Rajabhat Chiang Mai Research Journal : CMRJ
Vol. 24 No. 2 May – August 2023 : TCI 1, ACI

Prediction and Risk Group of Coronavirus Disease 2019 Protection Behaviors in the Community among Juveniles in Northern Region of Thailand

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(Received: 15 December 2022, Revised: 8 March 2023, Accepted: 23 March 2023)
https://doi.org/10.57260/rcmrj.2023.262666

Abstract

The coronavirus disease 2019 protection behavior in the community of juveniles in the northern region can have an impact on the lifestyles of people in the community if the juveniles ignore or do not follow protective measures against coronavirus disease 2019. The research aims to 1) identify significant predictors and prediction of psychological traits and situations involving the coronavirus disease 2019 protection behavior in the community and 2) investigate risk groups and protective factors. The sample consists of 600 juveniles obtained from the multi-stage quota random sampling. The analytic statistics used to test the hypotheses were the enter and stepwise methods of multiple regression analysis and the three - way analysis of variance.

The findings revealed that psychological traits, situations, and psychological states can predict 56.80% of the coronavirus disease 2019 protection behavior in the community. The most significant predictor is a positive attitude towards the coronavirus disease 2019 protection behavior (β=.29), followed by future orientation and self-control regarding the coronavirus disease 2019 protection (β=.27), love-reasoned child rearing practice (β=.22), observance of media on the coronavirus disease 2019 protection behaviors (β=.18), observance of their parents' coronavirus disease 2019 protection behaviors (β=.13), moral disengagement concerning Covid-19 prevention (β=.10), and emotional quotient (β=.08), respectively. Additionally, it was found that male juveniles and juveniles who lack protective equipment are at high risk and require urgent care. The research recommended protective development guideline to raise awareness of juveniles about the coronavirus disease 2019 protection behavior in the community with the coordination of public and civic sectors in the community.

Keywords: Community, Coronavirus disease 2019, Protection, Juveniles, Behavior

Introduction

"Coronavirus disease 2019" broke out in Wuhan City, the People's Republic of China in December 2019. The outbreak occurred so widely and rapidly that the World Health Organization announced it as an international emergency on January 30, 2020, and as a pandemic on March 11, 2020 (Chokewiwat, 2020).

Over the past three years, Thailand has faced with the coronavirus disease 2019, leading to the enormous number of infection cases and deaths. Juveniles are one of the groups that have been affected by the infection and the measures to control the pandemic. The situation has a negative impact on them in various aspects, such as the quality of education, school dropout, the development of young children, stress, and education gap (Hoffman et al., 2020; Conto et al., 2020).

Juveniles are the primary force of the country. It is imperative to cultivate coronavirus disease 2019 protection behaviors among juveniles in the community and teach them to live a lifestyle with less risky behaviors. Government agencies in the community must be aware of and focus on the issue by providing knowledge, encouraging learning from the situations, raising awareness, and developing positive attitudes among juveniles so that they can see the danger of coronavirus disease 2019. Currently, the government agencies have released measures to prevent and avoid coronavirus disease 2019 with the collaboration of the Municipality Offices, the Subdistrict Administrative Organizations, subdistrict health-promoting hospitals, and community leaders in order to take care of juveniles' health. The examples of the measures are 1) providing knowledge about how to live together with empathy, 2) facilitating the accessibility of vaccines and protective equipment among juveniles in the community, 3) taking care of and providing COVID-19 testing for the high-risk group, and 4) helping the infected to get treated as fast as possible (Community Organization Development Institute, 2022).

Hence, the researcher would like to explore coronavirus disease 2019 protection behavior among juveniles in the community. The study will be useful for protection planning and can help identify significant predictors, the amount of prediction for psychological traits and situations, and juveniles who are at risk. The findings can be applied as a guideline to formulate protective measures and to conduct experimental research to train juveniles on psychological traits and skills so that they will adopt the correct coronavirus disease 2019 protection behavior in the community.

Objective

1. To identify significant predictors and prediction of psychological traits and situations concerning the coronavirus disease 2019 protection behavior in the community of juveniles.

