, the collocates were associated with the measures implemented to cope with Covid-19. These could be physical such as 'fund,' 'technology,' and 'vaccines.' There were also non-physical responses such as 'guidance,' 'understanding,' and 'solidarity.' Furthermore, the collocates were related with the action associated with these responding measures as in 'access,' 'developed,' and 'launch.' Finally, there were collocates associated with the manner of response to the Covid-19 as in 'equitable,', 'effective,' and 'strategic.' Particularly, the word 'equitable' signal the issues of fairness when implementing Covid-19 responsive measures. As shown in the example excerpts below, the Covid-19 situation did not only affect health but also politics, economy, and society, and the issue of unequal access to the response was signaled in the speeches.

Table 4
Sample Concordances of Response Collocates

hope that we can defeat	COVID-19, and we can defeat
not only how to defeat	COVID-19 but also how we can
leadership needed to defeat	COVID-19. I thank President Xi,
to put the tools to defeat	COVID-19 in the hands of the
US\$1.7 billion to respond to	COVID-19, across the three levels of
their health systems for	COVID-19, and to respond when
your efforts to respond to	COVID-19, at home and abroad.
the first vaccines against	COVID-19 have been approved and
This week, vaccines against	COVID-19 have started to be rolled
therapeutics and vaccines for	COVID-19, including through the
	not only how to defeat leadership needed to defeat to put the tools to defeat US\$1.7 billion to respond to their health systems for your efforts to respond to the first vaccines against This week, vaccines against

- (3) As we continue to tackle this defining health crisis of our time, the deep cooperation between China and Africa illustrates the global solidarity and leadership needed to <u>defeat</u> COVID-19. (WHO Director-General's guest of honour speech at the extraordinary China-Africa Summit teleconference 17 June 2020)
- (4) Urgent support is needed, not only to support countries to <u>respond</u> to COVID-19, but to ensure other essential health services continue. (G20 Health Ministers virtual meeting Saudi Arabia 19 April 2020)
- (5) SAGE has recommended that any decisions about the allocation and prioritization of COVID-19 <u>vaccines</u> should be grounded in ethical values, including equal respect, global equity, national equity and reciprocity, as outlined in the WHO SAGE Values Framework published last month. (WHO Director-General's opening remarks at the media briefing on COVID-19 9 October 2020)

As shown in excerpt 3, WHO urged cooperation from countries around the world and encouraged influential countries to assume the leadership role in order to unite countries around the world to respond to the Covid-19 pandemic. The use of 'continue' created a presupposition that 'we,' which might refer to WHO and the world, has been tackling the Covid-19 pandemic without stopping. This presupposition might be strategically employed to emphasize the collaborative work between WHO and the world, thereby persuasively promoting WHO's work.

In addition, the speeches indicated acknowledgment that the response was not exclusive to direct impacts from Covid-19 but also other health services as shown in excerpt 4. Here it showed that despite the overwhelming impact of Covid-19, other health services could not be neglected. This in turn discursively constructed WHO as taking a well-rounded approach to managing the health crisis.

When the speech concerned the allocation of the vaccines, which can be seen in excerpt 5. Here it stated that the allocation of vaccines should be based on 'ethical values.' This in turn portrayed WHO as an organization that condones ethics and justice. Also, it construed Covid-19 as requiring ethical responses.

Effects

This category of collocates was related to various aspects of effects of Covid-19. The subcategories and the collocates are shown in Table 4. There were several nouns and verbs with meanings related to effects such as 'affected,' 'impact.' The effects were presented as dangers as in 'crisis,' 'threat,' and 'symptoms.' The spreading of the virus could be seen in the collocates 'spread,' 'infected,' and 'transmission.' Furthermore, Covid-19 were also presented as leading to reflection as shown in the collocates such as 'reminding,' 'shown,' and 'lessons.' In addition, collocates were related to people who were affected by the Covid-19 pandemic such as 'patients,' 'children,' and 'refugee.' The latter two constituted vulnerable groups. Furthermore, there were collocates associated with the scope and degree of the crisis as in 'severe,' 'term' (which comes from 'long-term'), and 'globally.'

