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Wijitra Kongkauropham

Thammasat University, Bangkok, Thailand, wijitra-kon63@tbs.tu.ac.th

Peter Ractham

Thammasat University, Bangkok, Thailand, Peter@tbs.tu.ac.th

Laddawan Kaewkitipong

Thammasat University, Bangkok, Thailand, laddawan@tbs.tu.ac.th

Eric M.P. Chiu

National Chung-Hsing University, Taiwan, ericchiu@nchu.edu.tw

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Health-related misinformation sharing on social media in Thailand: A case study during the Covid-19 pandemic

Wijitra Kongkauroptom^{1,*}

Peter Ractham²

Laddawan Kaewkitipong³

Eric M.P. Chiu⁴

Sirikorn Namlabut⁵

*Corresponding author

¹ Master Student, Thammasat University, Bangkok, Thailand, wijitra-kon63@tbs.tu.ac.th

² Professor, Thammasat University, Bangkok, Thailand, peter@tbs.tu.ac.th

³ Professor, Thammasat University, Bangkok, Thailand, laddawan@tbs.tu.ac.th

⁴ Professor, National Chung-Hsing University, Taichung, Taiwan, ericchiu@nchu.edu.tw

⁵ Assessor, Thailand Professional Qualification Institute (Public Organization), Bangkok, Thailand, namlabut@gmail.com

ABSTRACT

Misinformation affects people because it can convince them to believe in how to respond to uncertain situations. During the COVID-19 pandemic, a number of misinformation or fake news were distributed on social media, in Thailand. This research aimed to study attributes and causes of Health-Related Misinformation Sharing in Thailand on social media during the COVID-19 pandemic. Dataset used in this study was collected from the Anti-Fake News Center, the Thai government fact-checking website certified by the International Fact-Checking Network (IFCN). In-depth interviews based on qualitative research technique were also conducted to identify the causes of the transmission of false health news on Thai social media by applying the rumors transmission concept during times of crisis and the theory of Uses and Gratifications. The findings showed five main themes of fake news: conspiracy theories, pseudoscience, fake advertisements, inaccurate information, and misleading information. These elements may establish a conceptual framework for finding the root cause of misinformation spreads during crises. Factors that affect how psychological information was presented and shared are anxiety, insecurity, and uncertainty during the crisis. However, belief is not the only justification for sharing this information because some social media users have shared unverified and no evidence information for personal purposes. The Uses and Gratifications theories are found relevant. This study is intended to broaden the reach of disseminating misleading information as much as possible to lessen the effect of detrimental health fake news on Internet news consumers.

Keywords: Misinformation, Disinformation, Fake News, Covid, Health.

INTRODUCTION

Fake news significantly impacted Thai society when the Coronavirus Disease 2019 (COVID-19) outbreak began. As COVID-19 was new, there was a lack of relevant information on disease control management, preparation, and prevention, causing fear, confusion, and misinformation. The spread of misinformation, however, had generated huge negative impacts on society. It has been studied that spreading misinformation about vaccine safety affected population immunity rates (Borah, Kim, Xiao, & Lee, 2022). The spread of misinformation and fake news about viruses, their origins, vaccines, and treatment methods can be called Infodemic (Gisondi *et al.*, 2022). At the WHO meeting in Munich, Germany, on February 15, 2020, Dr. Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization (WHO), addressed the fake news problem. "We are not just fighting and epidemic; we are fighting an infodemic." The sentence was further explained by Sylvie Briand, Director of the Global Infectious Hazard Preparedness department (GIH) at the World Health Organization's (WHO) headquarters. She explained that the World Health Organization and the global health system are facing an information crisis because in the social media era, information spread as fast as a virus does. The spread of information also contains inaccuracies, rumors, and other information. Dealing with misinformation sharing is thus a new challenge which requires quick responses. To minimize the negative impacts, people must be provided with correct information that will help them deal with incidents appropriately (Zarocostas, 2020).

The dissemination of health misinformation on media platforms has affected a global health crisis as it directly and negatively affects the perceptions, decision-making and responses of those who believe in the misinformation (Bolsen, Palm, & Kingsland, 2020; Hansson *et al.*, 2021). For example, those who believe in fake news about COVID-19 vaccine may decide to not receiving vaccine and later on may face health issues that could have been avoided or prevented by the vaccine. In addition, the speed of (mis)information dissemination have been increased tremendously via the Internet and social media. Therefore, it is necessary to study and understand this phenomenon in order to deal with fake news sharing and its consequences.

