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Nurses' characteristics and practice environments: Comparison between clusters with different attitude and utilisation profiles regarding nursing diagnosis

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Abstract

Aim: To identify clusters of nurses in relation to the utilisation and attitude towards nursing diagnosis and to compare their profiles considering demographics, professional characteristics and nursing practice environments.

Background: Nursing diagnosis has benefits for both patients and nurses, and the attitude of nurses towards nursing diagnosis has been proposed as a determinant of its use. Therefore, an adequate understanding of nurses' attitude and utilisation profiles regarding nursing diagnosis is essential for the nursing managers who want to adopt nursing diagnosis as a practice framework.

Methods: A cross-sectional survey design was used. A sample of 239 nurses working in the Catalan primary health care system were categorised into clusters with similar attitude and utilisation profiles, which were compared with each other a posteriori.

Results: Nursing managers were grouped into more positive attitude clusters than clinical nurses. Nurses working in supportive nursing practice environments were classified into more positive attitude and higher utilisation clusters.

Conclusion: The field of work and nursing practice environments were found as differential factors in profiles of nurses with different attitudes towards and/or utilisation of nursing diagnosis.

Implications for Nursing Management: The promotion of supportive nursing practice environments could enhance the implementation and maintenance of nursing diagnosis as a practice framework in primary health care.

KEYWORDS

attitude of health care personnel, nursing diagnosis, primary health care, work environment

1 | BACKGROUND

There is growing evidence that the use of a professional practice framework, such as the nursing process and its recording based on standardised languages, influence patients' safety and clinical outcomes (Saranto et al., 2014). Several studies have linked the organisation of nursing practice around the nursing process to an improvement of clinical management and therapeutic adherence in chronic health

problems, as well as to a decrease in drug-related costs (Azzolin, Nogueira, Rejane, Motta, & De Fátima, 2013; Cárdenas-Valladolid et al., 2012; Pérez-Rivas et al., 2016; Rojas-Sánchez et al., 2009). In addition to the impact on patients, it has been highlighted that the nursing process is also useful for nurses in terms of improved critical thinking (Müller-Staub, 2009) and communication (Rutherford, 2008). On a professional level, it also allows nursing contributions to be quantified in the form of health outcomes (Müller-Staub, 2009).

Nursing diagnosis (ND) is considered the main phase of the nursing process, as the nurse, based on data collected from the patient, makes a clinical judgement about the patient's response to actual or potential health conditions or needs, which provides the basis for the nurse's care plan (American Nurses Association, n.d.). Consequently, ND articulates the connection between assessment and care planning and its subsequent evaluation. This goes beyond the traditional professional approach in which the nurses' work focused on collaborative work with other health care professionals, which limited the nurses' development of an independent role (Raña-Lama, 1999). This way, ND has been linked to greater autonomy (Elizalde & Almeida, 2006) and improved professional identity (Axelsson, Björvell, Mattiasson, & Randers, 2006).

However, several factors have been described that hinder the use of ND, such as lack of time and insufficient training in ND (Paganin, Moraes, Pokorski, & Rabelo, 2008). Nurses' attitude towards ND is another important factor of concern if the adoption of ND is to be regarded as a practice framework. Attitudes have been proposed as an important behaviour determinant in the use of ND, as several studies conducted in different countries have found that nurses who had a positive attitude toward ND used it to a greater extent than those who did not (D'Agostino et al., 2016; Guedes, Turrini, Sousa, Baltar, & Cruz, 2012; Romero-Sánchez et al., 2014).

Nevertheless, while attitudes and behaviours are closely related, classical theories support the idea that attitudes do not always lead to the performance of a behaviour, as there are modulatory variables that interact with attitudes, thus influencing the degree to which a behaviour is determined (Ajzen, 1993). For this reason, attitudes towards ND, as well as the utilisation of ND, could be influenced by the characteristics of the nursing staff and health care organisations, which may act as facilitating or constraining factors. These elements could have a simultaneous impact on both attitudes and behaviour or they could independently impact either of them. Several researchers have studied this issue in an attempt to understand the reasons why some nurses accept and utilise ND as a work framework to a greater extent than others.

Until now, nurses' characteristics, such as demographic attributes, have shown no influence on either the utilisation of or attitude towards ND (Romero-Sánchez et al., 2014; Rudolph, 2008). Professional characteristics have also failed to have any influence on ND, with exceptions such as specific training in ND, which has been described as favourable for both use and attitude according to various studies (Collins, 2013; D'Agostino et al., 2016; Romero-Sánchez et al., 2014).

