Validation of a manual of care plans for people hospitalized with COVID-19

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Abstract
Aim: Validate a manual of care plans for people hospitalized for coronavirus disease, COVID-19.
Design: Validation study with a mixed-method design.
Methods: Design and validation of a care plans manual for people hospitalized by COVID-19. Care plans used standardized languages: NANDA-I, Nursing Outcomes Classification (NOC) and Nursing Intervention Classification (NIC). The design included external and internal validation with quantitative and qualitative analysis. Data collection was between March and June 2020. The study methods were compliant with the Good Reporting of a Mixed Methods Study (GRAMMS) checklist.
Results: The manual integrated 24 NANDA-I diagnoses, 34 NOC and 47 NIC different criteria. It was validated by experts of Scientific-Technical Commission, who recommended linking the diagnoses to an assessment. The internal validation validated 17 of 24 diagnoses, 56 of 65 NOC and 86 of the 104 NIC. During the discussion group, 6 new diagnoses proposed were validated and the non-validated diagnoses were linked to the baseline condition of the person.
KEYWORDS diagnostic reasoning, knowledge, nursing care, triangulation research, validity

1 | INTRODUCTION

Coronavirus disease (COVID-19) has posed a global challenge for healthcare systems (World Health Organization, 2020a). Nursing professionals have proven to be the backbone of the healthcare system and to be in the forefront of the fight against the pandemic (World Health Organization, 2020b). In addition, currently we already have vaccines, but care continues to be the fundamental basis to face the contagion and the pandemic (World Health Organization, 2020c). In this sense, care is the object of knowledge and, therefore, the central essence of the nursing discipline (Alligood, 2018). Care diagnoses stated by nurses are clinical judgements about the human response to situations such as COVID-19 disease (Herdman & Kamitsuru, 2017; Moorhead et al., 2020). These diagnoses, linked to the outcomes and the interventions, constitute the care plans that can be represented through standardized language (Østensen et al., 2020).

International regulations recognize the nursing diagnosis, and there is legislation in countries such as Spain that specify its registration in clinical history (European Ministerio de Sanidad y Política Social, 2010; Parliament, 2013). However, currently...
there are hardly any publications on care plans, nor in standardized language, nor originating from clinical practice (Moorhead et al., 2020). Research in this area favours sharing regional care experiences on COVID-19 to disseminate knowledge about care and strengthen nursing knowledge about its clinical value from a professional theoretical base.

2 | BACKGROUND

The coronavirus disease COVID-19 has reached more than 127 million people infected and 2.7 million deaths worldwide (World Health Organization, 2020d). This infection is generally mild and does not require hospitalization. The most common symptoms are fever, dry cough and tiredness, as well as headache, sore throat, widespread pain in the body, diarrhoea or loss of taste and smell (World Health Organization, 2020e). Hospitalized cases are approximately 20% of the total and can go on to develop Acute Respiratory Distress Syndrome, coagulation disorders and shock (Huang et al., 2020; World Health Organization, 2020f; Zhu et al., 2020).

The impact of this disease led to the declaration of a pandemic and has forced the introduction of care measures (World Health Organization, 2020a). General action measures for the entire population include social distance, isolation of cases and suspicions, hand disinfection, use of masks and strict hygiene of the environment (World Health Organization, 2020f). In addition, the most affected countries approved measures ranging from quarantine periods for regions to the declaration of a state of alarm and confinement of the entire population (Chaudhry et al., 2020).

The magnitude and severity of the problem have forced health systems to adapt their infrastructures. In this reorganization, human resources are a fundamental piece and, consequently, all countries have had to prepare health workers to face this emergency demand for professional care (World Health Organization, 2020a, 2020b).

Currently, there is no specific treatment for this disease. The pharmacological treatments used have shown disparate outcomes and without supporting evidence (Mahase, 2020; La Roche, 2020). Some vaccines have already been approved, and the most vulnerable population or those facing the highest risk are being vaccinated (World Health Organization, 2020c). However, care measures are the basis of intervention from the first outbreak and will prevail for healthy, at-risk and infected populations.

Moreover, the common focus of attention for all nurses is the care needs of people, at any stage and vital circumstance, whether with or without disease. These needs are represented by nursing diagnosis. A nursing diagnosis is a clinical judgement concerning human responses (individual, family, group or community) to health conditions or life processes (Herdman & Kamitsuru, 2017).

The nursing diagnoses together with the outcome criteria and intervention criteria make up the care plans (Thoroddsen et al., 2011). The care plans have a legal function that represents the care service that the patient receives (Østensen et al., 2020).

Nursing care plans and diagnoses are internationally recognized, there is legislation that regulates their professional use and university study plans and reference manuals include content on this topic (Alligood, 2018). In Europe, Directive 2005/36/CE recognizes nursing professionals the ability to “competence to independently diagnose the nursing care required using current theoretical and clinical knowledge” (European Parliament, 2013). This regulation is reflected in Spain in the Law 44/2003 on the Organisation of Health Professions when it is stated that nurses are in charge of “management, evaluation and provision of nursing care aimed at the promotion, maintenance and recovery of health, as well as the prevention of diseases and disabilities” (translated from the original in Spanish). In this sense, nurses are the leading professionals responsible for the care of people with conditions such as COVID-19 disease. The registration of the care provided is regulated in Spanish regulations by Royal Decree 1093/2010 on the minimum set of data for clinical reports. This state regulation specifies that nurses must record the assessment, nursing diagnoses, outcomes and interventions in their medical records. Care plans of clinical records must use the standardized languages NANDA-I, NOC and NIC (Ministerio de Sanidad y Política Social, 2010).

NANDA-I is the standard language for diagnostic labels, and NOC is the language for outcome criteria and NIC for intervention criteria (Butcher et al., 2018; Herdman & Kamitsuru, 2017; Moorhead et al., 2018).

The assessment does not have a recognized standardized language, although the regulations include specifying the reference model used to collect this information. In this sense, NOC taxonomy can be used to record the valuation phase. NOC outcomes are not designed for assessment, but their indicators can be used because they represent people’s states, behaviours or perceptions. The indicators must correspond to the defining characteristics and, therefore, assessment and planning share a set of data collected at the beginning and that will be evaluated after the intervention (Moorhead et al., 2018).

The entire set of information recorded in standardized language in clinical records makes nursing work visible and allows for research studies in care (Østensen et al., 2020).

On 14 March 2020, Spain declared a state of alarm for the health crisis by COVID-19 (Ministerio de la Presidencia, Relaciones con las Cortes y Memoria Democrática, 2020). A week later, even without reaching the peak of the contagion curve, the COVID-19 IFEMA Hospital in the Community of Madrid was opened to provide health coverage to saturated hospitals (Gobierno de España, 2020; IFEMA Feria de Madrid, 2020).

The COVID-19 IFEMA Hospital is a reference monographic hospital that opened on 21 March 2020 at the “IFEMA Fairground” and closed on 2 May 2020. The purpose of this centre was to serve adults (older than 18 years, age of majority in Spain) affected by COVID-19 of any severity and socio-sanitary field of origin. Among the admission criteria, people with a high level of dependency prior to admission, pregnant women and minors were excluded because the characteristics of the people required a more appropriate
infrastructure, with services from other specialties or continuous accompaniment of parents or legal guardian. The sanitary complex used a total of more than 70,000 m² distributed in four pavilions (three for health care and one as a warehouse), changing rooms, offices and rest areas. The planned potential capacity was 5,500 beds, and more than 3,800 people were attended (Dirección de Enfermería, 2020; Gobierno de España, 2020).

The patients presented a mostly mild severity, although critically ill people were also treated in the Intensive Care Unit (ICU) (Dirección de Enfermería, 2020).

The health professionals came from Primary Care (first level of care that includes family and community care), the Community Medical Emergency Service of Madrid (SUMMA 112), the Municipal Emergency and Rescue Assistance Service (SAMUR – Civil Protection) and other professionals from hospitals with ICU experience. In this sense, the COVID-19 IFEMA Hospital had to face a challenge for nursing. In addition to the pandemic emergency, the centre was made up of nurses of different healthcare levels and clinical experience.