2. To investigate risk groups and protective factors for the coronavirus disease 2019 protection behavior in the community of juveniles.

Literature Review

1. The coronavirus disease 2019 protection behavior in the community: definition and methods of measurement

Currently, juveniles may need to go to schools, markets, government offices in the community, religious sites, public parks, or gatherings, making them be exposed to or become a spreader of coronavirus disease 2019 (Department of Health, 2021). If juveniles have to meet and participate in the activities in crowded places, it is imperative that they protect themselves well so that other people in their communities will not be affected. They should 1) observe for possible symptoms and avoid going outside if they have a fever, 2) wear a mask; always have alcohol-based hand sanitizer within reach; and make a social distance of at least 1 meter, 3) wash their hands with soap or alcohol-based hand sanitizer, 4) strictly adhere to the measures and regulations of the communities, and 5) avoid participating in any activities in the communities for 14 days after leaving risk areas (Department of Health, 2021).

The coronavirus disease 2019 protection behavior in the community refers to the compliance with the measures of the community, the cooperation with the officials, the avoidance of unnecessary trips to the community, and the self-protection against other people in the community. It consists of 4 elements: 1) incompliance with the measures of the community, 2) irresponsibility towards the community, 3) adherence to the measures of the community, and 4) protection against people and places. An assessment used in the research is based on summated rating scales comprising several sentences that can be rated on a 6-point scale ranging from “always true” to “never true”. The higher the score, the more compliant juveniles are with the coronavirus disease 2019 protection behavior in the community.

2. Situational variables and the coronavirus disease 2019 protection behavior in the community

The environment of an individual is an important factor in his/her thoughts and actions. The situational variables consist of 4 variables. *1)* The first one is *the observance of their parents' coronavirus disease 2019 protection behaviors.* According to the Social Cognitive Learning Theory (Bandura, 1997), observational learning comprises attentional processes, retention processes, reproduction processes, and incentives and motivation. It shows that juveniles imitate

their parents' desirable behaviors. *2)* The second one is *the teaching on the coronavirus disease 2019 protection behaviors provided by educational institutions*. The environment of an educational institution refers to anything in the educational institution of a learner, whether it is internal, external, concrete, or abstract environment. All of these can have a direct impact on learning, processes influencing individuals in the school, and positive and negative development (Boonkwang, 2008; Kaewfai, 2013). *3) The observance of media on the coronavirus disease 2019 protection behaviors* refers to a process to transmit or convey meaning between individuals through need, desire, feeling, thought, knowledge, and experience (Lapirattanakul, 2003). *4)* Finally, *love-reasoned child rearing practice* refers to physical and verbal expression demonstrating love, support, care, and kindness. It also includes a reasonable decision about rewards and punishment based on children's behaviors and situations, rather than impulse (Bhanthumnavin, 2013).

3. Psychological trait variables and the coronavirus disease 2019 protection behavior in the community

1) Future orientation and self-control regarding the coronavirus disease 2019 protection refers to the ability to speculate how and whom our actions will have an impact on as well as the tolerability. It also encompasses 1) self-awareness, 2) systematic planning for behavioral changes, and 3) the self-control orientation to protect oneself from infection or transmission (Thoresen & Mahoney, 1974, Bhanthumnavin, 2010). *2) Moral disengagement concerning Covid-19 prevention* refers to an act of making an excuse after doing something wrong or a refusal to be accountable (Bhanthumnavin, 2013). *3) Emotional quotient* refers to the capability to handle environment and pressure which directly affect psychological well-being, leading to accomplishment in life (Bar-On, 1997) as well as the reasoning capability, the perception of emotion and feeling, and the understanding of emotional matters (Mayer et al, 2000). *4) Internal locus of control regarding the coronavirus disease 2019 protection* refers to the belief that the outcomes one achieves are the consequence of one's own action rather than coincidence or external control. Being opposed to external locus of control, internal locus of control is the belief that one can control or prevent coronavirus disease 2019 by oneself (Rotter, 1966, Bhanthumnavin, 2010)

4. Psychological state variables and the coronavirus disease 2019 protection behavior in the community

Psychological states consist of two elements. *1) A positive attitude towards the coronavirus disease 2019 protection behavior* refers to an individual's positive or negative evaluation of a certain action or a judgement on that action (Ajzen & Fishbein, 1980). It can break down into cognitive component, affective component, and action tendency component. *2) Health literacy*

refers to an accessibility to and an understanding on health information, an ability to discuss and pose a question (Department of Health, 2017) and an ability to read and understand definition, term, concept, ang content concerning health (Baker, 2006).

