

# Impact of Covid-19 Pandemic on Professional Quality of Life and Coping Strategy among Nurses in Thailand

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## Abstract

*Quality of life and coping strategy are considered very important for nurses in performing their healthcare duties during a pandemic. The purpose of this descriptive research is to study professional quality of life and coping strategy among nurses during the Covid-19 outbreak in Thailand. The sample group comprised a total of 441 working nurses in public and private hospitals and other healthcare institutes nationwide. They voluntarily answered a questionnaire via Google Form. Amongst these nurses, 160 nurses directly cared for suspected and infected persons, while remaining 281 nursing staff are involved in the related caring. The instrument developed for this research was a questionnaire exploring professional quality of life and coping strategy, with reliability scores of .91 and .93, respectively. The questionnaire was part of a research on Mental Health, Coping Strategy and Professional Quality of Life among Nurses in Southeast Asia and South Asia Countries during the Covid-19 outbreak conducted by Department of Nursing Science, Faculty of Medicine, University of Malaya, Malaysia. Statistics analysed include percentage, mean, and standard deviation. Findings demonstrated that overall professional quality of life of nurses during the Covid-19 pandemic was at a good level, especially with regards to their positive perspective. The overall coping strategy was found to be at a moderate level. The obtained information will be useful for nurses and public health administrators responsible for caring for nurses and healthcare providers to improve their professional quality of life and coping strategy as part of dealing with subsequent waves of Covid-19 to ensure better personnel and patient safety.*

**Keywords:** *Professional Quality of Life, Coping Strategy, Health Care Providers, Covid-19*

## Introduction

The new strain of coronavirus was first discovered in Wuhan, People's Republic of China (PR China) in late 2019 (Wuhan Municipal Health Commission, 2020) and it eventually spread across the world. This led the World Health Organization (WHO) to declare Covid-19 a pandemic (World Health Organization, 2020), a development with serious political and socio-economic impact, affecting people from all walks of life throughout

the world, including in Thailand. The negative impact on mental health, as well as social and family support, has led to substantial changes in lifestyle and quality of life for residents in Liaoning Province, PR China (Yingfei & Zheng, 2020). Research conducted by Nguyen et al. (2020) in Hong Kong and Federica (2020) in Italy, respectively, point out that the Covid-19 pandemic has led to lower health-related quality of life in suspected and confirmed cases of Covid-19. This affects not only the general public but also healthcare providers, particularly nurses who care for Covid-19 patients and then suffer lower professional quality of life. Subsequently, this has an impact on the quality of medical and nursing care services.

In August 2020, the number of Covid-19 patients admitted in Thailand's hospitals was 112 (Ministry of Higher Education Science Research and Innovation, 2020). Although Thailand's Covid-19 situation appears under control, with the country ranked among the top countries handling the pandemic globally according to WHO, this health crisis has nevertheless affected its way of life and quality of life. Thus, it is critical to look for relevant coping strategies. In reviewing literature on the pandemic in Thailand and other countries, no study was found on the said issue as yet. Professional quality of life and coping strategy among nurses in Thailand. Accordingly, the objective of this research was to study the quality of life and coping strategy for nurses involved in the Covid-19 situation. The research findings will be beneficial to parties and policymakers concerned in planning and developing professional quality of life for nurses and healthcare personnel in Thailand.

## Literature Review

Nurses represent the largest number of healthcare personnel caring for suspected and confirmed cases of Covid-19. Unfortunately, some experience work overload due to limited nursing staff in special care units, which require specific skills in caring for seriously ill and infected persons. In this respect, nurses must adjust their lifestyles and practise social distancing to prevent infecting their families and other members of society. They are thus at high risk to experience negative health impact. Working hard, not getting enough rest, and experiencing chronic stress can cause devastation on a weary mind and body. This is harmful to the quality of life and coping strategy of nurses. Research by Ying et al. (2020), which studied quality of life of the frontline medical unit during the Covid-19 pandemic in PR China, revealed healthcare personnel experienced high stress, and were psychologically and mentally exhausted. This affected their quality of life and patient care as well. Due to a lack of medical equipment for self-protection, many became infected and were isolated from their families. Correspondingly, the nurses became even more stressed (Boontong, 2020).

