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Paradigm Shift in Hygiene Awareness Among Various Demographics in Thailand

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Abstract

The COVID-19 pandemic swept over the world and changed the way many people lived forever. From one day to the other, many countries enforced laws on wearing masks and keeping social distance, while many companies enforced rules on hand sanitizing and continuous COVID-19 testing, all to keep the virus from spreading. In late 2022, when this research paper was written, we wanted to find out if the COVID-19 pandemic had had any lasting effects on regular people's hygiene habits and hygiene awareness, as the pandemic induced laws and regulations were being loosened and people were once again left to make their own choices. As the team is based in Thailand, we decided to focus on varying demographics of people living in Thailand when conducting our research. We used data collected through surveys to get a better understanding of people's hygiene habits and hygiene awareness, and asked questions defining demographic factors to be able to compare different groups among the people answering our survey. To create and distribute our survey we used Google Forms. To analyze the data we collected in our survey we used SPSS to run data tests. As we suspected, hygienical habits and awareness had changed in Thailand during the pandemic, but contrary to our original assumptions demographic factors had very little effect on the matter. Our key findings showed that hygiene awareness has increased in Thailand after the pandemic.

Keywords: *Covid-19, hygiene, hand sanitizer, mask, pandemic, Thailand.*

1. Introduction

In late 2019, in Wuhan, China, an outbreak of a virus called SARS-CoV-2 occurred. It started as a cluster of people with pneumonia which was reported to the WHO on December 31st 2019. By the time people found out how contagious and easily spreadable the virus is, it was already too late as it had started large clusters of infectants in China. Only two weeks after, on January 13th 2020 (World Health Organization [WHO], 2020), the first ever case of SARS-CoV-2 virus, nicknamed COVID-19, was found in Thailand and as we know it today, a total of over 621 million cases of COVID-19 around the world with over 4.6 million cases in Thailand alone. It is clear that the COVID-19 pandemic has changed the way people live around the world as it has caused global travel restrictions, multiple periods of quarantines, lockdowns in order to reduce the spread of the virus. Most people have never experienced this level of restriction in their daily routines before.

The pandemic also caused global economic effects such as labor shortage (Lowenstein & Prior, 2022), supply chain issues (Kurth & Flynn, 2021), and increased demand for electronics such as computers and cars as public transit becomes dangerous due to the chance of becoming infected as (Rosenbaum 2020) suggested. One of the most significant changes to the way of life of people is now they approach hygiene. During a pandemic, hygiene is one of the more important factors in reducing the spread of the virus, especially when a good percent of the infected people is asymptomatic or does not get sick from the infection of the COVID-19 virus.

As for Thailand itself, the difference before and after COVID-19 is noticeable for citizens, and re-visiting tourists as there are regulations put in place by the prime minister Prayut Chan-o-cha. An example of this is the Emergency Decree on Public Administration in Emergency Situations that has been put in place for everyone to follow. However, the regulations and guidelines have changed throughout the last 2 years or so hence, an ever-changing way of life for many. This has greatly impacted how catering establishments do their business as they usually encounter customers face-to-face which would increase the chance of getting infected. Therefore, regulations were put in place by the prime minister of Thailand, General Prayut Chan-o-cha in 2020 and 2021which was then announced by the Ministry of Foreign Affairs of the Kingdom of Thailand (MFA), and this included regulations such as, only allowing take-out, prohibiting the sale of alcoholic beverages, and to close by 21:00. As for individuals, the regulations consisted of, wearing a

surgical/cloth mask, prohibition of entering high risk areas such as provinces, and the prohibition of leaving one's home between certain times. Moreover, to stimulate the use of hygienic products the Ministry of Foreign Affairs has taken initiative by sharing infographics which can be used and shared by anyone which has also been placed on an occasional billboard throughout some cities.

In the past two years, due to the raging epidemic, Thailand has closed all imports and exports. However, due to the serious problem of the raging epidemic in Thailand, which has seriously endangered the country's economic development and health, Thailand has gradually opened up tourists and local Thai citizens to enter Thailand. At the beginning, local Thai citizens and tourists entering Thailand must first obtain an entry permit and a 14-day quarantine hotel reservation order. However, the immigration policy was gradually relaxed in the later period. The Thai government implemented Thailand PLUS to manage all incoming passengers. Thailand PASS is a personal information only required to enter. If the information is correct, Thailand PASS will provide a QR code as a permit to enter Thailand. However, in recent years, Thailand has completely opened up to the outside world, and visitors can enter Thailand without any conditions.

From July 1 2022, the Thai pass for foreign tourists to enter the country will be completely canceled. (Thailand PASS) system, but entrants still need to show proof of vaccination or Covid-19 test. The Centers for Epidemic Control will require sampling and testing of those entering the country. Thailand also lifts mandatory requirements on Covid-19 insurance, but still encourages individuals too Willing to buy insurance. In addition, it is also approved that the mask can be taken off according to the principle of individual voluntariness in certain places, especially in the open air. Athletes can take off their masks also (TAT News, 2022).