Hypotheses

Predictor 3 includes predictor 1 and predictor 2. For predictor 1, there are 4 psychological trait variables 1) future orientation and self-control regarding the coronavirus disease 2019 protection, 2) moral disengagement concerning Covid-19 prevention, 3) emotional quotient, and 4) internal locus of control regarding the coronavirus disease 2019 protection and 4 situational variables which are 1) the observance of their parents' coronavirus disease 2019 protection behaviors, 2) the teaching on the coronavirus disease 2019 protection behaviors provided by educational institutions, 3) the observance of media on the coronavirus disease 2019 protection behaviors, and 4) love-reasoned child rearing practice. For predictor 2, there are 2 psychological state variables which are 1) a positive attitude towards the coronavirus disease 2019 protection behavior and 2) health literacy. Accordingly, predictor 3 contains a total of 10 variables and can predict the coronavirus disease 2019 protection behavior in the community with 5% more accuracy than predictor 1 or predictor 2 alone.

Methodology

Population: Thai juveniles in the 3 northern provinces: 1) 53,312 in Uttaradit, 2) 45,206 in Phrae, and 3) 52,950 in Nan (National Statistical Office Thailand, 2021).

Sample: This research used the multistage quota random sampling by following these steps. *Step 1* was to randomly select northern provinces, and the results were 3 provinces which were Uttaradit, Phrae, and Nan. *Step 2* was to randomly select 1 district from each of the provinces, and the results contained 3 districts: Thong Saen Khan District, Wang Chin District, and Mueang Nan District. *Step 3* was to randomly select 1 sub-district from each of the districts. The results were Nam Phi Sub-district, Mae Phung Sub-district, and Nai Wiang Sub-district. Finally, *step 4* was the selection of juveniles from the 3 sub-districts using quota sampling: 182 from Nam Phi Sub-district, 197 from Mae Phung Sub-district, and 221 from Nai Wiang Sub-district, making up of 600 juveniles in total, as shown in Table 1.

Table 1 The Sample Size for the Study

Province	District	Sudistrict	Size
Uttaradit	Thong Saen Khan	Nam Phi	182
Phrae	Wang Chin	Mae Phung	197
Nan	and Mueang Nan Dis	Nai Wiang	221
	Total		**600**

The research used 10 assessments as follows: 1 assessment of coronavirus disease 2019 protection behavior which is Coronavirus Disease 2019 Protection Behavior in the Community Assessment 14 items, Reliability 0.86; 4 assessments of psychological trait variables which are Future Orientation and Self-Control Regarding the Coronavirus Disease 2019 Protection Assessment 10 items, Reliability 0.78, Moral Disengagement Concerning Covid-19 Prevention Assessment 10 items, Reliability 0.76. Emotional Quotient Assessment 12 items, Reliability 0.80 and Internal Locus of Control Regarding the Coronavirus Disease 2019 Protection Assessment 10 items, Reliability 0.77; 4 assessments of situational variables which are Observance of Parents' Coronavirus Disease 2019 Protection Behaviors Assessment 10 items, Reliability 0.79 Teaching on the Coronavirus Disease 2019 Protection Behaviors Provided by Educational Institutions Assessment 10 items, Reliability 0.78, Observance of Media on the Coronavirus Disease 2019 Protection Behaviors Assessment 10 items, Reliability 0.81, and Love-Reasoned Child Rearing Practice Assessment 10 items, Reliability 0.80; and 2 assessments of psychological state variables which are Positive Attitude towards the Coronavirus Disease 2019 Protection Behavior Assessment 10 items, Reliability 0.83, and Health Literacy Assessment 10 items, Reliability 0.78, All of them are measurements Summated Rating Scale.

