Effect of an early pandemic phase of COVID-19 on sexual health

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ABSTRACT

Purpose: This study aimed to analyze the frequency of sexual intercourse and the number of sexual partners before and during the COVID-19 pandemic in Thailand.

Design/Methodology/Approach: 859 respondents were included in this study which involved a cross-sectional online survey and a self-administered questionnaire distributed to Thai people between May and June 2020. Data analysis methods included descriptive statistics, the Wilcoxon matched pairs signed-ranks test and the chi-square test.

Findings: 19.7% reported a decrease and 3.8% reported an increase in the number of sexual partners. 22.8% reported a decrease and 9.5% reported an increase in the frequency of sexual intercourse apart from those who had no change in the frequency of sexual intercourse or the number of sexual partners. The median difference in the number of sexual partners and the frequency of sexual intercourse before and during the COVID-19 pandemic was of statistical significance (p-value < 0.01). Age, marital status and occupation were statistically associated with the change in the frequency of having sexual intercourse. Sex, age, marital status, income and sexual desire were statistically associated with the change in sexual partners. (P value < 0.05).

Conclusion: The number of sexual partners and the frequency of sexual intercourse decreased because of the COVID-19 pandemic. Sexual health services and sexual education should provide a specific categorized group in order to meet their sexual health.

Research Limitations: Participants could remember their number of sexual partners but they may recall biases for sexual intercourse frequency. However, the average was used.

Keywords: *COVID-19, Pandemic, Sexual health, Sexual intercourse, Sexual partners, Thailand, Young adult.*

1. INTRODUCTION

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or COVID-19 is still a global health problem (Banerjee & Rao, 2020). Many researchers have attempted to determine whether COVID-19 is sexually transmitted disease (Abdollahpour, Badiee Aval, & Khadivzadeh, 2021; Patrì, Gallo, Guarino, & Fabbrocini, 2020; Wiwanitkit, 2020). They tried to point out whether COVID-19 was found in vaginal secretion anal secretion or semen. However, this study neglected both the arguments and supporting results because this virus was found in the respiratory tract and detected in the oropharyngeal. When someone was infected with COVID-19, sexual interactions that included a passionate kiss and shared breath enhanced the risk of infection(Abdelmaksoud, Vestita, & Goldust, 2020; Da Silva Lara et al., 2020; Pennanen-lire et al., 2021; Tur-Kaspa, Tur-Kaspa, Hildebrand, & Cohen, 2021; Tur-Kaspa, Hildebrand, Cohen, & Tur-Kaspa, 2020; Wiwanitkit, 2020).

Many public measures were implemented during the COVID-19 pandemic to stop and control the virus and its spread, including lockdowns, limited transportation, a prohibition on crowded activities, social distancing and quarantine. These restricted measures affected all social activities, interpersonal relations and sexual activity (Banerjee & Rao, 2020; Bowling, Montanaro, Gattuso, Gioia, & Guerrero Ordonez, 2022; Briedite et al., 2021; Hange et al., 2022; Hashem, Abdelnour, Alhimaidi, & Swelum, 2021; Maretti et al., 2020; Masoudi, Maasoumi, & Bragazzi, 2022; Toldam et al., 2022; Zubair, Akmal, & Laeeque, 2022).

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Approximately 70% of transmission was found within households (Haroon, Chandan, Middleton, & Cheng, 2020). Once a family member had contact with or was close to a COVID-19 patient or related things before coming home, other members were also at risk of the COVID-19 infection. The best way to prevent others from being infected was to quarantine oneself from others including their partner. Self-isolation and abstention from sexual activity were not effective remedies because sex is one of the aspects of human life. (Abdelmaksoud et al., 2020; Balestri et al., 2020; Banerjee & Rao, 2020). In addition, some studies found an association between living alone and less sexual activity, a poor health and a low quality of life (Mollaioli et al., 2021; Tan, O'Hara, Kumar, & Chow, 2021). Every aspect of health was impacted by the COVID-19 transmission control methods particularly sexual health (Hashem et al., 2021; Nelson, Gordon, John, Stout, & Macapagal, 2020). A limited prior research has been done on the relationship between the COVID-19 pandemic and sexual behaviour in Thai society (Burapakiat, Anantapong, & Ananchaisarp, 2022; Narkkul, Jiet Ng, & Saraluck, 2022). Therefore, this study aimed to compare the respondents' number of sexual partners and frequency of having sexual intercourse within three months before and during the COVID-19 pandemic.

