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ORIGINAL RESEARCH

The Psychological Nursing Interventions Based on Pygmalion Effect Could Alleviate Negative Emotions of Patients with Suspected COVID-19 Patients: a Retrospective Analysis

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Purpose: This study aims to explore the psychological status of suspected COVID-19 patients during quarantine and put forward a new yet effective psychological nursing strategy for intervention.

Patients and Methods: We performed a retrospective study with suspected COVID-19 patients who were hospitalized to the two hospitals of Hunan province, China and accepted the intervention of psychological nursing from 01/2020 to 03/2020. The control group received routine psychological nursing care and the observation group received the new psychological nursing intervention according to Pygmalion effect.

Results: A total of 89 objects were included in the analysis. Results of the questionnaire before intervention showed that the majority of isolated suspected COVID-19 patients showed negative emotions, with the incidence of depression (51.69%), anxiety (14.617%), inverted provocation (22.47%), extraverted provocation (25.84%). And the extraverted provocation scores of female patients was significantly higher than that of male counterparts ($P < 0.05$). At discharge, compared with the control group, the scores of depression, anxiety, introversion and extraversion of patients in the observation group were significantly lower after nursing intervention based on Pygmalion effect. The satisfaction rate of psychological care based on Pygmalion effect was 86.66%.

Conclusion: Suspected COVID-19 patients tend to show the symptoms of depression, anxiety and irritation during quarantine. The psychological nursing based on Pygmalion effect is helpful to alleviate their negative emotions.

Keywords: COVID-19, suspected patients, Pygmalion effect, psychological care, depression, anxiety

Introduction

Severe acute respiratory syndrome coronavirus 2 (sars-cov-2) had rapidly spread all over the world and developed into a pandemic.[1] The World Health Organization (WHO) announced the new name of the disease: coronavirus disease (COVID-19).[2] As of April 30, 2020, more than 3 million COVID-19 cases have been confirmed in more than 100 countries and regions.[3] So far, the rapid spread of sars-cov-2 has caused considerable harm to public health and economy.[4]

The infectious disease epidemic situations caused by COVID-19 is a sudden public crisis. It not only poses a serious threat to people's physical health, but also

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brings strong psychological impact to the masses, resulting in corresponding psychological and behavioral problems.[5–7] COVID-19 cases are prone to negative emotions, such as anxiety, depression, fear, irritability, especially during the 14 days of isolation observation.[8,9] This brings a burden to the society and leads to the decline in their life quality and treatment compliance. Therefore, the need for psychological intervention is urgent. However, there is few researches in this field.

The Pygmalion effect is a psychological effect summarized by American psychologist Rosenthal, who believes that positive suggestions, encouragement, trust and expectation can enhance people's self-worth, obtain positive motivation and strive to reach the expected value.[10,11] Initially, it was mainly used in education and teaching. In recent years, it has been gradually used in clinical intervention to alleviate patients' negative emotions and improve treatment compliance.[12] This study developed a new nursing program based on Pygmalion effect and explored its affect on psychological intervention of suspected COVID-19 patients in isolation period. It will offer a new perspective for the psychological nursing of COVID-19 patients in isolation period.

Materials and Methods

Study Design and Objects

This study is a multi-center, retrospective study conducted at the Hunan Provincial People's Hospital (the First Affiliated Hospital of Hunan Normal University) and The First Affiliated Hospital of University of South China. And this work was approved by the Ethics Committee of Hunan Provincial People's Hospital/The First Affiliated Hospital of Hunan Normal University (2020 Scientific Research Ethics Review NO: 04), and conducted in accordance with the ethical guidelines of Declaration of Helsinki.

