

## Relation between Nurses' Caring Behaviors and Satisfaction of patients with COVID-19

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### Abstract

**Background,** Coronavirus disease 2019 (COVID-19) pandemic is critical challenges with quality of nursing care and patient satisfaction, **the study aim:** was to study relation between nurses caring behaviors and Satisfaction of patients with COVID-19. **Design and sample:** A descriptive, Correlational design was used. A consecutive sample of 80 patients and 80 nurses were recruited. **Setting:** inpatient unit in Abo Khalifa Isolation Hospital. **Tools of data collection:** Four measurement instruments were used. Nurse Participants completed the Nurse's demographic Information questionnaire and the Caring Behaviors Inventory-24 (CBI-24). Patient participants completed the Patient Demographic Information Questionnaire and the Patient Satisfaction scale (PSS). **Results.** Regarding the studied patient's satisfaction, the highest mean score was related to technical-professional domain with mean  $4.37 \pm .37$ , while the lowest mean score was related to interpersonal- educational domain with mean  $4.28 \pm .41$ . Concerning nurses' caring behaviors, the highest mean score was related to professional knowledge and skills domain with mean  $5.63 \pm .62$ , while the lowest mean score was related to positive connectedness domain with mean  $5.16 \pm .77$ . **Conclusion:** There was highly statistically significant correlation between total mean scores of nurses' caring behaviors and Satisfaction of patients with COVID-19 **Recommendations:** Provide in service training for nurses to improve to improve nursing caring behaviors especially connectedness domain which consequently improve patient's satisfaction especially regarding interpersonal- educational domain .

**Keywords:** COVID 19, Nursing caring behaviors, and Patient satisfaction.

### Introduction:

Caring is considered as the vital concept of nursing role that provides framework for guiding the nursing practice. Nurses have a responsibility to care for patients, promoting and maintaining the health and safety for their patients (Calong & Soriano, 2018). With rapid technological developments and increasing competition, hospitals continually strive to improve the quality of provided service. Nurses are the chief human resources in hospitals as long as their performance as a key care quality contributor (Aupia et al., 2018).

Patients' satisfaction has been recognized as one of the five indicators for delivering high quality of nursing services including meeting physical needs by providing professional care, psychosocial support, and ensuring comprehensive care delivery to the patient. Consequently, patient satisfaction due to care is a critical outcome as it influences treatment adherence, health services utilization and general attitudes towards the health care system (Recinos et al., 2017).

Apart from being vital indicator of nursing caring behaviors of high-quality, patient satisfaction has a reciprocal effect where it can be used to improve nursing care (Köberich et al., 2016). Numerous studies have demonstrated the nursing and patient satisfaction link and recognized that nursing caring behaviors is the only hospital care service that had a direct and solid correlation with patient satisfaction (Abdullah et al., 2017).

Coronavirus disease 2019 is an emerging newly pandemic respiratory disease. Newly, these diseases have been linked with viruses such as coronavirus (Lui et al., 2020). A novel coronavirus, nominated as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) leading to COVID-19 detected in Wuhan, China, at the end of 2019. The COVID-19 rapidly spread throughout the world (Wang et al., 2020). As of May 21, 2020, 4 893 186 patients had been tested positive and confirmed for COVID-19 disease, and 323 256 deaths have been reported worldwide. However, the exact patients number still remains unknown as asymptomatic cases or patients with mild symptoms might not be tested and will not be identified (Monjazebi et al., 2021).

Moreover, nurses are the main health professionals' group at the frontline of the health care system who respond immediately to both epidemics and pandemics. Nurses deliver care directly to patients in close physical proximity who are often directly exposed to COVID-19 and are at high risk of developing disease as there is currently no valid disease treatment, the main approach is supportive and symptomatic treatments including keeping vital signs, maintaining oxygen saturation and blood pressure monitoring and treating complications as secondary infections and multiple organ failure (World Health Organization, 2020).

Additionally, nurses play an important role in providing nursing caring behaviors for patient with COVID-19. Nurses deal with different patients every day, so, they constantly need to meet their needs and expectations. All the caring behaviors which nurses have performed needs to be evaluated that are occasionally hard to understand the effectiveness of such behaviors on the patient's satisfaction. Evaluating satisfaction is one of the main measurements embedded in healthcare (Xie, et al., 2020 & Thomas, et al., 2019).