2. METHODOLOGY

2.1. Study Design

A cross-sectional study design was conducted during the first wave of the COVID-19 pandemic worldwide.

2.2. Population and Sample

Thai people who were 18 – 35 years old, early young adults (18 – 24 years old) and late young adults (25 – 35 years old) were a part of this study. 859 respondents completely answered the questionnaire within the time of data collection. However, some respondents were excluded from this study because they were either below 18 years old or above 35 years old and they were not the target population.

2.3. Research Tools

The questionnaires consisted of socio-demographic characteristics (sex, age, marital status, education level, occupation and monthly income). The number of sexual partners and average frequency of sexual intercourse in a week within three months before the COVID-19 pandemic in Thailand (November 2019 – January 2020) as well as the average frequency of sexual intercourse and the number of sexual partners during the pandemic (February – April 2020) were considered. The validity of the research questionnaires was determined by five expert health professionals. All experts agreed with all questions except the question of the frequency of sexual intercourse. An expert pointed out that it might be a recall bias to report the frequency of sexual intercourse within the last three to six months. However, four of five experts discussed that this bias could be reduced (but still remain) by reporting their average frequency of sexual intercourse.

2.4. Data Collection

Self-administered online questionnaires were used to collect the data. The online survey was performed between May and June 2020.

2.5. Data Analysis

Descriptive statistics were used to analyze the data. A Wilcoxon matched pairs signed-ranks test was used to test for the median differences between their sexual behaviors both their number of sexual partners and frequency of sexual intercourse within three months before and during the COVID-19 pandemic because of non-normality data. A chi-square was used to study the relationship between potential factors and the number of sexual partners as well as the frequency of sexual intercourse changes among Thai people (IBM SPSS AMOS V28 was used).

3. RESEARCH FINDINGS

Table 1 shows the participants' information. The majority was female (82.5%). Half of the participants were 20 – 24 years old (50.1%) and almost all of them were single (83.5%). Approximately 55% had income equal to their expenditure. 47.5% had finished their bachelor's degrees. Most of the participants were employees in the government sector (62.3%). They reported that they had negative emotions (63.4%) and a decrease in the

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frequency of their social interactions (90.9%) as a result of the COVID-19 pandemic but they did not report any changes in their sexual desire (82.4%).

Table 1. General information (n = 859).

General information	Frequency	%
Sex		
Male	709	82.5
Female	150	17.5
Age		
18 – 19 years	45	5.2
20 – 24 years	430	50.1
25 – 29 years	306	35.6
30 – 35 years	78	9.1
Marital status		
Single	717	83.5
Married	112	13.0
Widow/Divorce/Separated	3	0.4
Live together	27	3.1
Education		
Secondary school	267	31.0
Diploma certificate	107	12.5
Bachelor's degree	408	47.5
Higher than a bachelor's degree	77	9.0
Occupation		
Unemployed	36	4.2
Student	122	14.2
Agriculture	54	6.3
Government employee	535	62.3
Private employee	54	6.3
Business	27	3.1
Employee (Kob-holder)	31	3.6
Income		
Income equal to expenditure	468	54.5
Efficiency and have saving	100	11.6
Inefficiency and having a loan	291	33.9
Effect of the COVID-19 pandemic on your feeling or mood		
Positive	59	6.9
Negative	545	63.4
Not affect at all	255	29.7
Effect of the COVID-19 pandemic on your frequency of social activities		
More frequency	30	3.5
Less frequency	781	90.9
Seem no difference	48	5.6
Effect of the COVID-19 pandemic on your sexual desire		
Increase	36	4.2
Decrease	115	13.4
Seem no difference	708	82.4