The researcher developed the assessments based on the concepts and theories pertaining to the variables of the assessment of coronavirus disease 2019 protection behavior, psychological trait variables, situational variables, and psychological state variables. First, content validity was performed by experts in the fields of social development, public health, and behavioral sciences. Second, the assessments were tested with the sample of 120 participants to analyze its quality with 2 types of statistics: 1) item discrimination analysis and 2) item total correlation analysis. The criteria used in the selection of items was $t \geq 2.00$ and $r \geq 0.20$.

For data collection, the researcher went to the three provinces and distributed a survey to each participant. Each survey contains 10 assessments in total. The researcher also explained the instruction to the participants and ask them to sign a consent document. It took an hour to complete the survey. Then, the researcher gathered the surveys from the participants and examined their completion.

In this research, to analyze the first objective, the enter and stepwise methods of multiple regression analysis (MRA) were performed with multiple predictors. The prediction was completed one instance at a time with 5% difference. And to analyze the second objective, the Three-Way ANOVA was used as a method to find risk groups. Moreover, upon examining the degree of multicollinearity among the predictors, the results indicate a low level. The variance inflation factor (VIF) of each predictor was below 10 (O'Brien, 2007), and the tolerance of each predictor exceeded 0.10 (Hair et al., 2010). Hence, Consequently, further data analysis can proceed.

Results

Prediction results of the coronavirus disease 2019 protection behavior in the community using psychological traits, situations, and psychological states as predictors

The scores of the coronavirus disease 2019 protection behavior in the community were analyzed with enter and stepwise multiple regression. Predictor 1 is psychological traits and situations containing 8 variables: 1) future orientation and self-control regarding the coronavirus disease 2019 protection, 2) moral disengagement concerning Covid-19 prevention, 3) emotional quotient, 4) internal locus of control regarding the coronavirus disease 2019 protection, 5) observance of parents' coronavirus disease 2019 protection behaviors, 6) teaching on the coronavirus disease 2019 protection behaviors provided by educational institutions, 7) observance of media on the coronavirus disease 2019 protection behaviors, and 8) love-reasoned child rearing practice. Predictor 2 is psychological states containing 2 variables: 1) positive attitude towards the coronavirus disease 2019 protection behavior and 2) health literacy. Predictor 3 is psychological traits, situations, and psychological states containing 10 variables: 1) future orientation and self-control regarding the coronavirus disease 2019 protection, 2) moral disengagement concerning Covid-19 prevention, 3) emotional quotient, 4) internal locus of control regarding the coronavirus disease 2019 protection, 5) observance of parents' coronavirus disease 2019 protection behaviors, 6) teaching on the coronavirus disease 2019 protection behaviors provided by educational institutions, 7) observance of media on the coronavirus disease 2019 protection behaviors, and 8) love-reasoned child rearing practice, 9) positive attitude towards the coronavirus disease 2019 protection behavior, and 10) health literacy.

The analysis for total group (Table 2) found that all of the eight psychological trait and situational variables can predict 51.70% of the coronavirus disease 2019 protection behavior in the community. The predictors, from most to least significant, are future orientation and self-control regarding the coronavirus disease 2019 protection (β = .33), love-reasoned child rearing practice

(β = .26), observance of parents' coronavirus disease 2019 protection behaviors (β = .16), moral disengagement concerning Covid-19 prevention (β = .15), observance of media on the coronavirus disease 2019 protection behaviors (β = -.14), emotional quotient (β = .08), and internal locus of control regarding the coronavirus disease 2019 protection (β = .07). Furthermore, the analysis for 18 sub-groups (Table 2) reveals that the sub-group with the highest prediction rate from the eight psychological trait and situational variables is the juveniles who took ATK tests twice a month (72.20%). The predictors, from most to least significant, are moral disengagement concerning Covid-19 prevention (β = .31), future orientation and self-control regarding the coronavirus disease 2019 protection (β = .30), love-reasoned child rearing practice (β = .26), observance of parents' coronavirus disease 2019 protection behaviors (β = .17), internal locus of control regarding the coronavirus disease 2019 protection (β = .14), and observance of media on the coronavirus disease 2019 protection behaviors (β = -.08).