Table 5
Sub-categories of Effects

Sub-categories	Collocates
General effects	affect, cause, change, effect, impact
Dangers	crisis, death, emergency, pandemic, relate, risk,
	symptom, threat, take
Spreading	infect, infection, spread, transmission
Reflection	demonstrate, remind, show
Victims	children, patient, refugee
Scope and degree	globally, severe, term

Table 6
Sample Concordances of Effects Collocates

1	economic imperative. The	COVID-19 pandemic is reminding
2	of our time. The	COVID-19 pandemic is reminding
3	economic imperative. The	COVID-19 pandemic is reminding
4	long-term effects of	COVID-19 and also ensure access
5	India to tackle both	COVID-19 and the effects of
6	long-term effects from	COVID-19 infection. This
7	and its effects on	COVID-19 patients that have been
8	all the challenges that	COVID-19 has caused, it has
9	have seen the damage	COVID-19 has caused socially,
10	those surveyed said that	COVID-19 has caused them

- (6) COVID-19 is <u>reminding</u> us how vulnerable we are, how connected we are and how dependent we are on each other. In the eye of a storm like COVID, scientific and public health tools are essential, but so are humility and kindness. With solidarity, humility and assuming the best of each other, we can and will overcome this together. (WHO Director-General's opening remarks at the Mission briefing on COVID-19 4 March 2020)
- (7) Vaccines will help to end the pandemic, but the <u>effects</u> of COVID-19 will continue to be felt for many years to come. The pandemic has exploited and exacerbated the vulnerabilities and inequalities of our world. (WHO Director-General's opening remarks at the media briefing on COVID-19 21 December 2020)
- (8) More than half of countries reported disruption in antenatal care services and more than a third of countries reported disruption in child birth services. On top of the health impact, we have seen the damage COVID-19 has <u>caused</u> socially, economically and politically. (WHO Director-General's opening remarks at the media briefing on COVID-19 3 August 2020)

Excerpt 6 presented the various dimensions of impacts which were not only about health but also society, economy, and politics. The health issues were not just about Covid-19 and the disruption affected other health services as well. Excerpt 7 showed the collocates 'effects' in context and it indicated the long-term effects of Covid-19 and that

vulnerable groups and social inequalities were worsened due to the Covid-19 pandemic. Excerpt 8 indicated the effects in terms of self-reflection as shown in the word 'remind.' In addition, the pandemic was framed metaphorically as a storm. This metaphor highlighted the severity of the Covid-19 as the impact of Covid-19 was compared to the eye of a storm that can cause severe damage uncontrollably. Covid-19 was represented as a formidable crisis that required not only technological solutions but also cooperation as can be seen from 'humility' and 'kindness.'

Identification

This category of collocates was associated with the identification and diagnosis of Covid-19 cases. They were associated with the number of cases and the tools to identify Covid-19. The collocates are shown in Table 5. The collocates were related to the action of identifying the cases as in 'test,' 'detect,' and 'suspected.' The 'PCR' tool used in the Covid-19 test also appeared here. The word 'million' showed a high number of cases. There were also collocates concerning the status of the diagnosis results as in 'positive' and 'confirmed.'

Table 7Sub-categories of Identification

Sub-categories	Collocates
Identification processes and tools	test, detect, suspect, PCR
Diagnostic results	positive, confirm, case, report, million

Table 8
Sample Concordances of Identification Collocates

_ 1	expand testing capacity for	COVID-19 from just two countries
2	capacity to testing for	COVID-19. Hundreds of tests are
3	PCR testing capacity for	COVID-19 in Africa from just
4	build testing capacity for	COVID-19 in all regions of
5	's reported cases of	COVID-19, and less than 0.1 percent
6	than 11.3 million cases of	COVID-19, and 531,000 lives have

7	with surging cases of	COVID-19. And many countries still
8	of tests to detect	COVID-19 antibodies, which are
9	the ability to detect	COVID-19. Many of these countries
10	the ability to detect	COVID-19. We've also shipped