In addition, coronavirus disease mainly affects the respiratory system but also has a much broader impact on people’s physical and social health. In this sense, the disciplinary and professional object of nursing is the holistic care of the person that includes the attention of all the care needs, both respiratory and any other that derives from this alteration.

In order to unify the quality of care criteria as far as possible, the design of a care plan manual was proposed to serve as a guide for all the nursing professionals at the hospital.

2.1 | Research question

The aim of the study is to validate a manual of care plans for people hospitalized with COVID-19.

Research question were:

What care problems do adults hospitalized for COVID-19 have?
What standardized care plans can be applied to adults hospitalized for COVID-19?

3 | THE STUDY

3.1 | Design

The design was based on a mixed-method study for the development and validation of a manual of care plans focussed on people hospitalized with COVID-19. The methods include text analysis and validation by a panel of experts with quantitative and qualitative techniques. The study methods were compliant with the Good Reporting of a Mixed Methods Study (GRAMMS) checklist.

The object of research was the care plans for adults and elders, with COVID-19 and who are admitted to the hospital with mild-moderate severity. The study did not include care plans aimed at children or pregnant women. These care plans used the nursing taxonomies: NANDA for diagnoses, NOC for outcomes and NIC for nursing interventions.

The study setting was the COVID-19 IFEMA Hospital, but the participation or use of data from a patient sample was not necessary. The study methodology used focus group techniques with text analysis and triangulation, external validation by experts and internal validation with quantitative and qualitative analysis.

3.2 | Procedure: Method and analysis

The study applied three phases that combine properties of different methods. This combination of methods, from the design of the manual to the validation on which the study focuses, sought to obtain the benefits of different techniques, while reducing the limitations that appear when using only one method.

In this sense, the design of the manual applied text analysis and focus group of experts to cover the published knowledge with the clinical experience of experts who know the context of the study. The validation study used two groups and two techniques: an external group and an internal group to contrast two visions of the same manual; and a quantitative and qualitative technique in the internal validation panel of experts to determine what content is approved and, in addition, to know the reasons that support each quantitative result and seek to improve the understanding of care plans.

3.2.1 | Phase 1. Construction of a care plan manual

The design of the manual consisted of determining the diagnoses, outcomes and interventions that represent professional care for adults hospitalized by COVID-19.

The proposal was made by three experts (two male and one female) based on the information contained in national and international reference clinical guides, together with the clinical experience of clinical care (Ministerio de Sanidad, 2020a; World Health Organization, 2020f).

An expert participated on behalf of the COVID-19 IFEMA Hospital. The expert was a Nursing supervisor, with a Doctor’s degree, experience of more than twenty years in teaching and research with standardized nursing languages. The other two experts were external to the hospital. An expert specialist in Family and Community Nursing, with a Master’s level and more than seven years of clinical experience, representing the Madrid Scientific Care Society (SoCMaC) and the other expert was specialized in Critical Care, with a Master’s level and more than ten years of clinical experience, on behalf of the Research Group MISKC (Sociedad Científica Madrileña del Cuidado, 2020; University of Alcala, 2020). All three met the criteria to be considered experts, based on academic and clinical merit according to other studies that use a panel of experts in standardized languages (Vega-Escaño et al., 2020).
The technique used to prepare the manual was Taxonomic Triangulation. This technique acquires knowledge to determine the implicit care diagnoses in a data set that is analysed from three axes: the clinical information on the assessment of a person, the therapeutic goals to be achieved and the professional interventions to be carried out regarding a situation of health or problem (González Aguña, 2021a). This technique allows to acquire the approved knowledge (by scientific societies and governmental entities) but it needs to be adapted to the specified characteristics of the field of study. This limitation is remedied by reviewing the proposed care plans and receiving an initial unanimous approval from the group of three experts.

3.2.2 | Phase 2. External validation

The proposal for a care plan manual was presented to the Director of Nursing and she forwarded it to external validation through the Scientific-Technical Commission of the Nursing College of Madrid (CODEM), the highest professional representation of nursing in the region where the study is carried out. Among other functions, this commission is an advisory body in aspects related to research for the generation of clinical evidence, which underpins the scientific and technical quality of documents related to professional nursing work (Colegio Oficial de Enfermería de Madrid, 2020).

The Scientific-Technical Commission is made up of experts from different health centres and nursing teachers from the Community of Madrid. The commission's experts are independent research professionals who are exclusively involved in this external validation and do not derive any benefit from their evaluation. All the members of the commission participated in the manual analysis and approval session, except for one member who did not participate alleging a conflict of interest because he was part of the group of researchers. This expert did not intervene at any time in the evaluation of the manual. The commission may request the participation of external experts on some topics.

The conclusion of the analysis is signed as a commission, without individual reference to the people who have participated in its evaluation. This validation brings approval focussed on the consistency and quality of the content. The committee assesses whether the manual conforms to the regulations, whether the content is internally and externally consistent with other sources and, furthermore, whether the methodology and sources are of enough evidence.

On 20 April 2020, the approval of the manual was received and, subsequently, it was implanted in the hospital. This validation was the first because it gave approval from nursing institution to a document designed for its implementation in a public hospital. If the document was not approved at this stage, the initial experts would have to thoroughly review the content and start the process again.

3.2.3 | Phase 3. Internal validation

Once the external validation was approved, the internal validation was carried out in two ordered phases. None of the panel participants had participated in the research in any of the previous phases. After two weeks of implementation of the manual of care plans in the hospital, internal validation was performed through an expert panel. All participants received a project presentation session.

The panel consisted of twelve nurses in management positions at the health centre. The participants were selected by criteria of convenience, as responsible for professionals and care, and all fulfilled the eligibility criteria as experts established based on previous studies (Vega-Escaño et al., 2020).

The recruitment process considered two conditions. On the one hand, the country's regulations during confinement did not allow large group meetings to avoid contagion. On the other hand, the professionals came from different centres and the work shift days could not be managed, so their continuity could not be ensured. Faced with these conditions, the researchers looked for professionals who were continuously in the hospital and had access to a global vision of all the professionals. In this sense, the panel of experts was raised by nursing supervisors if they met eligibility criteria.

The characteristics of the expert panel are summarized in Table 1. All the participants had more than ten years of clinical experience, having a position of responsibility (director, supervisor or person in charge) for the care of the pandemic, teaching experience in undergraduate or graduate nursing, postgraduate studies and experience in the use of standardized languages.

The study applied a first quantitative validation using the Delphi technique with a self-administered questionnaire to assess with a Likert scale of 1-5 points (1 = not representative and 5 = fully representative) each diagnosis, outcomes and intervention proposed. Each expert assessed the diagnoses under the question “Do you consider each diagnosis appropriate for the care situation of a person hospitalized by COVID-19?” For their part, the outcome criteria were assessed according to “Do you consider each proposed NOC outcome adequate for each of the diagnoses?” That is, the NOC in relation to the care problem proposed for people hospitalized by COVID-19. Likewise, the NIC intervention criteria were assessed according to “Do you consider each proposed NIC intervention adequate for each of the diagnoses?” That is, its suitability as an intervention to solve the care problem proposed for people hospitalized by COVID-19. In addition, the experts were offered the opportunity of adding other diagnostic labels that they considered for the analysed situation.

The analysis of the responses of each of the three parts was performed using a content validation index (VCI) criterion. Each item (diagnosis, outcome or intervention) included the number of positive responses on the Likert scale. A positive evaluation was a score of 4 or 5. The number of responses obtained was a score divided by the total number of participants. An item obtained “approved” when its index was greater than 0.78 and “revised” when its index was equal to or <0.78. The diagnoses, outcomes and interventions with a score >0.78 were considered with good validation and did not go to the second round, while the rest were analysed qualitatively to be approved or to know the reasons for their non-validation (Frank-Stromborg & Olsen, 2003; Polit & Beck, 2017).
The second part of the validation carried out a qualitative study through a discussion group with all the experts on the panel. The session was in person at the COVID-19 IFEMA Hospital and lasted an hour and a half. The content of the session was divided into half an hour of presentation of the global results obtained and one hour of discussion based on the results obtained in the VCI, the contributions of new diagnoses proposed by the group of experts and the contributions made by the Scientific-Technical Commission of CODEM. Data were collected by recording audio and annotations by one of the researchers who made an observer. This person did not intervene at any time during the meeting. Subsequently, the content was analysed, and the results were sent to the group, which approved the conclusions drawn.