According to the following criteria, two investigators independently collected the data of patients who were suspected COVID-19 during 01/2020-03/2020 from the medical records management system, including age, sex, occupation, educational level, family location, and results of questionnaire survey. Then the data was crosschecked, and if there were any differences, consult a third investigator.[13] Inclusion criteria: ① Meet the diagnostic criteria of suspected cases in the "Diagnosis and Treatment Plan for COVID-19" issued;[14] ②Education above elementary school, with good communication skills; ③ Informed consent to participation in this study. Exclusion criteria: ① Confirmed cases of COVID-19; ②History of mental illness; ③Cancer and other serious diseases. (The minimum sample size was calculated as 88, considering the type I error rate = 0.05 and power = 90% (the G*Power tool was used for calculations)).[15,16]

Suspected COVID-19 patients began to receive psychological intervention in 2 individual isolation wards after admission, once a day, 20–30 minutes each time. The control group received regular psychological care, including empathy, comfort, question and answer, and diversion. The observation group was added psychological nursing care based on the Pygmalion effect on the basis of the intervention of control group (detail as follows). Questionnaires were used before and after the intervention.

The Psychological Nursing Interventions Based on Pygmalion Effect

Establishment of Nursing Group

The nursing group was composed of 6 nurses who had been trained in the Pygmalion effect (2h/day, 2 weeks) and had the qualifications of psychological counselors. A deputy director of the Nursing Department, a - national second-level psychological counselor, was mainly responsible for guiding plan design and activity coordination in this event; 1 head nurse in the isolation ward and 3 primary nurses are mainly responsible for the implementation of the activity. Taking three shifts a day, 8 hours a shift working mode.

Creating a Good Atmosphere

The members of the team communicated with the patient to understand the patient's psychological needs, the source of negative emotions, and the specific factors that affected emotions. In the ward, hung up the reminder to wear a mask, 7 correct steps to wash hands, the 48-character code for the new coronavirus, the publicity pictures for the prevention and control of the COVID-19, and encouragement slogans such as the fight against the "epidemic"; played targeted mindfulness decompression audio, and used modern communication methods to timely input the care, comfort, encouragement and other emotional support from relatives to create a positive humanistic environment in the isolation ward.

Delivering Expectations and Internalizing Expectations

Nursing group members integrated the Pygmalion effect concept into emotional management, focusing on

strengthening isolated patients' cognition of the COVID-19 in order to change their negative views, and regulate their own emotions. ①Longing and expecting. Head nurses and primary nurses told patients about the epidemiological characteristics, clinical manifestations, latest epidemic developments, disease prognosis and treatment plans of *the COVID-19*; and the purpose of isolation; guided patients to protect themselves, such as wearing masks and correcting the way they wash their hands; informed patients of the successful cases of healing to help them build confidence and courage to fight the disease, and enhance the patient's vision and expectations for curing the disease. ②Behaviours and feelings. The responsible nurse approached the patient, listened carefully to the patient's complaint, created an atmosphere for the patient to vent bad emotions, and encouraged the patient through eyes and body language, such as tapping the patient's shoulders and back, to eliminate the patient's fear and helplessness. At the same time, the patient was guided to carry on meditating and relaxation. First, the patient was asked to close his eyes and feel the inner feelings, and then was guided by the nurse to imagine the scenes of his future life with a relaxed, confident and firm belief, and finally was invited to share their inner emotions. During this process, the patient's feelings and emotional changes were recorded, and they were given affirmation, praise and encouragement during the sharing process. ③Acceptance and internalization: Under the guidance of the group members, the patients were encouraged to use self-motivation methods such as positive "self-talk", saying to themselves "I did a good job!" to affirm their own efforts and achievements, such as actively cooperating with the treatment, ensuring adequate sleep; enjoying solitude by reading a good book, listening to a piece of beautiful music, watching a good inspirational drama etc. Psychological suggestion: positive "self-talk" as well as other methods to control negative emotions could help patients gradually accept isolation, and establish expectations of overcoming the disease.[17]

Information Feedback

Patients still need to do home isolation after discharge. The following measures are targeted to evaluate the behavior of discharged patients in a timely and accurate manner for the purpose of deciding whether to maintain or adjust expectations: ① Strengthen the health guidance of discharged patients: instructing patients to continue self-health monitoring after discharge; supervising patients to