The analysis for total group (Table 2) indicated that all of the two psychological state variables can predict 38.20% of the coronavirus disease 2019 protection behavior in the community. The predictors, from most to least significant, are positive attitude towards the coronavirus disease 2019 protection behavior (β = .50) and health literacy (β = .23). The analysis for 18 sub-groups (Table 1) demonstrates that the sub-group with the highest prediction rate from the two psychological state variables is the juveniles who took ATK tests twice a month (55.40%). The predictors, from most to least significant, are positive attitude towards the coronavirus disease 2019 protection behavior (β = .60) and health literacy (β = .27).

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Table 2 Prediction results of the coronavirus disease 2019 protection behavior in the community using psychological traits, situations, and psychological states as predictors

Group	N	#1 Psychological traits and situations (1-8)			#2 Psychological states (9-10)			#3 Psychological traits, situations, and psychological states (1-10)			Difference (%)
		Prediction (%)	Predictor	β	Prediction (%)	Predictor	β	Prediction (%)	Predictor	β	Prediction (%)
Total	600	51.70	1,8,5,2,7,3,4	.33,.26,.16,.15,-.14,.09,.07	38.20	9,10	.50,.23	56.80	9,1,8,7,5,2,3	.29,.27,.22,-.18,.13,.10,.08	5.10*
Male	306	59.10	1,8,3,5,2	.27,.25,.18,.16,.12	41.70	9,10	.55,.19	64.30	8,1,9,3,10,5,2,7	.29,.26,.20,.18,-.14,.14,.10,.10	5.20*
Female	294	42.00	1.8.7.5	.39,.33,-.21,.17	30.40	9,10	.45,.24	46.20	1,10,8,7,5	.31,.28,.25,-.25,.13	4.20
Owned accommodation	200	58.40	2,1,8,5,7,4	.36,.30,.23,.21,-.19,.14	44.00	9,10	.60,.21	62.30	9,2,7,1,5,3	.36,.25,-.25,.23,.21,.17	3.90
Other accommodations	400	50.30	1,8,5	.39,.33,.15	36.40	9,10	.46,.27	54.40	1,8,9,5,7,6	.33,.32,.27,.11,-.10,-.08	4.10
Sufficient protective equipment	403	54.70	8,1,5,2,7	.34,.28,.25,.17,-.15	39.40	9,10	.57,.14	59.90	9,8,7,1,5,2	.33,.26,-.23,.21,.19,.12	5.20*
insufficient protective equipment	197	52.30	1,8,3,6	.41,.27,.26,-.15	38.60	10,9	.40,.38	55.30	1,8,3,9,6	.36,.27,.22,.21,-.16	3.00
COVID-19 knowledge from online media	452	50.70	1,8,2,5,7	.42,.25,.14,.12,-.10	33.80	9,10	.50,.20	55.70	1,9,8,7,2,5,6	.33,.28,.24,-.13,.12,.09,-.09	5.00*
COVID-19 knowledge from printed media	148	58.50	8,7,3,5,6	.53,-.29,.22,.19,.19	44.20	9,10	.43,.36	61.90	8,7,9,6,10,5	.44,-.35,.27,.19,. 18,.12	3.40
2 doses of vaccines	408	52.40	1,8,2,7,5,4	.37,.24,.22,-.13,.12,.11	34.50	9,10	.46,.27	56.00	1,9,8,2,7,5,4	.32,.23,.22,.18,-.17,.09,.09	3.60
More than 2 doses of vaccines	192	46.50	8,1,3,7,5	.43,.19,17,-.17,.15	48.20	9	.69	58.60	9,8,7,3	.54,.28,-.25,.15	12.10*