### 4 RESULTS

#### 4.1 Phase 1. Design of the care plan manual

The first group of experts developed a Manual of care plans for people hospitalized with COVID-19. The manual contains 24 NANDA-I diagnoses, 34 NOC outcome criteria and 47 different NIC intervention criteria, after duplicates have been removed. The approach considered that patients at COVID-19 IFEMA Hospital were adults or elders and were mostly of mild or medium severity. A minority of COVID-19 cases require admission to intensive care units. The care plan manual is shown in Table 2.

#### 4.2 Phase 2. External validation

The Scientific-Technical Commission of CODEM reviewed the manual, considered the use of the NANDA-I, NOC and NIC taxonomies a success and approved the identified diagnoses, along with their corresponding criteria for outcomes and intervention.

The Commission indicated that in the introduction “it would be interesting to explain that, in addition to these diagnoses, patients may present others. We understand that those proposed are the most prevalent (and priority to detect and solve) in the proposed environment.” Other diagnoses they raised are from the psycho-social or social sphere. The Commission considered it interesting to reflect on this type of care problem and clarify that these needs may exist, although the manual does not include them because the problems set out in the manual are a priority and prevalent. Likewise, the experts indicated that these social problems could be dealt with at other levels of care or moments of the process. As future improvements, the Commission proposed linking the diagnoses “to functional patterns or another option for nurse evaluation.”

#### 4.3 Phase 3. Internal validation

The results obtained for the validation index of the diagnoses are shown in Table 3. 17 of the 24 diagnoses were validated with a CVI between 0.83–1.00. The CVI for the NOC outcome criteria are shown in Table 4. In total, 65 NOC relationships to NANDA-I were assessed. The 34 outcome criteria were linked to each diagnosis and may appear one or more times. In total, 56 of the 65 NOC to NANDA-I relationships established were validated.

The CVI for the NIC intervention criteria appear in Table 5. In total, the validation of 104 relationships of NIC to diagnosis from the 47 NIC identified was analysed. The experts validated 86 of the 104 relationships established with a CVI between 0.83–1.00.

The experts added other possible diagnoses for the described situation. Five experts agreed to propose Anxiety (00146) and three added Diarrhea (00013) and Risk of falls (00155). Other added diagnoses were Compromised family coping (00074), Social isolation

| Characteristics of expert panel | N (%) |
|--------------------------------|-------|
| Gender (N = 12) |       |
| Male | 4 33.33 |
| Female | 8 66.67 |
| Age (N = 12) |       |
| 30–39 | 5 41.67 |
| 40–49 | 3 25.00 |
| 50–59 | 2 16.67 |
| >60 | 2 16.67 |
| Years of NP practice (N = 12) |       |
| 10–19 | 5 41.67 |
| 20–29 | 3 25.00 |
| 30–39 | 2 16.67 |
| >40 | 2 16.67 |
| Clinical position (N = 12) |       |
| Nurse practitioner | 5 41.67 |
| Supervisor | 5 41.67 |
| Others | 2 16.67 |
| Level of Nursing education (N = 12) |       |
| Master | 10 83.33 |
| Specialist | 1 8.33 |
| PhD | 2 16.67 |
| Teaching experience (N = 12) |       |
| Continuing Education | 12 100.00 |
| Grade | 6 50.00 |
| Master | 3 25.00 |
| Doctorate | 2 16.67 |
| Others | 4 33.33 |
| Research experience (N = 12) |       |
| Master | 7 58.33 |
| Doctorate | 2 16.67 |
| Research Group | 5 41.67 |
| Clinical research | 9 75.00 |
| Code     | Diagnostics (NANDA-I)                       | Code         | Outcomes (NOC)                        | Code | Interventions (NIC) |
|----------|---------------------------------------------|--------------|--------------------------------------|------|---------------------|
| 00030    | Impaired gas exchange                       | 0402         | Respiratory status: Gas exchange     | 6540 | Infection control   |
|          |                                             | 0408         | Tissue perfusion: Pulmonary          | 6680 | Vital signs monitoring|
|          |                                             | 0802         | Vital signs                          | 3350 | Respiratory monitoring|
|          |                                             | 0403         | Respiratory status: Ventilation      | 4232 | Phlebotomy: Arterial blood sample|
|          |                                             |              |                                      | 7610 | Bedside laboratory testing|
|          |                                             |              |                                      | 7690 | Laboratory data interpretation|
|          |                                             |              |                                      | 3590 | Skin surveillance   |
|          |                                             |              |                                      | 2620 | Neurologic monitoring|
|          |                                             |              |                                      | 3320 | Oxygen therapy      |
|          |                                             |              |                                      | 3390 | Ventilation assistance|
|          |                                             |              |                                      | 3140 | Airway management   |
| 00034    | Dysfunctional ventilatory weaning response  | 0402         | Respiratory status: Gas exchange     | 6540 | Infection control   |
|          |                                             | 0408         | Tissue perfusion: Pulmonary          | 6680 | Vital signs monitoring|
|          |                                             | 0411         | Mechanical ventilation response: Adult| 3350 | Respiratory monitoring|
|          |                                             | 0802         | Vital signs                          | 4232 | Phlebotomy: Arterial blood sample|
|          |                                             | 0403         | Respiratory status: Ventilation      | 7610 | Bedside laboratory testing|
|          |                                             |              |                                      | 7690 | Laboratory data interpretation|
|          |                                             |              |                                      | 3590 | Skin surveillance   |
|          |                                             |              |                                      | 2620 | Neurologic monitoring|
|          |                                             |              |                                      | 3320 | Oxygen therapy      |
|          |                                             |              |                                      | 3390 | Ventilation assistance|
|          |                                             |              |                                      | 3140 | Airway management   |
| 00031    | Ineffective airway clearance                | 0410         | Respiratory status: Airway patency   | 3250 | Cough enhancement   |
|          |                                             | 0403         | Respiratory status: Ventilation      | 3230 | Chest physiotherapy |
|          |                                             |              |                                      | 3350 | Respiratory monitoring|
| 00004    | Risk for infection (respiratory)            | 0703         | Infection severity                   | 6680 | Vital signs monitoring|
|          |                                             |              |                                      | 1924 | Risk control: Infectious process|
|          |                                             |              |                                      | 6540 | Infection control   |
|          |                                             |              |                                      | 6550 | Infection protection|
| 00004    | Risk for infection (skin)                   | 0703         | Infection severity                   | 6680 | Vital signs monitoring|
|          |                                             |              |                                      | 1101 | Tissue integrity: Skin and mucous membranes|
|          |                                             |              |                                      | 3590 | Skin surveillance   |
|          |                                             |              |                                      | 1924 | Risk control: Infectious process|
|          |                                             |              |                                      | 6540 | Infection control   |
|          |                                             |              |                                      | 6550 | Infection protection|
|          |                                             |              |                                      | 4062 | Circulatory care: Arterial insufficiency|
|          |                                             |              |                                      | 4066 | Circulatory care: Venous insufficiency|
|          |                                             |              |                                      | 3584 | Skin care: Topical treatments|
|          |                                             |              |                                      | 3660 | Wound care          |
| 00132    | Acute pain                                  | 2102         | Pain Level                           | 6680 | Vital signs monitoring|
|          |                                             | 1605         | Pain Control                         | 1400 | Pain management     |
|          |                                             |              |                                      | 2210 | Analgesic administration|
| 00092    | Activity intolerance                        | 0005         | Activity Tolerance                   | 6680 | Vital signs monitoring|