### Significance of the study:

For COVID-19 as an emerging and pandemic disease, there was no research studies which have been dealt with satisfaction patient with COVID-19 and its relation with nursing caring behaviors that might be due time constrains, virus growing outbreak, increase number of affected cases and lack of knowledge about this emerging virus. Nurses' knowledge about the patient with COVID-19 perceptions regarding nursing care to be fulfilled help them to become more sensitive regarding their caring behaviors. Patient care is a requirement for delivering high-quality health care and the opposite is true for poor patient satisfaction which might affect healthcare outcomes. In addition, correct conception and determination of the patients' and nurses' perceptions can help improve the caring quality and consequently the provided service. It is essential to explore patients' views, care priorities, and needs regarding nursing care to provide a high qualified care based on expanding and improving knowledge (Tsai, et al., 2015).

**Aim of the study:**

This study aimed to study relation between nurses' caring behaviors and satisfaction of patients with covid-19

**Research questions:**

1. What was the COVID-19 patients' satisfaction?
2. What were the nurses' caring behaviors?
3. What was the correlation between the perceived nurses' caring behaviors and COVID-19 patients' satisfaction?

**Method:****Design:**

A descriptive correlational design was used.

**Sample and sampling technique:**

A purposive sample of 80 patients and convenience sample 80 nurses was included in this study.

**Inclusion criteria:**

The participants of the study were nurses who working in inpatients units and a purposive sample of patients hospitalized at least 2 days (48 hrs.), cognitively aware and willing to participate in the study were potentially eligible for participation.

**Exclusion criteria:**

Participants with visual impairment and who weren't able to verbally communicate.

**Sample size:**

calculated for patients using the following equation.

$$n = \left[ \frac{Z_{\alpha/2} + Z_{\beta}}{\frac{1}{2} \log \frac{1+r}{1-r}} \right]^2 + 3$$

$Z_{\alpha/2} = 1.96$ ,  $Z_{\beta} = 0.90$  (Dawson & Trapp, 2004)

$r$  = correlation (.7)

$n = 73$ ; after adding 10% drop out, total sample was 80  
The total sample was 80 for patients and 80 for nurses

**Setting:**

Inpatient department in Abo Khalifa Isolation Hospital consisted of three roofs (2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> roofs of the hospital), where each roof consisted of twelve rooms;

Ten rooms contained two beds (double room) and two single rooms where they accommodated for twenty-two patients in each roof. In addition, each nurse was often responsible for two patients.

**Tools of Data Collection:**

Four measurement instruments were used. Nurse Participants completed the Nurse's demographic Information questionnaire and the Caring Behaviors Inventory-24 (CBI-24). Patient participants completed the Patient Demographic Information Questionnaire and the Patient Satisfaction scale (PSS).

**1. Patient Socio-demographic Information Questionnaire:** The patients' profile section collects information about sex, age, educational background.

**2. Nurse's Socio-demographic Information questionnaire:** Nurses' personal data included nurses' sex, age, level of education, and years of experience.

**3. Caring Behaviors Inventory-24 (CBI-24):** nurses' participants completed the translated self-administered CBI-24. The translated CBI-24 (Wu, et al., 2006) was used to gather perceptions of nurses. The scale was based on Watson's theory of caring. It was easy to administer and possible to be administered to nurses. The latest revised version of the instrument consisted of 4 subscales and 24 items evaluated on a 6-points Likert-type scale. (1=never, 2=almost never, 3=sometimes, 4=usually, 5=often, 6=always). The CBI-24 had four factors: availability to the patients' need and security assessed by "Assurance of human presence;" demonstration of conscience and competence assessed by "professional knowledge and skills;" attendance to the person's dignity assessed by "Respectful difference to others;" readiness to provide constant assistance to patient, assessed by "Positive connectedness" As total mean scores increased, nurses' caring behaviors increased (Wu, et al., 2006).

**4. Patient Satisfaction Scale (PSS):** to evaluate patients' satisfaction with nursing care. This scale was based on the patients' satisfaction as an evaluation criterion of nursing care that described as the corresponding match between patients' expectation of ideal nursing care and the perception of care actually received. The scale had 25 items, each item evaluated on a five point Likert type scale (5= strongly agree, 4=agree, 3=uncertain, 2=disagree, 1= strongly disagree). The scale consisted 25 questions in total. Factor A was further split into 3 subscales (technical professional - 7 items; interpersonal education - 7 items; interpersonal trusting - 11 items). As total mean scores increased, patient's satisfaction increased (Charalambous and Adamakidou, 2012). The translating the CBI and PSS to its own Arabic language, using forward and back translation procedures by two independent translators.