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Group	N	#1 Psychological traits and situations (1-8)			#2 Psychological states (9-10)			#3 Psychological traits, situations, and psychological states (1-10)			Difference (%)
		Prediction (%)	Predictor	β	Prediction (%)	Predictor	β	Prediction (%)	Predictor	β	Prediction (%)
Family member infected by COVID-19	120	45.90	8,6,5	.52,.17,.17	18.10	9	.42	51.40	8,9,10,5,6,7	.56,.24,-.23, .22,.19,-.16	5.50*
Family member not infected by COVID-19	480	56.00	1,8,2,5,7,4	.40,.22,.21,.15, -.12,.09	43.70	9,10	.53,.25	61.00	9,1,8,7,5,2,3,6	.31,.29,.17,-.16, .16,.14,.10, -.09	5.00*
Report on parents with COVID-19 infection	362	50.80	1,8,5,2,7	.33,.33,.20,.12, -.11	33.40	9,10	.46,.23	54.80	1,9,8,7,5,2	.29,.26,.26,-.17, .16,.10	4.00
Report on others with COVID-19 infection	238	54.10	1,8,2,4,7,5	.37,.24,.22,.16, -.16,.12	46.10	9,10	.57,.22	59.90	9,8,3,1,7,6	.40,.27,.26,.16, -.16,-.12	5.80*
At least 3 ATK tests a month	240	16.20	5,1,8	.25,.19,.19	9.70	9	.30	20.60	9,5,1,7,8	.26,.21,.20,-.18, .14	4.40
2 ATK tests a month	360	72.20	2,1,8,5,4,7	.31,.30,.25,.17, .14, -.08	55.40	9,10	.60,.27	74.40	8,1,2,9,5,7,4	.25,.24,.24,.21,.15 ,-.11,.09	2.20
No confidence in vaccine	206	41.90	1,8,5,2,7	.29,.27,.21,.14, -.13	28.00	9,10	.42,.19	43.90	1,9,8,7,5	.29,.25,.22, -.18,.17	2.00
Confidence in vaccine	394	57.10	1,8,2,5,7,3 ,4	.35,.26,.15,.15, -.13,.12,.08	45.60	9,10	.56,.27	63.80	9,1,8,7,5,3,2	.34,.24,.24,-.18,. 12,.12,.11	6.70*

Note: Each β shows a significance level of 0.05 and * a difference of 5%. Notes for predictor: 1. future orientation and self-control regarding the coronavirus disease 2019 protection, 2. moral disengagement concerning Covid-19 prevention, 3. emotional quotient, 4. internal locus of control regarding the coronavirus disease 2019 protection, 5. observance of parents' coronavirus disease 2019 protection behaviors, 6. teaching on the coronavirus disease 2019 protection behaviors provided by educational institutions, 7. observance of media on the coronavirus disease 2019 protection behaviors, 8. love-reasoned child rearing practice, 9. positive attitude towards the coronavirus disease 2019 protection behavior, and 10. health literacy

The analysis for total group (Table 2) pointed out that all of the ten psychological trait, situational, and psychological state variables can predict 56.80% of the coronavirus disease 2019 protection behavior in the community. The predictors, from most to least significant, are positive attitude towards the coronavirus disease 2019 protection behavior (β = .29), future orientation and self-control regarding the coronavirus disease 2019 protection (β = .27), love-reasoned child rearing practice (β = .22), observance of media on the coronavirus disease 2019 protection behaviors (β = -.18), observance of parents' coronavirus disease 2019 protection behaviors (β = .13), moral disengagement concerning Covid-19 prevention (β = .10), and emotional quotient (β = .08). The analysis for 18 sub-groups (Table 1) found that the sub-group with the highest prediction rate from the ten psychological trait, situational, and psychological state variables is the juveniles who took ATK tests twice a month (74.40%). The predictors, from most to least significant, are love-reasoned child rearing practice (β = .25), future orientation and self-control regarding the coronavirus disease 2019 protection (β = .24), moral disengagement concerning Covid-19 prevention (β = .24), positive attitude towards the coronavirus disease 2019 protection behavior (β = .21), observance of parents' coronavirus disease 2019 protection behaviors (β = .15), observance of media on the coronavirus disease 2019 protection behaviors (β = -.11), and internal locus of control regarding the coronavirus disease 2019 protection (β = .09).