(Continues)
| Code     | Diagnostics (NANDA-I)                          | Code    | Outcomes (NOC)                | Code    | Interventions (NIC)                  |
|----------|-----------------------------------------------|---------|-------------------------------|---------|--------------------------------------|
| 0001     | Endurance                                     | 0970    | Transfer                      |         |                                      |
| 0001     | Endurance                                     | 0180    | Energy management             |         |                                      |
| 00093    | Fatigue                                       | 0007    | Fatigue level                 | 6680    | Vital signs monitoring               |
| 0002     | Energy conservation                           | 0970    | Transfer                      | 0180    | Energy management                    |
| 00102    | Feeding self-care deficit                     | 1014    | Appetite                      | 1050    | Feeding                              |
|          |                                                | 1008    | Nutritional status: Food and fluid intake | 1803 | Self-care assistance: Feeding |
| 00039    | Risk for aspiration                            | 1010    | Swallowing status             | 1918    | Aspiration precautions               |
|          |                                                | 1008    | Nutritional status: Food and fluid intake |         |                                      |
| 00110    | Toileting self-care deficit                   | 0310    | Self-care: Toileting          | 0970    | Transfer                             |
|          |                                                |         |                               | 1804    | Self-care Assistance: toileting     |
| 00108    | Bathing self-care deficit                     | 0301    | Self-care: Bathing            | 1801    | Self-care Assistance: bathing/hygiene |
|          |                                                | 0305    | Self-care: Hygiene            |         |                                      |
| 00247    | Risk for impaired oral mucous membrane integrity | 0308  | Self-care: Oral hygiene      | 1720    | Oral health promotion                |
|          |                                                |         |                               |         |                                      |
| 00014    | Bowel incontinence                            | 0501    | Bowel elimination             | 0410    | Bowel incontinence care             |
|          |                                                | 0500    | Bowel continence              | 1804    | Self-care Assistance: toileting     |
|          |                                                | 1101    | Tissue integrity: Skin and mucous membranes | 3590 | Skin surveillance                   |
|          |                                                | 1103    | Wound healing: Secondary intention | 3584 | Skin care: Topical treatments       |
|          |                                                | 3660    | Wound care                    |         |                                      |
| 00017    | Stress urinary incontinence                   | 0503    | Urinary elimination           | 0610    | Urinary incontinence care           |
|          |                                                | 0502    | Urinary continence            | 1804    | Self-care assistance: Toileting     |
|          |                                                | 1101    | Tissue integrity: Skin and mucous membranes | 3590 | Skin surveillance                   |
| 00019    | Urgent urinary incontinence                   | 0503    | Urinary elimination           | 0610    | Urinary incontinence care           |
|          |                                                | 0502    | Urinary continence            | 1804    | Self-care assistance: Toileting     |
|          |                                                | 1101    | Tissue integrity: Skin and mucous membranes | 3590 | Skin surveillance                   |
| 00020    | Functional urinary incontinence               | 0503    | Urinary elimination           | 0610    | Urinary incontinence care           |
|          |                                                | 0502    | Urinary continence            | 1804    | Self-care assistance: Toileting     |
|          |                                                | 1101    | Tissue integrity: Skin and mucous membranes | 3590 | Skin surveillance                   |

(Continues)
The experts reviewed the non-validated diagnoses in the first round, and the proposals made by at least two group members in the discussion group.

Non-validated diagnoses obtained the same qualitative consideration. Participants explained that these diagnoses of self-care deficit and urinary incontinence were care problems typical of the person’s baseline situation: “Incontinence is not caused by COVID-19 or by being hospitalized. They had this problem before and will continue to do so when they are discharged.”

Bowel incontinence (00014) was modified by the group for Diarrhea (00013). The panel of experts unanimously approved this diagnosis.

The panel explained that Anxiety (00146) and Fear (00148) appeared in the first days of hospitalization and in relation to the uncertainty of the evolution of the disease. The problem of low situational self-esteem was validated because “many people felt that they were not worth it and worried that they would not be able to be...”
at home or taking care of their families.” Lastly, the Disturbed sleep pattern (00198) was identified and resolved early with light grading or coordination of rest times.

Social isolation (00053) and Impaired skin integrity (00046) were not approved. The first was not considered because people had technologies to communicate and interaction activities among hospitalized people were favored. The second was not validated because it had no direct relationship with COVID-19 situation, and only appeared as a risk in bedridden people in a critical situation.

This qualitative assessment phase coincided with the contribution of the Scientific–Technical Commission to integrate social aspects through the diagnoses Impairment of social interaction (00052) and Risk of loneliness (00054).

The NOC outcome criteria were mostly approved. The NIC interventions showed more differentiated results. The quantitative assessment was modified during the qualitative analysis phase by contrasting the interpretation in the group. A total of seven diagnoses out of 18 to be reviewed were finally approved.

| Code   | Diagnostics NANDA-I                                      | Round 1 | Round 2           |
|--------|----------------------------------------------------------|---------|-------------------|
| 00030  | Impaired gas exchange                                    | 1.00    | Approved          |
| 00034  | Dysfunctional ventilatory weaning response               | 1.00    | Approved          |
| 00031  | Ineffective airway clearance                             | 1.00    | Approved          |
| 00004  | Risk for infection (respiratory)                         | 1.00    | Approved          |
| 00004  | Risk for infection (skin)                                | 0.83    | Approved          |
| 00132  | Acute intolerance                                        | 1.00    | Approved          |
| 00092  | Activity intolerance                                     | 1.00    | Approved          |
| 00093  | Fatigue                                                  | 1.00    | Approved          |
| 00102  | Feeding self-care deficit                                | 0.83    | Approved          |
| 00039  | Risk for aspiration                                      | 0.83    | Approved          |
| 00110  | Toileting self-care deficit                              | 0.67    | Revised, Not Approved |
| 00108  | Bathing self-care deficit                                | 0.67    | Revised, Not Approved |
| 00247  | Risk for impaired oral mucous membrane integrity         | 0.92    | Approved          |
| 00045  | Impaired oral mucous membrane integrity                  | 0.92    | Approved          |
| 00014  | Fecal incontinence                                       | 0.75    | Revised, Modified |
| 00017  | Stress urinary incontinence                              | 0.67    | Revised, Not Approved |
| 00019  | Urge urinary incontinence                                | 0.67    | Revised, Not Approved |
| 00020  | Functional urinary incontinence                          | 0.58    | Revised, Not Approved |
| 00021  | Total urinary incontinence                               | 0.50    | Revised, Not Approved |
| 00047  | Risk for impaired skin integrity                         | 0.83    | Approved          |
| 00078  | Ineffective health management                            | 1.00    | Approved          |
| 00052  | Impaired social interaction                              | 1.00    | Approved          |
| 00054  | Risk for loneliness                                      | 0.92    | Approved          |
| 00007  | Hyperthermia                                             | 1.00    | Approved          |
| 00013  | Diarrhea                                                 | –       | Approved          |
| 00074  | Compromised family coping                                | –       | Approved          |
| 00120  | Situational low self-esteem                              | –       | Approved          |
| 00146  | Anxiety                                                  | –       | Approved          |
| 00148  | Fear                                                     | –       | Approved          |
| 00198  | Disturbed sleep pattern                                  | –       | Approved          |