Thailand's government chaired a meeting of the epidemic Command Center, in which it was decided to implement strict restrictions. The measures include the closure of department stores and shopping malls in these six areas, but supermarkets, convenience stores, restaurants, communication shops and pharmacies can operate, restaurants take out only and all shops and restaurants operate until 8:00p.m. And they also close high-risk places such as massage parlors and beauty parlors. During the meeting, the government was asked not to go out from 9:00p.m. to 4:00 a.m.the next unless there was a necessary reason, and public transportation would not operate from9:00p.m., gathering of more than 5 people.

This research paper will focus on analyzing the paradigm shift in hygiene awareness among different demographics in Thailand, specifically how people's perception of hygiene has changed since the pandemic started amongst different ages. The aim is to compare their hygienic habits in people of different ages to see how it has changed prior to the pandemic, and now, more than 2 years after the start. The objectives of this research are to learn about change in hygiene concern in Thailand, and to explore the habit change after Covid-19 in Thailand.

2. Literature Review

Application technology to fight the COVID-19 pandemic: Lessons learned in Thailand (Intawong, 2021). This paper investigates the background and use of three different smartphone applications that were implemented in Thailand to ease the effects of the Covid-19 pandemic. The paper talks about the background and need for technology to fight the pandemic in the world, and uses Thailand and its use of applications to research the effect of said technology. The main point of the research is to see how application users, academics and developers can use what they have learned from the implementation of applications to fight the health crisis, especially in case there is need for future public health surveillance.

The research is mainly on three specific applications developed and used in Thailand to help prevent spread of Covid-19 as well as to reduce fear in society by helping people track their health. The applications include Self-Screening for COVID-19, Self-Health Check for COVID-19, and Chiang Mai Covid-19 Hospital Information System. The article suggests that the application technology could be used efficiently to survey, test, trace, quarantine and help manage hospitals. It found that the technology was used by a large number of people, and that this was in part because it was easy for the public to access.

Hand Hygiene Habits and Prevalence of Hand Eczema During the Covid-19 Pandemic (Techasatian, 2021). This paper researches the risks of developing hand eczema because of new hand hygiene habits in health workers and non-health workers in Khon Kaen, Thailand. The researchers conducted a survey with 805 participants.

The article found that using alcohol-based hand hygiene products should be avoided when other hand washing alternatives are available, and that healthcare workers, people with previous problems with hand eczema, and people with underlying atopic dermatitis run a higher risk of developing hand eczema from handwashing. As handwashing is increased because of the Covid-19 pandemic, the researchers recommend that proper strategies are developed to avoid hand eczema.

Influencing factors of Covid-19 spreading: a case study of Thailand (Tantrakarnapa, 2022). This paper looks in to the Covid-19 situation and spread, as well as influencing factors of spreading and control, in Thailand. The timeline of the study starts from the first case of Covid-19 in Thailand and went on until 15th April 2020.

The study found that there was a significant relation between the infections and economic factors. The researchers found that this was because the number of infections correlated with the number of visitors, which generates income from both Thai nationals and foreign tourists. Factors that were found to slow the increased rate were found to be enforcement and implementation of regulations, the strength of the Thai health care system, culture and social relations and the partnerships between various governmental and private sectors.

Improving knowledge, attitudes and practice to prevent COVID-19 transmission in healthcare workers and the public in Thailand (Maude, 2021): This article brings out the idea of KAP, which stands for knowledge, attitudes, and practices. The objective of this research study was to test the KAP of healthcare workers and the general public. The author hypothesized that there is a significant gap in the KAP of these two different groups and this gap means that the general public can be practicing the prevention and control measures with wrong protocols and attitudes.

The data collection took place in two hospitals in Bangkok that provide medical treatment for the COVID-19. With the general public being any patients and patient attendants in the hospital and the healthcare workers being anyone who works at the hospital, both groups took a baseline questionnaire survey to demonstrate their KAP in COVID-19. The study also involves making two sets of educational videos on how to prevent the transmission of the COVID-19 with correct protocols and attitudes. After showing the two sets of educational videos to the participants, the participants were asked to take two follow-up questionnaires asking about their KAP in the prevention of COVID-19. Datas have found that the level of general knowledge of the methods of transmission and the symptoms of the virus was similar and well demonstrated by both groups. However, the general public was not aware of some details such as how long you should wash your hands. Overall, the KAP both improved after the educational videos were shown.

The two follow up questionnaires were meant to identify specific improvements in KAP. The process also allows the participants to provide anonymous feedback on the videos. However, the study is believed not to represent the entire city because the sample size is relatively small.

Access to digital information and protective awareness and practices towards COVID-19 in urban marginalized communities (Pattanasri, 2022): This research study was conducted to find the role of digital competencies in people's ability to access COVID-19 information and follow proper protocol in the practice of prevention of the transmission of the virus. The sample group of this research study is the urban marginalized communities, which are the people living in Bangkok who do not have much access to the economy and the infrastructure of the city.