In addition to studying the nurses' professional quality of life, studying their coping strategy is also important. Coping is the process of how an individual attempt to deal with encountering stress problem. There are two coping strategies: problem focused coping and emotional focused coping strategies (Lazarus & Folkman, 1984). Healthcare providers may use emotional focused coping strategies to deal with Covid-19. This may have positive or negative results. It was found that emotional intelligence was positively associated with stress coping styles (Noorbakhsh et al., 2010). Emotion-focused coping practices such as meditation, positive thinking are advisable for stress relief, trying to reduce unfavorable emotions i.e. frustration, excitement, fear, and etc. Under stressful circumstances, using inappropriate coping styles will cause greater impact on consequences of the nurses' professional quality of life.

Interestingly, for Thailand, there appear to be another coping strategy known as *thum-jai* as mentioned by Andrew et al. (2017). A concept that may be understood within the Buddhist or Islamic religious context. *Thum-jai* is a coping strategy embedded in the Thai culture. It is used when facing an adverse situation or circumstance from which there seems to be no escape. The attributes of *thum-jai* are accepting and letting go of negative

situations, forgetting the bad feeling, calming or steadying the mind, and developing patience and understanding. Chances are Thai people will probably turn to this coping strategy to adjust to life under the New Normal, improve cleanliness, and take all other preventive measures following advice by the Ministry of Public Health.

## Research Method

The study is approved by the University Malaya Medical Centre Research Ethical Committee, Malaysia (MRECID No. 2020411-8502). The sample group comprised a total of 441 working nurses in public and private hospitals and other healthcare institutes nationwide who voluntarily answered a questionnaire via Google Form. Out of the total, 160 nurses directly cared for suspected and infected persons while the remaining 281 nursing staff were involved in the related caring.

The research instrument is a questionnaire that explored professional quality of life and coping strategy that is part of the research on the Mental Health, Coping Strategy and Professional Quality of Life among Nurses in Southeast Asia and South Asia Countries during the Covid-19 Outbreak conducted by Department of Nursing Science, Faculty of Medicine, University of Malaya, Malaysia. The questionnaire consists of the following three parts:

- i. Personal Data i.e. age, marital status and working experience;
- ii. 30 questions for Professional Quality of Life (ProQOL), comprising 15 positive questions (items 1,3,4,6,12,15-18,20,22,24,27,29, and 30) and 15 negative questions (items 2,5,7-11,13,14,19,21,23,25,26,28) with a 5-point rating scale. The rating scale for positive questions involved the following: 5 = very often, 4= often, 3= sometimes, 2= rarely, 1= never, while the rating scale for negative questions were its direct opposites. This had a reliability score of .91; and
- iii. 28 questions for Coping Strategy, comprising 20 positive questions (items 1,2,5,7,9,10,12-15,17-20, 22-25,27 and 28), and eight negative questions (items 4,6,8,11,16,21 and 26) with a 4-point rating scale for positive questions, i.e. 4 = high, 3 = moderate, 2 = low, 1 = not at all, and the opposite for negative questions. This had a reliability score of .93.

The questionnaire was distributed via Google Form and completed by the nurses who participated in this study in Thailand.

## Findings

The findings from this study is analysed based on two groups of nurses: (i) 160 nurses who were directly engaged with caring for suspected and infected persons, and (ii) 281 nurses who were involved in the related caring. Both groups answered the questions in both parts.

### **Group 1: Nurses who directly cared for suspected and infected persons with Covid-19.**

#### ***Part 1: Professional Quality of Life (ProQOL)***

The first group of 160 nurses who directly cared for suspected and infected persons with Covid-19 rated their ProQOL as good ( $M=3.73$ ,  $SD=.50$ ). In particular, the first three items were rated as "very good". The item, "I am proud of what I can do to care" was given

the highest rating ( $M=4.29$ ,  $SD=.89$ ), followed by, “As a result of my care, I have intrusive, frightening thoughts” ( $M=4.28$ ,  $SD=1.04$ ), and, “I get satisfaction from being able to care for people” ( $M=4.28$ ,  $SD=0.77$ ). The item that received the poorest rating was, “I am preoccupied with more than one person I cared for” ( $M =2.06$ ,  $SD=1.13$ ). Details of the results are given in Table 1.

