4 The Axial Structure of NANDA International

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4.1 Introduction to the Axial Structure

The NANDA-I terminology was the first recognized nursing terminology by the American Nurses Association (Lundberg et al., 2008). The benefit of a recognized nursing language is the indication that the classification system is accepted as supporting nursing practice by providing clinically useful terminology. The terminology is also registered with Health Level Seven International (HL7), a health care informatics standard, as a terminology to be used in identifying nursing diagnoses in electronic messages among clinical information systems (www.HL7.org). Our terms were mapped into SNOMED as one of the original nursing terminologies to do so; we continue today to request the updating of our terms within SNOMED CT. Those in SNOMED CT member countries can support this effort by contacting their SNOMED CT national release centers to request the complete updating of the latest edition of NANDA-I terms within SNOMED CT.

4.2 NANDA-I Taxonomy II: A Multiaxial System

The NANDA-I diagnoses are concepts which represent the judgments nurses make as a result of their assessment: a diagnosis results from clinical reasoning. The standardized term that is used to represent that diagnosis is constructed using a system of terms that are categorized as axes. An axis, for the purpose of the NANDA-I Taxonomy II, is operationally defined as a dimension of the human response that is considered in the diagnostic process. There are eight axes in the NANDA-I model. What is an axis, and why do we have so many? The primary reason for having a multiaxial system for diagnosis is to enable:

"clinical description, professional communication, treatment planning, prognosis, clinical research, and professional training. Additionally and more specifically, multiaxial diagnosis has purposes that have been the actual motivation for the development of particular proposals and schemas. These purposes correspond to a given conceptualization of the appropriate scope of the clinical condition to be orderly, systematically, and succinctly described and coded (i.e., diagnosed)." (Mezzich et al, eds., 1994)

Do nurses in clinical practice need to be intimately familiar with the NANDA-I axes? The short answer to this question is no, this is not required to use the diagnoses. Other clinical fields, such as psychology, have

restructured their documentation systems to remove multiaxial diagnosis and documentation, because it was felt to not be clinically useful (American Psychiatric Association, 2013). It is our belief that the axes are most useful to nurses in informatics, using standardized terminology systems within electronic health records, in Apps, and for development of clinical support tools. However, it can be helpful to think through the axes, especially when dealing with a human response that is new to you as a clinician, or is unusual in your clinical practice.

First, let's take a look at the axes, and then we will walk through an example of how they could be used in clinical practice. It is important to recognize the following key points:

1. Most diagnoses will not have all axes terms identified, but ***all*** diagnoses should have the subject of care (Axis 2), judgment term (Axis 3), and primary focus (Axis 1) identified, at a minimum (although Axes 1 and Axis 3 are occasionally combined into one term, as with *contamination*);
2. The axis values for each diagnosis are displayed in this book at the top of each diagnosis page; however – and this is critical to understand – there will be axis terms identified that are not found in the diagnosis label. Rather, the axis term represents the concepts/terms within the label. An example of this will be provided later in the chapter.

The diagram, *NANDA-I Model of a Nursing Diagnosis* (▶ Fig. 4.1), displays NANDA-I's axes and their relationship to each other. As a reminder, an axis is operationally defined as a dimension of the human response that is considered in the diagnostic process. There are eight axes in the revised multiaxial model for NANDA-I.

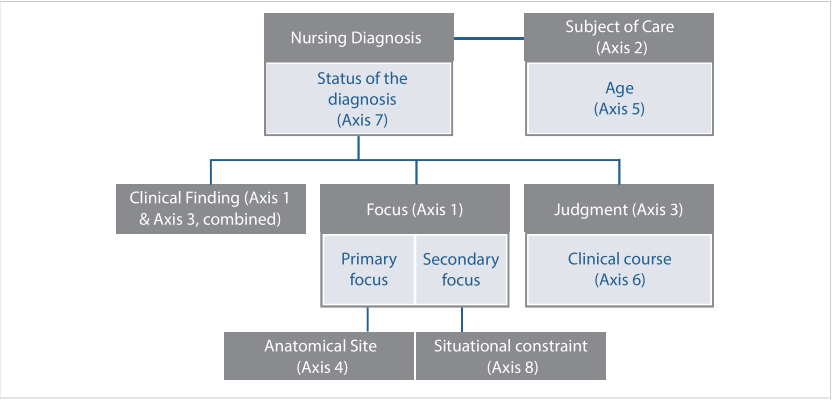

Fig. 4.1 NANDA International Nursing Diagnosis Model, 2024.