Table 1 Population Characteristics

Group the Number of Cases		Gender		Age	Educational Level		Family Location		Occupation	
		Male (37.1%)	Female (62.9%)		College degree (49.4%)	Above (50.6%)	Rural (48.3%)	Town (51.7%)	Medical related (30.3%)	No medical Related (69.7%)
Control group observation group	89 (100%)									
	44	15	29	40.09±13.8938.18 ±10.58	24	20	21	23	14	30
	45	18	27		20	25	22	23	13	32
t/χ^2		0.33		0.73	0.91		0.01		0.09	
P		0.564		0.466	0.341		0.913		0.764	

actively and promptly report personal information and health status through various means, and guiding patients to do self-management after discharge, such as wearing masks, doing hand hygiene, and reducing close contact with family members and outings, etc. ② Make full use of communication technology to do follow-up visits. The nursing group members are able to timely discover and deal with possible physical and psychological problems of patients via WeChat, telephone return visits, family doctors signing App and other means to interact with discharged patients' information. ③ Develop five measures for home isolation, including making a plan, arranging the things to do every day, especially ensuring regular diet and adequate sleep; learning a new skill and enjoying the process; talking to family members and friends through video, phone calls, etc. and seeking professional support through various media when they are not available and self-adjustment is difficult; taking a daily workout, do your favorite indoor sports or use fitness apps to exercise remotely with friends; considering it a specific experience that you obtain valuable life experience from it, and thinking about what kind of life attitude should be possessed to face work, life and study in the future.

Questionnaire Survey

Irritating, Depression and Anxiety Status

The irritation, depression, and anxiety scales (Irritability, Depression and Anxiety Scale, IDA)[18] were used to evaluate the emotional status of two groups of patients within 12 hours after admission and 12 hours before discharge. IDA included depression, anxiety, introverted agitation, and extroverted agitation, a total of 18 items, with a scale of 0 to 3. The higher the score, the greater the degree of depression, anxiety, and agitation. Depression factor <4 is considered normal, 4–6 points are marginal, >6 is abnormal; anxiety factor <6 is normal, 6–8 is marginal, >8 is abnormal; introverted stimulus factor <4 is normal, 4 to 6 points edge, >6 points to abnormal; extroversion stimulus factor <5 points to normal, 5 to 7 points edge, >7 points to abnormal. The scale has good reliability and validity.[19]