**Table 1**

*Quality of lifefor nurses who directly cared forsuspected and infected persons with Covid-19 (N=160)*

No.	Item	M	SD	Level
24	I am proud of what I can do to care.	4.29	0.89	Very good
25	As a result of my care, I have intrusive, frightening thoughts.	4.28	1.04	Very good
3	I get satisfaction from being able to care for people.	4.28	0.77	Very good
14	I feel as though I am experiencing the trauma of someone I have cared for.	4.18	1.10	Good
4	I feel connected to others.	4.12	0.93	Good
13	I feel depressed because of the traumatic experiences of the people I have cared for.	4.04	1.10	Good
19	I feel worn out because of my work as a nurse.	4.01	1.17	Good
18	My work makes me feel satisfied.	3.99	0.90	Good
30	I am happy that I chose to do this work.	3.98	1.02	Good
20	I have happy thoughts and feelings about those I have cared for and how I could help them.	3.98	0.98	Good
11	Because of my care, I have felt "on edge" about various things.	3.96	1.12	Good
17	I am the person I always wanted to be.	3.96	0.91	Good
1	I am happy.	3.93	0.78	Good
16	I am pleased with how I am able to keep up with care techniques and protocols.	3.91	0.95	Good
29	I am a very caring person.	3.89	0.89	Good
12	I like my work as a nurse.	3.86	1.04	Good
27	I think that I am a "success" as a nurse.	3.81	0.99	Good
26	I feel "bogged down" by the system.	3.79	1.22	Good
8	I am not as productive at work because I am losing sleep over traumatic experiences of a person I have cared for.	3.74	1.12	Good
28	I can't recall important parts of my work with trauma victims.	3.71	1.11	Good
22	I believe I can make a difference through my work.	3.58	0.94	Good
10	I feel trapped by my job as a nurse.	3.57	1.14	Good
9	I think that I might have been affected by the traumatic stress of those I have cared for.	3.55	1.13	Good
6	I feel invigorated after working with those I have cared for.	3.54	1.02	Good
5	I jump or am startled by unexpected sounds.	3.46	1.14	Good
23	I avoid certain activities or situations because they remind me of frightening experiences of the people I have cared for.	3.46	1.14	Good
15	I have beliefs that sustain me.	3.29	1.23	Moderate
21	I feel overwhelmed because my workload seems endless.	2.82	1.15	Moderate
7	I find it difficult to separate my personal life from my life as a nurse.	2.78	1.22	Moderate
2	I am preoccupied with more than one person I have cared for.	2.06	1.13	Poor
<b>Average</b>		<b>3.73</b>	<b>0.50</b>	<b>Good</b>

**Part 2: Coping Strategy**

The 160 nurses who directly cared for suspected and infected persons with Covid-19 rated their Coping Strategy as moderate ( $M=2.81$ ,  $SD=.136$ ). In particular, the item, “I’ve been using alcohol or other drugs to make myself feel better” was given the highest score ( $M=3.63$ ,  $SD=.72$ ), followed by, “I’ve been giving up trying to deal with it” ( $M=3.63$ ,  $SD=.61$ ).

The lowest scored item was given to, “I’ve been criticising myself” (M=2.10, SD=.83), as shown in Table 2.

**Table 2**

*The coping strategy for nurses who directly cared for suspected and infected persons with Covid-19 (N=160)*

No.	Item	M	SD	Level
4	I've been using alcohol or other drugs to make myself feel better.	3.63	0.72	High
6	I've been giving up trying to deal with it.	3.63	0.61	High
16	I've been giving up the attempt to cope.	3.44	0.81	High
11	I've been using alcohol or other drugs to help me get through it.	3.42	0.88	High
8	I've been refusing to believe that it has happened.	3.41	0.73	High
26	I've been blaming myself for things that happened.	3.40	0.77	High
3	I've been saying to myself “this isn't real”.	3.31	0.78	High
20	I've been accepting the reality of the fact that it has happened.	3.08	0.86	Moderate
2	I've been concentrating my efforts on doing something about the situation I'm in.	3.01	0.80	Moderate
24	I've been learning to live with it.	2.98	0.88	Moderate
7	I've been taking actions to try to make the situation better.	2.95	0.98	Moderate
21	I've been expressing my negative feelings.	2.89	0.74	Moderate
17	I've been looking for something good in what is happening.	2.88	0.91	Moderate
14	I've been trying to come up with a strategy about what to do.	2.84	0.86	Moderate
15	I've been getting comfort and understanding from someone.	2.73	0.81	Moderate
10	I've been getting help and advice from other people.	2.71	0.81	Moderate
25	I've been thinking hard about what steps to take.	2.58	0.87	Moderate
19	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	2.56	0.87	Moderate
1	I've been turning to work or other activities to take my mind off things.	2.55	0.88	Moderate
28	I've been making fun of the situation.	2.46	0.89	Low
9	I've been saying things to let my unpleasant feeling escape.	2.36	0.90	Low
18	I've been making jokes about it.	2.36	0.82	Low
23	I've been trying to get advice or help from other people about what to do.	2.30	0.85	Low
27	I've been praying or meditating.	2.18	0.97	Low
5	I've been getting emotional support from others.	2.14	0.90	Low
22	I've been trying to find comfort in my religion or spiritual beliefs.	2.14	0.88	Low
13	I've been criticising myself.	2.10	0.83	Low
<b>Average</b>		<b>2.81</b>	<b>0.36</b>	<b>Moderate</b>