Table 2 illustrates the respondents' self-reported frequency of sexual intercourse within three months before and during the COVID-19 pandemic. Their frequency of having sexual intercourse was reported on

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average each week. Then, it was multiplied by 12 (3 months = 12 weeks) to present their frequency of having sexual intercourse within three months. A number "0.5" was used for those who reported having sexual intercourse less than once a week according to the possibility of having sexual intercourse 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, or 1 time within 12 weeks. The majority of respondents (67.6%) did not change their frequency of sexual intercourse although there was a decrease in frequency compared to the non-COVID-19 pandemic time in 22.8% of participants and an increase in frequency in 9.5% of participants. The mean frequency of having sexual intercourse was between 13.0 and 10.7 times within three months. The median difference between their frequency of having sexual intercourse before and during the COVID-19 pandemic was statistically significant (p-value < 0.001).

Table 2. Frequency of sexual intercourse before and during the COVID-19 pandemic (n = 859).

Frequency of sexual intercourse	Nov, 2019 – Jan, 2020		Feb, 2020 – Apr, 2020	
	N	%	N	%
0 (Have no sexual intercourse)	190	22.1	304	35.5
Less than once a week	292	34.0	207	24.1
1 Time/week	170	19.8	190	22.1
2 Times/week	87	10.1	70	8.1
3 Times/week	68	7.9	42	4.9
4 Times/week	23	2.7	26	3.0
5 Times/week	29	3.4	20	2.3
Mean ± S.D.	13.00 ± 14.70		10.67 ± 13.81	
Median ± S.E.	0.5 ± 0.042		0.5 ± 0.039 *	

Note: 1) Less frequency 196 (22.8%), non-change 581 (67.6%), more frequency 82 (9.5%).
2) * Wilcoxon matched pair's signed-ranks test, p-value < 0.001.

Table 3 shows the number of sexual partners reported by respondents within three months before and during the COVID-19 pandemic. Some respondents had no sexual intercourse before and during the COVID-19 pandemic (22.1% and 35.4%). Sexual partners ranged from one to five for those who had sexual intercourse. Most respondents (76.5%) did not change their sexual partners, 19.7% had fewer sexual partners and 3.8% had more sexual partners than before the COVID-19 pandemic. The average of their sexual partners was 0.95 and 0.74, respectively. The median differences between the number of sexual partners before and during the COVID-19 pandemic were statistically significant (p-value < 0.001). Some experts recommended that showing the number of sexual partners as a decimal number less than one was not a recommendation. As a result, this study provided not only the mean comparison (see Table 3) but also the change in the number of sexual partners and frequency of sexual intercourse (see Table 4).

Table 3. Number of sexual partners before the pandemic and during the COVID-19 pandemic (n = 859).

Number of sexual partners	Nov, 2019 – Jan, 2020		Feb, 2020 – Apr, 2020		Change
	N	%	N	%	n (%)
0 (Have no sexual contact)	190	22.1	304	35.4	114 (60.0) Increase
1 Partner	591	68.8	510	59.3	81 (13.7) Decrease
2 Partners	43	5.0	23	2.7	20 (46.5) Decrease
3 Partners	14	1.6	12	1.4	2 (14.3) Decrease
4 Partners	10	1.2	5	0.6	5 (50.0) Decrease
5 Partners	11	1.3	5	0.6	5 (45.4) Decrease
Mean ± S.D.	0.95 ± 0.80		0.74 ± 0.72		Decrease *
Median ± S.E.	1.0 ± 0.27		1.0 ± 0.24 *		

Note: 1) More sexual partners 169 (19.7%), non-change 657 (76.5%); no sexual intercourse/had sex with own mate 71 (8.3%), and single had 1 sexual partner/single or couple with more than 1 sexual partner 586 (68.2%), less sexual partners 33 (3.8%).
2) * Wilcoxon matched pair's signed-ranks test, p-value < 0.001.