A total of 453 people who live in the urban marginalized communities in Bangkok were asked to take a questionnaire and the study has found whether socio-demographic factors play an prole in people's access to disclosed online information of COVID-19. In conclusion, the data collection showed that people's competencies in using the internet and access to disclosed online information plays an important role in their KAP of the COVID-19. The data showed that people who had higher competencies and could access online information have a greater understanding of the prevention practices of the COVID-19 while those who are usually older, female and foreign do not have access to that online information and therefore have less KAP of the virus.

Even though the study was conducted in a small slum community in Bangkok, it allows researchers to get a general understanding of how different socio-demographic-nationality backgrounds can affect people's awareness and knowledge in the control measures of the virus. The study also serves as a great reference of how the government can improve in the coverage of information about knowledge and practices

of preventing the virus. The data collection protocols were approved by the research ethics review committee at the Asian Institute of Technology in Thailand and therefore are liable.

Hygiene and sanitation practices amongst residents of three long-term refugee camps in Thailand, Ethiopia and Kenya (Biran et al., 2012): The main objective of this article is to understand sanitation and hygiene in long-term camp populations. The data collection is composed of a series of questionnaires and observations. The sample size of the observation is 126 households and the sample size of the questionnaire is 1089 households, all located in three long-term refugee camps in Thailand, Ethiopia and Kenya. The study was conducted in order to gain a more accurate understanding on how people wash their hands during the pandemic and whether or not the sample groups have access to soap also plays an important role in finding the results.

The study was meant to be a continuing process by an international non-governmental organization, the International Rescue Committee. Data on how people wash their hands are collected as qualitative data through observation, while a verbally administered questionnaire survey was also used to gain an understanding of the frequency of handwashing, the duration of the handwashing, and other sanitation practices within the camps. Datas has found that people's knowledge in washing hands in these three camps are also greatly affected by their education levels and where they are from. Access to soap and water were confirmed by visual inspection.

This study was funded by the US Department of State's Bureau for Population, Refugees and Migration (BPRM) therefore is believed to be credible.

Understanding Food Security Behaviors during the COVID-19 Pandemic in Thailand: A Review (Sereenonchai, & Arunrat, 2021) This review aims to understand people's behaviors about promoting food security during the COVID-19 pandemic by covering three main cases at a community level: the food bank, the food exchange, and the food pantry. The attitude toward food as a crucial factor for living, the influence of family members and neighborhoods, and the perception of what constituted enough food led to people's behavioral intentions regarding food security. The intrapersonal communication of opinion leaders was an important initial step linking to people's understanding of others.

Food security exists when all people always have physical and economic access to sufficient food to meet their nutritional needs for a productive and healthy life. Food security has three dimensions. The availability of food of adequate quality and in sufficient quantities, supplied by domestic production or imports. Ensure that households and individuals have access to adequate resources to purchase food suitable for nutritious diets. Access to food through adequate nutrition, water, sanitation, and health care. As this was not the case during his COVID-19, this review was conducted to assess the impact on food security.

This study was funded by the US Department of State's Bureau for Population, Refugees and Migration (BPRM) therefore is believed to be credible.

Post-COVID-19 Tourism Recovery and Resilience: Thailand Context (Wongmota, 2021) This article shows the significant impacts Covid has on tourism. Safety protocols and sanitary measures are essential factors that every business in the tourism industry must consider mandatory, and they are essential to creating tourism demand. The objective of this study was to find what are the important factors to get Thailand's tourism back on track.

The article also proves that building trust in health and hygiene is essential to creating post-COVID-19 tourism requirements. The country is tightening hygiene measures to boost tourism demand as all countries rely on vaccination to create herd immunity and be open to international tourists. Thailand declared a state of emergency on March 25, 2020, temporarily closing its borders to inbound tourists. Since then, no foreigners have arrived in Thailand. The measures taken have successfully contained the spread of COVID-19.

To fully reopen the doors of international arrivals and reduce the risk of travelers contracting COVID-19, a global immunization program must reach herd immunity. Thailand is one of the top ten tourist destinations in most countries. Therefore, there is great potential for the tourism sector going forward if the COVID-19 crisis is contained. Many post-COVID-19 tourism recovery measures will need to start once the pandemic is over. Waiting until countries are free from COVID-19 is too late for the global economy and livelihoods to recover. The study recommends the following strategies: 1) health safety protocols that align with the guidelines of the World Health Organization (WHO) and the Department of Health (DOH) of each

country and 2) train employees to comply with health safety protocols and new normality in the tourism industry.

Responding to the COVID-19 second wave in Thailand by diversifying and adapting lessons from the first wave (Rajatanavin, et al. 2021) This study shows the social measures taken by Thailand in the first and second waves showing what has been effective and the causes of the spread. The purpose of this study was to analyze the different measures taken throughout the first wave and second waves.

The first wave of COVID-19 in Thailand in March 2020 spread to 68 provinces, sparked by boxing matches and nightclubs in Bangkok. The country responded quickly with strong public health and social measures on 26 March 2020. Contact tracing was carried out by more than 1,000 surveillance and emergency response teams, assisted by 1.1 million village health volunteers to identify, isolate, and isolate cases.