**Group 2: Nurses who were involved in the related caring for suspected and infected persons with Covid-19 (N=281)**

**Part 1: Professional Quality of Life (ProQOL)**

The 281 nurses who were involved in the related caring rated their ProQOL as good (M=3.67, SD=0.51). In particular, the item “I am proud of what I can do to care” was given the highest score (M=4.09, SD=.98), followed by, “As a result of my caring, I have intrusive, frightening thoughts” (M=4.06, SD=1.20). The lowest score was given to, “I am preoccupied with more than one person I cared”, which was rated moderate (M= 2.28, SD=1.34). More details are illustrated in Table 3.

**Table 3**

*Quality of life for nurses who were involved in the related caring for suspected and infected persons with Covid-19 (N=281)*

No.	Item	M	SD	Level
24	I am proud of what I can do to care.	4.09	0.98	Good
25	As a result of my care, I have intrusive, frightening thoughts.	4.06	1.20	Good
19	I feel worn out because of my work as a nurse.	4.05	1.14	Good
3	I get satisfaction from being able to care for people.	4.01	0.99	Good
13	I feel depressed because of the traumatic experiences of the people I have cared for.	4.00	1.17	Good
1	I am happy.	3.98	0.79	Good
14	I feel as though I am experiencing the trauma of someone I have cared for.	3.97	1.20	Good
4	I feel connected to others.	3.90	0.92	Good
30	I am happy that I chose to do this work.	3.89	0.98	Good
18	My work makes me feel satisfied.	3.88	0.99	Good
11	Because of my care, I have felt "on edge" about various things.	3.86	1.15	Good
20	I have happy thoughts and feelings about those I have cared for and how I could help them.	3.80	1.10	Good
16	I am pleased with how I am able to keep up with care techniques and protocols.	3.74	1.03	Good
12	I like my work as a nurse.	3.74	0.99	Good
8	I am not as productive at work because I am losing sleep over traumatic experiences of a person I have cared for.	3.73	1.17	Good
17	I am the person I always wanted to be.	3.73	1.05	Good
27	I think that I am a "success" as a nurse.	3.73	1.01	Good
29	I am a very caring person.	3.71	0.85	Good
9	I think that I might have been affected by the traumatic stress of those I have cared for.	3.66	1.11	Good
28	I can't recall important parts of my work with trauma victims.	3.65	1.13	Good
26	I feel "bogged down" by the system.	3.63	1.24	Good
10	I feel trapped by my job as a nurse.	3.58	1.23	Good
5	I jump or am startled by unexpected sounds.	3.54	1.13	Good
6	I feel invigorated after working with those I have cared for.	3.52	0.95	Good
23	I avoid certain activities or situations because they remind me of frightening experiences of the people I have cared for.	3.46	1.21	Good
22	I believe I can make a difference through my work.	3.42	1.11	Good
15	I have beliefs that sustain me.	3.32	1.19	Moderate
21	I feel overwhelmed because my workload seems endless.	3.00	1.19	Moderate
7	I find it difficult to separate my personal life from my life as a nurse.	2.91	1.19	Moderate
2	I am preoccupied with more than one person I have cared for.	2.28	1.34	Moderate
<b>Average</b>		<b>3.67</b>	<b>0.51</b>	<b>Good</b>

**Part 2: Coping Strategy**

The 281 nurses in this group rated their coping strategy as moderate (M=2.78, SD=.40). The item, "I've been using alcohol or other drugs to make myself feel better" received the highest rating (M=3.72, SD=.67), followed by, "I've been giving up trying to deal with it" (M=3.63, SD=.61). The lowest score was given to, "I've been criticising myself" (M=2.02, SD=.85), as shown in Table 4.