Table 4 compares the frequency of sexual intercourse and the number of sexual partners during the three months of the COVID-19 pandemic by sex, age, marital status, education level, occupation, income, mood, frequency of social activities and whether they felt COVID-19 affected their sexual desire. For their marital status, single,

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widowed, divorced and separated were included as alone and married and living together were merged as couples. The occupation was categorized into two groups: the government and non-government sectors. Most respondents did not change their frequency of having sexual intercourse or their number of sexual partners. Their sex, age, marital status, income and sexual desire were statistically associated with the change in their sexual partner (p-value < 0.05) and their age, marital status and occupation were statistically associated with the change in their frequency of having sexual intercourse (p-value < 0.05).

4. DISCUSSION

This study focused on sexually active young individuals aged 18 to 35 years old who were appropriate for studying sexual behaviours (Stavridou et al., 2021; Wignall et al., 2021). Females responded at a lower rate (see Table 1) when compared to the population percentage and previous studies. In the Thai culture, women have less talked about or reported on sexually related issues than men. Marital status was classified into two categories: single (single, widowed, divorced or separated) and couple (married and living together). When a couple came into contact with a coronavirus-infected person, the household transmission of COVID-19 may have resulted (Haroon et al., 2020). The occupations were categorized into two groups: government and non-government sectors. Numerous businesses halted and many workers were lost their jobs during the COVID-19 pandemic (Lin, Law, Beaman, & Foster, 2021). However, government sectors seemed to have had more workload, especially for health care services. A suitable classification was made into two groups for secure and non-secure work. According to research, low-income workers or those with insecure employment had fewer sexual experiences on average than government workers (Curtis, 2022).

Participants reported that the COVID-19 pandemic had a negative impact on their mood (63.4%), a reduction in the frequency of social activities (90.9%) and no difference in their sexual desire (82.4%) before and during the pandemic (see Table 1). This is similar to the findings of a study in which most participants reported having no differences in sexual desire or sexual arousal (Cito et al., 2021; Ko et al., 2020; Panzeri, Ferrucci, Cozza, & Fontanesi, 2020; Torres-Cruz, Aznar-Martínez, & Pérez-Testor, 2022; Wignall et al., 2021). Some respondents reported a decrease in sexual desire (Calabrò, 2021; Cito et al., 2021) and a few respondents reported an increase in their sexual desire (Kovalak, Akgül, Karacan, Aybek, & Güraslan, 2021; Stavridou et al., 2021). The average number of sexual partners during the COVID-19 pandemic was lower than before the pandemic. Although the number of sexual partners ranging from 1 to 5 was similarly found in other studies (Arafat, Alradie-Mohamed, Kar, Sharma, & Kabir, 2020), sexual abstinence was increasing and the number of sexual partners decreased during the pandemic (Arafat et al., 2020; Bolarinwa et al., 2021; Culha, Demir, Sahin, & Altunrende, 2021; Da Silva Lara et al., 2020; Li, Li, Xin, Wang, & Yang, 2020; Masoudi et al., 2022). The frequency of sexual intercourse within three months before and during the COVID-19 pandemic was significantly reduced (see Table 2). Approximately 77% did not have any change in the number of sexual partners while 19.7% reported having fewer sexual partners. However, 3.8% reported having more sexual partners than before the pandemic (see Table 3). These findings contradict the findings of certain research (Arafat et al., 2020; Kusuma, Brodjonegoro, Soerohardjo, Hendri, & Yuri, 2021) which found no change in sexual activity (Cabello, Sánchez, Farré, & Montejo, 2020; Cito et al., 2021; Feng et al., 2021; Gouvernet & Bonierbale, 2021; Karagöz et al., 2021; Reda, Sehlo, Youssef, & Elsayed, 2022; Schiavi et al., 2020).

