International Journal of Healthcare Sciences ISSN 2348-5728 (Online)
Vol. 9, Issue 2, pp: (12-18), Month: October 2021 - March 2022, Available at: www.researchpublish.com

COVID-19 related Knowledge and Preventive behaviour of Delta Variant among grade 10-12 students in Bangkok

Chanacharn Luckanakul

Saint Gabriel's College

Abstract: **Coronavirus Disease (COVID-19) affected every single population in the world. Thailand was hastening to vaccinate their population. However, children (age below 18) are not in the scope of vaccination. Therefore, preventive behaviour is the most important protocol to face this pandemic.**

Purpose: to assess COVID-19 related knowledge, attitude toward COVID-19 prevention and COVID-19 preventive behaviours

Methodology: This is a descriptive research that studied a group of students in Saint Gabriel's College, Bangkok. Sampling groups were invited to participate in completing the questionnaire distributed by class social media.

Findings: 392 students participated during August-September 2021.COVID-19related knowledge, attitude toward preventive behaviour and COVID-19 preventive behaviour was assessed. For findings, participants revealed moderate knowledge about COVID-19 (M=6.04, SD=1.53), favourable attitudes toward preventive behaviours (M=49.46, SD=6.12) and low risk perception of getting COVID-19 (M=2.77, SD=1.32). Participants reported always engaging in COVID-19 preventive behaviour (M=62.56, SD=10.02) from a total of 80 scores. There was positive correlation between knowledge about COVID-19, attitude toward prevention and preventive behaviour (r=.658 and r=129*, p<0.05 and p<0.01) statistically significant. In addition, there were negative correlation between Risk Perception of getting COVID-19 and COVID-19 Preventive Behaviour (r=-.124**, p<0.01). Having a positive attitude toward COVID-19 preventive behaviours (Beta= .692, p <0.01) predicted the adoption of those preventive behaviours.**

Conclusion: This research provides data to plan protocol to prevent this pandemic. The study found that the consistency in knowledge and attitude is essential to promote good preventive behaviours.

Keywords: **COVID-19, Preventive behaviour, high school students.**

1. INTRODUCTION

Coronavirus Disease or known as COVID-19 has established "New normal" life, which is distinct from our lives before this "outbreak" has started. For instance, physical distancing [1] — this means we keep a distance of at least 1m from each other and avoid spending time in crowded places or in groups, wearing face masks all the time, etc. Also, COVID-19 has demolished many offsite activities since the physical distancing and many COVID-19 defensive measure [2].

The severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) was first reported as the pathogen causing COVID-19 disease in Wuhan, China in December 2019 [3]. This outbreak is believed to have linkage with the epicentre, the Huanan Seafood Wholesale Market where many wildfires such as bats were sold. In addition, COVID-19 was declared a pandemic by the WHO on March 11th, 2020, due to the mortality and infection rate [4].

The COVID-19 is transmitted worldwide including Thailand. The situation of this pandemic in Thailand at the 4th quarter of 2019 is in control— more statistically, On the 29th of December 2020, 155 new cases of laboratory-confirmed COVID-19 were reported by the Ministry of Public Health. The total number of cases reported in Thailand is currently 6,440. Of these cases, 65 % (4,184) have recovered, 1% (61) have died (one new death was reported today) and 34 %