**Validity of the study tools:**

Tools of data collection were tested for its content validity with a content validity index. Comprehensiveness and applicability by three expertises from Faculty of Nursing; one professor of medical- surgical departments from Faculty of Nursing- Port-Said University and two professors from Faculty of Nursing- Mansoura University to determine whether the included items are comprehensive, understandable, applicable, clear and suitable to achieve the aim of the study. Necessary modifications were done.

### Reliability of study tools:

Internal consistency reliability using Cronbach's  $\alpha$  was found to be 0.94 for CBI-24 and 0.96 for PSS

### Pilot study:

Tools of data collection were tested on ten percent of subjects (8 nurses and 8 patient) and they were excluded from the entire sample of research study. The purpose of the pilot study is to test the applicability of study tools and to estimate the time needed to fill it. The results of the data obtained from the pilot study helped the researcher to modify the tools: items were corrected or added as needed. Accordingly, modifications were done and the final form was developed.

### Data Collection:

The researchers contacted the nurses in charge of administration in the inpatient departments to identify patients who were being studied. The researchers collected the data from the patients through interview using videoconferencing technology (Zoom app). The data collected from the nurses through structured interview. The members of the study were informed about the aim of the study before they were managed the inventory. written consent and oral assent were acquired and the questionnaires were filled by the participants under the investigator's supervision. PSS took about 15-20 minutes to be filled. CBI-24 took about 15-20 min to be filled by nurses.

### Data analysis:

The analysis was conducted using the Statistical Package for the Social Sciences (SPSS) Version 20 for Windows. Categorical measurements were indicated by numbers and percentages and numerical measurements were displayed as numbers and percentages, normally distributed variables as mean and standard deviation (SD). Descriptive statistics calculated for the personal characteristics for each group and the CBI total and its subscales. Pearson correlation coefficients used to examine if there was relation between the nurses' reported caring behaviors and patient's satisfaction.

### Ethical Considerations:

After obtaining the permission from Ethics Committee with code 83 /7-2020 as well as permits and a letter of introduction. Permission for data collection was obtained from the hospital administrative personnel by the submission of a formal letter. Online oral consent was obtained from the nurses and patients included in the study. The researcher clarified the aim of the study as well as objectives of the study. The participants had the right to withdraw from the study at any time; confidentiality and anonymity were assured and protection of both nurses and patients from hazards.

### Result:

**Table (1):** Showed that studied patients' mean age was  $44.65 \pm 17.19$  & ranged from 18-73 years old. More than half (56.3 %) of the studied patients were females and 81.3 were married. Nearly two third (66.3) of them had university education and 53.8 had professional job. Previous hospital visits mean was  $3.16 \pm 3.63$  with 88.8% of the studied patients waited less than one hour for medical care.

**Table (2):** Revealed that patients' total satisfaction mean score regarding technical -professional domain got the highest mean score  $4.37 \pm .37$  followed by interpersonal trusting mean score  $4.34 \pm .42$ , while the lowest satisfaction mean score  $4.28 \pm .41$  was reported for interpersonal education.

**Table (3):** demonstrated that studied nurses' mean age was  $24.28 \pm 7.48$  years old & ranged from 20-40 years. Working years of experience ranged from 1 to 18 year & 71.1 % of them were married & 73.8 % had resided in urban areas. Nearly, 70% of studied nurses had technical degree in nursing and working hours ranged from 12-24 hrs.

**Table (4):** Clarified total mean scores of the nurses' caring behaviors & their domains. The highest mean score ( $5.63 \pm .60$ ) was reported to professional knowledge and skills domain, followed by assurance of human presence and respectful differences to others with mean scores  $5.61 \pm .61$  &  $5.49 \pm .48$  respectively, whereas the positive connectedness domain was reported as the lowest mean score  $5.16 \pm .77$ .

**Table (5):** Showed that there was highly statistically significant correlation between total satisfaction mean score of pts with COVID-19 and nurses' caring behaviors mean score with  $r = .768$  and P value  $< .001^*$ .

Table (1): Frequency percentage distribution of demographic characteristic of patients with COVID-19 (n=80).