TABLE 3 Validation of diagnoses
| Code   | NOC outcomes for NANDA-I diagnosis                                           | Round 1 | Round 2 |
|--------|-----------------------------------------------------------------------------|---------|---------|
|        |                                                                             | CVI     | Interpretation | Final decision |
| 00030  | Impaired gas exchange                                                       |         | Approved       |
| 0402   | Respiratory status: Gas exchange                                            | 1.00    | Approved       |
| 0408   | Tissue perfusion: Pulmonary                                                 | 1.00    | Approved       |
| 0802   | Vital signs                                                                  | 0.92    | Approved       |
| 0403   | Respiratory status: Ventilation                                             | 0.92    | Approved       |
| 00034  | Dysfunctional ventilatory weaning response                                   |         | Approved       |
| 0402   | Respiratory status: Gas exchange                                            | 1.00    | Approved       |
| 0408   | Tissue perfusion: Pulmonary                                                 | 1.00    | Approved       |
| 0411   | Mechanical ventilation response: adult                                       | 1.00    | Approved       |
| 0802   | Vital signs                                                                  | 0.92    | Approved       |
| 0403   | Respiratory status: Ventilation                                             | 1.00    | Approved       |
| 00031  | Ineffective airway clearance                                                |         | Approved       |
| 0410   | Respiratory status: Airway patency                                          | 1.00    | Approved       |
| 0403   | Respiratory status: Ventilation                                             | 0.83    | Approved       |
| 00004  | Risk for infection (respiratory)                                            |         | Approved       |
| 0703   | Infection severity                                                           | 0.92    | Approved       |
| 1924   | Risk control: Infectious process                                            | 1.00    | Approved       |
| 00004  | Risk for infection (skin)                                                   |         | Approved       |
| 0703   | Infection severity                                                           | 0.83    | Approved       |
| 1101   | Tissue integrity: Skin and mucous membranes                                 | 1.00    | Approved       |
| 1924   | Risk control: Infectious process                                            | 1.00    | Approved       |
| 1103   | Wound healing: Secondary intention                                          | 0.75    | Revised        |
|        |                                                                             |         | Approved       |
| 00132  | Acute pain                                                                  |         | Approved       |
| 2102   | Pain level                                                                  | 0.92    | Approved       |
| 1605   | Pain control                                                                | 1.00    | Approved       |
| 00092  | Activity intolerance                                                        |         | Approved       |
| 0005   | Activity tolerance                                                          | 1.00    | Approved       |
| 0001   | Endurance                                                                   | 0.83    | Approved       |
| 00093  | Fatigue                                                                     |         | Approved       |
| 0007   | Fatigue level                                                               | 1.00    | Approved       |
| 0002   | Energy conservation                                                         | 1.00    | Approved       |
| 00102  | Feeding self-care deficit                                                   |         | Approved       |
| 1014   | Appetite                                                                    | 0.83    | Approved       |
| 1008   | Nutritional status: Food and fluid intake                                   | 1.00    | Approved       |
| 0303   | Self-care: Eating                                                          | 1.00    | Approved       |
| 1010   | Swallowing status                                                           | 1.00    | Approved       |
| 00039  | Risk for aspiration                                                         |         | Approved       |
| 1010   | Swallowing status                                                           | 1.00    | Approved       |
| 1008   | Nutritional status: Food and fluid intake                                   | 1.00    | Approved       |
| 0410   | Respiratory status: Airway patency                                          | 1.00    | Approved       |
| 00110  | Toileting self-care deficit                                                |         | Approved       |
| 0310   | Self-care: Toileting                                                        | 0.92    | Approved       |
| 00108  | Bathing self-care deficit                                                  |         | Approved       |
| 0301   | Self-care: Bathing                                                          | 1.00    | Approved       |
| 0305   | Self-care: Hygiene                                                          | 1.00    | Approved       |
| Code   | NOC outcomes for NANDA-I diagnosis                                                                 | Round 1          | Round 2                  |
|--------|-------------------------------------------------------------------------------------------------|------------------|--------------------------|
|        |                                                                                                 | CVI              | Interpretation           | Final decision       |
| 00247  | Risk for impaired oral mucous membrane integrity                                                |                  |                          |                        |
| 0308   | Self-care: Oral hygiene                                                                         | 1.00             | Approved                 |                        |
| 1100   | Oral health                                                                                     | 1.00             | Approved                 |                        |
| 00045  | Impaired oral mucous membrane integrity                                                          |                  |                          |                        |
| 0308   | Self-care: Oral hygiene                                                                         | 1.00             | Approved                 |                        |
| 1100   | Oral health                                                                                     | 0.92             | Approved                 |                        |
| 1101   | Tissue integrity: Skin and mucous membranes                                                     | 1.00             | Approved                 |                        |
| 1103   | Wound healing: Secondary intention                                                              | 0.83             | Approved                 |                        |
| 00014  | Bowel incontinence                                                                              |                  |                          |                        |
| 0501   | Bowel elimination                                                                               | 0.83             | Approved                 |                        |
| 0500   | Bowel continence                                                                                | 1.00             | Approved                 |                        |
| 1101   | Tissue integrity: Skin and mucous membranes                                                     | 0.75             | Revised                  | Not approved           |
| 00017  | Stress urinary incontinence                                                                      |                  |                          |                        |
| 0503   | Urinary elimination                                                                             | 0.75             | Revised                  | Not approved           |
| 0502   | Urinary continence                                                                             | 0.92             | Approved                 |                        |
| 1101   | Tissue integrity: Skin and mucous membranes                                                     | 0.67             | Revised                  | Not approved           |
| 00019  | Urge urinary incontinence                                                                        |                  |                          |                        |
| 0503   | Urinary elimination                                                                             | 0.75             | Revised                  | Not approved           |
| 0502   | Urinary continence                                                                             | 0.92             | Approved                 |                        |
| 1101   | Tissue integrity: Skin and mucous membranes                                                     | 0.67             | Revised                  | Not approved           |
| 00020  | Functional urinary incontinence                                                                  |                  |                          |                        |
| 0503   | Urinary elimination                                                                             | 0.67             | Revised                  | Not approved           |
| 0502   | Urinary continence                                                                             | 0.83             | Approved                 |                        |
| 1101   | Tissue integrity: Skin and mucous membranes                                                     | 0.67             | Revised                  | Not approved           |
| 0208   | Mobility                                                                                        | 0.83             | Approved                 |                        |
| 00021  | Total urinary incontinence                                                                       |                  |                          |                        |
| 0503   | Urinary elimination                                                                             | 0.67             | Revised                  | Not approved           |
| 0502   | Urinary continence                                                                             | 1.00             | Approved                 |                        |
| 1101   | Tissue integrity: Skin and mucous membranes                                                     | 0.75             | Revised                  | Not approved           |
| 00047  | Risk for impaired skin integrity                                                                |                  |                          |                        |
| 1101   | Tissue integrity: Skin and mucous membranes                                                     | 1.00             | Approved                 |                        |
| 00078  | Ineffective health management                                                                    |                  |                          |                        |
| 1608   | Symptom control                                                                                 | 0.92             | Approved                 |                        |
| 0802   | Vital signs                                                                                     | 1.00             | Approved                 |                        |
| 2301   | Medication response                                                                             | 0.92             | Approved                 |                        |
| 00052  | Impaired social interaction                                                                      |                  |                          |                        |
| 1504   | Social support                                                                                  | 1.00             | Approved                 |                        |
| 00054  | Risk for loneliness                                                                            |                  |                          |                        |
| 1504   | Social support                                                                                  | 1.00             | Approved                 |                        |
| 00077  | Hyperthermia                                                                                    |                  |                          |                        |
| 1608   | Symptom control                                                                                 | 0.92             | Approved                 |                        |
| 0802   | Vital signs                                                                                     | 1.00             | Approved                 |                        |
| 1924   | Risk control: Infectious process                                                                | 0.92             | Approved                 |                        |
| 0800   | Thermoregulation                                                                                | 1.00             | Approved                 |                        |
## Table 5 Validation of the interventions for each diagnosis