(2,195) are still receiving treatment. The 155 new cases reported today also include 134 cases classified as 'domestic transmission', as follows - 12 cases are linked to the Samut Sakhon cluster including Samut Sakhon (4), Nakhon Pathom (5), Samut Songkhram (2) and Nakhon Ratchasima (1) [5]. — as the COVID-19 preventive measure which is effective and the preventive behaviour of Thais and especially the variant that was transmitted in the 4th quarter of 2019 which is the variant that first spread in Wuhan, China. However, the situation became worse as the mutation of the disease, which established the Delta (B.1.617) COVID-19 variant. The delta (B.1.617) variant originally discovered in India last December has now become the most dominant — and worrisome — strain of the coronavirus circulating globally. The most transmissible variant yet, Delta is roughly twice as contagious as the original COVID strain, and as much as 60 percent more contagious than the Alpha (U.K./B.1.1.7) variant, which itself caused numerous waves of the pandemic around the world [6]. Also, as the suggest from the CDC [7] that the Delta variant might cause more severe illness than previous strains in unvaccinated persons. Moreover, fully vaccinated people with Delta variant breakthrough infections can spread the virus to others. In Thailand, on 5th August 2021, 20,920 new cases of laboratory-confirmed COVID-19 and 160 new deaths were announced by the Thailand Ministry of Public Health. 4,993 patients are classified with serious illness, of which 1,058 are currently receiving ventilatory support. 262 cases of these new cases are in prison facilities and 8 were detected in quarantine after arriving in Thailand from another country. Cases due to transmission in the community include 17,312 cases detected through the routine surveillance system: (testing of people presenting at a healthcare facility for a variety of reasons, including presence of COVID-19 symptoms, contact with a case, concern about possible exposure) and 3,338 cases who were identified through active case finding: (testing of people in the community at the initiative of public health authorities) 213,910 cases are receiving treatment (active cases), including 87,150 in conventional hospitals and 126,760 in field hospitals/home isolation and 4,140 of 20,920 are in Bangkok [8]. The statistics shows that the epicentre of Thailand is the capital city, Bangkok. As the Harvard Medical School reveals that Children, including very young children, can develop COVID-19. Many of them have no symptoms. Those that do get sick tend to experience milder symptoms such as low-grade fever, fatigue, and cough. Some children have had severe complications, but this has been less common. Children with underlying health conditions may be at increased risk for severe illness. [9].

As there have been many surveys on behaviour towards prevention of COVID-19. A study in students in Portugal revealed that a knowledge level about COVID-19 is correlated with their preventive behaviour whilst the study in Kalasin province reveals that a knowledge level about COVID-19 is not associated with their preventive behaviour. Currently there are limited studies about the correlation of knowledge and preventive behaviour. Therefore, the objective of this study is to determine the factors associated with preventive behaviour towards COVID-19 among high school students in Bangkok, Thailand.

2. METHODS

This was a cross-sectional observational study. An online questionnaire was purposely developed and made available through Google from between 1-August-21 and 4-September-21. All high school students were eligible and were invited to participate in the study. The invitation was sent to class social media groups to all grade 10-12 students. The high school students have access to the class social media groups, so they all receive an invitation. In this invitation, information about the objectives of the study as well as the ethical guarantee of confidentiality and anonymity in the data collected as stated in the informed consent were explained. Participation was completely free and voluntary, and no personal data were collected from any participant. Of the 392 students, a total of 750 students, who participated in the study (response rate: 52.27 %).

Instrument

The questionnaire was developed based on a literature review including (1) [What is COVID-19, The "CORONA" virus type, Where COVID-19 comes from, symptoms, COVID-19 situation in Thailand, The effect of COVID-19 on our society, Chain of Infection, Breaking the chain of infection, COVID-19 Vaccine, effectiveness of COVID-19 Vaccine, Thais attitude towards COVID-19 Vaccine from WHO, CDC, Thailand Ministry of Public Health (2) studies performed on the same topic were several common items were used to assess each of the dimensions analysed in this study. The proposed items were then grouped, and redundant items were removed.

A preliminary version of the instrument was reviewed by three experts to validate its content. A pre-test was then performed with a small sample of students to test for comprehension and difficulty. All the questions reminded without

modifications. The psychometric characteristics of the questionnaire were tested, as described in the statistical analysis subsection.

The final version of the questionnaire contained 40 questions; 4 about sociodemographic date (grade, curriculum, their parent's occupation) and 36 items divided into 3 sections.

Knowledge related to COVID-19: this scale consisted of 10 questions related to COVID-19. The participants were asked to choose the correct answer from multiple choices of 3 to 4. One point was assigned to each correct answer, while providing an incorrect answer received zero points. The sum of all items was made hence higher scores corresponded to a higher level of knowledge. The score varied from 0-10.