This research aims to study the spread of fake news in Thailand by analyzing fake news content collected from government anti-fake news centers according to a 6-step thematic analysis as follows: (1) Familiarization with the data, (2) Initialization, (3) Searching for the essence, (4) Re-examination of the subject, (5) Identifying and naming the essence, and (6) Formation Report (Braun & Clarke, 2006). The attributes of fake news identified in the first phase of this research will be used to further understand fake news sharing behavior and reasons through in-depth interviews. Two research questions are: RQ1) What are characteristics of health-related misinformation that were spreaded on social media in Thailand during the outbreak of COVID-19?; RQ2. Why did people share health-related misinformation on social media in Thailand during the outbreak of COVID-19?

LITERATURE REVIEW

Fake news and Anti-Fake News Center in Thailand

Fake news has become a hot topic since the 2016 US presidential election. In the final campaign of the election, 8,711,000 electoral information was disseminated (Silverman & Singer-Vine, 2016). Two essential attributes, namely the authenticity of the content and the intent of the news, define fake news. The content of fake news contains false information with the fraudulent intention to deceive or distract audiences (Allcott & Gentzkow, 2017). Fake news is used interchangeably with misinformation in some studies. According to Lazer et al. (2018) fake news is fabricated information that mimics the form of mainstream news media content but not the editorial process. However, Gisondi et al. (2022) noted that misinformation is misinformed but has no malicious intent, different from fake news. Rather, disinformation is intended to spread misinformation with malicious intent (Gisondi et al., 2022). Wu et al. (2019) explain that fake news refers to false information in the form of communication. It differs from misinformation because publishers may be news consumers who do not intend to deceive but genuinely believe the news (Wu et al., 2019). False information is considered misinformation, which is incorrect information that usually occurs during the development of an event, or additional information over time that is not for convincing or misleading guided purposes (Kumar & Geethakumari, 2014; Scheufele & Krause, 2019). Disinformation is false information intentionally guided by the publisher's objectives (Fallis, 2009; Stahl, 2006).

In Thailand, the Ministry of Digital Economy and Society established the Anti-Fake News Center on November 1, 2019, to provide Fact-Checking Website services according to international standards of the International Fact-Checking Network or IFCN (<http://www.antifakenewscenter.com/>). Thai people can submit news information they want to check on this website. Officers will review relevant sources of news content and update facts on the website within 2 hours in coordination with the Police Cyber Taskforce (PCT) of the Royal Thai Police. The Anti-Fake News Center does not provide a clear definition of fake news or a description of the scope of fake news content on its website. Rather, it covers the wide range of fake news. It focuses on the Covid-19 news with inaccurate information that affects four groups of problems in Thailand: disaster, economy, health-related products, and government policy (Sombatpoonsiri, 2021). This research will collect all types of fake health news collected from the Anti-Fake News Center websites. It will be consistent with the actual situation in Thailand. Today, the scope of fake news has expanded beyond the original definition due to the complexity of the Internet and social media. However, fake news started to gain attention after being used in political contexts and becoming widespread in many other contexts—for example, vaccination, nutrition, stock exchange, and other aspects. Fake news poses a severe threat to mainstream media systems, especially regarding credibility (Lazer et al., 2018).

Rumor Transmission

Rumors refer to unverified news that can be both true and false (Wu et al., 2019). Sun et al. (2020) researched the transmission of health rumors among the elderly in China during the COVID-19 outbreak in 2020 and found that the belief that the information submitted was accurate positively related to the willingness to pass it on among older adults during the COVID-19 pandemic. In addition, personal anxiety was negatively associated with the ability to discriminate against rumors and perceive the consequences of spreading rumors (Sun et al., 2020). Prasad (1950) explained that natural events could cause fear. For instance, earthquakes will cause emotional disturbances, and attitudes will broaden widely. Ambiguity related to lack of evidence, and anxiety was crucial for spreading rumors. Emotion plays a big part in the growth of stories. The power behind words will fade away once it is gone. Rumors arose to satisfy the need for an explanation. Rumors are drawn from the famous stories among the group to perceive the event. It would be close to the need for control to predict future events. Rumors that cannot be easily verified will persist and continue to spread (Bordia & DiFonzo, 2002; Prasad, 1935, 1950). Spreading rumors depends on the importance of content and ambiguity for further spreading (Allport & Postman, 1947; Bordia & DiFonzo, 2002). Rosnow's research (1991) found that anxiety and belief that rumors are true and uncertainty in current or future situations can predict the spread of rumors (Rosnow, 1991). Its response to feelings of threat (Difonzo, 2018). Suspicion and distrust of official announcements or news can cause rumors (DiFonzo & Bordia, 2000).