The outbreak was contained in February 2021 through synergistic multi-sectoral efforts involving the health, non-health, and private sectors. The total number of cases was seven times higher than his in the first wave, but early hospitalization and treatment put the mortality rate at 0.11 in the second wave. In summary, the experience of responding to the first wave will inform the response to the second wave with targeted lockdowns of affected locations and proactive case finding at affected sites.

'New Normal' in Covid.19 Era: A Nursing Perspective from Thailand (Gunawan , 2020). This paper researched the impact of Covid-19 in Thailand and how it's changed people's behavior. The study finds that Covid19 has given Thailand both positive and negative new features to life, and that we need to learn and adapt through these changes.

This paper was supported by the C2F Fund of Chulalongkorn University in Bangkok, Thailand. The authors used existing research papers combined with personal experience to conduct their research. The article used sources including the Ministry of Public Health of Thailand, scientific journals and articles, and the Bangkok Post. We find that this article is somewhat reliable.

3. Materials and Methods

We conducted research and collected data on our topics using survey methods. The survey was created and distributed through Google Forms. Our survey got a total of 280 responses from people living in Thailand. Since most of the articles describe the general situation of the country after the epidemic, they do not describe the real feelings of the people in detail. Therefore, we hope to use the method of questionnaire survey to discuss the life and psychology of the people in Thailand, in a quantitative manner.

We have collected our data through an online survey, using Google Forms. The survey was divided into 3 sections. Section 1 ensures our data is collected in Thailand, section 2 provides us with data that tells us more about the people responding, and section 3 provides us with data regarding hygiene awareness. We compared the data collected from section 3 in the survey to see if hygiene awareness had increased, and cross-referenced it with data collected from section 2 of the survey which showed if age/level of education/gender etc. affects this increase.

The data collected from section 3 gave us our dependent variables, meaning section 3 is how we found if there's been any change or effect. The data collected from section 2 gave us our independent variables, meaning section 2 is how we found if there's any cause to this change or effect. By cross-referencing our dependent variables with one independent variable at the time, we were able to analyze if any of the factors asked about in section 2 was related to the change in hygiene awareness that we believed we would find through section 3. The purpose of our research was to find a correlation between the variables, and to calculate the correlation coefficient for each variable in section 2 with the variables in section 3. We did this to find the strength and direction of the correlation between the variables. An example of the correlation would be if we could see that the level of hygiene awareness increased more with males than females, or if it has increased less with younger generations than older generations. Through the correlation coefficient we cannot prove that one variable is the causation of the other variable, but we can see if they're related to each other, and how strong the correlation is. To prove that the variables collected in section 2 is the causation of the effects in section 3, we ran hypothesis testing with data analysis software, in this case

SPSS. The tests used to analyze our data were the Pearson correlation coefficient, ANOVA test, and Independent T-test.

4. Results and Discussion

Table 1 Correlation between hygiene awareness and usage frequency of hygiene products with demographic factors

		What's your gender?	How old are you?	What is your highest level of education?	What is your current occupation?	Do you have any pre-existing health conditions? (Diabetes/heart disease/lung disease/etc)	Have you ever had Covid-19?	IncreaseOfAwareness	IncreaseOfProducts
What's your gender?	Pearson Correlation	1	-0.101	-0.067	-0.019	0.066	-0.062	-0.008	0.063
	Sig. (2-tailed)		0.093	0.267	0.755	0.274	0.305	0.898	0.296
	N	280	280	280	280	280	280	280	280
How old are you?	Pearson Correlation	-0.101	1	0.091	.445**	-0.11	-0.068	0.069	0.021
	Sig. (2-tailed)	0.093		0.131	0	0.066	0.26	0.247	0.727
	N	280	280	280	280	280	280	280	280
What is your highest level of education?	Pearson Correlation	-0.067	0.091	1	0.021	-0.079	0.008	0.006	-0.062
	Sig. (2-tailed)	0.267	0.131		0.725	0.189	0.891	0.926	0.301
	N	280	280	280	280	280	280	280	280
What is your current occupation?	Pearson Correlation	-0.019	.445**	0.021	1	0.066	0.033	-0.031	0.036
	Sig. (2-tailed)	0.755	0	0.725		0.271	0.577	0.608	0.553
	N	280	280	280	280	280	280	280	280
Do you have any pre-existing health conditions? (Diabetes/heart disease/lung disease/etc)	Pearson Correlation	0.066	-0.11	-0.079	0.066	1	0.085	.134*	0.111
	Sig. (2-tailed)	0.274	0.066	0.189	0.271		0.158	0.025	0.064
	N	280	280	280	280	280	280	280	280
Have you ever had Covid-19?	Pearson Correlation	-0.062	-0.068	0.008	0.033	0.085	1	0.047	0.059
	Sig. (2-tailed)	0.305	0.26	0.891	0.577	0.158		0.437	0.325
	N	280	280	280	280	280	280	280	280
IncreaseOfAwareness	Pearson Correlation	-0.008	0.069	0.006	-0.031	.134*	0.047	1	.596**
	Sig. (2-tailed)	0.898	0.247	0.926	0.608	0.025	0.437		0
	N	280	280	280	280	280	280	280	280
IncreaseOfProducts	Pearson Correlation	0.063	0.021	-0.062	0.036	0.111	0.059	.596**	1
	Sig. (2-tailed)	0.296	0.727	0.301	0.553	0.064	0.325	0	
	N	280	280	280	280	280	280	280	280

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

*. Correlation is significant at the 0.05 level (2-tailed).