Attitude towards COVID-19 prevention: this scale was composed of 11 items, and response categories consisted of a five-point Likert scale (from 1-strongly disagree, to 5 agree) with the highest score corresponding to more positive attitudes toward preventive behaviours. Some items on the scale were inverted for the analysis. A sum of all the items was made to obtain a score. The "Attitude toward COVID-19 prevention" factor consisted of 11 items and varied from 11 to 55 and the higher values corresponded to a more positive attitude toward COVID-19 prevention.

Risk perception of getting COVID-19: this scale was composed of 1 item, and response categories consisted of a five-point Likert scale (from 1-strongly disagree, to 5 agree) with the highest score corresponding to more positive risk perception of getting COVID-19. Some items on the scale were inverted for the analysis. A sum of all the items was made to obtain a score. The "Risk perception of getting COVID-19" factor consisted of 1 item and varied from 1 to 5 and the higher values corresponded to a more positive risk perception of getting COVID-19.

COVID-19 Preventive Behaviour: this scale referred to the number of preventive behaviours adopted and included 16 items (i.e., social distancing, isolation, wearing mask, hand washing, and other preventives behaviour). The data analysis reports to 16 items. Each item was answered using a five-point scale (From 1-Never to 5-Always), with one point assigned to each behaviour that was always practiced. The number of behaviours practiced was added up. A high score on this scale indicated good preventive behaviours, ranging from 16 to 80.

3. STATISTICAL ANALYSIS

The analysis was performed using SPSS for windows, version 26. To analyse psychometric characteristics of the scales, an exploratory factor analysis, using principal component analysis with varimax rotation, was carried out. Reliability was analysed through the calculation of item-total correlation coefficients and Cronbach's alpha (α) for the scales of the questionnaire. The descriptive analysis was presented in absolute (n) and relative (%) frequencies, mean (M) and standard deviations (SD). To assess the differences between the outcome variables (Knowledge, attitudes and behaviours) and the sociodemographic characteristics, considering the sample size, independent t-test and the ANOVA were used as appropriate. The correlations between the outcomes of the study were calculated by Pearson's correlation. Lastly, a generalized linear model was calculated to determine the predictive variables of the preventive behaviours. Exp (β) and the respective 95% confidence intervals (95% IC) were presented. Statistical significance was defined as $p < 0.05$.

Ethical Considerations

This research uses an anonymous data collection method to collect data from grade 10-12 Students of Saint Gabriel's College School, Bangkok, Thailand, by using Google form. The invitation was sent by the head of Grade 12 teacher and high school student's homeroom teacher to the high school students. In these invitations, information about the study's objectives and the ethical guarantee of confidentiality and anonymity in the data collected as stated in the informed consent was explained. Participation was completely free and voluntary, and no personal data were collected from any participant.

4. RESULT

This study comprised a total of 392 participants. The sociodemographic characteristics of the sample are presented in table 1. The participants were in Grade 12 (n=152, 38.8%) followed by Grade 10 (n=126, 32.1%) and Grade 11 (n=114, 29.1%) respectively. Most participants were in Science Stream (n=280, 71.4%) and the rest were in Language Stream (n=112, 28.6%). Most of the participants' parent were work as Government official or Office worker (n=136, 34.7%), work as business owner (n=100, 28.1%), work as Student or Freelance (n=102, 26%) and work as Teacher or Health care workers or Other (n=44, 11.2%).

Regarding Knowledge about COVID-19 revealed moderate knowledge about COVID-19, correctly answering average score of 6.04 (SD=1.53) questions in a total of 10. Grade 11 participants showed the highest average COVID-19 related average knowledge score of 6.63 (SD=1.45). Language Stream participants reported the highest average COVID-19 related knowledge score of 6.09 (SD=1.57). For the participants that their parent work as Government official or Office worker informed the highest average COVID-19 related knowledge score of 6.40 (SD=1.45).