Uses and Gratifications Theory

The use and gratification theory is the most widely acknowledged and frequently adopted concept in journalism to explain reasons and motives of media consumption. (Kaur, Dhir, Chen, Malibari, & Almotairi, 2020; Vickers, 2017) The Internet and social media have recognized and studied as the new and popular media (Papacharissi & Rubin, 2000; Whiting & Williams, 2013). The study of motivation to transmit social media information was often based on a personal basis. Prior literature, which adopted use and gratification theory to explain why users share information on social media, identified four main reasons: entertainment, socializing, information seeking, and self-expression (Chen, Sin, Theng, & Lee, 2015). Chen et al. (2015) applied the Uses and Gratifications theory to their study of data characteristics and rumors spread by questioning Singapore university students on the reasons for spreading misinformation on social media. The top three reasons for student

transmission of misinformation are that the information can be a good topic for conversation, interesting, and new eye-catching details. The fourth-ranked reason is sharing information helps them get to obtain opinions of others about the news. The reason that the students (senders) can express their opinion by sharing that information is ranked fifth. On the other hand, the accuracy of the data ranked 24th out of 29 topics, and the reliability of the data source ranked 26th. This implies that the students did not pay attention to the accuracy and reliability of the information they shared. In terms of gender difference, the study found that more women shared misinformation than men did. Significant differences in the rank of reasons for sharing were also found in 10 out of 29 reasons. Overall, main reasons for sharing information on social media were: they shared to bookmark helpful information; they shared to enhance interpersonal relations; they shared to keep updated on the latest happenings; they shared to stay in touch with friends; they shared to get other related information; they shared to relax; they share fun information.; they share as others do; they shared for enjoyment; they shared to interact with people (Chen et al., 2015).

METHODOLOGY

Research Methods

This research examined the characteristics of inaccurate health information in Thailand as factors related to motivation and reasons for misinformation transmission. The research was divided into two phases: 1) classification of fake news attributes and 2) investigation of behavior and reasons for fake news sharing. In the first phase, we attempted to understand and identify attributes of fake news related to health issues in Thailand through thematic analysis. In the second phase, a semi-structured interview was employed to understand motivation or reasons to share fake news. Interview was considered an appropriate method to understand complex and sensitive issues. In addition, semi-structured interviews allow respondents to answer question freely but in-depth and to the point (Figueroa-Domecq, Pritchard, Segovia-Pérez, Morgan, & Villacé-Molinero, 2015; Hankinson, 2009; Jones, Brown, & Holloway, 2012).

Data Collection and Analysis

In the first phase, we attempted to study the phenomenon of fake news related to health in Thailand and identify their attributes. We collected 468 fake health news listed from November 1, 2019 to January 24, 2022 on the Anti-Fake News Center's website. It is an official fact-checking website, in Thailand, which follows the international standards of the International Fact-Checking Network (IFCN). To analyze the collected fake news, we followed the study of Mohammadi et al. (2022), which investigated misinformation about COVID-19 from fact-checking websites, by adopting the Framing theory as a framework for thematic analysis. According to Mohammadi et al. (2022), framing theory posits that a message can impact public's opinion, behavior, and actions differently, depending on how it is framed. The theory is helpful because it can reflect the motivations and goals of the messengers well (Entman, 2006; Mohammadi, et al., 2022; Weaver, 2007). The six-step thematic analysis (Braun & Clarke, 2006) method were followed. Two investigators used a six-step thematic analysis to: 1) familiarize with the data, 2) initialize, 3) search for the essence, 4) re-examine the subject, (5) Identify and name the essence, and (6) form a report. The thematic analysis is a popular analysis method used in research about 'framing', because it can identify similar and dissimilar data attributes (Allen, 2017; Thompson, 2014). The analysis of the apparent main themes was reviewed again to identify a subtheme to reduce coder bias. Cohen kappa statistics were then calculated to estimate Inter-rater reliability (IRR) to indicate the relative significance of appraisal rates (Landis & Koch, 1977). Miles and Huberman (1994) suggested that an acceptable IRR higher than or equal to 80% was 0.8. As McAlister et al. recommended, if the IRR was higher than or equal to 80%, it was acceptable (McAlister et al., 2017).