Demographic characteristics	N	%
<b>Age</b>		
Range		15 – 73
Mean ± SD.		44.65 ± 17.19
<b>Gender</b>		
Male	45	56.3
Female	35	43.8
<b>Marital status</b>		
Single	12	15
Marriage	65	81.3
Divorced	0	0
Widow	3	3.8
<b>Education</b>		
Illiterate	7	8.8
Read and write	4	5.0
Basic school	8	10.0
Secondary school	8	10.0
University	53	66.3
<b>Working</b>		
Professional job	43	53.8
Manual work	5	6.3
Retired	7	8.8
House wife	11	13.8
Other jobs	14	17.5
<b>Previous Hospital Visits</b>		
None	20	25
One time	14	17.5
More than one	46	57.5
Mean ± SD.		3.16±3.63
<b>Time to wait for medical care</b>		
≤1 hour	71	88.8
>1hour	9	11.3
Mean ± SD.(Minutes)		33.3±40.9

Table (2): Satisfaction mean scores of the patients with COVID-19 and their domain (n=80).

Items subscale	Patient Satisfaction	Mean ±SD	Min-max
Technical- professionally	-The nurse is skillful in assisting the doctor with procedures	4.52±.503	4-5
	-The nurse always knows what he/she is talking about.	4.25±.738	3-5
	-The nurse is precise in doing his/her work.	4.29±.860	2-5
	-The nurse makes a point to show the pts how to carry out the doctor's orders.	4.26±.545	3-5
	- Nurse is too fast to do things for pt.	4.26±.990	1-5
	-The nurse is often too organized to appear calm	4.44±.744	1-5
	-The nurse gives good advice.	4.59±.495	4-5
	<b>Total Mean Score</b>		4.37±.37
Interpersonal- educational	-The nurse gives directions at just the right speed.	4.41±.610	3-5
	-The nurse asks a lot of questions, but once he/she finds the answers, he/she doesn't seem to do anything.	4.23±.711	2-5
	- the nurse would tell the pts about the results of my tests more than he/ she does	3.93±.569	2-5
	-The nurse explains things in simple language.	4.42±.854	2-5
	-It is always easy to understand what the nurse is talking about.	4.36±.680	3-5
	-Too often the nurse thinks the pts can't understand the medical explanation of their illness so he/she doesn't bother to explain.	4.26±.759	2-5
-The nurse always gives complete enough explanations of why tests are ordered.	4.37±.582	3-5	
	<b>Total Mean Score</b>		4.28±.41
Interpersonal- trusting	-The nurse is understanding in listening to a patient's problems.	4.46±.502	4-5
	-The nurse should be more attentive than he/ she is.	4.42±.632	2-5
	-The nurse is just patient enough.	3.94±1.236	1-5
	-When I need to talk to someone, I can go to the nurse with my problems.	4.20±.770	2-5
	-The nurse spend adequate time talking to me.	4.41±.688	1-5
	-The nurse is pleasant to be around.	4.49±.595	3-5
	-Feeling calm if the nurse talking down to their pts.	4.35±.731	2-5
	-The nurse is a person who can understand how pts feel.	4.36±.680	3-5
	-The nurse should be more friendly than he/she is.	4.46±.795	1-5
	-the pts feels free to ask the nurse questions.	4.31±.667	3-5
-Just talking to the nurse makes the pt feel better.	4.42±.497	4-5	
	<b>Total Mean Score</b>		4.34±.42

**Table (3):** Frequency percentage distribution of demographic characteristics of nurses (n=80).

Demographic characteristics	No.	%
<b>Age</b>		
Range.	20.0– 40.0	
Mean ± SD.	24.28 ± 7.48	
<b>Experience</b>		
Range.	1– 18	
Mean ± SD.	4.79 ± 3.12	
<b>Marital status</b>		
Single	57	71.1
Married	23	28.9
<b>Residence</b>		
Urban	59	73.8
Rural	21	26.2
<b>Nurse education</b>		
Diploma	6	7.5
Technical	57	71.3
Bachelor	17	21.2
<b>Work hours</b>		
Min. – Max.	12-24	
Mean ± SD.	13.50±3.99	