- (9) We now have good examples of many countries that have shown how to effectively suppress the virus with a combination of testing, tracing, and quarantining patients and caring for those that get sick. Lab capacity has been dramatically enhanced across the world to boost COVID-19 testing, which is critical for identifying where the virus is and informing government actions. (WHO Director-General's opening remarks Member State Briefing on WHO Academy 17 June 2020)
- (10) We now have more than six million <u>cases</u> of COVID-19 across the world and have lost more than 370,000 people to the virus (WHO Director-General's opening remarks at the media briefing on COVID-19 1 June 2020)
- (11) We will continue working with countries and all relevant partners to ensure equitable access to the tools to prevent, <u>detect</u> and treat COVID-19. (WHO Director-General's closing remarks at the World Health Assembly 19 May 2020)

The excerpts above show discourses surrounding the identification of Covid-19. Excerpt 9 showed that WHO encouraged the enhancement of tools and facilities for Covid-19. Excerpt 10 represented an example where WHO used statistics to demonstrate the number of patients and deaths to show the severity of the Covid-19 situation. Excerpt 11 showed WHO's positive self-presentation by presenting its role in collaborating with other countries to develop tools and fairly facilitate the instruments for Covid-19. These excerpts showed the representation of Covid-19 as a critical health crisis which countries were unprepared for and the testing played a vital role in the handling of this pandemic.

Others

This category comprised other diseases which tended to co-occur with Covid-19 in the WHO director general's speeches. These consist of 'ebola,' 'influenza,' and 'malaria.' Other words in this category included

'now' and 'current.' Table 9 shows the collocates while Table 10 shows sample concordance lines.

Table 9
Sub-categories of Others

Sub-categories of collocation	Collocates
Other diseases	Ebola, influenza, malaria
time	current, now

Table 10
Sample Concordances of Others Collocates

1	to malaria services from	COVID-19 in 41 countries in sub-
2	ecting their populations from	COVID-19 or malaria; they can –
3	even reverse if the	COVID-19 pandemic disrupts malaria
4	priority. Co-circulation of	COVID-19 and influenza can worsen
5	unique characteristics. Both	COVID-19 and influenza cause
6	important differences between	COVID-19 and influenza. First, COVID-
7	are now deploying against	COVID-19. But we have also
8	're providing now for	COVID-19 is part of it,
9	what we now call	COVID-19. Much has changed
10	may be focused on	COVID-19 now, our commitment

- (12) Although malaria deaths have fallen by more than half since the year 2000, progress has stalled in recent years, and may even reverse if the COVID-19 pandemic disrupts $\underline{\text{malaria}}$ control programmes. (WHO Director-General's opening remarks at the media briefing on COVID-19 1 May 2020)
- (13) The co-circulation of <u>influenza</u> and COVID-19 may present challenges for health systems and health facilities, since both diseases present with many similar symptoms. For that reason, WHO is working with countries to take a holistic approach to the preparedness, prevention, control and treatment of all respiratory diseases, including influenza and COVID-19. (WHO Director-General's opening remarks at the media briefing on COVID-19 16 October 2020)

(14) As you know, yesterday I said that the global COVID-19 outbreak can <u>now</u> be described as a pandemic. This is not a decision we took lightly. We have made this assessment for two main reasons: first, because of the speed and scale of transmission. (WHO Director-General's opening remarks at the Mission briefing on COVID-19 - 12 March 202

The first excerpt indicated that Covid-19 has a negative effect on the efforts to treat other diseases. Excerpt 12 indicated that the pandemic could 'disrupt' the control of malaria. Excerpt 13 showed the complexity owing to the interaction of Covid-19 and influenza. This is because they shared some similar symptoms, making the identification more complicated. These indicated the complex interaction between the diseases and how Covid-19 can complicate the control and how other diseases might hinder the diagnosis. Excerpt 14 showed the use of 'now' to construe the immediacy and urgency of the situation. WHO needed to keep the public up-to-date and the emphasis was reflected in the collocates 'now' and 'current.' It might be a persuasive move to encourage the public to tackle the pandemic seriously by emphasizing the immediacy and reminding people that the Covid-19 situation was current and thus required responses and cooperation.