In the second phase, we attempted to understand fake news sharing behavior and reasons by interviewing people who shared fake news. Therefore, the samples for this study must be those who used to share inaccurate health information. The samples were selected by purposive sampling in combination with the snowball technique. Twenty one samples agreed to participate in a semi-structured interview session, which would take about 40-45 minutes. The interviews, however, were conducted through telephone, due to the COVID-19 pandemic lock down and social distancing constraints. See Table 1 for information about the interviewees. In this phase, we have learned from the first 6 respondents that the word 'fake news' was offensive and people would reject that they shared fake news. However, if we provided examples of fake news headlines, they would then realize and admit that they had shared the fake news. Therefore, to reduce the interviewees' self-defense, we avoided using 'fake news' and using 'misinformation' instead. This approach was based on a method of interviewing rape-sensitive questions by avoiding rape in Africa but using behavior-specific questions. For example, non-consensual intercourse because it had a better outcome for confirming rape behavior (Sikweyiya, Jewkes, & Morrell, 2007). The first 6 respondents connected us to the other 15 respondents. The 21 samples were aged 37-71 years. Half of the group were retired. The percentage of retired persons was high as Thailand has now entered an aging society (Tejativaddhana, Chuakhamfoo, & Vo, 2022). All interviews were recorded and transcribed. The six-step thematic analysis (Braun & Clarke, 2006) was applied by two coders to identify fake news sharing behavior and reasons. As in the first phrase, the Cohen kappa statistics were used to assess Inter-rater reliability.

Table 1: Interview respondents' Profiles.

Case	Age	Gender	Education	Location	Infection	Covid's knowledge	Career
1(Pilot)	59	female	PhD	urban	infect	fair	professor
2(Pilot)	67	female	Master	rural	clean	fair	retiree
3(Pilot)	62	female	Master	urban	clean	good	retiree
4(Pilot)	56	male	Master	urban	clean	fair	retiree

Case	Age	Gender	Education	Location	Infection	Covid's knowledge	Career
5(Pilot)	67	female	Master	urban	clean	good	retiree
6(Pilot)	45	female	Master	urban	clean	fair	employee
7	47	male	Master	urban	clean	good	official
8	53	male	Bachelor	urban	clean	good	freelancer
9	69	female	PhD	rural	clean	fair	retiree
10	65	male	Bachelor	rural	infect	fair	retiree
11	62	male	Master	urban	infect	fair	retiree
12	71	male	Bachelor	urban	clean	good	retiree
13	42	female	Bachelor	rural	clean	good	official
14	48	female	Bachelor	urban	clean	good	official
15	60	male	Bachelor	rural	clean	fair	Insurance Agent
16	60	female	Master	urban	clean	fair	retiree
17	60	female	Bachelor	rural	infect	good	official
18	63	female	Bachelor	urban	infect	fair	retiree
19	61	female	Bachelor	urban	clean	fair	retiree
20	54	female	Master	urban	clean	good	freelancer
21	37	female	Master	urban	infect	good	official

Source: This study.

RESULTS AND DISCUSSIONS

In the first phase, two coders have coded 468 fake news collected from the website of Anti-Fake news Center, Thailand. Inter-rater reliability (IRR) for each news had an IRR value between 0.8 and 1, which are within acceptable range. Five main themes are identified as attributes of fake health news shared in Thailand during the COVID-19 pandemic.

Attributes of fake health news in Thailand

Five main themes are classified, including Conspiracy theories, Pseudoscience, Fraudulent advertising, Incorrect information, and Misleading information. Fourteen subthemes are identified, as shown in Table 2. Subtheme, such as Easy to follow Treatments, has similar characteristics to the theme, called Protection and solution, identified in Mohammadi et al. (2022). According to Mohammadi et al. (2022), protection and solutions relate to home remedies, treatments, drugs, diagnosis and testing, and virus killers. The identified themes in this study are also consistent with the findings by Wonodi et al. (2022), who studied misinformation in Nigeria, such as biological weapons transmitted by 5G technology.

Table 2: Identified COVID-19 misinformation themes and subthemes.

Subthemes	Code	Examples	Count	% Codes
Conspiracy theory theme				
There is someone behind it.	CT01	To take control of Thailand, communist terrorists collaborate with pharmaceutical corporations to insert viruses into vaccines that will inject into Thais people.	17	1.30%
An insider told me.	CT02	The medical authorities would tell each other but not say to the public.	125	9.70%
There are plans to cover up negatively against the public.	CT03	The government hides the truth because it fears people will not be vaccinated. The number of people who have died from vaccination is now close to 100.	64	5.00%
Paranoia.	CT04	Pfizer or Moderna vaccinators can now prepare to farewell their families because these people will die within two years.	46	3.60%
Connect the dots but no supporting evidence.	CT05	Smelling solid herbs can kill all kinds of germs.	66	5.10%
Misleading information theme				
Intentional misinformation	ML01	The military has spent 22 million to spray disinfectants on the roads.	216	16.70%
Try to convince	ML02	The infected patients escaped from the quarantine!!!.... They smashed the walls to escape.	195	15.10%
Create confusion	ML03	When you have registered to reserve a vaccination, you must check with the hospital in 7-10 days because your reservation can be missed.	181	14.00%
Fraudulent advertising theme				
Fraudulent	FA01	https://www.moqh.in.th/?rid=G8YsMuq Ministry of Health Register for Covid-19 vaccinations	40	3.10%
Scam review	FA02	When I discovered that a member of my household was infected with	54	4.20%

