

Appendix:**The conventional training and assessment plan of the control group**

| Month | Every Wednesday: 2:00-6:00 pm | Content and class hours |
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| First Month | Session 1 | Lecture (2 h): clinical guidance for the management of COVID-19 patients, infection control guidance, and the key points of nursing care Technical skills (2 h): demonstration and practice on respiratory tract sampling, donning and doffing personal protective equipment |
| | Session 2 | Lecture (2 h): disinfection, quarantine, and nosocomial infection control Technical skills (2 h): review and assess the practical skills learned in the last session |
| | Session 3 | Lecture (2 h): guidelines for the treatment and care of the COVID-19 patients in critically condition (I) Technical skills (2 h): demonstration and practice on CPR, sputum aspiration, oxygen inhalation, simple respirator operation |
| | Session 4 | Lecture (2 h): guidelines for the treatment and care of the COVID-19 patients in critically condition (I) Technical skills (2 h): demonstration and practice on arterial puncture and venipuncture, trachea cannula, defibrillator operation |
| Second Month | Session 1 | Lecture (2 h): psychological nursing of patients Technical skills (2 h): review and assess the practical skills of CPR, sputum aspiration, oxygen inhalation, simple respirator operation |
| | Session 2 | Lecture (2 h): nurses' psychological support, relax training, relieving stress, and releasing negative emotions Technical skills (2 h): review and assess the practical skills of arterial puncture and venipuncture, trachea cannula, defibrillator operation |
| | Session 3 | Lecture (2 h): preparation of common epidemic prevention materials, basic life support and advanced life support (I) Technical skills (2 h): practicing material preparation, high-frequency ventilation support, aerosol inhalation |
| | Session 4 | Experience sharing (4 h): a meeting on experience sharing with the professionals working on the front-line of treating COVID-19 |

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| Third Month | Session 1 | Lecture (2h): basic life support and advanced life support (II) Technical skills(2h): review and assess the practical skills of high-frequency ventilation support, aerosol inhalation |
| | Session 2 | Lecture (2h): test on theories Technical skills(2h): demonstration and assessment of ventilators (the ICU nurse needs to attend the assessment, while others only need to learn but no test requirements) |
| | Session 3 | Emergency Drill, the emergency procedures for responding to respiratory epidemic, practice and exercise in two groups after briefing the procedures and plan (3 h) Recapping and exchanging of views after exercise (0.5 h) Fill the scale of disaster preparedness, explain the grading criteria of the emergency response capability assessment (0.5 h) |
| | Session 4 | Twice emergency response exercises for two groups (4 h): the contents of the twice exercises are the same, with 30 trainees in each. Each trainee is designated one role. In the second exercise, the trainee should play a different role. The instructors should be divided into two groups to supervise the exercise and evaluate each trainee's performance with the emergency nursing capacity evaluation sheet. |

Virtual reality simulation (VRS) training in combination with technical skills training and assessment plan of the intervention group

| Month | Every Tuesday or Friday: 2:00-6:00 pm | Content and class hours |
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| First Month | Session 1 | VRS training (2 h): Introduction and use of virtual projects, Individual training: pre-hospital management Technical skills (1.5 h): demonstration and practice in teams on respiratory tract sampling, donning and doffing personal protective equipment Summary and discussion (0.5 h) |
| | Session 2 | VRS training (2 h): Individual training on Fever Clinic Reception Technical skills (1.5 h): review and assess the practical skills learned in the last session Summary and discussion (0.5 h) |
| | Session 3 | VRS training (2 h): Individual training on Intensive Care Unit(I) |

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| | | <p>Technical skills (1.5h): demonstration and practice on CPR, sputum aspiration, oxygen inhalation, simple respirator operation</p> <p>Summary and discussion (0.5 h)</p> |
| | Session 4 | <p>VRS training (2 h): Individual training on Intensive Care Unit (II)</p> <p>Technical skills (1.5 h): demonstration and practice on arterial puncture and venipuncture, trachea cannula, defibrillator operation</p> <p>Summary and discussion (0.5 h)</p> |
| Second Month | Session 1 | <p>VRS training (2 h): Individual training on Isolation ward</p> <p>Technical skills (1.5h): review and assess the practical skills of CPR, sputum aspiration, oxygen inhalation, simple respirator operation</p> <p>Summary and discussion (0.5 h)</p> |
| | Session 2 | <p>VRS training (2 h): Comprehensive training (Individual training)</p> <p>Technical skills (1.5 h): review and assess the practical skills of arterial puncture and venipuncture, trachea cannula, defibrillator operation</p> <p>Summary and discussion (0.5 h)</p> |
| | Session 3 | <p>VRS training (2 h): Comprehensive training (Team training)</p> <p>Technical skills (1.5 h): practicing material preparation, high-frequency ventilation support, aerosol inhalation</p> <p>Summary and discussion (0.5 h)</p> |
| | Session 4 | <p>Lecture (4 h): nurses' psychological support, relax training, relieving stress, and releasing negative emotions; psychological nursing of patients</p> |
| Third Month | Session 1 | <p>VRS training (2 h): Comprehensive training (Team training)</p> <p>Technical skills (1.5 h): review and assess the practical skills of high-frequency ventilation support, aerosol inhalation</p> <p>Summary and discussion (0.5 h)</p> |
| | Session 2 | <p>VRS training (2 h): test on theories</p> <p>Technical skills (2 h): demonstration and assessment of ventilators (the ICU nurse needs to attend the assessment, while others only need to learn but no test requirements)</p> |
| | Session 3 | <p>Emergency Drill, the emergency procedures for responding to respiratory epidemic, practice and exercise in two groups after explaining the procedures and plan (3 h)</p> <p>Recapping and exchanging of views after exercise (0.5 h)</p> <p>Fill the scale of disaster preparedness, explain the grading criteria of the emergency response capability assessment (0.5 h)</p> |
| | Session 4 | <p>Twice emergency response exercise for two groups (4 h): the contents of the twice exercises are the same, with 30 trainees in</p> |

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| | | each. Each trainee is designated one role. In the second exercise, the trainee should play a different role. The instructors should be divided into two groups to supervise the exercise and evaluate each trainee's performance with the emergency nursing capacity evaluation sheet. |
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All technical skills training in two groups were individual training.