**Table (4):** Mean scores of nurses' caring behaviors and their domains (n=80).

Items subscale	CBI-24	Mean±SD	Min- Max.
Assurance of the human presence	Returning to the patient voluntarily.	5.41±1.209	1-6
	Talking with the patient.	5.64±.733	2-6
	Encouraging the patient to call if there are problems.	5.58±.868	1-6
	Responding quickly to the patient's call.	5.49±.914	1-6
	Helping to reduce the patient's pain.	5.65±.695	2-6
	Showing concern for the patient.	5.70±.770	1-6
	Giving the patient's treatments and medications on time.	5.80±.582	2-6
	Relieving the patient's symptoms.	5.66±.779	1-6
	<b>Total Mean Score</b>	5.61±.61	
Professional knowledge and skills	Knowing how to give shots, IVs, etc.	5.52±.981	1-6
	Being confident with the patient.	5.77±.693	1-6
	Demonstrating professional knowledge and skill.	5.53±.811	1-6
	Managing equipment skillfully.	5.40±.894	1-6
	Treating patient information confidentially.	5.88±.513	2-6
	<b>Total Mean Score</b>	5.63±.62	
Respectful differences to others	Attentively listening to the patient.	5.43±.823	3-6
	Treating the patient as an individual.	5.70±.604	4-6
	Supporting the patient.	5.49±.827	1-6
	Being empathetic or identifying with the patient.	5.24±.875	2-6
	Allowing the patient to express feelings about his or her disease and treatment.	5.75±.703	1-6
	Meeting the patient's stated and unstated needs.	5.39±.934	2-6
	<b>Total Mean Score</b>	5.49±.48	
Positive connectedness	Giving instructions or teaching the patient.	5.35±1.104	1-6
	Spending time with the patient.	4.80±1.306	2-6
	Helping the patient grow.	5.64±.783	1-6
	Being patient or tireless with the patient	5.51±.914	1-6
	Including the patient in planning his or her care.	4.50±1.476	1-6
	<b>Total Mean Score</b>	5.16±.77	

**Table (5):** Correlation between total satisfaction mean score of pts with COVID-19 and nurses' caring behaviors mean score.

Factor	n	Mean ± SD	Pearson correlation (r)	P value
Nurses' caring behaviors	80	5.48±.56	0.768	<.001*
Patients satisfaction	80	4.33±.37		

P-value: the correlation between the means considered statistically significant if the p-value ≤ 0.05.

## Discussion

The COVID-19 pandemic is critical challenges with quality of nursing care and patient satisfaction, Moreover, nurses are in the first frontline of caring of patients with COVID-19. Patient satisfaction with the care provided by nurses is a respected core for standardized measurement of nursing caring behavior and patient outcomes as stated by **Al Thobaity & Alshammari , (2020)**, so this shed the light to study the relationship between nurses' caring behaviors satisfaction of patient with COVID-19 patient satisfaction in the selected hospital.

The current study revealed that the highest satisfaction mean score was related to technical - professional care; this indicate that patient with COVID-19 considered that high level of nurses' competency in physical and technical care associated with high level of professional knowledge & skills. Also, the patients perceived that nursing care implemented for achieving their clinical needs and providing safe patient care. This study result was in identical line with **O'Reilly, et al., (2021)**, **Kannan et al., (2020)**, **Schuster-Bruce et al., (2020)** and **Traiki et al., (2020)** who examined the impact of COVID-19 pandemic on patients' satisfaction and documented that satisfaction level was high for technical- professional domain, most of patients were satisfied with nursing skills and the services.

Furthermore, the majority of patients were convinced with nurses' practice. These findings could be explained in the light of the fact that nursing care is the main supportive provision to the admitted patients, and nursing staff comprise the major percentage of the health sector mainly for the in-patient care service. Contrastely, a study done by **Deriba et al., (2020)** that aimed to evaluate Patient Satisfaction and associated factors during COVID-19 Pandemic in North Shoe health care facilities which found that patient satisfaction was very low in all domain especially in technical domain. Also, the studies done by **Khezri et al., (2012)** and **Nayeri & Aghajani, (2010)** which showed that the majority of patients were dissatisfied with the physical care provided by nurses. This variation might be due to the study setting, time difference, differences in socioeconomic status and the difference in patient management strategy across the health facilities.