Subthemes	Code	Examples	Count	% Codes
		COVID, I ordered xxx to take it out early. I was infected with coronavirus when I went to the hospital for a check-up. Now, I'm hospitalized, and my condition is getting better. My lungs are normal, no fever, and my breathing is as good as before.		
Incorrect information theme				
Incorrect information	II01	The covid-19 vaccine is made from pork fat.	67	5.20%
Pseudoscience theme				
Scientific reference	PS01	A person's emotional state affects the transmission of the COVID-19 virus. The more negative emotions, the more easily infected.	33	2.60%
Give the audience hopeful information.	PS02	GOOD NEWS* Finally, Ram, an Indian student, has found a generic home remedy for *Covid 19* that has been approved for the first time by WHO.	86	6.70%
Home remedies and Easy to follow Treatments.	PS03	To maintain body temperature and avoid disease, drink enough hot water. Infection can be avoided by eating ginger and working out frequently.	100	7.80%

Source: This study.

Conspiracy theory theme **There Is Someone Behind it**

The attribute of the Incorrect information checked by the anti-fake news center related to any actions by an influential person or group without evidence is grouped in this category. Heider explained in 1958 that conspiracy theories were to describe events. It played an essential role in ensuring internal stability and consistency. Most were characterized by solid and dangerous groups' significant events and secret plots (Douglas, Sutton, & Cichocka, 2017; Goertzel, 1994; Heider, 1958). Some keywords show prominent features. Details can be found in Table 3.

Table 3: Identified keywords in There Is Someone Behind its subthemes.

Pattern	Examples keywords
Actors	Terrorists; Communists; Global Trash; Pharmaceutical Companies; Vaccine Sellers; Participants; The Chinese Government; Wuhan; In China; Lab; United States; Orders From Above; Prime Minister; VVIP, Etc.
Action	Intervened; Criterion; Strike As; Gesture; Claim; Force, Order; Choose To Give; Stop Administration; The Reason Is, Etc.
Reason	Genocide; Ordered To Shoot; Occupy Thailand; Take Advantage; Test Drugs; Transmit The Covid-19 Pathogens; Infect; Quarantine Patients; Do Not Pay; Sell Vaccines, Etc.
Result	Penalty; Impact; Abandoned To Their Fate; Lack Of Income; Terrible; Its Cruelty, Etc.
Warning	Don't Tell Anyone; The Whole World Will Know; Detect; They Are Scared, Etc.

Source: This study.

An Insider Told Me

The attribute of Incorrect information checked by the anti-fake news center or the fact-checking website related to any content that the messenger refers to as an insider source without evidence is grouped in this category. The motivation for rumor transmission would likely have caused the need to search to fill incomplete or conflicting information to reduce uncertainty and doubt in describing the event without patterns. The description of the event might contradict one's beliefs. Conspiracy theories deal with threats through the transmission of uniquely structured information. On the other hand, it was a reference to recognized insiders and outsiders trying to harass with details of how and why the harasser uses and the insider's countermeasures (Douglas et al., 2017; Tangherlini, 2017). Defining insiders and outsiders was essential for studying narratives, beliefs, social theories, and conspiracy theories (Barkun, 2003; Bodner, Welch, & Brodie, 2020). Some keywords show prominent features. Details can be found in Table 4.

Table 4: Identified keywords in An Insider Told Me its subthemes.

Pattern	Examples keywords
Celebrity	Fauci; Robert F. Kennedy Jr.; Bill Gates; Dr. John; His Royal Highness Ordered (Queen Of Thailand); Last Night, I Dreamed Of Luang Pu Tuad (A Famous Monk); Professor Dr. Prasit (A Renowned Doctor); Mr. Anutin (Ministry Of Public Health), Etc.
Friends and Family	My Friend's Telephone To Tell Me; My Grandchildren Called To Say To Me; My Friend's Mother Is A Doctor Who Is Going To Respond To This Case; My Mother Sent A Message To Me Via Line; My Aunt Said; My Mother Said; My Colleague's Mother Told Me; My Sister Who Has Been Examined There Hear An Urgent Announcement A Moment Ago; My Friend's Granddaughter Has A Master's Degree And Works In China; I Just Listened To The News From Someone Close To Me; From A Respected Senior; A Senior At Work Told Me That; My Senior Who Is The Owner Of Tour Company Already Has It; The Co-Workers Told Me; News From My Mom, Etc.
Authority	The Government Announced; The Live Broadcast From The Office Of The Permanent Secretary Of The