4.3 Definitions of the Axes

The eight NANDA-I axes are briefly described here, and will then be discussed in depth.

- Axis 1:
  - **Primary focus –** the concept focus of the diagnosis (behavior, development, respiratory function, thermoregulatory function, etc.); the area of attention (International Standards Organization, 2014).
  - **Secondary focus –** context / symptom focus (allergy, communication, decision-making, health management, lactation, parenting, etc.).
- Axis 2: **subject of care** (individual, family, community)
- Axis 3: **judgment** (delayed, excessive, ineffective, maladaptive, etc.)
- Axis 4: **anatomical site** (cardiopulmonary system, genitourinary system, sensory nervous system, etc.)
- Axis 5: **age**
  - **age lower limit** (1d, 1y, 120d, 61y, etc.)
  - **age upper limit** (28d, 365d, 9y, 18y, 60y, etc.).
- Axis 6: **clinical course** (acute, chronic, intermittent)
- Axis 7: **status of the diagnosis** (problem-focused, potential to improve, potential to deteriorate)
- Axis 8: **situational constraint** (occupational setting, perioperative period, end-of-life).

Axes may contain values, even though the exact axis term may not be found in the label. In some cases they are named explicitly, such as with the problem-focused diagnoses, *maladaptive community coping* (00456) and *ineffective family health management* (00080), in which the subject of the diagnosis is named using the two values "community" and "family" taken from Axis 2 (subject of care). The terms, "maladaptive" and "ineffective", are two of the values contained in Axis 3 (judgment). The primary and secondary foci, however, are not in either label. For example, for *maladaptive community coping*, the primary focus (what you think of first) is represented by the axis term *stress response*, while the secondary or context / symptom focus (what you think of next) is represented by the axis term, *adaptation*. In *ineffective family health management*, the primary focus is *behavior*, and the secondary or context / symptom focus, which is a part of the diagnosis label, is *health management*.

As another example, in terms in which we use one word in the original English, such as *hyperthermia* (00007), there is no individual judgment term or subject of the information found in the label. However, we can easily

identify that the judgment intention is that there is too much heat ("hyper-"), which we represent using the judgment term, *excessive*; the subject is inferred to be *individual*. Likewise, in this same diagnosis, what we think about first is that there is an issue with *thermoregulation*, and thus the primary focus in this diagnosis is *thermoregulatory function.*

This means that we have the diagnosis, *hyperthermia* (00007), represented by the following axes:

- Axis 1 (Primary focus): thermoregulatory function
  secondary or context / symptom focus: [none]
- Axis 2 (Subject of care): individual
- Axis 3 (Judgment): excessive
- Axis 4 (anatomical site): [none]
- Axis 5 (age): [none]
- Axis 6 (clinical course): [none]
- Axis 7 (status): problem-focused
- Axis 8: situational constraint: [none].

In some cases, the axis is implicit, as is the case with the diagnosis *decreased activity tolerance* (00298), in which the subject of care (Axis 2) is always the individual patient. In some instances, an axis may not be pertinent to a particular diagnosis and therefore is not part of the nursing diagnostic label. For example, the age axis may not be relevant to every diagnosis. In the case of diagnoses without explicit identification of the subject of the diagnosis, it may be helpful to remember that NANDA-I defines a patient as "an individual, family, or community".

Axis 1 (the focus of the diagnosis) and Axis 3 (judgment) are essential components of a nursing diagnosis. In some cases, however, the focus of the diagnosis contains the judgment, such as with *contamination* (00181); in these cases, the judgment is not explicitly separated out in the diagnostic label. Axis 2 (subject of care) is also essential, although, as described above, it may be implied and therefore not included in the label. The DDC requires these axes for submission; the other axes may be used where relevant for clarity.

Finally, you will note that with some diagnoses, most if not all of the axes terms will not actually appear in the diagnostic label. This is likely to cause confusion, so let's take a moment to think about how the axial structure will be used. The primary reason for the axes, as we have previously stated, is to enable machine-readable data that will be useful to nurses in informatics, particularly for development of clinical support tools. This means that the axes terms exist in the background, within the EHR system – they aren't being

used on a day-to-day basis by nurses in practice – but they are important in the sense that they support machine learning, tools to support nurses in considering diagnoses based on assessment data, and enable a searchable database for finding terms that represent similar concepts.