Discussion and Conclusion

This paper investigated the representation of Covid-19 in the WHO director general's speeches, using corpus linguistics and critical discourse analysis as an analytical framework. A corpus of the WHO director general's speeches, which were delivered in 2020, was compiled and analyzed in terms of keywords and collocation to identify the salient themes and discursive construction of Covid-19. The results indicated that Covid-19 was discursively represented as an urgent multi-faceted crisis that had multidimensional impacts on health, society, economy, and politics. In addition, WHO presented itself as an active organization that put in place measures and coordinated efforts to deal with Covid-19. It was also found that presupposition was used for self-promotion and militaristic metaphor was used to intensify the urgency and aggressiveness of the pandemic. Such aggressiveness had been noted and criticized (Ivic, 2021; Semino, 2021).

Findings from this research were consistent with other studies in terms of the negative representation of Covid-19 (Joharry et al., 2020)

and there was aggressive and militaristic discourse (Castro Seixas, 2021; lvic, 2021). The self-promotional discourse was also identified similar to Jarvis et al. (2021), who found that the UK government, in response to criticisms, used discourse to maintain its credibility, suggesting that WHO might be using the same move. However, WHO's discourse on Covid-19 was different from some other studies which identified the construction of 'others' and blaming attribution (Barreneche, 2020; Rosa & Mannarini, 2020; Castro Seixas, 2021; Yang & Chen, 2020). This could be explained by the role of WHO as an international organization that aimed to promote collaboration between countries all over the world to handle this crisis. Thus, blaming others or using Us vs Them discourse may jeopardize its goal and thus such discourse was not found WHO director general's speeches. Moreover, while Ivic (2021) argued that international organizations lack emphasis on caring and solidarity, the word 'solidarity' was found as a collocate of Covid-19, indicating that WHO emphasized solidarity as a crucial factor in the response to the pandemic. This supported WHO's image as a facilitator of global cooperation and presented WHO in a positive light.

This research has shown that the Covid-19 discourse of WHO was not only informational but also persuasive. Given that WHO needed to persuade the public and the governments to implement safety measures, it may not seem surprising. However, apart from persuading the public and the government to take action, it also persuaded the public of WHO's continuous and substantial efforts to respond to the Covid-19 pandemic as well as its crucial role to play in this crisis management. Furthermore, it discursively constructed itself as an equitable organization when it comes to responding to the pandemic. Through collocation and other linguistic features, it can be seen that discourse was strategically used and that it played an important role in the strategic manipulation of the representation of Covid-19 and WHO's image enhancement.

This research was focused on the representation of Covid-19 but other related issues such as the representation of WHO, the vaccines, and vulnerable groups in the discourse of Covid-19, remained to be further investigated. In addition, the findings of this study were solely on WHO director general's speeches, but WHO also issued several other documents such as press release and its official website also provides an interesting site for further investigation.

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References

- Anthony, L. (2020). *AntConc (Version 3.5.8)* [Computer Software]. Waseda University. Available from http://www.antlab.sci.waseda.ac.jp/
- Azamfirei, R. (2020). The 2019 novel coronavirus: A crown jewel of pandemics? *The Journal of Critical Care Medicine*, *6*(1), 3–4.
- Baker, P. (2006). Using corpora in discourse analysis. Continuum.
- Baker, P., Gabrielatos, C., KhosraviNik, M., Krzyzanowski, M., McEnery, T., & Wodak, R. (2008). A useful methodological synergy? Combining critical discourse analysis and corpus linguistics to examine discourses of refugees and asylum seekers in the UK press. *Discourse & Society*, *19*(3), 273–306. https://doi.org/10.1177/0957926508088962
- Barreneche, S. M. (2020). Somebody to blame: On the construction of the other in the context of the Covid-19 outbreak. *Society Register*, 4(2), 19–32. https://doi.org/10.14746/sr.2020.4.2.02
- Cabral, S. (2021, May 21). *Covid "hate crimes" against Asian Americans on rise*. BBC News. https://www.bbc.com/news/world-us-canada-56218684