Pattern	Examples keywords
	Ministry Of Public Health Announced; From Facebook Live Ministry Of Public Health; The Source Is From Bamrasnaradura Infectious Diseases Institute; Coronavirus Disease 2019 Press Conference, The Emergency Operations Center For Medicine And Public Health; The Department Of Thai Traditional And Alternative Medicine Reveals, Provincial Public Health Office Assessment That; Consul Accepted That Etc.
Organization	A Retired Former Pfizer Executive; Said Pfizer's Former Science Chief; Pfizer Scientists State That; The Billionaire Co-Founder And Binding Force Behind The Covid-19 Vaccine Call For; World-Class Nuclear Physics Scientists, A Group Of German Doctors Found; Internationally Acclaimed Immunologist Continues; According To Italian Scientists; Division Of Chinese Medicine And Chinese Herbal Medicine; Chinese National Medicine Division, The United States Supreme Court Ruled That Foreign News Releases; The Japanese Government Found; The British Public Health Officials Said; Doctors Around The World Issue Urgent Warnings, Etc.

Source: This study.

There are plans to cover up negatively against society or groups

The attribute of Incorrect information checked by the anti-fake news center or the fact-checking website related to any actions covered by an influential person or group without evidence is grouped in this category. A key attribute of conspiracy theories is the speculation that some activities are behind the public perception. It requires complex multi-party cooperation. Those accomplices will lie and deceive the public by transmitting misinformation to cover up their efforts (Douglas et al., 2017). Some keywords show prominent features. Details can be found in Table 5.

Table 5: Identified keywords in There Is Someone Behind its subthemes.

Pattern	Examples keywords
Hidden actions	Covered; Hush News; Order To Hush; Confidential Report; Cooperate To Hush Up The News; No Report; Not Informed; Never Disclosed; Pretext; Lie, Deceit; Silence; Suppressed; Secret That Stops The World; Do Not Tell; Do Not Have; Avoid, Edit; Delete The Numbers; Are Created, Etc.
Force action	Ordered; Forbid, To Demand; Be Ordered; Not Permitted; To Stop, Do Not Access; Without Orders; Be Caution; To Tell; Decide; I Can Say Only This; In Trouble; Merciless, Etc.
Expose action	To Expose; Leak; Rumor; Hear The News; Spread The Word; Sound; Waiting For Him To Announce; Report; Publish; Note; Disclose; Occur; Take-Out Accept; Indicate; Or Expect Because There Will Be; The Reason Is; It Is Essential; I Know That; Will Know; Know Information; Access; Let See; He Knows; Warn Me; Be Cautious, Etc.
Fear	Impact; Fear; Fear That People Will; Because There Will Be; Panic, Embarrassed; Angry; Cursed; Worried; Be Careful; Do Not Want, Etc.

Source: This study.

Paranoia

The attribute of Incorrect information checked by the anti-fake news center or the fact-checking website related to any actions that messenger feels insecure of information without evidence is grouped in this category. Belief in conspiracy theories is linked to narcissism. It is a defensive motive to alleviate the bad feelings of one's or one's group due to their unfavorable status to access information. It is an extension of personal perspective that requires external validity and is connected to paranoid thinking (Cichocka, Marchlewska, & De Zavala, 2016). some keywords show prominent features. Details can be found in Table 6.

Table 6: Identified keywords in Paranoia subthemes.

Pattern	Examples keywords
Violence	World War; Biological Weapons; Reduction Of The World's Population; The Genocide Of Thai People; Destroying People All Over The World; Crime; Countless Deaths; Killing People; People Will Die; Kill People Indirectly; For Security; Full Of Germs; Facilitating The Insurance Group; Lethal Poison; Poison; Injected; Arrested; Dangerous Virus; New Virus; Diseases; Germs; Genocide Vaccines; Dangerous Vaccines; Death Vaccine; Non-Vaccination; Vaccination; Genetic Modification; Genetic Material; Genetic; It Is A Hoax; Lowers Immunity; Inject Virus; Carries Viruses, Etc.
Anxiety	Does Not Share News; Do Not Go Out; Refrain From Entering; Refrain From Going; Escape; Protect People; Protect Yourself; Fight For Existence; Be Careful; Be Careful With Yourself; It Is A Mistake; There May Be A Problem; Stop Vaccination; Don't Inject; We Do Not Inject, Etc.