**Table 4**

*The coping strategy for nurses who were involved in the related caring for suspected and infected persons with Covid-19 (N=281)*

No.	Item	M	SD	Level
4	I've been using alcohol or other drugs to make myself feel better.	3.72	0.67	High
6	I've been giving up trying to deal with it.	3.47	0.81	High
16	I've been giving up the attempt to cope.	3.41	0.84	High
11	I've been using alcohol or other drugs to help me get through it.	3.37	1.02	High
8	I've been refusing to believe that it has happened.	3.36	0.83	High
26	I've been blaming myself for things that happened.	3.26	0.82	High
3	I've been saying to myself "this isn't real".	3.25	0.87	Moderate
20	I've been accepting the reality of the fact that it has happened.	3.06	0.93	Moderate
24	I've been learning to live with it.	2.88	0.92	Moderate
2	I've been concentrating my efforts on doing something about the situation I'm in.	2.86	0.83	Moderate
21	I've been expressing my negative feelings.	2.86	0.83	Moderate
7	I've been taking actions to try to make the situation better.	2.85	0.99	Moderate
14	I've been trying to come up with a strategy about what to do.	2.81	0.87	Moderate
17	I've been looking for something good in what is happening.	2.77	0.93	Moderate
15	I've been getting comfort and understanding from someone.	2.77	0.90	Moderate
12	I've been trying to see it in a different light, to make it seem more positive.	2.74	0.94	Moderate
10	I've been getting help and advice from other people.	2.61	0.86	Moderate
19	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	2.59	0.90	Moderate
25	I've been thinking hard about what steps to take.	2.51	0.92	Moderate
1	I've been turning to work or other activities to take my mind off things.	2.48	0.95	Low
28	I've been making fun of the situation.	2.43	0.86	Low
18	I've been making jokes about it.	2.41	0.86	Low
9	I've been saying things to let my unpleasant feeling escape.	2.29	0.91	Low
23	I've been trying to get advice or help from other people about what to do.	2.28	0.89	Low
27	I've been praying or meditating.	2.27	0.93	Low
22	I've been trying to find comfort in my religion or spiritual beliefs.	2.20	0.97	Low
5	I've been getting emotional support from others.	2.19	0.89	Low
13	I've been criticising myself.	2.02	0.85	Low
<b>Average</b>		<b>2.78</b>	<b>0.40</b>	<b>Moderate</b>

## Discussion

The quantitative research described in this paper discovered the following critical issues for discussion.

The overall ProQOL of both groups of nurses was positive or considered to be good. This may be due to Covid-19 is a new disease that has never been encountered before, which easily infects people and can be severe enough to cause death. Therefore, nurses and healthcare providers must work hand in hand with a sense of pride to provide optimal care for patients (M = 4.29, SD=0.89), obtain satisfaction from their duties in caring for patients (M=4.28,SD=1.04) and also consider themselves as a "success" as nurses (M=3.81,SD=0.99). This agrees with the findings of Panuraj and Matchim (2018), who

indicated ProQOL contributed to happy thoughts and feelings about persons the nurses cared for and how they could help patients. However, the Covid-19 pandemic is still in its early stages, so far lasting only for a short period of three to four months in Thailand. However, nurses may have to cope for a longer duration if the disease persists. At that point, ProQOL will presumably reduce among nurses, as they will suffer from exhaustion and encounter problems in dealing with their work stresses. The research results corresponded with the work of Qian Zhou et al. (2020), which revealed that healthcare workers in a medical aid team experienced lower level burnout, and higher level of compassion and satisfaction during the Covid-19 pandemic compared to normal times. Their findings also supported the findings of Piyapanya (2016) from the study on the work life of nurses in private hospitals in Bangkok. The overall quality of life among nurses was considered moderate, corresponding to the results provided by Sithironarit (2018) from the study on stress at the workplace and coping strategy and quality of life among personnel in general hospitals, which also found quality of life to be at a moderate level.