The results of the Pearson correlation coefficient show us that the factors that has a significant correlation is pre-existing health conditions and increase of hygiene awareness, as well as pre-existing health conditions and increase of hygiene product usage. The other factors did not have a significant correlation. (p.>0.05)

According to the answers we got regarding perceived increase in hygiene awareness (fig. 1), there seems to have been a significant increase in hygiene awareness. As the question asked responders to rank their perceived increase in hygiene awareness from 1 to 5, where 5 is the highest, we can assume that any answer of 3 or above would mean that there has been a measurable increase in hygiene awareness for people

living in Thailand, at least according to what our responders perceive themselves. 91.5% of responders responded 3, 4, or 5, and therefore, we believe our initial hypothesis that hygiene awareness has increased since the Covid-19 pandemic started is proven.

We also asked responders to rank their awareness of 10 different hygiene factors before (fig. 2) and after (fig. 3) the Covid-19 pandemic, and the results showed a measurable increase in hygiene awareness for all 10 factors. Further, we asked responders to rank their usage frequency of several hygiene products related to Covid-19 before (fig. 4) and after (fig. 5) the Covid-19 pandemic, and again the results showed a measurable increase in product usage. These results, together with the results shown in figure 1, gives us high confidence that hygiene awareness has seen a measurable increase since the Covid-19 pandemic.

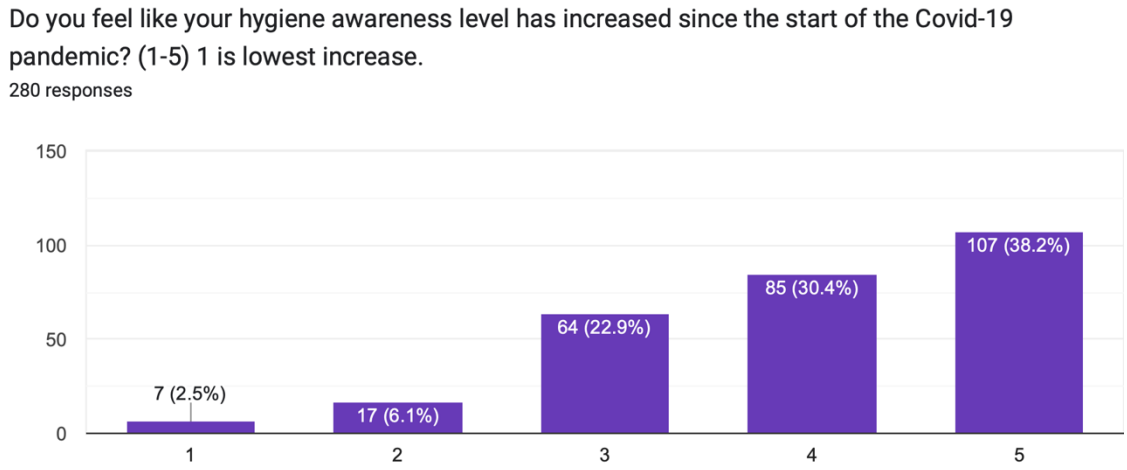

Figure 1 Perceived increase in hygiene awareness among people living in Thailand

38.2% of people living in Thailand responded that they had the highest (5) perceived increase in hygiene awareness since the start of the Covid-1 pandemic. Only 2.5% answered with the lowest (1) perceived increase (Fig. 1).

As Fig. 1 shows, 256 out of 280 respondents perceived that their hygiene awareness had increased by at least a 3 on a scale from 1 to 5.

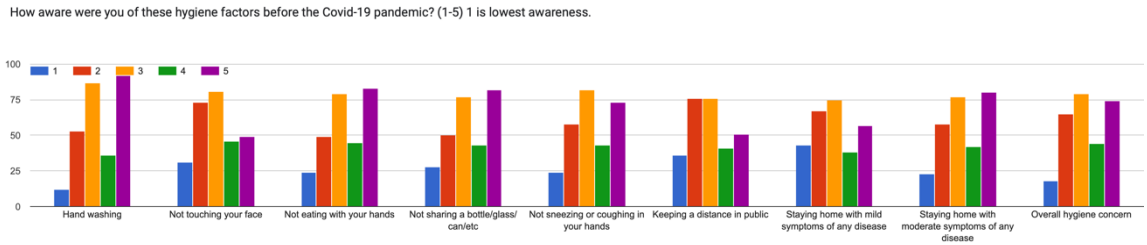

Figure 2 Hygiene awareness in different factors before the Covid-19 pandemic

32.9% hand washing.
29.6% not eating with their hands.