Source: This study.

Connect the dots but no supporting evidence.

The attribute of Incorrect information checked by the anti-fake news center or the fact-checking website related to any information without evidence is grouped in this category.

Misleading information theme

Intentional misinformation.

The attribute of Incorrect information checked by the anti-fake news center or the fact-checking website related to any information intended to present false information to news consumers without evidence is grouped in this category. The European Association For Viewers Interests (Eavi) presented a type of news that deliberately misrepresents information into ten main categories. It avoids using the term fake news in article headings because it requires complexity. The meaning of the word fake news can be confusing. Thus, it can lead to the fact that their only real and fake news. Instead, they use the term misleading news, further information intended to create confusion. Still, the primary purpose is mainly for money and power, and other purposes, such as global warming news, may be made for political reasons (Steinberg, 2017).

Try to convince.

The attribute of Incorrect information checked by the anti-fake news center or the fact-checking website related to any information intended to make believed or convince news consumers without evidence is grouped in this category. Some keywords show prominent features. Details can be found in Table 7.

Table 7: Identified keywords in Intentional misinformation subthemes.

Pattern	Examples keywords
Arousal	In the shocking announcement; Shocking!!!; Checked the covid red zone here!!; We win; Covid Insurance only covered who got lung infected; Now, the Emergency room is currently indefinitely closed; The body is forbidden to open already in the bag; Dangerous Covid zone by the Ministry of Public Health; If you don't want to sleep forever like this, please take care yourself, etc.
Condemn	Expensive and low quality still, they will buy more; They don't care about us, only care about their life; Death will be forbidden or delayed, etc.
Attention	There is news that; There is a rumor that all family got infected; I have the information you should know, etc.
Convincing	Official results confirmed; I advise everyone to do their research; Most of it is their opinion, etc.

Source: This study.

Create confusion.

The attribute of Incorrect information checked by the anti-fake news center or the fact-checking website related to any information intended to confuse news consumers without evidence is grouped in this category. Some keywords show prominent features. Details can be found in Table 8.

Table 8: Identified keywords in Create confusion subthemes.

Pattern	Examples keywords
Questioning	Is this message valid; Is anyone know? Please tell me the details; I will find the fact for you later; Let's think about how an escaper will be entered; Anyone who knows this, please explain, etc.
Informed	I cannot explain to make you guys believe me, but...; People who do not get vaccinated will be prohibited; Rumor that they found...; I can tell that we must prepare for it!!; Some people leave field hospitals without lung checkups; I see someone collapse at an intersection; Just got vaccinated and now died; You should see this, etc.
Sarcastic	They donate vaccines for free, but Thailand doesn't take them. Why; If they had a gut, I would take a risk, etc.
Asking	Please share; Help ourselves and other people in the world; Listen to this, and please share; please be careful, etc.

Source: This study.

Fraudulent advertising theme

Fraudulent

The attribute of incorrect information checked by the anti-fake news center or the fact-checking website related to any information intended to trick news consumers, such as phishing links, is grouped in this category.

Scam review

The attribute of incorrect information checked by the anti-fake news center or the fact-checking website related to any information with a commercial purpose is grouped in this category. Hu et al. (2012) explained that a fake review is an act of a manufacturer, seller, or third party to pursue a product review and deliberately disseminate untrue information to portray itself as a consumer increased sales and benefits.

Incorrect information theme

The attribute of incorrect information checked by the anti-fake news center or the fact-checking website related to false information is grouped in this category. Misinformation is a mixture of accurate and inaccurate information. It is intended to disseminate information, but the messenger does not know that it is misinformation and therefore has harmful effects on society (Steinberg, 2017).

Pseudoscience theme

Scientific reference

The attribute of the incorrect information checked by the anti-fake news center related to any content that the messenger refers to as a scientific source or scientist without evidence is grouped in this category. Blancke et al. (2017) explained that what makes a scientific concept accepted or rejected is related to trust in the data. Citing experts is integral to everyday convictions and decisions, such as going to the dentist or choosing a garage (Blancke, Boudry, & Pigliucci, 2017). Science is helpful because it aligns people's instincts rather than scientific reasons that contradict intuition (Boudry, Blancke, & Pigliucci, 2015; McCauley, 2011; Wolpert, 1992).

Give the audience hopeful information

The attribute of the incorrect information checked by the anti-fake news center related to any content that provides an optimistic or untrue solution for the receiver without evidence is grouped in this category. False hope has a mental value that leads cancer patients and their families to misinformation in a world-false science model that advertises unsubstantiated treatments. These data will pledge that many people have recovered and lived long, healthy lives despite being told by doctors to go home and wait for the day of death. The data, consisting of medical conspiracy theories, is designed to advertise natural methods or more dramatic treatments (Bernicker, 2019).