The nursing diagnosis, ***non-suicidal self-injurious behavior*** (00467), is represented by the following axes terms – only one of which actually appears in its label:

- Axis 1 (Primary focus): *behavior*
  - [secondary or context / symptom focus: *violence*]
- Axis 2 (Subject of care) : *individual*
- Axis 3 (Judgment): *maladaptive*
- Axis 4 (anatomical site): [*none*]
- Axis 5 (age): [*none*]
- Axis 6 (clinical course): [*none*]
- Axis 7 (status): *problem-focused*
- Axis 8: situational constraint: [*none*].

Let's consider an example of E.G., a cisgender female adolescent patient, in the school setting.

> E.G. was referred for assessment by a teacher due to observed cutting behavior, and because she is displaying overt anger behaviors in the classroom. She is clearly under the influence of an illegal substance at the time of the assessment, her teacher indicates she is displaying excessive anxiety and impulsiveness. The nurse observes scabbed cuts on E.G.'s thighs, lower legs, and arms. Older scars are visible that are completely healed. Two of the newer cuts required cleaning and dressing, and one is deeper so the nurse applied steristrips to approximate the edges.
>
> E.G. claims to spend the majority of her time engaged in online gaming and interacting with social media. She admits to poor sleep patterns. Upon questioning, EG says her parents are virtually absent in her daily life: "they're too busy fighting about the divorce to even remember I'm alive". She denies suicidal ideation, and states that the cutting "helps me release all the tension".

At the completion of the initial assessment, the first thing that strikes the nurse is the threat to her *physical integrity* (the cutting behavior is getting worse, with many new wounds noted, some of which are deeper and not being taken care of); the context or secondary focus is that this threat to physical integrity is self-directed *violence*. This behavior is considered *maladaptive* (the

nurse's judgment), and the diagnosis is *problem-focused*. The nurse diagnoses the human response she is observing in EG as *non-suicidal self-injurious behavior* (00467). Unfortunately, this human response is not new to this nurse, who frequently cares for students with this diagnosis. But what about the nurse for whom this is the first patient exhibiting this time of response?

Within machine learning and artificial intelligence, taxonomic axes can be used to classify and organize data sets, which is critical for data aggregation and making predictions. The ability to classify assessment data into broader dimensions of the human response that are considered in the diagnostic process (axes) enables the support of clinical decision making and diagnosis through computerized clinical decision-support tools. These tools can provide support to nurses who are faced with a patient situation to which they are new, and provide recommendations to consider as potential diagnoses, based on information provided by the nurse's assessment.

4.3.1 Axis 1: The Focus of the Diagnosis

The focus of the diagnosis is the principal element or the fundamental and essential part, the root, of the diagnostic concept. It describes the "human response" that is the core of the diagnosis.

The focus of a diagnosis may consist of one or more nouns. When more than one noun is used (e.g., *mood regulation*), each one contributes a unique meaning to the focus of the diagnosis, as if the two were a single noun; the meaning of the combined term, however, is different from when the nouns are stated separately. Frequently, a noun (*function*) may be used with another noun that serves as an adjective (*cognitive*) to denote the focus, *cognitive function*. Adjectives describe or modify nouns, providing more information about their attributes. In this case, *cognitive* describes the type of function to which we are referring; *function* is a noun, representing a specific concept or thing.

We have opted to have a two-part focus. One way of understanding this might be to ask yourself, "When thinking about this patient's assessment, what strikes me first?" Your answer might be something that is a clear problem or risk – or it might be something that is broader in nature. You might think, "there is a problem with this patient's thermoregulatory function". Or, you might think, "something is happening with Mr. J's blood glucose pattern. They are varying up and down outside the desirable range dramatically lately, and he is usually very stable. I wonder if something is affecting his ability to manage his health". This might lead you to consider Mr. J's ability for self-management. These broad categories can be considered the focus of these diagnoses: *thermoregulatory function*, and *self-management*.

Axis 1 – Primary focus. This might be thought of as the inference that "strikes you first" as you are considering the human response being identified. For example, in the case of *maladaptive community coping,* mentioned above, the primary focus (what you think of first) is represented by the axis term *stress response*. When observing community residents struggling with an environmental disaster, pointing blame rather than mobilizing efforts to prevent and control sequelae, for example, the first thing that might strike the nurse is that this is a *stress response*.