Some characteristics of health care organisations regarding ND use have also been studied. Most of these characteristics are aspects related to the specific nature of the organisations and institutions where nurses work, such as administrative workload (Paans, Nieweg, Van der Schans, & Sermeus, 2011), implementation of electronic clinical records (Lavin, Avant, Craft-Rosenberg, Herdman, & Gebbie, 2004) and educational programmes (Cruz, Pimenta, Pedrosa, Lima, & Gaidzinski, 2009). However, in an extensive review of the literature, no studies were found that evaluated the global influence of the general organisational characteristics of the work setting on the ND. It is generally acknowledged that clinical organisational environments

can have profound psychological effects on both patients and staff (Norman, 2013). Nursing practice environments (NPEs) that facilitate professional nursing practice have been linked to improved quality of care and better patient health outcomes, including a decrease in hospital mortality and treatment failures (Aiken et al., 2014). NPEs have been associated with nurses' increased job satisfaction and control over their professional practice (Berndt, Parsons, Paper, & Browne, 2009). Considering the important influence of NPEs on several aspects of the nursing process and on outcomes of nursing practice, it would be interesting to assess whether nurses with different attitudes and utilisation profiles regarding ND also work in dissimilar NPEs.

The identification of nursing staff profiles regarding ND could help to determine the existence of differential characteristics of nurses and their work environment that are common among the nurses who share the same attitude and utilisation patterns with respect to ND. Having more knowledge on this issue will enable managers to design specific, tailor-made interventions for each cluster type, which would maximise the chances of success in the implementation and maintenance of ND as a work framework for nursing practice in health care institutions. Cluster analysis is a statistical technique frequently used for the identification of groups of individuals characterised by a shared psychological or behavioural profile (Bianchi, Schonfeld, & Laurent, 2015). This could be useful for the abovementioned purpose.

2 | AIMS

The aims of this study were (a) to identify clusters of nurses in relation to the utilisation of and attitude towards ND, and (b) to examine and compare the profile of each cluster detected while considering the nurses' demographics and professional variables, as well as their NPEs.

3 | METHODS

3.1 | Design

A cross-sectional survey design was used.

3.2 | Sample

A convenience sample of registered nurses was recruited from all of the primary health care (PHC) centres belonging to the PHC management of Catalonia, a northeastern region of Spain.

3.3 | Variables and instruments

Participants completed a survey that included the following:

- Demographic (age and gender) and professional data (years of experience as a nurse, field of work and postgraduate training).

- Self-evaluation of the frequency of ND use, which was measured using a single question with a five-point scale with responses ranging from one (never) to five (always).
- Positions on ND (PND): The PND is a 20-item semantic differential scale developed by Lunney and Krenz (1992) to measure nurses' attitudes towards the concept of ND. Each item consists of a pair of opposite adjectives, representing pole properties of ND, separated by a seven-point line, where seven corresponds to the point closest to the positive adjective and one corresponds to the point closest to the negative adjective. Respondents are asked to place a mark over the line to coincide with the point that most closely represents their feelings about the concept. The overall score, ranging from 20 to 140, is obtained by adding the number assigned to the point selected in every item. Higher scores indicate better attitudes and lower scores indicate worse attitudes, with a neutral attitude represented by a score of 80. The PND has shown evidence of satisfactory psychometric properties, revealing a one-factor model, adequate criterion and contrasting-group validities, as well as internal consistency and test-retest reliability in the original version (Lunney & Krenz, 1992) and other transcultural adaptations (D'Agostino et al., 2016), including the Spanish version (Romero-Sánchez et al., 2013), which is used in this study.
- Practice Environment Scale of the Nursing Work Index (PES-NWI): The PES-NWI is a 31-item questionnaire developed by Lake (2002) to measure the perception of nurses regarding their practice environment. The NPE is defined as the organisational characteristics of a work environment that facilitate or constrain professional nursing practice (Lake, 2002). Respondents are directed to rate the extent to which they agree with the organisational attribute of their NPE depicted in each item, rated with responses ranging from one (strongly disagree) to four (strongly agree). The instrument is composed of five subscales: (a) *nurses' participation in their health care centre's affairs (participation)*: nurses were involved in their health care centre affairs, such as internal governance, policy decisions and committees; had opportunities for advancement, communicated openly with a responsive nursing administration and acknowledged a powerful, visible and accessible nurse executive; (b) *nursing foundations for quality of care (foundations of care)*: a pervasive nursing philosophy, a nursing (rather than a medical) model of care, and nurses' clinical competence are established in the health care centre; quality was assured by using a formal programme, cultivating a positive attitude on the part of the new staff and providing continuous training for all staff; (c) *nursing managers' ability, leadership and support of nurses (managers' support)*: the nurse-manager is a good manager and leader, and supports and praises nurses for work well done; (d) *staffing and resource adequacy (workforce adequacy)*: having adequate staff and support resources to provide good quality patient care, being able to spend time with patients and being able to discuss patient care problems with other nurses; and (e) *collegial nurse-physician relations (nurse-physician relations)*: positive working relationships between nurses and physicians. The mean of each subscale