The results of the analysis to find the risk group using the three-way analysis of variance for the scores of psychological traits, situations, psychological states, and coronavirus disease 2019 protection behavior in the community based on significant biosocial background

The results of the three-way analysis of variance for the coronavirus disease 2019 protection behavior in the community based on the juveniles' gender, accommodation, and protective equipment revealed that the coronavirus disease 2019 protection behavior in the community varied according to the interaction among 3 independent variables — the juveniles' gender, accommodation, and protective equipment (Table 3). Then, Scheffe's pair wise comparison of means (Table 5) was performed and showed 8 pairs with statistically significant differences. Among them, there were only 3 important pairs as follows. 1) in the group of the juveniles who lived in other accommodation and had sufficient protective equipment, female juveniles exhibited more coronavirus disease 2019 protection behaviors in the community than male juveniles. 2) In the group of the juveniles who lived in their own accommodation and had insufficient protective equipment, female juveniles exhibited more coronavirus disease 2019 protection behaviors in the community than male juveniles. And 3) in the group of male juveniles who had sufficient protective equipment, those who lived in their own accommodation exhibited more coronavirus disease 2019 protection behaviors in the community than those who lived in other accommodation. Additionally, the coronavirus disease 2019 protection behavior in the community varied according to the level of 2 separate

independent variables (Table 4): juveniles' gender and protective equipment. Given the means of the groups categorized based on the level of gender, female juveniles displayed more coronavirus disease 2019 protection behaviors in the community than male juveniles. And 2) considering the means of the groups categorized based on the level of protective equipment, juveniles with sufficient equipment displayed more coronavirus disease 2019 protection behaviors in the community than juveniles with insufficient equipment.

Table 3 The results of the three-way analysis of variance for the coronavirus disease 2019 protection behavior in the community based on gender, accommodation, and protective equipment

Group	N of participants	F						
		Gender	Accommodation	Protective equipment	AxB	AxC	BxC	AxBxC
		A	B	C				
coronavirus disease 2019 protection behavior in the community	600	15.749*** .026	.708 .001	3.721** .001	.001 .000	1.503 .003	1.795 .003	4.205* .007

Note: **p<0.01 *p<0.05

Table 4 The analysis of the means of dependent variables when compared to independent variables

Group	Independent variable	Mean comparison of dependent variable			
		Category of group	Mean	95% confidence Interval	
				Lower Bound	Upper Bound
coronavirus disease 2019 protection behavior in the community	Gender	Male	58.088	56.828	59.348
		Female	61.830	60.473	63.186
	Protective equipment	Sufficient protective equipment	45.524	44.923	44.946
		insufficient protective equipment	44.023	43.121	43.895

Table 5 The results of mean comparison of the coronavirus disease 2019 protection behavior in the community based on juveniles' gender, accommodation, and protective equipment

Gender	Accommodation	Protective equipment	N of participants	Code	Mean	221	212	222	111	122	112	121
Female	Owned accommodation	Sufficient	79	211	62.89	0.16	1.29	2.79	3.00	3.41	5.84**	6.96**
Female	Other accommodation	Sufficient	122	221	62.73		1.13	2.63	2.84	3.25	5.68**	6.80**
Female	Owned accommodation	Insufficient	25	212	61.60			1.50	1.71	2.12	4.55**	5.67**
Female	Other accommodation	Insufficient	68	222	60.10				0.21	0.62	3.05	4.17**
Male	Owned accommodation	Sufficient	54	111	59.89					0.41	2.84	3.96**
Male	Other accommodation	Insufficient	62	122	59.48						2.43	3.55
Male	Owned accommodation	Insufficient	42	112	57.05							1.12
Male	Other accommodation	Sufficient	148	121	55.93							

Discussions

First, for positive attitude towards the coronavirus disease 2019 protection behavior, Dejsuwannachai (2021) found that attitude towards the coronavirus disease 2019 protection ranked first among predictors of the coronavirus disease 2019 protection behavior. Fishbein & Ajzen (1977) stated that attitude has an impact on an individual's behavior and expression, which in turn have an impact on the individual's attitude because attitude is associated with the individual's thought, feeling, and desire to do something. *Second*, future orientation and self-control regarding the coronavirus disease 2019 protection is in line with the research of Sakdapat (2021) who indicated that future orientation and self-control variable ranked sixth among predictors of the coronavirus disease protection behavior, as juveniles realized, effectively planned, and had self-control regarding coronavirus disease 2019 protection. *Third*, love-reasoned child rearing practice was found in similar research on other kinds of protection