Axis 1 – Secondary (context / symptom) focus. This is a more granular level of inference, or "what strikes you next". After further data collection, this focus for the community struggling with the stress response might be represented by the axis term, *adaptation*.

In some cases, it can be difficult to determine exactly what should be considered the focus of the diagnosis. Although nearly two years were spent in our attempt to clarify and specify our axes terms, this is a process, and we know that there may be additional revisions to come as we work with these new axes terms.

The diagnostic foci of the NANDA-I nursing diagnoses are shown in ▸ Table 4.1.

4.3.2 Axis 2: Subject of care

The subject of care is defined as the person(s) for whom a nursing diagnosis is determined. The terms in Axis 2 are individual, family, and community, representing the NANDA-I definition of "patient":

- ***Individual***: A single human being distinct from others, a person.
  - *Informal Caregivers* are included as individuals: A family member or helper who regularly looks after a child or a sick, elderly, or disabled person.
- ***Family***: Two or more people having continuous or sustained relationships, perceiving reciprocal obligations, sensing common meaning, and sharing certain obligations toward others; related by blood and / or choice.
- ***Community***: A group of people living in the same locale under the same governance. Examples include neighborhoods, cities, groups.
  - *Groups* are included as communities: A number of people with shared characteristics.

In the example above of *maladaptive community coping* (00456), community is clearly stated in the label as the subject of the information.

Table 4.1 Diagnostic foci of the NANDA-I nursing diagnoses

Adaptation	Fluid volume	Recovery
Aging	Grieving	Reproduction
Allergy	Health awareness	Resilience
Aspiration	Health maintenance	Role
Attachment	Health management	Self-concept
Blood glucose management	Home maintenance	Self-control
Blood volume	Hygiene	Self-efficacy
Breathing pattern	Infection	Self-esteem
Cardiac output	Information processing	Sleep
Cardiovascular function	Lactation	Social interaction
Caregiving	Literacy	Sociocultural transition
Communication	Liver function	Spiritual well-being
Decision-making	Lymphedema management	Substance withdrawal
Dry eye management	Moral distress	Swallowing
Dry mouth management	Motor development	Threat
Dysreflexia	Musculoskeletal function	Tissue perfusion
Eating pattern	Nausea management	Tissue trauma
Electrolyte balance	Neurobehavioral	Trauma response
Elimination	Nutrient intake	Urinary continence
Elopement	Oxygenation	Violence
Endurance	Pain management	Weight management
Energy management	Parenting	
Environmental hazard	Perception	

When the subject of the diagnosis is not explicitly stated, it becomes the individual by default. However, it is perfectly appropriate to consider such diagnoses for the other subjects of the diagnosis as well. A nurse might diagnose individuals with *excessive fear* (00390) who have a learned response to threat and are in an unfamiliar setting, separated from their support systems, and who are experiencing feelings of apprehensiveness, increased alertness, intense dread, and psychomotor agitation, and / or who suffer from nausea, increased blood pressure and heart rate, and diarrhea. However, *excessive fear* (00390) could also be an appropriate diagnosis for a neighborhood that shelters a new immigrant community whose members were exposed to a traumatic situation (e.g., war), live in areas with increased violence, and whose members face communication barriers in their new and unfamiliar environment, and whose residents are experiencing distressing symptoms such as

apprehensiveness, decreased self-assurance, inadequate appetites, and are concentrated on the source of fear.

NANDA-I believes, however, that as there is more research on individual versus group responses, there may be different etiologic factors – or defining characteristics – and if so, specificity in the diagnosis will increase clinical relevance.

4.3.3 Axis 3: Judgment

A judgment is a descriptor or modifier that limits or specifies the meaning of the focus of the diagnosis. The ISO previously defined judgment as "*opinion or discernment related to a focus*" (International Standards Organization, 2014). The focus of the diagnosis, together with the nurse's judgment about it, forms the diagnosis. The values in Axis 3 are found in ▶ Table 4.2.

In the example used above of *maladaptive community coping*, we can now identify that the judgment term is *maladaptive*, which is defined as "not adjusting adequately or appropriately to the environment or situation".