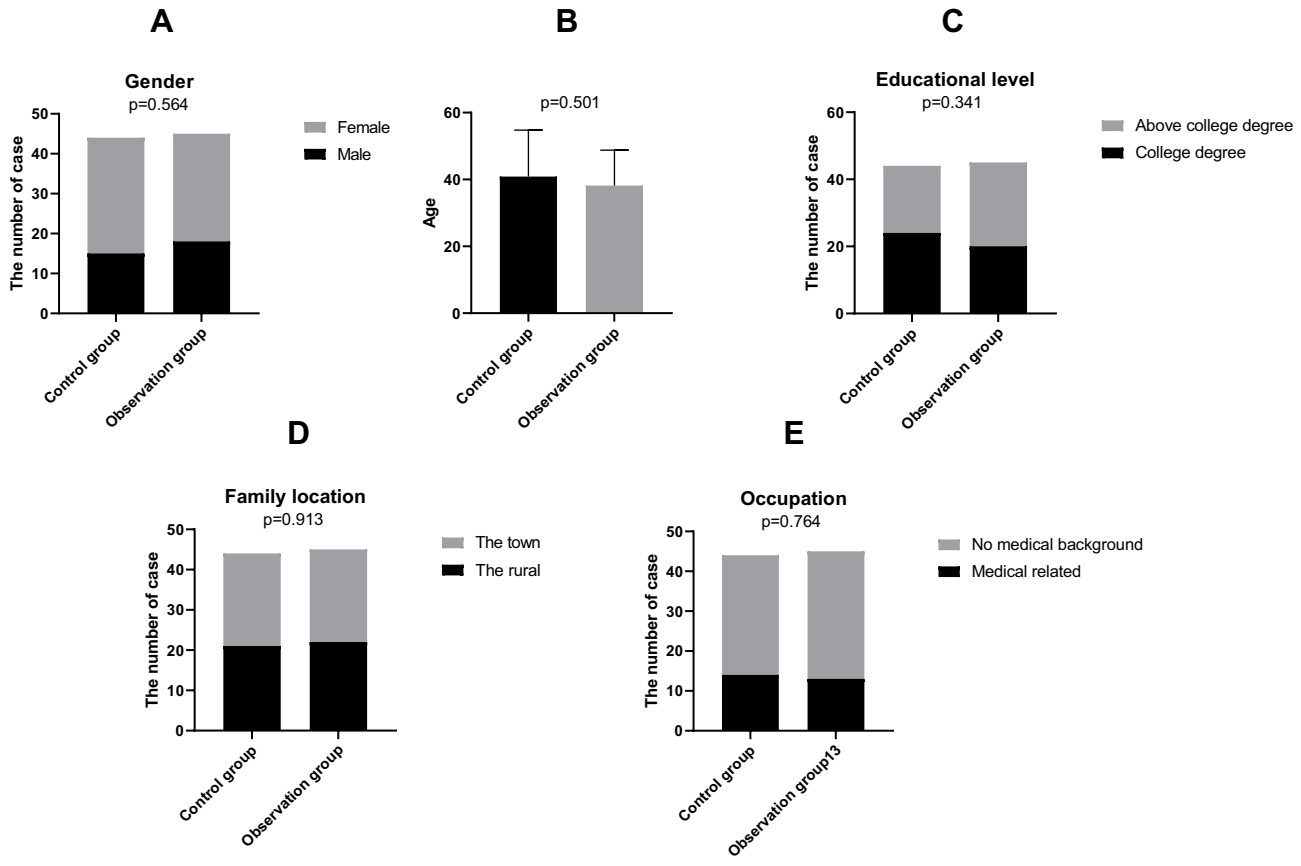

Figure 1 Population characteristics of control group and the observation group suspected COVID-19 patients. (**A**) Gender; (**B**) age; (**C**) educational level; (**D**) family location; (**E**) occupation.

Table 2 The Incidence Rate of Negative Emotions in Suspected COVID-19 Patients During Isolation

Item	The Number of Cases	Rate
Totality	89	100%
Depression	46	51.69%
Anxiety	13	14.61%
Inverted provocation	20	22.47%
Extraverted provocation	23	25.84%

Evaluation of Psychological Nursing Activities

The self-made psychological nursing activity evaluation questionnaire was used to evaluate the psychological nursing activity based on the Pygmalion effect, which was filled out by the observation group at the time of discharge. The questionnaire included 10 items, with 1–10 points from extremely non-conforming to extremely conforming. The higher the score, the higher the satisfaction, and the 9 points was set as cut-off.[20]

Statistical Analysis

SPSS19.0 (IBM, Chicago, IL, USA) software[21] was utilized for statistical description. The $\chi 2$ test was used for comparisons among the categorical variables and independent *t*-test to compare the continuous variables, and the test level is $\alpha = 0.05$, $P<0.05$ was considered statistically significant.

Results

Population Characteristics

A total of 89 objects were included in the analysis (control group 44 and observation group 45). Among of the 89 participants, the majority were women (62.9%); most were middle-aged; most had a bachelor's degree (50.6%); most occupations were not related to medicine (69.7%) (Table 1). However, there were no significant differences between the observation group and the control group in gender, age, education level, residence and occupation (Figure 1).

Emotions of Suspected COVID-19 Patients Tend to Be Negative and Psychological Nursing Based on Pygmalion Effect Can Effectively Alleviate Them

A total of 89 valid questionnaires were collected (response rate of 100%). Scale test results for all participants indicated that most of the suspected COVID-19 patients in isolation were depression (51.69%), anxiety (14.617%), inverted provocation (22.47%) and extraverted provocation (25.84%) (Table 2). And the extraverted provocation score of female patients was significantly higher than that of male counterparts ($P < 0.05$) (Table 3, Figure 2). This phenomenon suggests that psychological problems are common among suspected COVID-19 patients in isolation. In addition, there were no differences in depression, anxiety, introverted and extraverted irritations between suspected COVID-19 patients in the pre-intervention treatment group and the control group. However, after the psychological nursing based on Pygmalion effect, the psychological status of depression, anxiety, inward and outward irritations of suspected COVID-19 patients in the observation group were significantly relieved compared with the control group (Table 4, Figure 3).