and an overall composite score should be calculated, where values higher than 2.5 are indicative of a supportive NPE. The PES-NWI has been used in multiple studies and settings, and is considered a highly reliable and valid measurement of NPE (Warshawsky & Havens, 2011). The Spanish version of the instrument, developed and validated in the PHC setting by De Pedro-Gómez et al. (2012), was used in this study.

3.4 | Data collection

The survey was edited in an electronic online format. A secure website was used to ensure that data protection standards were complied with. The regional offices for PHC management e-mailed the nurses under their jurisdiction (4,200) to invite them to participate in this study voluntarily. Additionally, local professional and scientific nursing associations sent an e-mail to their members (900). Since the e-mailing process was delegated to third parties and since these parties could not disclose information about their contacts due to personal data protection laws, it is impossible to determine accurately the number of potential participants who actually received the invitation to participate. The e-mail contained an information letter and a link to the survey. In the event that a person was invited twice, the information letter contained a text instructing the participant to complete the survey once. All cases with missing and atypical data were deleted. Data were collected from June to September 2015.

3.5 | Data analysis

Descriptive statistics were used to summarise data, such as frequency and percentage for categorical variables, and mean and standard deviation for continuous variables. The normality of the continuous variables was verified using the Kolmogorov-Smirnov-Lilliefors test. To categorise the participants into groups with similar attitude profiles, a hierarchical cluster analysis was employed based on the responses to all of the PND (Spanish version) items using an average linkage method with a squared Euclidean distance. Several cluster solutions were assessed. The solution that produced the clusters with the greatest differences between them while having theoretical significance was considered the most suitable solution. A Kruskal-Wallis *H*-test was carried out on each item response separately. A multivariate analysis of variance was used on the entire aggregate to assess differences among clusters. The replication of the clustering process was performed on different subsets of the sample to corroborate its internal consistency. To classify participants into groups with similar ND utilisation profiles, a self-assessment of the frequency of ND use was employed. Participants were classified as follows: those who answered "never" and "seldom" were placed in the low utilisation rate group, those who answered "sometimes" were placed in the medium utilisation rate group and those who answered "often" and "always" were placed in the high utilisation rate group. The chi-squared

test was used to compare the clusters for categorical variables. To assess differences in continuous variables, the Kruskal–Wallis *H*-test was used. The Mann–Whitney *U*-test was used for post-hoc pair-wise comparisons. Analyses were performed using SPSS v.21 (IBM Corp., Armonk, NY, USA). Statistical significance was set at $p < 0.05$.

4 | RESULTS

4.1 | Sample description

The sample consisted of 239 nurses who had completed the survey correctly, which represented 70.50% of the completed questionnaires. Most of the participants were female (88.70%), with an average age of 40.42 years (*SD*: 10.21). The majority of the nurses worked directly with patients, while only 15% performed tasks related to management or supporting services. The average work experience as a nurse was 22.31 years (*SD*: 10.50). The vast majority had some form of postgraduate training (90.80%). Table 1 shows the above-mentioned results in detail.

4.2 | Selection and validation of clusters

The cluster analysis, performed to group nurses according to their attitude towards ND, determined that a three-cluster solution was the most suitable one. Each of the clusters consisted of nurses with negative ($n = 32$), neutral ($n = 122$) and positive ($n = 85$) attitude profiles toward ND. Table 1 shows the average overall PND scores yielded by each cluster. The Kruskal–Wallis test and the multivariate analysis of variance test, which were performed to verify the internal consistency of the chosen cluster solution, determined that subjects belonging to each cluster differed significantly in the score of each PND item ($p < 0.05$) and in their aggregate ($\Lambda = 0.104$; $F = 551.008$; $p < 0.001$), respectively. The aforementioned results indicated that the selected cluster solution was theoretically consistent and facilitated an optimal differentiation between participants according to their attitude profile. In addition, the replication of the cluster analysis on different subsets of the sample yielded similar results.