Additionally, this study discovered that the nurses' coping strategy during the Covid-19 outbreak was also rated as moderate. Perhaps the nurses found it difficult to avoid getting infected, as many special steps are needed, such as using Personal Protection Equipment (PPE), which is a requirement for nurses to work closely with patients, and universal cooperation with other healthcare personnel. On top of that, nurses must keep a close eye on suspected persons during their 14-day quarantine and care for patients in negative pressure rooms. If nurses use positive coping strategies to ease or reduce their physical, emotional and mental anxiety by the experiencing to various stress in their lives, thus they will be able to reduce these stress (Snyder & Dinoff, 1999). This corresponds with results obtained by Limthongkul (2018) in the study on sources of stress, coping strategy and outcomes among nursing students. In the first practice, coping strategy was considered moderate after the nurses resorted to *thum-jai*, which is a popular technique in Thai culture characterised by accepting a bad situation, forgetting unhappy feelings, calming the mind, as well as developing patience and understanding (Andrew et al., 2017). With this helpful technique, nurses who suffered from stress could calm themselves and develop a peaceful mind, emotion stability, positive thoughts, and finally, productive change.

From the study on ProQOL and coping strategy among nurses in Thailand during the Covid-19 pandemic, the relevant persons and agencies are welcome to make use of the obtained information as guidelines for planning and improving nurses' ProQOL and coping strategy as follows:

- i. There should be an improvement of nurses' quality of life by assigning each nurse to fewer patients, which will prevent excessive workload. It would also be beneficial for nurses to take pride from their jobs and obtain satisfaction for being able to care for people, learn to live with this disease, build happy thoughts and feelings about the patients they care for, as well as how they can help those patients.
- ii. It is recommended to develop better coping strategies among nurses. According to the study, some nurses use alcohol and other drugs to feel better. Coping strategies could be enhanced by learning how to accept the truth about what has happened, learning to live with the situation, meditating, and adopting *thum-jai*.
- iii. For future research, it is recommended to study a model on the development of ProQOL and coping strategy, as well as conduct a qualitative study on these issues, as well as the psychological, emotional, familial and economic impact on the nurses.



## Conclusion

The on-going Covid-19 outbreak that began in late 2019 has globally affected the ProQOL among nurses throughout Thailand. Due to their healthcare duties, this professional group spends a lot of working hours in close contact with infected individuals and Covid-19 patients. The objectives of this research were to study and investigate the impact of the pandemic on ProQOL and coping strategy among nurses in Thailand using an online survey approach. The sample comprised 441 nurses in two groups, i.e. 160 nurses who directly cared for suspected and infected persons with Covid-19, and 281 nurses who encountered their hard time in the related caring. The survey instrument is a questionnaire that had reliability scores of .91 and .93 for each part, respectively. Data were analysed using the statistical dimensions of percentage, mean, and standard deviation. Research findings revealed that both groups' ProQOL was rated at a good level and considered in a positive way, while scores for coping strategy were moderate. These findings might be due to the short duration of the first wave of the Covid-19 pandemic (three to four months in Thailand) as well as due to the high-spirit of care in Thai culture. However, ProQOL may suffer due to poor coping strategy if a second wave of the Covid-19 pandemic hits Thailand, similar to the situation faced by other countries. As such, if everyone including nurses keep mentally and physically fit, they can remain healthy while the world waits for the Covid-19 vaccine to be ready. This could be considered as a coping strategy that may have an impact on ProQOL. It is essential for policymakers to support and prepare nurses and other healthcare providers to approach ProQOL in a positive way and develop the right coping strategies in order to empower themselves during the Covid-19 pandemic.

## Acknowledgement

This study is part of the research entitled, "The Mental Health, Coping Strategy and Professional Quality of Life among Nurses in Southeast Asia, East Asia and South Asia Countries during Covid-19 Outbreak" that studied data involving nurses in 10 countries including Thailand. The research proposal was approved by the University of Malaya Medical Centre Research Ethical Committee, Malaysia (MRECID No.2020422-8502) under principal investigator Dr. Chui Pin Lei and co-investigator Professor Dr. Khatijah Lim Abdullah, with support from Associate Professor Dr. Mei Chan Chong, Head of Department of Nursing Science, Faculty of Medicine, University of Malaya, Malaysia. As co-investigators in Thailand, we would like to express our sincere appreciation to Malaysian researchers for allowing us to disseminate their findings in Thailand and for encouraging as well as supporting the publication. We would like to thank Thai nurses who participated in this study.

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