29.3% not sharing a bottle/glass/can.
28.6% staying at home when displaying moderate sickness symptoms.
26.4% overall hygiene concern (Fig. 2).
26.1% not sneezing or coughing in to their hands.
20.4% staying at home when displaying mild sickness symptoms.
18.2% keeping a distance to others in public.
17.5 not touching their face.
13.91% avoiding touching door handles with their hands.

Fig. 2 shows us that hygiene awareness among people living in Thailand before the Covid-19 pandemic started was perceived as moderate, or moderate to-high within the 10 factors we asked about.

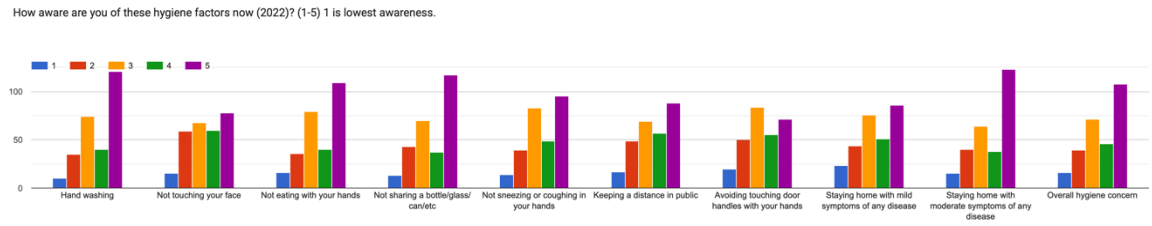

Figure 3 Hygiene awareness in different factors now (4th quarter of 2022)

43.9% staying at home when displaying moderate sickness symptoms.
43.2% hand washing.
41.9% not sharing a bottle/glass/can.
38.9% not eating with their hands.
38.6% overall hygiene concern (Fig. 3).
33.9% not sneezing or coughing in to their hands.
31.4% keeping a distance to others in public.
30.7% staying at home when displaying mild sickness symptoms.
27.9% not touching their face.
25.3% avoiding touching door handles with their hands.

Fig. 3 shows us that hygiene awareness among people living in Thailand in the 4th quarter if 2022 was perceived as mostly high or moderate to high within the 10 factors we asked about.

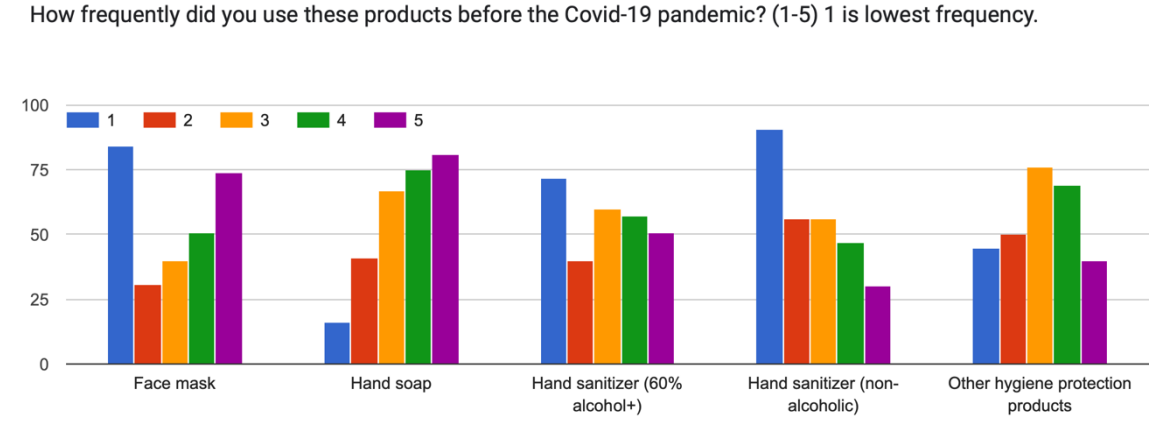

Figure 4 Usage frequency of hygiene products related to Covid-19 before the pandemic

28.9% hand soap.
26.4% face masks.
18.2% hand sanitizer with over 60% alcohol.
14.3% other hygiene protection products (Fig. 4).
10.7 alcohol-free hand sanitizer.

Figure 4 shows us that the usage frequencies of hygiene products was low or moderate among people living in Thailand before the Covid-19 pandemic, and hand soap was the only product that was used often among the majority.