Participants showed a good level of attitude toward COVID-19 prevention with the average score of 49.46 (SD=6.12) from 55 full scores. Grade 11 participants showed the highest average attitude toward COVID-19 average prevention score of 50.27 (SD=5.47). Language Stream participants reported the highest average attitude toward COVID-19 prevention score of 49.72 (SD=5.95). For the participants that their parent work as Government official or Office worker informed the highest average attitude toward COVID-19 prevention of 50.20 (SD=5.96).

Concerning Risk Perception of Getting COVID-19, the data reveals that participants showed a low level with Risk Perception of Getting COVID-19 an average score of 2.77 (SD=1.32) from 5 full scores. Grade 11 participants showed the highest average COVID-19 Preventive Behaviour score of 3.11 (SD=1.33). Language Stream participants reported the higher average COVID-19 Preventive Behaviour score of 62.57 (SD=9.32) than Science stream 3.11 (SD=1.32). For the participants that their parent work as Government official or Office worker and Business owner informed the highest average COVID-19 Preventive Behaviour score of 2.73 (SD=1.34) and 2.73 (SD=1.30).

Concerning with COVID-19 Preventive Behaviour, the data reveals that participants showed a good level of COVID-19 Preventive Behaviour with an average score of 62.56 (SD=10.02) from 80 full scores. Grade 10 participants showed the highest average COVID-19 Preventive Behaviour score of 63.21 (SD=10.32). Language Stream participants reported the higher average COVID-19 Preventive Behaviour score of 62.57 (SD=9.32) than Science stream 62.55 (SD=10.30). For the participants that their parent work as Government official or Office worker informed the highest average COVID-19 Preventive Behaviour of 63.01 (SD=10.00).

Table 1: Differences in outcomes according to the sociodemographic characteristics of participants (N = 392)

Sociodemographic characteristics	N (%)	Knowledge about COVID-19 (Range 0-10) M (SD)	Attitude toward COVID19 prevention (Range 11-55) M (SD)	Risk Perception Of getting COVID-19 (Range 1-5) M (SD)	COVID-19 Preventive Behaviour (Range 16-80) M (SD)
Grade Level					
Grade 10	126 (32.1)	5.72 (1.43)	49.02 (7.04)	2.46 (1.22)	63.21 (10.32)
Grade 11	114 (29.1)	6.63 (1.45)	50.27 (5.47)	3.11 (1.33)	62.88 (9.17)
Grade 12	152 (38.8)	5.86 (1.55)	49.21 (5.74)	2.77 (1.33)	61.77 (10.37)
Study Program					
Science Stream	280 (71.4)	6.02 (1.52)	49.35 (6.20)	2.63 (1.30)	62.55 (10.30)
Language Stream	112 (28.6)	6.09 (1.57)	49.72 (5.95)	3.11 (1.32)	62.57 (9.32)
Parent Occupation					
Teacher / Health care workers / Other	44 (11.2)	6.25 (1.31)	49.70 (5.92)	3.20 (1.36)	62.50 (9.85)

Business owner	110 (28.1)	5.88 (1.63)	49.23 (6.86)	2.73 (1.30)	62.53 (10.41)
Government official / Office worker	136 (34.7)	6.40 (1.45)	50.20 (5.96)	2.73 (1.34)	63.01 (10.00)
Freelance	102 (26)	5.65 (1.51)	48.62 (5.52)	2.68 (1.32)	62.00 (9.79)
Total	392 (100)	6.04 (1.53)	49.46 (6.12)	2.77 (1.32)	62.56 (10.02)

The analysis of the correlations between the outcomes of the study - knowledges, attitudes, and preventive behaviours - revealed the existence of positive and statistically significant correlations between the preventive behaviours and the attitude toward preventive behaviours (r=.658**, p<0.01) and knowledge related to COVID-19 (r=129*, p<0.05). Revealed the existence of negative and statistically significant correlations between the preventive behaviours and the Risk perception of getting COVID-19 (r=-.124**, p<0.01). (Table2)