In its newest release, ISO (2023) seems to move away from an emphasis on nursing judgment, which we believe is potentially disastrous to the profession's autonomy. Currently, although ISO defines nursing diagnoses as "judgements about assessment data; they form the basis for setting goals and

Table 4.2 Definitions of judgment terms for Axis 3, NANDA-I Taxonomy II

Judgment	Definition
Decreased	Smaller or fewer in size, amount, intensity, or degree than expectation or accepted norms.
Delayed	Slowness or failure to attain an expected milestone, or taking longer than expected to reach a state or outcome.
Disrupted	Disturbance in normal course or continuation of a function, process, or response.
Excessive	Amount greater than expectation or accepted norms.
Imbalanced	Lack of proportion or relation between corresponding things.
Impaired	Weakened or damaged (something, especially a faculty or function); absence of or significant difference in body structure or function.
Inadequate	Not having enough of a specified quality or ingredient; lacking some elements or characteristics.
Ineffective	Not producing any significant or desired effect.
Maladaptive	Not adjusting adequately or appropriately to the environment or situation.
Prepared	Willingness to do something.
Unstable	Prone to change, fail, or give way; not steady.

deciding on nursing actions" (ISO, 2023, p. 27), it no longer includes a judgment term in its model, and seems to be more focused on observations in its new release which, as we have stated previously, do not require clinical reasoning. Clearly this is not consistent with current definitions of diagnosis, which are more than mere observations. Such changes are concerning as they suggest a lack of understanding of the importance of clinical reasoning for accuracy in diagnosis by individuals developing standards that our profession may be required to follow, thus threatening the ability of researchers to harness verifiable nursing information from the electronic health records.

4.3.4 Axis 4: Anatomical Site

Anatomical Site (formerly "site") describes the systems of the body and/or their related functions – all tissues, organs, anatomical sites, or structures. Use of terms at this level of granularity prevents overlap in terms, thus increasing clarity. The terms in Axis 4 are shown in ▶Table 4.3. This Axis is found

Table 4.3 Locations and their definitions in Axis 4, NANDA-I Taxonomy II

Term	Definition
Cardiopulmonary system	Includes the heart and its blood vessels and blood, blowhole, trachea, bronchi and lungs. These interdependent systems are responsible for picking up and carrying oxygen to the cells of the body and transporting and discarding carbon dioxide.
Cerebrovascular system	Comprises the vessels that transport blood to and from the brain.
Gastrointestinal system	The passageway of the digestive system that leads from the mouth to the anus; contains all the major organs of the digestive system, including the esophagus, stomach, and intestines.
Genitourinary system	Also known as the urogenital system, includes all organs of both the reproductive and the urinary systems.
Integumentary system	Body's outer layer; composed of skin, nails, hair and the glands and nerves of the skin.
Lymphatic system	Organ system that is part of the immune system, and complementary to the circulatory system; consists of a large network of lymphatic vessels, lymph nodes, lymphoid organs, lymphoid tissues and lymph.
Musculoskeletal system	Includes the bones, muscles, ligaments, tendons, and joints, which support and move the body.
Peripheral vascular system	Includes all blood vessels that exist outside the heart, classified as follows: aorta and its branches, arterioles, capillaries, venules and veins returning blood to the heart.
Sensory nervous system	Consists of sensory neurons, neural pathways, and parts of the brain involved in sensory perception and interoception.

beneath the Focus (Axis 1) in the NANDA-I model, as it relates to the focus of the diagnosis.

4.3.5 Axis 5: Age

Age refers to the age group of the person(s) who is (are) the subject of care (Axis 2). The axis is embedded in Axis 2 (subject of care) on the graphic depiction of the NANDA-I model, because it provides specific information about the individual. In the axis revision work, it was noted that finding terms that did not overlap was exceptionally difficult. For example, within the concept of child, one can further delineate neonate, infant, and adolescent. However, to do so forces overlap in terms, which violates the rules of creating axes. Thus, there are no terms, per se, remaining in Axis 5. Rather, upper and lower age limits are provided, demarcated as days (d) or years (y). Specific ages, if appropriate, are indicated within the definition of diagnoses that use an age-related term (e.g., neonate, child, adolescent, elder) in the diagnostic label.

4.3.6 Axis 6: Clinical Course

Clinical course, previously named "Time", describes the onset and / or duration of the focus of the diagnosis, and is embedded in the Judgment box at the right of the middle tier of the NANDA-I Model. The terms in Axis 6 are:

- *Acute*: lasting < 3 months
- *Chronic*: lasting ≥ 3 months
- *Intermittent*: stopping or starting again at intervals, periodic, cyclic.