On the other hand, the present study demonstrated that the lowest satisfaction mean score was related to patient education. This result was consistent with a study done by **Deriba et al., (2020)** who reported low level of satisfaction regarding Covid-19 patient education. on the same line, **Karaca & Durna (2019)** and **Eyasu et al., (2016)** pointed that patients were less satisfied with the professional information provided by the nurses about their disease, health status, investigations and their condition prognosis. Moreover, **Yeh, et al., (2018)** illuminated that insufficient patient education was negatively reflected on patient satisfaction.

The lowest satisfaction mean score regarding patient education might be due to reduce face to face educational interaction as a result of nurses' experience of worries from infection with COVID-19 and decrease the use of teleteaching strategies for patient care. This study finding reflects the importance of application new teaching strategies and educational plans to meet the urgent educational needs of the studied patients such as telenursing in form of teleteaching ,video conference , telephone and email for improving their satisfaction.

On the other hand, **Gillman-Wells, et al., (2020)** and **Layfield, et al., (2020)** pointed high level of satisfaction related to patient education due to using of telehealth strategies on online learning for patients. Moreover, **Purabdollah & Ghasempour (2020)** stated that Patients with COVID-19 need regular follow-up during and after treatment where, distance education is one of the appropriate tools in this regard. The needs of these patients include

educational needs regarding adherence to drug treatment, medications side effects, diet, mental counseling, observance of standards of care, health care and follow-up of disease outcomes met through tele-nursing.

The current study illustrated that the highest nursing caring behaviors mean score was related to professional knowledge and skills while the lowest mean score was related to positive connectedness. This result was in agreement with previous studies done by **Aupia, et al., (2018)** and **Fenzia, et al., (2020)** who showed that nurses' knowledge and skills domain got the highest score. Contrastely, positive connectedness was rated by nurses as the lowest domain in nursing caring behavior. This result might be explained in the light of restricted contact time between nurses and patients. Also, nurses expect involving patient in his / her care doesn't affect plan of care or treatment plan and lack of communication strategies as tele-communication.

In the same context, **Beckett, et al., (2007)** stated that teaching and learning in nursing education often focus on mechanical skills and technical interventions. Educational curriculum frequently emphasized scientific, measurable technical knowledge and ignoring interpersonal aspects of positive connectedness nursing care. Additionally, **Allen, et al., (2013)** reported that nurses should undergo seminars and trainings regarding care provision. whereas nursing education curriculum should emphasize the value of connectedness aspect in nursing care in addition to the knowledge and skills aspects. These findings of current study reflect the critical importance of using telecommunication for care of patient with COVID-19 and adding nursing care behaviors in nursing curriculum focusing on positive connectedness

The current study revealed that there was highly significant positive correlation between total mean scores of nurses' caring behaviors and COVID-19 patient satisfaction. This finding could interpret that positive correlation suggest importance of strategies for improving nurses caring behaviors through education, practice, communication and training that positively increase patient satisfaction. This result was in identical line consistent with previous studies done by **Rajabpour & Rayyani, (2019)**, **Calong & Soriano, (2018)**, **Azizi-Fini, et al., (2012)** & **Palese, et al., (2011)** and who revealed that there was positive correlation between nursing caring behaviors, quality of care and patient satisfaction. this result was in disagreement with study done by **Soliman, et al., (2015)** who found negative correlation between nurses' caring behaviors and patients' satisfaction. Nurses can utilize these findings to recognize the strengths and weaknesses of nursing services and adopt necessary measures for enhancing nursing care quality to increase patients' satisfaction.

## Conclusion:

Regarding the studied patients' satisfaction, the highest mean score was related to technical-professional domain while, the lowest mean score was related to interpersonal- educational domain. Concerning nurses' caring behaviors, the highest mean score was related to professional knowledge and skills domain while, the lowest mean score was related to positive connectedness domain. In addition, there was highly statistically significant correlation between nurses' caring behavior and patients' satisfaction.

## Recommendations

- Monitor nurses' caring behaviors and patients' satisfaction regularly.
- Provide in service training for nurses to improve patient satisfaction especially regarding interpersonal- educational domain in form of telenursing.

- Provide education program for nurses to improve nursing caring behaviors especially connectedness domain in form of telecommunications.
- Add nursing caring behaviors to nursing curriculum focusing on connectedness domain.
- Replicate the study on large sample size and different setting.
- Replicate the study for other respiratory disorders.
- Add of telenursing technologies in caring for COVID-19 patient for improving patient education.
- Implement telecommunication technology for improving patient satisfaction through involving the COVID-19 patient in the care process to improve connectedness domain.

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