| Code    | NIC interventions for NANDA-I diagnoses                          | Round 1 | Round 2 |
|---------|------------------------------------------------------------------|---------|---------|
|         |                                                                  | CVI     | Interpretation | Final decision |
| 00030   | Impaired gas exchange                                            |         | Approved      |               |
| 6540    | Infection control                                                | 0.92    | Approved      |               |
| 6680    | Vital signs monitoring                                           | 0.92    | Approved      |               |
| 3350    | Respiratory monitoring                                           | 0.92    | Approved      |               |
| 4232    | Phlebotomy: Arterial blood sample                                | 0.83    | Approved      |               |
| 7610    | Bedside laboratory testing                                       | 0.67    | Revised      | Not approved  |
| 7690    | Laboratory data interpretation                                   | 0.75    | Revised      | Approved      |
| 3590    | Skin surveillance                                                | 0.75    | Revised      | Approved      |
| 2620    | Neurologic monitoring                                            | 0.83    | Approved      |               |
| 3320    | Oxygen therapy                                                   | 1.00    | Approved      |               |
| 3390    | Ventilation assistance                                           | 0.92    | Approved      |               |
| 3140    | Airway management                                                | 1.00    | Approved      |               |
| 00034   | Dysfunctional ventilatory weaning response                       |         |               |               |
| 6540    | Infection control                                                | 0.58    | Revised      | Not approved  |
| 6680    | Vital signs monitoring                                           | 1.00    | Approved      |               |
| 3350    | Respiratory monitoring                                           | 1.00    | Approved      |               |
| 4232    | Phlebotomy: Arterial blood sample                                | 0.83    | Approved      |               |
| 7610    | Bedside laboratory testing                                       | 0.58    | Revised      | Not approved  |
| 7690    | Laboratory data interpretation                                   | 0.92    | Approved      |               |
| 3590    | Skin surveillance                                                | 0.75    | Revised      | Approved      |
| 2620    | Neurologic monitoring                                            | 0.92    | Approved      |               |
| 3320    | Oxygen therapy                                                   | 1.00    | Approved      |               |
| 3390    | Ventilation assistance                                           | 0.83    | Approved      |               |
| 3140    | Airway management                                                | 1.00    | Approved      |               |
| 00031   | Ineffective airway clearance                                     |         |               |               |
| 3250    | Airway management                                                | 1.00    | Approved      |               |
| 3230    | Chest physiotherapy                                               | 0.92    | Approved      |               |
| 3350    | Respiratory monitoring                                           | 0.92    | Approved      |               |
| 00004   | Risk for infection (respiratory)                                 |         |               |               |
| 6680    | Vital signs monitoring                                           | 0.83    | Approved      |               |
| 6540    | Infection control                                                | 0.92    | Approved      |               |
| 6550    | Infection protection                                             | 1.00    | Approved      |               |
| 00004   | Risk for infection (skin)                                         |         |               |               |
| 6680    | Vital signs monitoring                                           | 0.92    | Approved      |               |
| 3590    | Skin surveillance                                                | 1.00    | Approved      |               |
| 6540    | Infection control                                                | 1.00    | Approved      |               |
| 6550    | Infection protection                                             | 1.00    | Approved      |               |
| 4062    | Circulatory care: Arterial insufficiency                          | 0.75    | Revised      | Not approved  |
| 4066    | Circulatory care: Venous insufficiency                            | 0.75    | Revised      | Not approved  |
| 3584    | Skin care: Topical treatments                                     | 0.83    | Approved      |               |
| 3660    | Wound care                                                       | 0.92    | Approved      |               |
| 00132   | Acute pain                                                       |         |               |               |
| 6680    | Vital signs monitoring                                           | 0.92    | Approved      |               |
| 1400    | Pain management                                                  | 1.00    | Approved      |               |
| 2210    | Analgesic administration                                         | 1.00    | Approved      |               |

(Continues)
| Code   | NIC interventions for NANDA-I diagnoses                                                                 | Round 1 | Round 2                          |
|--------|-------------------------------------------------------------------------------------------------------|---------|----------------------------------|
|        |                                                                                                       | CVI     | Interpretation                   | Final decision |
| 00092  | Activity intolerance                                                                                   | 0.92    | Approved                         |               |
| 6680   | Vital signs monitoring                                                                               | 0.92    | Approved                         |               |
| 0970   | Transfer                                                                                              | 0.75    | Revised                          | Approved      |
| 0180   | Energy management                                                                                     | 1.00    | Approved                         |               |
| 00093  | Fatigue                                                                                               | 0.92    | Approved                         |               |
| 6680   | Vital signs monitoring                                                                               | 0.92    | Approved                         |               |
| 0970   | Transfer                                                                                              | 0.75    | Revised                          | Approved      |
| 0180   | Energy management                                                                                     | 0.92    | Approved                         |               |
| 00102  | Feeding self-care deficit                                                                             | 0.92    | Approved                         |               |
| 0970   | Transfer                                                                                              | 0.75    | Revised                          | Approved      |
| 1804   | Self-care assistance: Toileting                                                                       | 1.00    | Approved                         |               |
| 00039  | Risk for aspiration                                                                                   |         |                                  |               |
| 1918   | Aspiration precautions                                                                                | 1.00    | Approved                         |               |
| 00110  | Toileting self-care deficit                                                                          | 0.92    | Approved                         |               |
| 0970   | Transfer                                                                                              | 0.75    | Revised                          | Approved      |
| 00045  | Impaired oral mucous membrane integrity                                                               |         |                                  |               |
| 1720   | Oral health promotion                                                                                 | 1.00    | Approved                         |               |
| 1710   | Oral health maintenance                                                                               | 0.92    | Approved                         |               |
| 00014  | Bowel incontinence                                                                                    |         |                                  |               |
| 0410   | Bowel incontinence care                                                                               | 0.92    | Approved                         |               |
| 00017  | Stress urinary incontinence                                                                           |         |                                  |               |
| 0610   | Urinary incontinence care                                                                             | 1.00    | Approved                         |               |
| 00019  | Urge urinary incontinence                                                                             |         |                                  |               |
| 0610   | Urinary incontinence care                                                                             | 1.00    | Approved                         |               |
| 3590   | Skin surveillance                                                                                     | 0.83    | Approved                         |               |
| 00020  | Functional urinary incontinence                                                                       |         |                                  |               |
| 0610   | Urinary incontinence care                                                                             | 0.92    | Approved                         |               |
| 0610   | Urinary incontinence care                                                                             | 1.00    | Approved                         |               |
| 3590   | Skin surveillance                                                                                     | 0.83    | Approved                         |               |
| 0970   | Transfer                                                                                              | 0.83    | Approved                         |               |
Other nursing research on COVID-19 focuses on the life experiences of nurses and changes made in health centres. However, studies on caring problems for people with COVID-19 are limited. The most similar articles expose nursing care from the field of the community and Public Health or the analysis of the clinical management guide of the World Health Organization (WHO). This manuscript provides a comprehensive guide to care for people with COVID-19, offering a common language and model for all nurses worldwide. The study designs and validates a manual of care plans for people hospitalized with COVID-19. This manual offers a common guide for all nurses in the world because they share a common professional model and language.

| Code     | NIC interventions for NANDA-I diagnoses                                      | Round 1 CVI | Interpretation | Round 2 Final decision |
|----------|-----------------------------------------------------------------------------|-------------|----------------|------------------------|
| 00021    | Total urinary incontinence                                                  | 1.00        | Approved       |                        |
| 0610     | Urinary incontinence care                                                  | 1.00        | Approved       |                        |
| 1804     | Self-care assistance: Toileting                                            | 0.83        | Approved       |                        |
| 3590     | Skin surveillance                                                          | 1.00        | Approved       |                        |
| 00047    | Risk for impaired skin integrity                                           | 0.83        | Approved       |                        |
| 3590     | Skin surveillance                                                          | 1.00        | Approved       |                        |
| 3584     | Skin care: Topical treatments                                               | 1.00        | Approved       |                        |
| 3540     | Pressure ulcer prevention                                                   | 0.83        | Approved       |                        |
| 00078    | Ineffective health management                                              | 0.92        | Approved       |                        |
| 6680     | Vital signs monitoring                                                      | 0.92        | Approved       |                        |
| 2620     | Neurologic monitoring                                                      | 0.83        | Approved       |                        |
| 2300     | Medication administration                                                   | 1.00        | Approved       |                        |
| 2304     | Medication administration: Oral                                             | 0.83        | Approved       |                        |
| 2314     | Medication administration: intravenous (IV)                                | 0.92        | Approved       |                        |
| 2311     | Medication administration: Inhalation                                       | 0.83        | Approved       |                        |
| 5616     | Teaching: Prescribed medication                                             | 1.00        | Approved       |                        |
| 4190     | Intravenous (IV) insertion                                                  | 0.50        | Revised        | Not approved           |
| 4238     | Phlebotomy: Venous blood sample                                             | 0.50        | Revised        | Not approved           |
| 7610     | Bedside laboratory testing                                                  | 0.58        | Revised        | Not approved           |
| 7690     | Laboratory data interpretation                                              | 0.58        | Revised        | Not approved           |
| 5618     | Teaching: Procedure/Treatment                                               | 1.00        | Approved       |                        |
| 00052    | Impaired social interaction                                                 | 0.92        | Approved       |                        |
| 4920     | Active listening                                                           | 0.92        | Approved       |                        |
| 5340     | Presence                                                                    | 0.92        | Approved       |                        |
| 5270     | Emotional support                                                          | 1.00        | Approved       |                        |
| 7110     | Family involvement promotion                                                | 1.00        | Approved       |                        |
| 00054    | Risk for loneliness                                                        | 1.00        | Approved       |                        |
| 4920     | Active listening                                                           | 1.00        | Approved       |                        |
| 5340     | Presence                                                                    | 0.92        | Approved       |                        |
| 5270     | Emotional support                                                          | 1.00        | Approved       |                        |
| 7110     | Family involvement promotion                                                | 1.00        | Approved       |                        |
| 00007    | Hyperthermia                                                                | 0.92        | Approved       |                        |
| 6680     | Vital signs monitoring                                                      | 0.75        | Revised        | Not approved           |
| 2620     | Neurologic monitoring                                                      | 1.00        | Approved       |                        |
| 6540     | Infection control                                                          | 0.92        | Approved       |                        |
| 6550     | Infection protection                                                        | 0.58        | Revised        | Approved               |
| 1380     | Heat/Cold application                                                       | 1.00        | Approved       |                        |
| 3740     | Fever treatment                                                            | 1.00        | Approved       |                        |
presents the experience of the design, implementation and practical evaluation of nursing care plans specifically designed for a context of hospitalization of adults with mild-moderate severity. (González Agüña et al., 2021a, 2021b; Moorhead et al., 2020).