Patients in the Observation Group Were Satisfied with the Psychological Nursing Activities Based on Pygmalion Effect

Patients in the observation group were given 10 items to evaluate psychological nursing activities based on Rosenthal effect, and the average score of each item was more than 8 points, indicating that psychological nursing activities based on Pygmalion effect had a positive impact on patients. The patient satisfaction score was 9.20±0.72, and the satisfaction rate was 91.01%, suggesting that psychological nursing activities based on Rosenthal effect were highly accepted among suspected COVID-19 patients in isolation period (Table 5).

Table 3 The Comparison of the Scores of Negative Emotions Between Female and Male During Isolation

Gender	Depression	Anxiety	Inverted Provocation	Extraverted Provocation
Female	7.48±2.77	6.89±1.87	6.20±1.51	7.38±2.65
Male	6.94±2.40	6.55±1.91	5.67±1.79	6.21±1.93
t/*P*	0.94/0.351	0.84/0.402	1.49/0.140	2.20/0.030

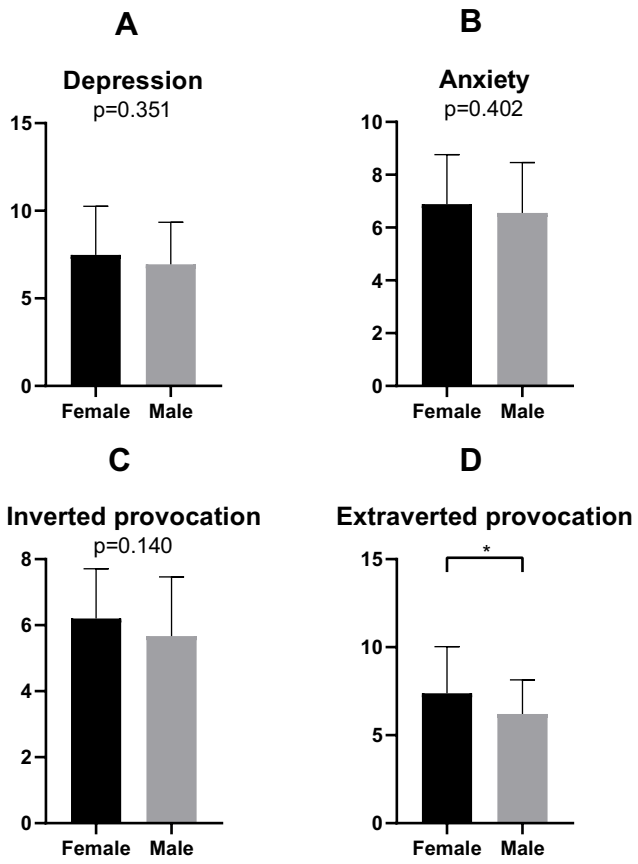

Figure 2 The comparison of the scores of negative emotions between female and male during isolation. (**A**) Depression; (**B**) Anxiety; (**C**) Inverted provocation; (**D**) Extraverted provocation. *P <0.05.

Discussion

The public often have different degrees of psychological stress in the face of sudden infectious public health incidents, especially in the high-incidence period of infectious diseases, they are prone to various negative emotions.[22,23] In the research of D'Emeh W. et al, COVID-19 scale and self-testing anxiety scale were collected from 240 nurses. They found that they had experienced tremendous pressure and anxiety related to work under the background of COVID-19 pandemic.[24] Sandín B. et al found that 144 adolescents were investigated (aged 12–18, 55 boys (38.2%) and 89 girls (61.8%)), most of whom showed a higher level of anxiety and depression symptoms during the COVID-19 pandemic.[25] It is even possible to change people's lifestyles under such intense psychological pressure, for example, women are more likely to eat to cope with stress.[26,27] Therefore, nursing intervention is of great importance to negative emotions caused by COVID-19. Pygmalion effect has been more and more widely used in clinical nursing in recent years.[28,29] Therefore, this study

Table 4 The Comparison of the Scores of Negative Emotions Between the Two Groups Before and After Intervention