Home remedies and easy-to-follow treatments

The attribute of the incorrect information checked by the anti-fake news center related to any content that provides easy methods to follow to improve health without evidence is grouped in this category. This irrational belief drives the direction of illogical science. Pseudoscience is linked to the confirmation bias that causes most people to favor scientific theories that are easily understood and reasoned based on their ideas, not truth-based reasoning, and when pressured to make decisions or feel burdened, look for reasons that support their arguments by ignoring such assertions, which this motivation makes it impossible to consider the value of conflicting information (Mercier & Sperber, 2011).

Causes of health-related fake news transmission

According to phase 1 of this study, there is a growing spread of health rumors related to pandemic response guidelines and ways to behave. The conspiracy theory theme has characteristics that are seen in their fabricated pattern. The transmission of fake news is composed of messengers and receivers, with the transmission of information on social media usually intended to attract the attention of the recipient, so the use of arousal and moral words such as 'fight,' 'greed,' 'evil' and 'punish' assembled in the message will make the messenger pay attention to receiving information and increase the chances of forwarding it (Brady, Gantman, & Van Bavel, 2020; Brady, Wills, Jost, Tucker, & Van Bavel, 2017; Han, Cha, & Lee, 2020). Based on the interviewee's answers in phase 2 of this study, 11 out of 15 respondents believed that people who share fake news believe that the information they share are true/correct.

One of the interviewees, a retired doctor who worked during the H5N1 pandemic as an executive administration of the public health ministry, explained, "If they share fake news, it will ruin their reputation. Nobody in my group chat intends to share fake news. They did that by mistake." He does share health news a lot. "I want to warn everyone in my circle about important information. If it is true, it will benefit them, I want to share some knowledge that I think is accurate."

Another interviewee is a doctor who works at a province hospital and believes that "Nobody has an intention to share fake news." She, however, admitted that she used to share fake news. "I cannot remember correctly, but I shared some misinformation from unofficial Facebook pages."

7 of 15 respondents perceived the benefit of health information sharing. "I shared some useful news with my family to inform them."; "If I think that's useful, I send it to all of my group chat sometimes twice."; "I think they share new information because they want to inform others for their benefit."

10 of 15 respondents thought that people who shared fake news felt insecure about the pandemic. "I don't want to aggravate the terror that already exists."; "I think they were worried and believed that everybody should protect themselves; they do care."; "I believed they were panic."; "I already inform them, true or not; if it helps, I will share."; "I think fake news sharing has been increased because people cared about their close ones."

9 out of 15 respondents think people do not check the information they share before posting it. "They shared without investigation."; "Nobody knows what was right or wrong because it was so new."; "I shared fake news because the evidence seemed real."; "Some of my group chat was such random trash about Covid-19 news"; "They didn't have critical thinking." However, 9 of 15 respondents also admitted that it is possible that some people gained benefits from fake news sharing. "It's possible that vaccine companies may send fake news to attack their competitors."; "It's all about business."; "Everyone was forced to get a vaccination, but they only cared about the benefit, not people's life"; "They do care about engagement data."

CONCLUSIONS

This study expanded the understanding of misinformation in Thailand by classifying attributes of health-related fake news. Five main themes, showing visible patterns of words or terms that intend to attract news consumers' attention, are Conspiracy theories, Pseudoscience, Fraudulent advertising, Incorrect information, and Misleading information. The conspiracy theory

theme shows an unmistakable pattern of rumor transmission. The COVID-19 outbreak has significantly increased conspiracy theories, rumors, and news that have fueled scientific distrust on social media (Mukhtar, 2021). Conspiracy theories are a type of rumor because the critical feature of rumors is information that has not been supported or proven true. It might also be called a conspiracy rumor. This type of rumor is characterized by the covert and malicious activities of the dominant secret group (Difonzo, 2018). The spread of fake news is the result of an outbreak of news. Consequently, anxiety and confusion escalated to many levels due to fear and the inability to trust the accuracy of public information. It may also lead people to believe suggestive non-scientific details such as the dangers of medicines or the origins of COVID-19 (Rodrigo, Arakpogun, Vu, Olan, & Djafarova, 2022).

LIMITATION

This study was conducted in Thailand, with only one fact-checking website that was certified by international standards of the International Fact-Checking Network IFCN. This study analyzed the incorrect information checked by the anti-fake news center 468 news from November 1, 2019, to January 24, 2022.

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