Table 2: Pearson's correlation coefficient between the study outcomes

Variables	Risk Perception of getting COVID-19	Knowledge about COVID-19	Attitude toward COVID19 prevention	COVID-19 Preventive Behaviour
Risk perception of getting COVID-19	1			
Knowledge about COVID-19	.257**	1		
Attitude toward COVID19 prevention	.151**	.271**	1	
COVID-19 Preventive Behaviour	-.124*	.129*	.658**	1
**Correlation is Significant at the 0.01 *Correlation is Significant at the 0.05				

Results from the generalized linear model indicated that the Attitude toward preventive behaviour (Beta=.692, p<0.01) had a statistically significant effect on the preventive behaviours adopted. (Table 3)

Table 3: Generalized linear model predicting preventive behaviours of COVID-19

	B	SE	EXP (β)	Sig (p)	95% CI	
					Lower	Upper
Grade Level	-.562	.437	-.047	.199	-1.421	.297
Study Program	.435	.821	.020	.597	-1.179	2.048
Parent Occupation	-.075	.381	-.007	.844	-.824	.675
Risk perception of getting COVID-19	-1.733	.294	-.228	.000	-2.310	-1.156
Knowledge about COVID-19	-.002	.255	.000	.994	-.503	.500
Attitude toward COVID19 prevention	1.132	.062	.692	.000	1.010	1.255

5. DISCUSSION

The results in knowledge about COVID-19 in Saint Gabriel's College, Bangkok, Thailand reveals that the Grade11 students had the highest score in knowledge about COVID-19 according to the table1. The rationale behind this is because grade11 students had learnt more years than grade10 students and had more free time to follow up the news related to COVID-19 than students in grade12 as grade12 students need to focus on their plan to get into university. Therefore, grade11 students had more knowledge than grade10 and 12 students. As more knowledge, grade11 students had the highest score in attitude toward COVID19 prevention reveals that there is a correlation between knowledge and attitude. However, the data disclose that Grade10 students had the highest score in COVID-19 preventive behaviour topic. The reason might be because grade10 students were younger than those who were in grade11 and 12. Thus grade10 students were more obeying to their parents to follow the preventive measure. Furthermore, the data reveals that language stream students had more scores than science stream students in all fields including COVID-19 related knowledge, attitude toward COVID-19 prevention, and COVID-19 preventive behaviour. The explanation behind this was because science stream students are more stressed and need to work harder language stream students as more subjects to learn. So, language stream students had more time to look into the news and had more knowledge related to COVID-19 Moreover, the data informs that students that their parents work as government officials or office workers have the highest score in Knowledge about COVID-19, Attitude toward COVID19 prevention, COVID-19 Preventive Behaviour. The justification behind this might be because government officials or office workers were working as a routine mostly from 8AM. to 5PM. Therefore, they had more time to spend with their children to teach about COVID-19 related knowledge, attitude toward COVID-19 prevention, and COVID-19 preventive behaviour than parents who had an occupation as business owners or healthcare workers.

To support my justification, the research of Tawan Petpaiboon [10] in Knowledge, attitudes, and preventive behaviours toward coronavirus disease-19: A study among high school students in Bangkok reveals that grade11 students have higher scores in knowledge related to COVID-19. The result of Mr.Tawan's research is consistent with our study. The Grade 11 students has highest score in knowledge related to COVID-19.Furthermore, the research of Supakarn Vathanakitanond, Kanyapak Intaporn-Udom[11] in Knowledge, attitudes, and preventive behaviours toward pathogens transmission: A study among Grade 10–12 students of Mahidol University International Demonstration School at Nakhon Pathom has some similarity in result which was the non-science stream students had higher score in knowledge related to COVID-19 than science stream students. The rationale behind this is because the group of study is face with the same pandemic and learn in the same study system and the study group's school is in the same area which is Bangkok. In addition, the result of the research of Aun Sakulsantiporn [12] in Attitude to vaccinate against coronavirus disease 2019 of high school students in Chonburi province, Thailand: A study of grade 10–12 students of princess Chulabhorn science school disclose that students whose parents work in medical field had more scores in knowledge related to COVID-19 which was contradicted to this research as the different group of study and other factors.