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Table 4. Change in the number of sexual partners and frequency of sexual intercourse during the COVID-19 pandemic compared to before the pandemic (n = 859)

Factors	Change in the number of sexual partners n (%)			x^2	*p*-value	Change in the frequency of sexual intercourse n (%)			x^2	*p*-value
	Decrease	Non-change	Increase			Decrease	Non-change	Increase		
Gender										
Male	129 (18.2)	556 (78.4)	24 (3.4)	8.71	0.013	159 (22.4)	482 (68.0)	68 (9.6)	0.35	0.838
Female	40 (26.7)	101 (67.3)	9 (6.0)			37 (24.7)	99 (66.0)	14 (9.3)		
Age										
18 – 19 years	8 (17.8)	36 (80.0)	1 (2.2)	46.42	< 0.001	9 (20.0)	34 (75.6)	2 (4.4)	32.50	< 0.001
20 – 24 years	79 (18.4)	341 (79.3)	10 (2.3)			90 (20.9)	301 (70.0)	39 (9.1)		
25 – 29 years	53 (17.3)	242 (79.1)	11 (3.6)			62 (20.3)	215 (70.2)	29 (9.5)		
30 – 35 years	29 (37.2)	38 (48.7)	11 (14.1)			35 (44.9)	31 (39.7)	12 (15.4)		
Marital status										
Alone	122 (16.9)	583 (81.0)	15 (2.1)	64.38	< 0.001	148 (20.6)	533 (74.0)	39 (5.4)	116.3	< 0.001
Couple	47 (33.8)	74 (53.3)	18 (12.9)			48 (34.5)	48 (34.5)	43 (31.0)		
Education level										
Secondary school	60 (22.5)	196 (73.4)	11 (4.1)	11.70	0.069	70 (26.2)	172 (64.4)	25 (9.4)	3.85	0.696
Diploma	14 (13.1)	87 (81.3)	6 (5.6)			19 (17.8)	77 (71.9)	11 (10.3)		
Bachelor's degree	77 (18.9)	321 (78.6)	10 (2.5)			88 (21.6)	281 (68.8)	39 (9.6)		
Higher than a bachelor's degree	18 (23.4)	53 (68.8)	6 (7.8)			19 (24.7)	51 (66.2)	7 (9.1)		
Occupation										
Government	96 (17.9)	418 (78.2)	21 (3.9)	2.69	0.261	106 (19.8)	377 (70.5)	52 (9.7)	7.34	0.026
Non-government	73 (22.5)	239 (73.8)	12 (3.7)			90 (27.8)	204 (62.9)	30 (9.3)		
Income										
Income equal to expenditure	99 (21.2)	355 (75.8)	14 (3.0)	12.61	0.013	113 (24.1)	315 (67.4)	40 (8.5)	6.09	0.192
Efficiency and have saving	27 (27.0)	66 (66.0)	7 (7.0)			28 (28.0)	60 (60.0)	12 (12.0)		
Inefficiency and have a loan	43 (14.8)	236 (81.1)	12 (4.1)			55 (18.9)	206 (70.8)	30 (10.3)		

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Factors		Change in the number of sexual partners n (%)			x^2	*p*-value	Change in the frequency of sexual intercourse n (%)			x^2	*p*-value
		Decrease	Non-change	Increase			Decrease	Non-change	Increase		
Effect of the COVID-19 pandemic on your feeling or mood											
	Positive	17 (28.8)	41 (69.5)	1 (1.7)	8.98	0.062	15 (25.4)	42 (71.2)	2 (3.4)	8.15	0.086
	Negative	111 (20.4)	417 (76.5)	17 (3.1)			136 (25.0)	357 (65.5)	52 (9.5)		
	Not affect at all	41 (16.1)	199 (78.0)	15 (5.9)			45 (17.6)	182 (71.4)	28 (11.0)		
Effect of the COVID-19 pandemic on your frequency of social activities											
	More frequency	8 (26.7)	19 (63.3)	3 (10.0)	5.64	0.211	7 (23.3)	19 (63.4)	4 (13.3)	3.07	0.549
	Less frequency	149 (19.1)	604 (77.3)	28 (3.6)			176 (22.5)	534 (68.4)	71 (9.1)		
	Seem no difference	12 (25.0)	34 (70.8)	2 (4.2)			13 (27.1)	28 (58.3)	7 (14.6)		
Effect of the COVID-19 pandemic on your sexual desire											
	Increase	11 (30.6)	24 (66.6)	1 (2.8)	10.35	0.037	12 (33.3)	23 (63.9)	1 (2.8)	6.63	0.157
	Decrease	31 (27.0)	77 (66.9)	7 (6.1)			27 (23.5)	72 (62.6)	16 (13.9)		
	Seem no difference	127 (17.9)	556 (78.6)	25 (3.5)			157 (22.2)	486 (68.6)	65 (9.2)		