4.3.7 Axis 7: Status of the Diagnosis

NANDA International considers three types of diagnoses: problem-focused, and the two types of potential diagnoses: *potential to deteriorate* and the *potential to improve*. The NANDA-I terms in Axis 7, and their definitions, are:

- *Problem-focused*: undesirable human response to a health condition/life process that exists in the current moment (includes syndrome diagnoses)
  Note: In problem-focused diagnoses this status is assumed in the label itself, there are not standardized terms used for every problem-focused diagnosis.
- *Potential to improve*: motivation and desire to increase well-being and to actualize human health potential that exists in the current moment (Pender et al 2006). This status is represented in the NANDA-I labels using the phrase, "*Readiness to enhance*".

– *Potential to deteriorate*: susceptibility for developing, in the future, an undesirable human response to health conditions/life processes. This status is represented in the NANDA-I labels using the phrase, "*Risk for*".

The terms in Axis 7 (status of the diagnosis) are not currently expressed, explicitly, in any of the NANDA-I nursing diagnosis labels (Miguel et al., 2019). However, the axis is implicit in every diagnosis as this relates to the type of diagnosis that is represented by the label.

4.3.8 Axis 8: Situational Constraint

This axis refers to settings (environmental locations, such as occupational setting) or situational periods (such as perioperative period) that relate to the diagnostic concept. The need for terms to address the time and circumstance of *end-of-life*, for example, has been addressed by diagnosis experts (Bragança et al., 2021), and required consideration. The terms in Axis 8 in this first release are: *occupational setting*, and *perioperative period*, and *end-of-life*. It is anticipated that other terms, such as school (setting) or puberty (situational period), could be added to represent diagnoses occurring in these situational periods. NANDA-I opted for an axis that could provide information related to situational periods and environmental settings, thus supporting clinical decision-making by using an independent axis with machine-readable terms. For example, being aware of human responses that occur within the constraint of a particular time frame (e.g., end-of-life) or location (e.g., a work setting) could be helpful for nurses working with individuals in these settings or time periods. The terms in Axis 8, and their definitions, are:

– *End-of-life:* time period of progressive life-limiting disease with a prognosis of months or less, usually with impaired function and increased symptom burden requiring higher levels of care (Bragança et al, 2021; Hui et al., 2014; National Institutes of Health, 2014).
– *Occupational setting*: location where work is performed, either paid or voluntary, outside the individual's home environment.
– *Perioperative period*: time lapse surrounding the surgical act; occurs within three stages: preoperative, operative and postoperative.

4.4 Future considerations

A recent basic statistical analysis of diagnostic labels demonstrated that the 2018–2020 NANDA-I nursing diagnoses used Axis 1 (focus) in association with different terms from the other axes, except in situations in which the label was a single word (e.g., anxiety, fear, obesity). Axis 3 (judgment) was the

second most used axis, contributing to the construction of 82% of the diagnoses. The remaining axes were used to a lesser extent, in 18% of the nursing diagnoses (Miguel et al., 2019).

Currently, we have 62 diagnoses without an implicit judgment term; these will be a focus for the next cycle. To date, few diagnoses within NANDA-I specifically address the elderly (n = 2), adult ($n = 4$), child and adolescent ($n = 10$), infant ($n = 7$), or neonatal ($n = 6$) populations within the diagnosis label. Likewise, there are only a few that explicitly address a subject of the information that is not the individual: family ($n = 8$), community ($n = 2$). Therefore, it seems the adequacy of nursing diagnoses to such populations, whose specificities make them unique when comparing them to the general population, may remain limited. The absence of a clinical picture consistent with those clients' reality – including differentiated defining characteristics, related and/or risk factors – and the complexity of decisions nurses undertake in caring for them, leads us to think that nursing diagnosis labels are far from being thoroughly developed (Miguel et al., 2019).

The adjustments of nursing diagnosis labels to particular contexts, environments, and populations – implicitly including the rights of clinical reasoning advocated by Levett-Jones et al. (2010) – could raise the quality of nursing care. In addition, it would provide the necessary evidence base for the NANDA-I terminology, corroborating the nursing diagnoses hierarchy within taxonomy II, or lead to an appeal for more adequate and clear domains and classes (Miguel et al., 2019).

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