Similar research is on care plans focussed on other problems (cardiology, oncology) or qualitative studies on the opinion of nurses in the use of care plans and clinical history records. Standardized nursing languages are not used in any of these studies (Kuusisto et al., 2020; Lee, 2005; Pöder et al., 2015).

The mixed methodology with text analysis and quantitative and qualitative validation by experts is novel compared with similar studies. Previous studies on the design of care plans used retrospective analysis methodologies in medical records. This type of methodology could not be used for several reasons: there were no previous historical records because the health problem was new, the available records had different formats, and the emergency required agile methodologies. (Park, 2014).

Clinical nurses (in direct contact with patients) were not included because there was a high turnover rate and they came from other health centres to provide specific days, which did not allow continuity throughout the study or ensure that the criteria to be considered experts were met. In addition, face-to-face meetings of large groups of professionals were not legally allowed during the study time due to the declaration of the state of alarm in Spain and it limited the number of participants in the subsequent discussion group. This meeting was held once the health activity of the hospital was closed and with strict compliance with preventive measures (Ministerio de la Presidencia & Relaciones con las Cortes y Memoria Democrática, 2020; Ministerio de Sanidad, 2020b).

The union of the results issued by the three groups seeks to ensure the quality of the findings by triangulating with a mixed method that unites three different perspectives on the same object of interest. In addition, the techniques include quantitative and qualitative assessments, which allows us to better understand the evaluation of the experts (Carter et al., 2014; Raphiphathanna et al., 2020; Shapiro et al., 2020).

Standardized language care plans are necessary to retrieve and use the information contained in clinical records. These plans are legal documents and serve to investigate (Østensen et al., 2020). However, although the importance of these care plans and standardized language is recognized, even today there are difficulties for their generalized implementation by nurses. Some alleged reasons are that the elaboration of care plans is not part of the routines in daily care, records in free text are easier to note changes in patients, lack of time, the complexity of patients makes individualization difficult or the lack of support from those responsible in the organization (Castellá-Creus et al., 2019; Conrad et al., 2012). In this sense, when the importance of developing care plans is identified, the nursing diagnosis is not made explicit (Glasper, 2020).

Government documents on clinical management for COVID-19 did not include care plans, nursing diagnoses or a framework of care (Ministerio de Sanidad, 2020a, 2020c). The studies published on nursing management in the face of this pandemic focus the interest on human and material resources, but do not allude to the identification of care problems in the population (Huang et al., 2020; Legido-Quigley et al., 2020; Martínez-Estalella et al., 2020).

A global analysis shows that the proposed diagnoses focus on domains 11. Safety/protection with eight diagnoses (a distinction is made between the potential problems of respiratory and skin infection), 3. Elimination and exchange with six diagnoses and 4. Activity/Rest with six other diagnoses. The rest of the labels appear in domain 12. Comfort with two labels and domains 1. Health promotion and 7. Role relationship with a care problem each. The diagnoses added by the experts focussed on domain 9. Coping/stress tolerance.

The diagnoses with the highest scores were Hyperthermia (00007), Impaired gas exchange (00030), Impaired social interaction (00052) and Risk of loneliness (00.054). These findings correspond to the main warning signs of COVID-19 infection and the consequences of isolation as the main intervention to stop contagion (Armitage & Nellums, 2020; World Health Organization, 2020f).

The diagnoses that were not approved were related to the condition of the person prior to the diagnosis of COVID-19. These results suggest that the type of population and the problems derived from COVID-19 should be analysed separately. The study of people should include an analysis of their vulnerability and care problems prior to the COVID-19 diagnosis. These studies would make it possible to link diagnoses of self-care deficit or incontinence to a specific population (Fernández Batalla et al., 2018).

The suggestions in external and internal validation suggest the importance of problems in the psychosocial area. Isolation involves a change in routine and social relationship that has an impact on the appearance of care problems, especially in some populations. People who can suffer this type of problems are those who culturally have close social and family contact and, especially, older people who live alone, are dependent and their only social contact is outside the home (Armitage & Nellums, 2020; Family Health in Europe-Research in Nursing, 2020; McPeake & Pattison, 2020).

Other diagnoses that could be considered in the social area were not introduced in this manual because, since the opening of the hospital, measures of contact with the family were introduced through electronic devices such as tablets. All patients were able to keep in touch with the family. In addition, the social impact of the pandemic caused many people to donate materials, such as books, and volunteered for entertainment activities to those admitted. All this following the contagion prevention measures.