Group	Time	The Number of Cases	Depression	Anxiety	Inverted Provocation	Extraverted Provocation
Control group	Before the intervention	44	7.45±2.77	7.07±2.21	6.18±1.47	7.14±2.64
	After the intervention	44	6.70±1.67	6.32±1.68	4.91±2.00	6.75±1.51
Observation group	Before the intervention	45	7.11±2.53	6.47±1.44	5.82±1.78	6.76±2.29
	After the intervention	45	5.93±1.60	5.38±2.53	3.91±2.32	5.73±2.23
t/P (before intervention in both groups)			0.60/0.542	1.52/0.131	1.04/0.301	0.73/0.469
t/P (after intervention in both groups)			2.22/0.029	2.06/0.042	2.17/0.033	2.51/0.014

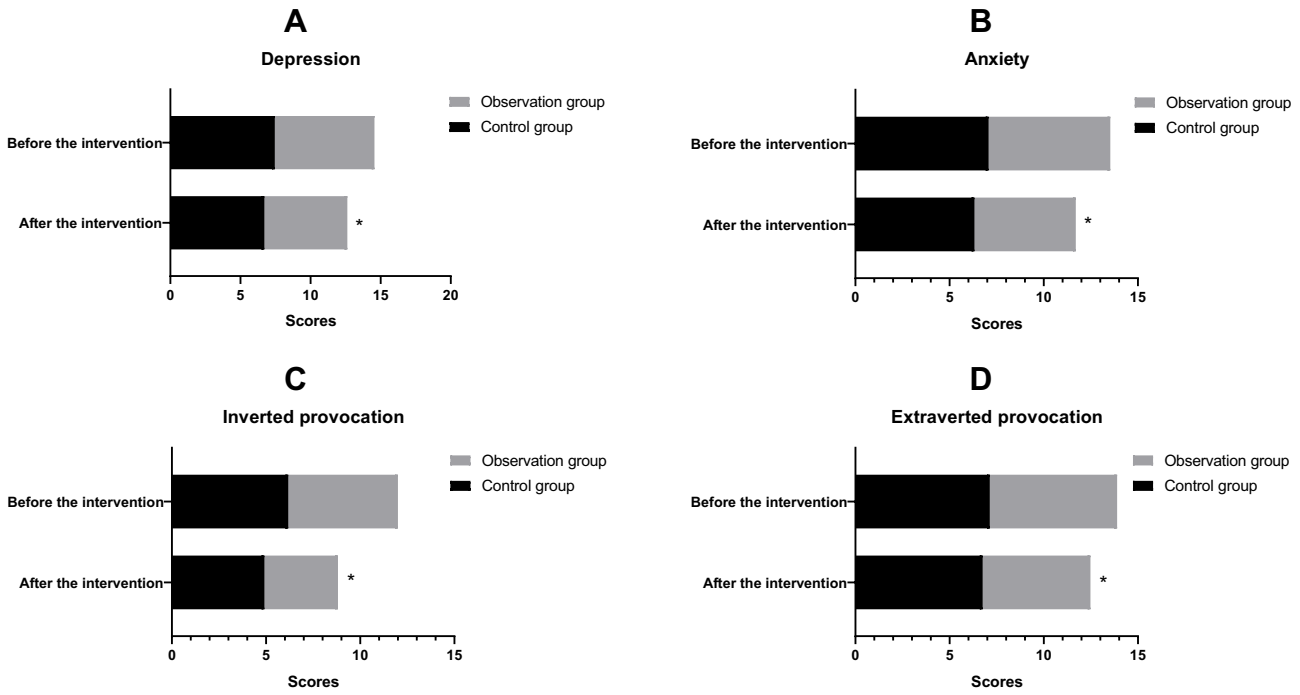

Figure 3 The comparison of the scores of negative emotions between the two groups before and after intervention. (**A**) Depression; (**B**) anxiety; (**C**) inverted provocation; (**D**) extraverted provocation. *P <0.05.

explored the effect of new intervention on patients with new crown pneumonia from the perspective of psychological nursing based on Pygmalion effect.