- Castro Seixas, E. (2021). War metaphors in political communication on Covid-19. *Frontiers in Sociology*, *5*(January), 1–11. https://doi.org/10.3389/fsoc.2020.583680
- Center for Disease Control and Prevention. (2021, May 24). *Basics of COVID-19*. https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19/basics-covid-19.html
- Cooper, S. (2020, April 16). Why is the World Health Organization accused of mishandling the coronavirus pandemic? Global News. https://globalnews.ca/news/6826415/world-health-organization-accused-of-mishandling-coronavirus-pandemic-covid-19/
- Fairclough, N. (2003). *Analysing discourse: Textual analysis for social science research*. Routledge.
- Fairclough, N. (2010). *Critical discourse analysis: The critical study of language* (2nd ed.). Longman.
- Fariza, N., Nor, M., & Zulcafli, A. S. (2020). Corpus driven analysis of news reports about Covid-19 in a Malaysian online newspaper. *GEMA Online Journal of Language Studies*, 20(August), 199–220.
- Gramsci, A. (1971). *Selections from the prison notebooks* (Q. Hoare and G. Nowell Smith Trans.). International Publishers.
- Hoey, M. (2005). Lexical priming: A new theory of words. Routledge.
- Hoey, M. (2007). Lexical priming and literary creativity. In M. Hoey, M. Mahlberg, M. Stubbs, & W. Teubert (Eds.), *Text, discourse and corpora: Theory and analysis* (pp. 7–29). Continuum.
- Hunston, S. (2002). *Corpora in applied linguistics*. Cambridge University Press.
- lvic, S. (2021). International organizations and Covid-19 discourse. International Law and Contemporary Framework, 1–8.
- Jarvis, L., Anglia, E., & Jarvis, L. E. E. (2021). Covid-19 and the politics of temporality: Constructing credibility. *Critical Studies on Security,* 9(1), 72–75. https://doi.org/10.1080/21624887.2021.1904363.
- Joharry, S. A., Alam, S., Turiman, S., & Alam, S. (2020). Examining Malaysian public letters to editor on COVID-19 pandemic: A corpus-assisted discourse analysis. *GEMA Online Journal of Language Studies*, 20(3), 242–260.
- Liu, M., & Zhang, Y. (2018). Language & Communication Discursive constructions of scientific (Un)certainty about the health risks of

- China's air pollution: A corpus-assisted discourse study. *Language Sciences*, 60, 1–10.
- https://doi.org/10.1016/j.langcom.2018.01.006
- Louw, W. E. (1993). Irony in the text or insincerity in the writer? The diagnostic potential of semantic prosodies. In M. Baker, G. Francis & E. Tognini-Bonelli (Eds.), *Text and technology* (p. 157-176). John Benjamins Publishing Company.
- McEnery, T., & Hardie, A. (2011). *Corpus linguistics: Method, theory and practice*. Cambridge University Press.
- Nasar, N., Ramzan, A., Tufail, S., Qasim, S., & Hussain, Z. (2020). COVID-19 advertorials accentuating fright and xenophobia in ecosystem: An eco-linguistic approach to SFL. *Linguistic Forum*, 2(3), 7–14.
- Nerlich, B. (2011). The role of metaphor scenarios in disease management discourses: Foot and mouth disease and avian influenza. In S. Handl & H.-J. Schmid (Eds.), *Windows to the mind: Metaphor, metonymy and conceptual Blending* (pp. 115–142). Mouton de Gruyter.
- Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., Agha, M. & Agha, R. (2020). The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *International Journal of Surgery*, 78, 185–193. https://doi.org/10.1108/IJSE-12-2018-0651
- Olimat, S. N. (2020). Words as powerful weapons: Dysphemism in Trump's Covid-19 speeches. 3*L: Language, Linguistics, Literature, 26*(3), 17–29. https://doi.org/10.17576/3L-2020-2603-02
- Rosa, A. S. De, & Mannarini, T. (2020). The "invisible other": Social representations of COVID-19 pandemic in media and institutional discourse. *Papers on Social Representations*, 29(2), 5.1-5.35.
- Scott, M., & Tribble, C. (2006). *Textual patterns: Key words and corpus analysis in language education*. John Benjamins Publishing Company.
- Semino, E. (2021). "Not soldiers but fire-fighters" metaphors and Covid-19. *Health Communication*, *36*(1), 50–58.
- Wodak, R., & Meyer, M. (2009). Critical Discourse Analysis: History, Agenda, Theory and Methodology. In R. Wodak & M. Meyer (Eds.), *Methods of critical discourse analysis* (pp. 1-31). Sage.