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According to Table 4, most respondents (76.5%) had no change in the number of sexual partners. 68.2% of these participants continued to engage in unsafe sexual behaviour that increased their vulnerability to COVID-19 infection and other sexually transmitted diseases (Balestri et al., 2020; Calabrò, 2021). A decrease in sexual partners was experienced by around 18% of males compared to the decline experienced by females except for those who had no change in the number of partners (see Table 4). The decrease in the number of sexual partners was found in respondents between 30 – 35 years old in married respondents compared to single participants. Respondents with appropriate income and savings increased their sexual partners whereas those with inefficient income and a loan declined their sexual partners.

30.6% of respondents' sexual desire decreased while only 2.8% increased the number of sexual partners. In addition, this study did not find association between sexual desire and frequency of sexual intercourse but some previous studies suggested an association between them (Abdelmaksoud et al., 2020; Cito et al., 2021). It might be assumed that when they had sexual desire, they would have sexual intercourse with their own mate (Da Silva Lara et al., 2020; Wignall et al., 2021; Yuksel & Ozgor, 2020). Hence, an increase in the frequency of sexual intercourse was found in married couples.

Gender had no relationship with the frequency of sexual intercourse except for those who had no changes. Approximately 45% of respondents between 30 – 35 years old reported a decrease in the frequency of sexual intercourse (see Table 4). Their frequency of sexual intercourse was significantly lower in other studies (Baran & Aykac, 2021; Cigiloglu, Efendioglu, & Ozturk, 2023; Cito et al., 2021; Culha et al., 2021; Feng et al., 2021; Kusuma et al., 2021; Li et al., 2020; Masoudi et al., 2022; Özlü et al., 2022) but there was an increase in the frequency in couples in other studies (Arafat et al., 2020; Karagöz et al., 2021; Tan et al., 2021). A reduction in the frequency of sexual activity was found in single individual (Briedite et al., 2021; Rodrigues, Balzarini, Zoppolat, & Slatcher, 2023; Wignall et al., 2021). Both singles and couples might be aware of the threat of the COVID-19 infection, its severity and its complication but in couples, sexual intercourse with their own mate was safer than with unknown people. Hence, the frequency of sexual intercourse among couples was found to be higher and more satisfactory than in single individuals (Fischer et al., 2022; Mollaioli et al., 2021; Sotiropoulou et al., 2021; Tan et al., 2021; Wignall et al., 2021).

5. CONCLUSION

Both dimensions of the frequency of sexual intercourse and the number of sexual partners were lowered during the COVID-19 pandemic. Sex, age, marital status, income and sexual desire were associated with the change in their sexual partner. Age, marital status, and occupation were associated with the change in the frequency of sexual intercourse. Limiting sexual activities may lead to sexual health issues. Therefore, sexual health services, including sexual health education should be provided throughout the pandemic's restrictions.

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INSTITUTIONAL REVIEW BOARD STATEMENT

The Ethical Committee of the Ethics Committee for Human Research Subjects of Sirindhorn College of Public Health, Yala, Thailand has granted approval for this study on 18 April 2020 (Ref. No. SCPHIRB 096-63).

TRANSPARENCY

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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