Limitation

The data was collected by the online platform, therefore, there was no guarantee that students had not searched for answers through the internet. Also, this study was carried out at a group of high school students from a school. So, the generalizability of data to other Thai school students should be made with caution.

6. CONCLUSIONS

This study revealed moderate knowledge level about COVID-19, high level of attitude toward COVID-19 prevention, low level with Risk Perception of Getting COVID-19, high level of COVID-19 Preventive Behaviour among Grade 10-12 students in Saint Gabriel's College. Furthermore, the data indicates the positive causal relationship between knowledge or attitude and preventive behaviour and negative causal relationship between risk perception and preventive behaviour. In addition, attitude toward COVID19 prevention is the major predictive factor of having COVID-19 Preventive Behaviour. Therefore, to control the pandemic in the long term, promoting COVID-19 Preventive Behaviour is the best solution and to increase preventive behaviour, we should improve student's attitude by teaching them more COVID-19 related knowledge.

REFERENCES

[1] World Health Organization (WHO). COVID-19: Physical Distancing. Available from https://www.who.int/westernpacific/emergencies/covid-19/information/physical-distancing. [Last access:15 Sep 2021]

[2] John Hopkins Medicine. What is Coronavirus? Available from https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus [Last access:15 Sep 2021]

[3] World Health Organization (WHO). Coronavirus disease 2019 (COVID-19) Situation Report-94. Available from https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200423-sitrep-94-covid-19.pdf. [Last access:15 Sep 2021]

[4] Nature. WHO report into COVID pandemic origins zeroes in on animal markets, not labs. Available from https://www.nature.com/articles/d41586-021-00865-8.[Last access:15 Sep 2021]

[5] Reliefweb (OCHA). Coronavirus disease 2019 (COVID-19) WHO Thailand Situation Report - 29 December 2020 [EN/TH]. Available from https://reliefweb.int/report/thailand/coronavirus-disease-2019-covid-19-who-thailand-situation-report-29-december-2020. [Last access:15 Sep 2021]

[6] Intelligencer.What We Know About the Dangerous Delta Variant. Available from https://nymag.com/intelligencer/article/covid-b-1-617-2-delta-variant-what-we-know.html. [Last access:15 Sep 2021]

[7] Centers for Disease Control and Prevention (CDC). Delta Variant. Available from https://www.cdc.gov/coronavirus/2019-ncov/variants/delta-variant.html. [Last access:15 Sep 2021]

[8] Reliefweb (OCHA). Coronavirus disease 2019 (COVID-19) WHO Thailand Situation Report 195 - 5 August 2021 [EN/TH]. Available from https://reliefweb.int/report/thailand/coronavirus-disease-2019-covid-19-who-thailand-situation-report-195-5-august-2021. [Last access:15 Sep 2021]

[9] Harvard Medical School. COVID-19 and Children. Available from https://hms.harvard.edu/news/covid-19-children. [Last access:15 Sep 2021]

[10] Tawan Petpaiboon. Knowledge, attitudes, and preventive behaviours toward coronavirus disease-19: A study among high school students in Bangkok. Available from https://www.ejmanager.com/mnstemps/67/67-1618460440.pdf?t=1621937829. [Last access:15 Sep 2021]

[11] Supakarn Vathanakitanond and Kanyapak Intaporn-Udom. Knowledge, attitudes, and preventive behaviours toward pathogens transmission: A study among Grade 10–12 students of Mahidol University International Demonstration School at Nakhon Pathom. Available from http://www.ijmsph.com/fulltext/67-1623507856.pdf?1631433628. [Last access:15 Sep 2021]

[12] Aun Sakulsantiporn. Attitude to vaccinate against coronavirus disease 2019 of high school students in Chonburi province, Thailand: A study of grade 10–12 students of princess Chulabhorn science school. Available from https://www.ejmanager.com/mnstemps/67/67-1625024938.pdf?t=1631160861. [Last access:15 Sep 2021]