- Yang, Y., & Chen, X. (2021). Globalism or nationalism? The paradox of Chinese official discourse in the context of the COVID-19 outbreak. *Journal of Chinese Political Science*, 26(1), 89–113. https://doi.org/10.1007/s11366-020-09697-1
- Yu, H., Lu, H., & Hu, J. (2021). A corpus-based critical discourse analysis of news reports on the COVID-19 pandemic in China and the UK. *International Journal of English Linguistics*, 11(2), 36. https://doi.org/10.5539/ijel.v11n2p36

Appendix A
Collocates of Covid-19

Rank	Collocates	Frequency	MI Score	Rank	Collocates	Frequency	MI score
1	portal	5	7.18	48	detect	7	4.45
2	reminding	5	6.96	49	spread	15	4.44
3	pool	11	6.66	50	reported	37	4.43
4	reminded	6	6.33	51	current	6	4.36
5	refugee	5	6.18	52	globally	15	4.32
6	technology	14	6.01	53	infected	5	4.25
7	portfolio	5	5.86	54	impact	15	4.22
8	pcr	5	5.68	55	fighting	5	4.21
9	tools	70	5.62	56	preventing	5	4.21
10	combat	5	5.60	57	taking	5	4.18
11	responding	15	5.55	58	recovery	9	4.17
12	suspected	6	5.51	59	control	17	4.15
13	accelerator	62	5.45	60	potential	8	4.14
14	causes	5	5.45	61	testing	14	4.10
15	tackle	6	5.45	62	treat	7	4.06
16	effects	10	5.41	63	developed	8	4.05
17	positive	8	5.40	64	taken	7	4.03