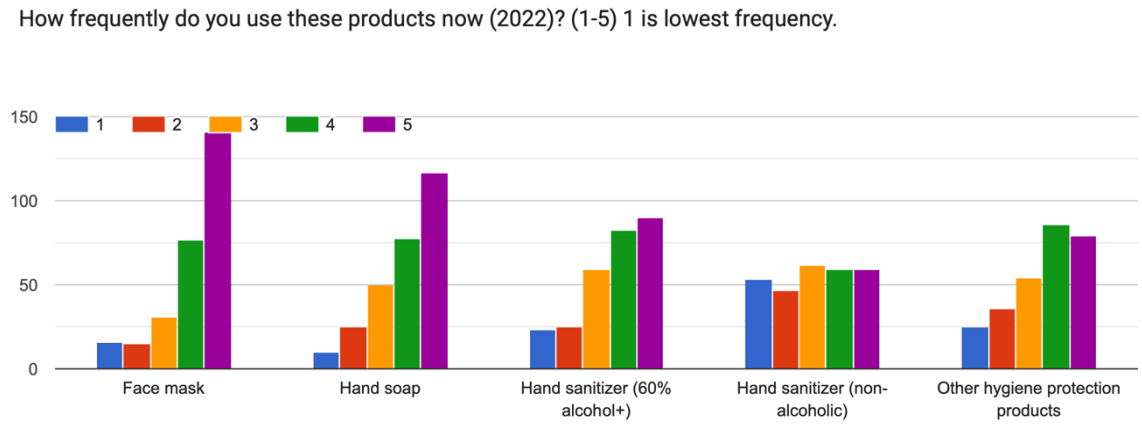

Figure 5 Usage frequency of hygiene products related to Covid-19 now (4th quarter of 2022)

50.4 face masks.
41.8% hand soap.
32.1% hand sanitizer with over 60% alcohol.
28.2% other hygiene protection products (Fig. 5).
21.1% alcohol-free hand sanitizer.

Figure 5 shows us that the usage frequencies of hygiene products in the 4th quarter of 2022 was high or moderate-to-high among people living in Thailand. Face masks, hand sanitizer, and other hygiene products had a significant increase in frequency of use.

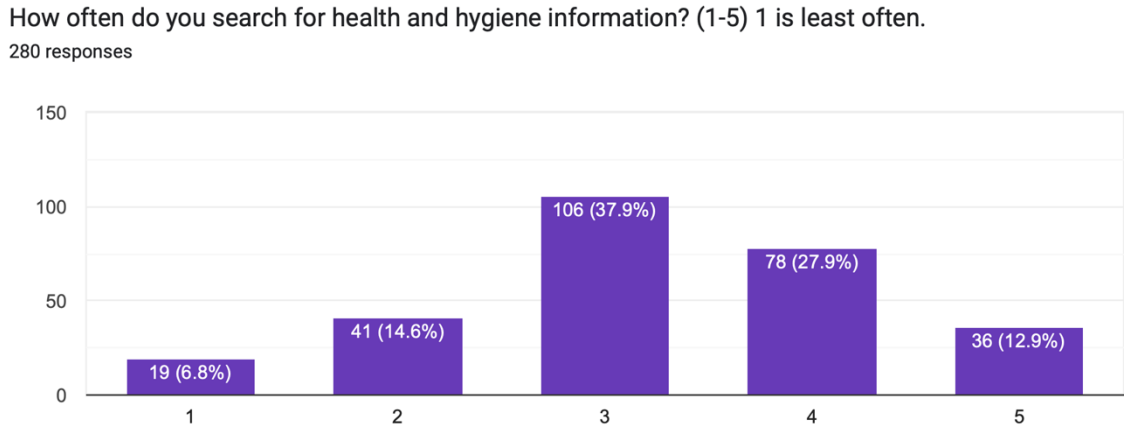

Figure 6 Search frequency for health and hygiene information

Figure 6 shows how often our responders actively searched for health and hygiene information. The results show that 78.7% of responders search frequency was moderate to high.

As shown in figure 6, the search frequency for health and hygiene information was mostly moderate-to-high with our responders at the time of answering the survey. We believe that the high search frequency in Thailand could be attributed to the many online sources with such information available in Thailand. Without being able to prove this hypothesis, we believe that a correlation could be found between the search frequency and the number of apps and other available Thai information sources that was quickly established during the pandemic. Apps such as the Self-Screening Application, Self-Health Check Application, and Chiang Mai COVID-19 Hospital Information System were quickly made available and even saw significant use internationally (Intawong, 2021). However, studies have shown that the trust in information can be low in online information about Covid-19, especially in urban marginalized areas of Thailand (Pattanasri, 2022), and we can't really draw any conclusions from our results except for recommending further investigation in the subject.

We wanted to investigate if demographical factors had a significant impact on increase in hygiene awareness in Thailand since the Covid-19 pandemic, and therefore we made sure to ask our responders about themselves before answering our questions about their habits and awareness level. After running ANOVA Tests for one-way analysis of variance seen in table 1, we came to the conclusion that neither age or occupation affected the level of increased hygiene awareness or the usage frequency of hygiene products among our responders. After running Independent T-tests which results are shown in table 3 and 4, we also found that there was no statistical evidence that gender had any significant impact on increased hygiene awareness or the usage frequency of hygiene products among our responders. An independent T-test seen in table 4 also showed that there was no statistical evidence that having had Covid-1 before had any effect on increased hygiene awareness.

However, the independent T-test seen in table 4 did determine that there was statistical evidence that having had Covid-19 before did affect increase in usage of hygiene products. Surprisingly, responders to our survey who had had Covid-19 before had a lower increase in hygiene product usage, which still disproves our hypothesis that having had Covid-19 before would increase hygiene product usage.