behaviors. For example, Siriwipherk (2018) studied about the Behavior of People in Drug Prevention and found that rearing practice was associated with the behavior of drug prevention. *Fourth* is observance of media on the coronavirus disease 2019 protection behaviors. For instance, Prongrommarat (2018) pointed out that the influence of media is a direct variable for the AIDS prevention behavior. Luevanich et al. (2020) showed that catching up with media and information on COVID-19 ranked second for health literacy and new normal lifestyle to protect oneself against coronavirus disease 2019. Sakdapat (2021) revealed that being informed by online media ranked first among the predictors of the coronavirus disease 2019 protection behavior. The risk groups were also found as follows: female students, students with low average grades, and students in the departments of Humanities, Social Sciences, and Business Administration. Intarapanich et al. (2021) indicated that learning media influenced students' learning capability in an unusual situation like the spread of coronavirus disease 2019. *Fifth*, observance of parents' coronavirus disease 2019 protection behaviors is consistent with the research of Sakdapat (2021) who found that observance of family ranked third among the predictors of the coronavirus disease 2019 protection behaviors. Bunthan et al. (2021) demonstrated that interpersonal influence ranked second among the predictors of the health promotion behavior for coronavirus disease 2019 prevention. Observance of good models can influence juveniles to protect themselves from the disease. *Sixth* is emotional quotient which was also studied by many pieces of research. The example of research with consistent results is the research of Wangsom et al. (2018) which found intelligence variables which are health literacy, emotional quotient, and spiritual intelligence. *Lastly*, moral disengagement concerning Covid-19 prevention accords with the research of Punpromthada (2021) which showed that moral disengagement concerning Covid-19 ranked fifth among the predictors of younger undergraduates who lived alone. The juveniles that were in the risk group and should be cared for urgently were male juveniles and juvenile with insufficient protective equipment. This was consistent with a study which found that male students and students with low GPAX were in the risk group for the conscious risk behavior (Bhanthumnavin, 2013).

Conclusion and suggestions

In conclusion, the findings validated the hypothesis that the combination of psychological traits, situations, and psychological states can predict the coronavirus disease 2019 protection behavior in the community at least 5% better than each of the predictors alone. The results found in the total group and some sub-group: male gender, sufficient protective equipment, COVID-19 knowledge from online media, family member infected by COVID-19, family member not infected by COVID-19, report on others with COVID-19 infection, and confidence in vaccine. Many previous studies show consistent results with the significant variables in the total group.

Develop a training session on psychological traits, situations, and psychological states in order to cultivate the coronavirus disease 2019 protection behavior. Then, conduct experimental research on the training session.

New knowledge and the effects on society and communities

1. The juveniles displayed more coronavirus disease 2019 protection behavior in the community. They had a positive attitude towards the coronavirus disease 2019 protection behavior and possessed future orientation and self-control regarding the coronavirus disease 2019 protection. Their parents used love-reasoned child rearing practice. The juveniles showed the observance of media on the coronavirus disease 2019 protection behaviors and the observance of their parents' coronavirus disease 2019 protection behaviors. Additionally, they exhibited a low level of moral disengagement concerning Covid-19 prevention and a high level of emotional quotient.

2. The organizations in the community, such as the Municipality Offices, the Subdistrict Administrative Organizations, subdistrict health-promoting hospitals, and community leaders, should collaborate to hold activities for juveniles to develop their skills and provide knowledge about the methods to prevent or avoid coronavirus disease 2019. This will help reduce the expenditure on protective equipment and can have a positive impact on juveniles' health in the future.

3. The government agencies in the community provides knowledge and positive attitudes for male juveniles so that they will be aware of the effects of COVID-19 infection among the risk group. For the juveniles with insufficient equipment, the government agencies in the community, community leaders, and public health volunteers should prepare sufficient equipment such as masks, alcohol-based sanitizer, and ATK for the juveniles.

Ethical Considerations

This research was approved by the Ethical Committee of the Uttaradit Rajabhat University, Thailand on June 25, 2021 (URU-REC No. 037/64)

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