18	Rank	Collocates	Frequency	MI Score	Rank	Collocates	Frequency	MI score
19 changed 5 5.31 66 face 8 3.88 20 access 74 5.18 67 launched 8 3.86 21 caused 7 5.17 68 equitable 8 3.82 22 confirmed 12 5.13 69 preparedness 19 3.79 23 symptoms 6 5.13 70 treatment 9 3.78 24 defeat 9 5.09 71 ebola 13 3.76 25 courses 7 5.08 72 launch 5 3.75 26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 <th></th> <th></th> <th>ency</th> <th>ore</th> <th></th> <th></th> <th>ency</th> <th>ore</th>			ency	ore			ency	ore
20 access 74 5.18 67 launched 8 3.86 21 caused 7 5.17 68 equitable 8 3.82 22 confirmed 12 5.13 69 preparedness 19 3.79 23 symptoms 6 5.13 70 treatment 9 3.78 24 defeat 9 5.09 71 ebola 13 3.76 25 courses 7 5.08 72 launch 5 3.75 26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86	18	tested	8	5.40	65	fight	9	3.93
21 caused 7 5.17 68 equitable 8 3.82 22 confirmed 12 5.13 69 preparedness 19 3.79 23 symptoms 6 5.13 70 treatment 9 3.78 24 defeat 9 5.09 71 ebola 13 3.76 25 courses 7 5.08 72 launch 5 3.75 26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 <t< td=""><td>19</td><td>changed</td><td>5</td><td>5.31</td><td>66</td><td>face</td><td>8</td><td>3.88</td></t<>	19	changed	5	5.31	66	face	8	3.88
22 confirmed 12 5.13 69 preparedness 19 3.79 23 symptoms 6 5.13 70 treatment 9 3.78 24 defeat 9 5.09 71 ebola 13 3.76 25 courses 7 5.08 72 launch 5 3.75 26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 7	20	access	74	5.18	67	launched	8	3.86
23 symptoms 6 5.13 70 treatment 9 3.78 24 defeat 9 5.09 71 ebola 13 3.76 25 courses 7 5.08 72 launch 5 3.75 26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80	21	caused	7	5.17	68	equitable	8	3.82
24 defeat 9 5.09 71 ebola 13 3.76 25 courses 7 5.08 72 launch 5 3.75 26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 <td>22</td> <td>confirmed</td> <td>12</td> <td>5.13</td> <td>69</td> <td>preparedness</td> <td>19</td> <td>3.79</td>	22	confirmed	12	5.13	69	preparedness	19	3.79
25 courses 7 5.08 72 launch 5 3.75 26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 <td>23</td> <td>symptoms</td> <td>6</td> <td>5.13</td> <td>70</td> <td>treatment</td> <td>9</td> <td>3.78</td>	23	symptoms	6	5.13	70	treatment	9	3.78
26 severe 20 5.04 73 strategic 6 3.71 27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83	24	defeat	9	5.09	71	ebola	13	3.76
27 understanding 6 5.03 74 effective 11 3.65 28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 <td>25</td> <td>courses</td> <td>7</td> <td>5.08</td> <td>72</td> <td>launch</td> <td>5</td> <td>3.75</td>	25	courses	7	5.08	72	launch	5	3.75
28 response 101 5.01 75 now 45 3.63 29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85	26	severe	20	5.04	73	strategic	6	3.71
29 pandemic 183 4.96 76 affected 6 3.62 30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 <td>27</td> <td>understanding</td> <td>6</td> <td>5.03</td> <td>74</td> <td>effective</td> <td>11</td> <td>3.65</td>	27	understanding	6	5.03	74	effective	11	3.65
30 demonstrated 8 4.86 77 malaria 5 3.54 31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87	28	response	101	5.01	75	now	45	3.63
31 death 12 4.80 78 risk 20 3.50 32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88	29	pandemic	183	4.96	76	affected	6	3.62
32 related 5 4.77 79 guidance 12 3.49 33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51	30	demonstrated	8	4.86	77	malaria	5	3.54
33 fund 15 4.72 80 solidarity 28 3.49 34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	31	death	12	4.80	78	risk	20	3.50
34 resolution 7 4.70 81 vaccine 15 3.48 35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	32	related	5	4.77	79	guidance	12	3.49
35 shown 9 4.69 82 supply 8 3.47 36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	33	fund	15	4.72	80	solidarity	28	3.49
36 infection 10 4.68 83 test 9 3.45 37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	34	resolution	7	4.70	81	vaccine	15	3.48
37 respond 16 4.67 84 deaths 14 3.43 38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	35	shown	9	4.69	82	supply	8	3.47
38 influenza 8 4.64 85 transmission 17 3.36 39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	36	infection	10	4.68	83	test	9	3.45
39 patients 26 4.64 86 crisis 9 3.27 40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	37	respond	16	4.67	84	deaths	14	3.43
40 cases 108 4.61 87 capacity 7 3.23 41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	38	influenza	8	4.64	85	transmission	17	3.36
41 therapeutics 21 4.57 88 threat 5 3.21 42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	39	patients	26	4.64	86	crisis	9	3.27
42 platform 8 4.56 89 children 8 3.10 43 term 11 4.51 90 lessons 5 3.10	40	cases	108	4.61	87	capacity	7	3.23
43 term 11 4.51 90 lessons 5 3.10	41	therapeutics	21	4.57	88	threat	5	3.21
	42	platform	8	4.56	89	children	8	3.10
44 includes 9 4.51 91 several 5 3.05	43	term	11	4.51	90	lessons	5	3.10
	44	includes	9	4.51	91	several	5	3.05

Rank	Collocates	Frequency	MI Score	Rank	Collocates	Frequency	MI score
45	million	50	4.50	92	emergency	9	3.02
46	free	5	4.48	93	end	8	3.01
47	vaccines	51	4.48				