When running a Pearson Correlation Coefficient we also found a significant correlation between responders having pre-existing health conditions and increase in hygiene awareness, as well as significant correlation between responders having pre-existing health conditions and increase in usage frequency of

hygiene products. Therefore, we can conclude that people living in Thailand who has pre-existing health conditions increased their hygiene awareness more than the average person living in Thailand, and increased their hygiene product usage frequency more than the average person living in Thailand.

Table 2 ANOVA Test of variable affecting in hygiene awareness and usage of hygiene products

Variable affecting hygines awareness	Sum of Squares	df	Mean Square	F	Sig.
Occupation					
Between Groups	279.148	3	93.049	1.232	0.298
Within Groups	20846.42	276	75.531		
Total	21125.568	279			
Age					
Between Groups	1050.54	3	350.18	4.814	0.003
Within Groups	20075.027	276	72.736		
Total	21125.568	279			
Variable affecting usage frequency of hygines products	Sum of Squares	df	Mean Square	F	Sig.
Occupation					
Between Groups	175.983	3	58.661	1.77	0.153
Within Groups	9145.103	276	33.134		
Total	9321.086	279			
Age					
Between Groups	148.26	3	49.42	1.487	0.218
Within Groups	9172.826	276	33.235		
Total	9321.086	279			

The Result of Table 2, occupation show that occupation has no significant effect on enhancement of hygiene awareness. (p.>0.05). The results of table 2 show that age has a significant difference on enhanced hygiene awareness among age. According to the Multiple Comparisons test, the age of 21-40 were significantly higher than the age of under 20 and 41-60. (p.>0.05). Show that age has no significant effect on enhancement of usage of hygiene products. (p.>0.05). And that occupation has no significant effect on enhancement of usage of hygiene products. (p.>0.05).

Table 3 Independent T-test of the gender affecting hygiene awareness

The gender affecting the hygiene awareness	N	Mean	Std.Deviation	Std.Error Mean
Improve Of Hygiene Awareness				
Male	120	4.2167	9.44616	0.86231
Female	160	4.0813	8.12866	0.64263
Increase Of Hygiene Product				
Male	120	2.925	5.45903	0.49834
Female	160	3.6563	6.00738	0.47493

The result of Table 3, 5 show that gender has no significant effect on enhancement of hygiene awareness (p.>0.05) and gender has no significant effect on enhancement of usage of hygiene products. (p.>0.05).

Table 4 Independent T-test of having had Covid-19 and pre-existing health conditions

Have you ever had Covid-19?	N	Mean	Std.Deviation	Std. Error Mean
Increase Of Awareness	173	3.8208	9.18209	0.6981
Yes	107	4.6542	7.87772	0.76157
No				
Do you have any pre-existing health conditions?	N	Mean	Std.Deviation	Std. Error Mean
Increase Of Product				
Yes	48	1.9375	4.62374	0.66738
No	232	3.6336	5.95868	0.39121

The result of Table 4, show that whether responders had had Covid-19 before has no significant effect on enhancement of hygiene awareness. (p.>0.05) and there was a significant difference in increased product use between whether responders had had Covid-19 before or not. According to an Independent T-test, responders who have had Covid-19 before had a lower increase in use of hygiene products than the responders who had not had Covid-19 before. (p.>0.05).

5. Limitation

Since our questionnaire survey was launched in the later stages of the pandemic, it was difficult for many people to return to their first feelings at the peak of the pandemic and conduct the questionnaire survey. Moreover, our questionnaire focuses on people's awareness of health prevention, ignoring practical measures. We could have waited until the entire pandemic was over and society returned to the same before starting this survey, because in this way we could get all the data from the peak period and the end of the epidemic. Moreover, since the pandemic has not completely ended in the world, there are not many literatures on pandemic research to refer to, and we have limitations in terms of the use of literatures, so we can only start the investigation from our questionnaire data.

6. Conclusion

Over the past year, the global pandemic has caused ups and downs, and mankind's battle against the novel coronavirus is at a difficult stage. Thailand's health system needs to be able to cope with the medical conditions that plague survivors for years after the outbreak, and it needs to respond.

Thai authorities may need to adopt or modify the legal framework to improve planning, integrate disease surveillance, enhance coordination between different levels of government, thereby strengthening the capacity of health systems. For example, planning and disease surveillance can have significant implications for data privacy and need to be regulated through legal frameworks. In addition, the provision of health services is highly decentralized in many countries and may require a reassessment and subsequent revision in decentralized legislation.

Thailand should increase its efforts and resources to deepen international cooperation. The scale and rapid spread of the COVID-19 pandemic underscores the interconnectedness of countries at the economic and mobility levels. With advanced economies also struggling to combat the virus, it is clear that no country can single-handedly stop the epidemic without cutting off the international exchanges that underpin rich economic and social lives. This is why, in the context of this and future outbreaks, it is critical to develop policy in a coordinated and cooperative manner at the regional and international levels. It is imperative that a vaccine for COVID-19 be developed and made available to countries around the world to save lives and reduce the risk of long-term economic consequences. Further efforts will focus on designing, strengthening and maintaining the international architecture for a rapid, effective and coordinated international response.

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