The results of this study showed that the depression, anxiety, introversion and extroversion stimulus scores of the two groups of suspected infected patients were all in an "abnormal" state when they were admitted to the hospital, which indicate that the COVID-19 patients in isolation period generally have negative emotions. It may be due to: ① subjective perception. COVID-19 is highly contagious and there is no specific treatment, which has increased people's tension.[15] Meanwhile, the speed of information dissemination on modern social networks is fast, and many false information can easily cause panic among the people.[30] In addition, there was the fear from one's heart, the fear of infecting his/her family members and/or afraid of losing his/her job. ② The objective environment. Being treated in isolation in a single room and in a closed space for a long time, patients are more likely to produce negative emotions due to lack of communication

Table 5 The Evaluation Score of Psychological Nursing Activity Based on Pygmalion Effect

Entry	Score[#]
Learned to regulate my bad emotions	8.02±1.00
Learned about COVID-19	8.13±0.93
Learned how to better deal with illness	8.20±0.81
I have new expectations for my future life	8.16±0.84
Taking part in this activity makes me more and more confident	8.04±1.33
Trust and honesty can be achieved in activities	8.13±1.34
Being willing to share my inner thoughts in activities	8.04±1.03
Be willing to share your opinions with others	8.02±0.98
I like the way of this activity	9.02±0.77
Satisfied with this activity	9.20±0.72
Satisfaction rate	91.01%

Note: [#]The total score is 10.

and worries about the disease.[31] Furthermore, by gender grouping, we found that the extraverted provocation score of female patients was significantly higher than that of male ones, suggesting that women might be more prone to negative emotions during the COVID-19 epidemic. This is consistent with previous research, which women were more likely to suffer from psychological stress during and after the recent pandemic.[32] However, after given Pygmalion effect psychological care based on the above, the observation group had significantly lower scores of depression, anxiety, introversion and extroversion than the control group, indicating that the Pygmalion effect Psychological care can effectively alleviate the negative emotions of suspected COVID-19 patients. Our study brought a new strategy for the psychological treatment of COVID-19 patients in isolation period.

Psychological care of patients needed to promote the patient's understanding of the disease and pay attention to the patient's psychological feelings.[33] The result of the evaluation of psychological nursing activities showed that the patients could feel the effects of subjective efforts, transform passive behaviors into active behaviors, strengthen self-affirmation, and enhance patients' self-regulation and self-management capabilities by Pygmalion effect psychological nursing. The follow-up visits were equally important in the psychological care when the patients were at post-discharge.[34] Psychological interventions conducted through modern information methods could continuously track the emotional changes of the patients, help the patients adjust their mental health in time, and play a dynamic and continuous role in alleviating negative emotions. In addition, the evaluation of observation group's psychological care activities based on the Pygmalion effect was above 8 points, and the overall satisfaction with the activities was 9.17 points, indicating that the patients recognized and were satisfied with the psychological care activities. Psychological care based on the Pygmalion effect allows patients to realize that hard work is rewarding, which constantly motivates patients to actively share and regulate emotions. Alleviated negative emotions through continuous intervention contributes to patients' gradual acceptance of the isolation, hence their feeling full of hope towards the future.

Implications

In the context of the COVID-19 pandemic, there are suspected COVID-19 patients in isolation every day.[35] During the 14-day isolation period, they experienced a high level of stress due to uncertainty about the nucleic acid results.[36] Given this situation, we aim to provide evidence of the psychological status of suspected COVID-19 patients in isolation. It calls for improvement not only in the physical health but also mental health of patients. Moreover, our study provides an intervention strategy for negative emotions in patients with suspected COVID-19 in isolation.

Limitations

This study still has some limitations. This study is not a prospective research. The number of cases in this study is small, and there may be some bias. In the later stage, a larger sample and long-term study is needed and we will further explore the effect of nursing intervention based on Pygmalion effect on the prognosis of COVID-19.

Conclusion

Suspected COVID-19 patients tend to suffer from depression, anxiety and irritating during quarantine. The psychological nursing based on Pygmalion effect is helpful to alleviate the negative emotions of patients with suspected COVID-19 and promote patients' confidence and courage to face diseases.

Data Sharing Statement

The authors of included studies should be contacted individually regarding requests to share individual patient data.

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Disclosure

The authors have disclosed no potential conflicts of interest, financial or otherwise.

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