The NOC outcomes and NIC interventions were mostly approved, but their analysis requires more detailed studies that include the aetiology of the problem and the main interventions that can be performed in the professional context. Furthermore, the inclusion of experts from different professional fields can be associated with the variability of possible NOC and NIC for the same care problem in
| Code   | Diagnostics (NANDA-I)       | Code  | Outcomes (NOC)                  | Code  | Interventions (NIC)                      |
|--------|----------------------------|-------|---------------------------------|-------|------------------------------------------|
| 00030  | Impaired gas exchange      | 0402  | Respiratory status: Gas exchange| 6540  | Infection control                        |
|        |                            | 0408  | Tissue perfusion: Pulmonary     | 6680  | Vital signs monitoring                   |
|        |                            | 0802  | Vital signs                     | 3350  | Respiratory monitoring                   |
|        |                            | 0403  | Respiratory status: Ventilation | 4232  | Phlebotomy: Arterial blood sample        |
|        |                            |       |                                 | 7690  | Laboratory data interpretation           |
|        |                            |       |                                 | 3590  | Skin surveillance                        |
|        |                            |       |                                 | 2620  | Neurologic monitoring                    |
|        |                            |       |                                 | 3320  | Oxygen therapy                           |
|        |                            |       |                                 | 3390  | Ventilation assistance                   |
|        |                            |       |                                 | 3140  | Airway management                        |
| 00034  | Dysfunctional ventilatory weaning response | 0402 | Respiratory status: Gas exchange | 6680 | Vital signs monitoring |
|        |                            | 0408  | Tissue perfusion: Pulmonary     | 3350  | Respiratory monitoring                   |
|        |                            | 0411  | Mechanical ventilation response: Adult | 4232 | Phlebotomy: Arterial blood sample        |
|        |                            | 0802  | Vital signs                     | 7610  | Bedside laboratory testing               |
|        |                            | 0403  | Respiratory status: Ventilation | 7690  | Laboratory data interpretation           |
|        |                            |       |                                 | 3590  | Skin surveillance                        |
|        |                            |       |                                 | 2620  | Neurologic monitoring                    |
|        |                            |       |                                 | 3320  | Oxygen therapy                           |
|        |                            |       |                                 | 3390  | Ventilation assistance                   |
|        |                            |       |                                 | 3140  | Airway management                        |
| 00031  | Ineffective airway clearance | 0410 | Respiratory status: Airway patency | 3250 | Cough enhancement                        |
|        |                            | 0403  | Respiratory status: Ventilation | 3230  | Chest PHysiotherapy                      |
|        |                            |       |                                 | 3350  | Respiratory monitoring                   |
| 00004  | Risk for infection (respiratory) | 0703 | Infection severity             | 6680  | Vital signs monitoring                   |
|        |                            | 1924  | Risk control: Infectious process | 6540 | Infection control                        |
|        |                            |       |                                 | 6550  | Infection protection                     |
| 00004  | Risk for infection (skin)   | 0703  | Infection severity             | 6680  | Vital signs monitoring                   |
|        |                            | 1101  | Tissue integrity: Skin and mucous membranes | 3590 | Skin surveillance                        |
|        |                            | 1924  | Risk control: Infectious process | 6540 | Infection control                        |
|        |                            | 1103  | Wound healing: Secondary intention | 6550 | Infection protection                     |
|        |                            |       |                                 | 4062  | Circulatory care: Arterial insufficiency  |
|        |                            |       |                                 | 4066  | Circulatory care: Venous insufficiency   |
|        |                            |       |                                 | 3584  | Skin care: Topical treatments            |
|        |                            |       |                                 | 3660  | Wound care                               |
| 00132  | Acute pain                 | 2102  | Pain level                      | 6680  | Vital signs monitoring                   |
|        |                            | 1605  | Pain control                    | 1400  | Pain management                          |
|        |                            |       |                                 | 2210  | Analgesic administration                 |
| 00092  | Activity intolerance       | 0005  | Activity tolerance             | 6680  | Vital signs monitoring                   |
|        |                            | 0001  | Endurance                       | 0970  | Transfer                                 |
|        |                            |       |                                 | 0180  | Energy management                        |
| Code     | Diagnostics (NANDA-I)          | Code | Outcomes (NOC)                      | Code | Interventions (NIC)                      |
|----------|--------------------------------|------|-------------------------------------|------|----------------------------------------|
| 00093    | Fatigue                        | 0007 | Fatigue level                       | 6680 | Vital signs monitoring                   |
|          |                                | 0002 | Energy conservation                 | 0970 | Transfer                                |
|          |                                |      |                                     | 0180 | Energy management                       |
| 00102    | Feeding self-care deficit      | 1014 | Appetite                            | 1050 | Feeding                                 |
|          |                                | 1008 | Nutritional status: Food and fluid  | 1803 | Self-care assistance: Feeding           |
|          |                                | 0303 | Self-care: Eating                   |      |                                        |
|          |                                | 1010 | Swallowing status                   |      |                                        |
| 00039    | Risk for aspiration            | 1010 | Swallowing status                   | 1918 | Aspiration precautions                  |
|          |                                | 1008 | Nutritional status: Food and fluid  |      |                                        |
|          |                                | 0410 | Respiratory status: Airway patency  |      |                                        |
| 00247    | Risk for impaired oral mucous membrane integrity | 0308 | Self-care: Oral HYGIENE             | 1720 | Oral health promotion                   |
|          |                                | 1100 | Oral health                         | 1710 | Oral health maintenance                 |
| 00045    | Impaired oral mucous membrane integrity | 0308 | Self-care: Oral hygiene             | 1720 | Oral health promotion                   |
|          |                                | 1100 | Oral health                         | 1730 | Oral health restoration                 |
|          |                                |      |                                     |      | Skin surveillance                       |
|          |                                | 1101 | Tissue integrity: Skin and mucous   | 3590 | Skin care: Topical treatments           |
|          |                                |      | membranes                           |      |                                        |
|          |                                | 1103 | Wound healing: Secondary intention  | 3584 | Skin care: Topical treatments           |
|          |                                |      |                                     | 3660 | Wound care                              |
| 00013    | Diarrhea                       | 0501 | Bowel elimination                   | 0410 | Bowel incontinence care                 |
|          |                                | 0500 | Bowel continence                    | 1804 | Self-care assistance: Toileting         |
|          |                                | 1101 | Tissue integrity: Skin and mucous   | 3590 | Skin surveillance                       |
|          |                                |      | membranes                           |      |                                        |
| 00047    | Risk for impaired skin integrity | 1101 | Tissue integrity: Skin and mucous   | 3590 | Skin surveillance                       |
|          |                                |      | membranes                           |      |                                        |
|          |                                |      |                                     | 3584 | Skin care: Topical treatments           |
|          |                                |      |                                     | 3540 | Pressure ulcer prevention               |
| 00078    | Ineffective health management  | 1608 | Symptom control                     | 6680 | Vital signs monitoring                   |
|          |                                | 0802 | Vital signs                         | 2620 | Neurologic monitoring                   |
|          |                                | 2301 | Medication response                 | 2300 | Medication administration               |
|          |                                |      |                                     | 2304 | Medication administration: Oral         |
|          |                                |      |                                     | 2314 | Medication administration: Intravenous (IV) |
|          |                                |      |                                     | 2311 | Medication administration: Inhalation   |
|          |                                |      |                                     | 5616 | Teaching: Prescribed medication         |
|          |                                |      |                                     | 5618 | Teaching: Procedure/Treatment           |
| 00052    | Impaired social interaction    | 1504 | Social support                      | 4920 | Active listening                        |
|          |                                |      |                                     | 5340 | Presence                                |
|          |                                |      |                                     | 5270 | Emotional support                       |
|          |                                |      |                                     | 7110 | Family involvement promotion            |

(Continues)
relation to the cause of the problem, the place of health care and the
time of the intervention.

5.1 | Limitations

This study offers a set of diagnoses that represent the care problems
of a specific and limited population: adults hospitalized for COVID-19
in a monographic hospital in Madrid in a health emergency.

A limitation of the study is that it does not include other popu-
lations, such as pregnant women and children. Care diagnoses for
people in critical situations require another study and a proposal can
be found in previous studies (González Aguña et al., 2021b).

Subsequent studies, which include other health centres or that
consider reviews of clinical records, may increase the knowledge
base and allow the results of the manual to be compared.

In addition, the study was conducted in Spanish language and
subsequently translated into English for dissemination. The care plan
manual is translated using the original English sources of NANDA-I,
NOC and NIC (Butcher et al., 2018; Herdman & Kamitsuru, 2017;
Moorhead et al., 2018).

Finally, the number of participants that make up the panel of
experts is limited and selected by technique of convenience. The
quality of the sample would improve by increasing the number of
participants and including hospital nurses who directly care for
patients.
CONCLUSION

The COVID-19 Hospitalized Care Plans Manual provides a set of validated diagnoses, outcomes and interventions with a high degree of expert agreement. Care plans approved are shown in Table 6.

This manual provides a knowledge base that can be used in other studies to understand the impact of COVID-19 on care around the world. In addition, the electronic implementation in the medical record would allow research on validation, effectiveness of interventions and improvement of the evidence in care. Research with care plans would show the impact of nursing in obtaining health results and patient satisfaction.

However, additional studies are necessary to continue expanding knowledge about the COVID-19 pandemic from a careful approach and with standardized language.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the author(s). All authors have approved the manuscript and declare that this manuscript has not been published before and have not received funding source.

AUTHOR CONTRIBUTIONS

Alexandra González and José María Santamaría: Study conception, data analysis and manuscript drafting. Marta Fernández: Data analysis and critical review with substantial contributions. Javier Díaz-Tendero and Juan Antonio Sarrión: Research process and critical review with substantial contributions. Blanca Gonzalo: Supporting the study and manuscript reviewing, including the latest contributions from the reviewers.

ETHICAL APPROVAL

The study was presented and approved by the COVID-19 IFEMA Hospital with internal code 20/03-AB-VAL_MAN.

In addition, the project was approved by the Epistemology and Bioethics Committee of the Madrid Scientific Care Society (SoCMaC) with code 0402_2020_CElC and obtained the endorsement of the Research Group MISK of the University of Alcalá (Sociedad Científica Madrileña del Cuidado, 2020; University of Alcalá, 2020).

All participants were informed of the study and gave their written consent. The Nursing Directorate granted consent for the study and the voluntary participation of professionals.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no data sets were generated or analysed during the current study.

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