The classification of the sample based on the self-assessment of the frequency of ND utilisation formed three groups made up by participants with a low ($n = 46$), medium ($n = 70$) and high ($n = 123$) ND utilisation rate profiles. Nurses belonging to clusters with a higher ND utilisation rate attained higher PND overall scores, thus showing more positive attitudes towards ND, with significant differences between clusters ($p < 0.001$).

4.3 | Nurses' characteristics and nursing diagnosis

Non-significant results were obtained between the different attitudes towards ND clusters for all demographic variables. Nevertheless, age was significantly different between the utilisation clusters ($\chi^2 = 8.57$; $df = 2$; $p = 0.014$), since older nurses tended to be grouped into the higher utilisation rate clusters. Table 2 shows the

TABLE 1 Description of sample socio-demographic characteristics and comparison between attitude toward nursing diagnosis and utilisation rate clusters

Variables	Attitude clusters			Utilisation clusters			Comparisons between clusters		
	Cluster 1: Negative <i>n</i> = 32	Cluster 2: Neutral <i>n</i> = 122	Cluster 3: Positive <i>n</i> = 85	Cluster 1: Low rate <i>n</i> = 46	Cluster 2: Medium rate <i>n</i> = 70	Cluster 3: High rate <i>n</i> = 123	Statistic	<i>p</i> -value	
Age, mean (<i>SD</i>)	45.42 (10.21)	45.31 (10.22)	44.46 (10.55)	41.48 (11.06)	45.14 (10.34)	47.06 (9.44)	$\chi^2 = 3.43^a$	2	0.180
Sex, <i>n</i> (%)							$\chi^2 = 2.81^b$	2	0.245
Female	31 (96.90)	108 (88.50)	73 (85.90)	39 (84.80)	61 (87.10)	112 (91.10)			
Male	1 (3.10)	14 (11.50)	12 (14.10)	7 (15.20)	9 (12.90)	11 (8.90)			
							$\chi^2 = 8.57^a$	2	0.014
							$\chi^2 = 1.56^b$	2	0.459

df: degrees of freedom; *SD*: standard deviation.

^aKruskal–Wallis. ^bChi-square.

TABLE 2 Description of sample professional characteristics and comparison between attitude toward ND and utilisation rate clusters

Variables	Attitude clusters				Utilisation clusters				Comparisons between clusters	Statistic	df	p-value	Clusters ^a
	Cluster 1: Negative	Cluster 2: Neutral	Cluster 3: Positive	P-value	Cluster 1: Low rate	Cluster 2: Medium rate	Cluster 3: High rate	Comparisons between clusters					
	n = 32	n = 122	n = 85		n = 46	n = 70	n = 123						
Nursing experience, mean (SD)	24.88 (9.56)	22.25 (10.49)	21.42 (10.92)	0.305	18.85 (11.07)	21.61 (10.68)	24.00 (9.96)	$\chi^2 = 6.69^b$	2	0.035	2	0.035	—
Field of work, n (%)	25 (92.60)	102 (90.30)	60 (77.90)	0.031	37 (86.00)	52 (86.70)	98 (86.00)	$\chi^2 = 0.17^c$	2	0.992	2	0.992	—
Direct care to patients	2 (7.40)	11 (9.70)	17 (22.10)	—	6 (14.00)	8 (13.30)	16 (14.00)	—	—	—	—	—	—
Management and other support services	2 (6.3)	10 (8.2)	10 (11.8)	—	23 (50.00)	33 (47.10)	54 (43.90)	—	—	—	—	—	—
Postgraduate course, n (%)	1 (3.1)	20 (16.4)	11 (12.9)	0.264	9 (19.60)	10 (14.30)	13 (10.60)	$\chi^2 = 5.23^c$	4	0.264	4	0.360	—
None	29 (90.6)	92 (75.4)	64 (75.3)	—	14 (30.40)	27 (38.60)	56 (45.50)	—	—	—	—	—	—
Specialisation	2 (6.3)	10 (8.2)	10 (11.8)	—	23 (50.00)	33 (47.10)	54 (43.90)	—	—	—	—	—	—
Master and/or doctoral programme	1 (3.1)	20 (16.4)	11 (12.9)	—	9 (19.60)	10 (14.30)	13 (10.60)	—	—	—	—	—	—
Attitude toward ND:	37.81 (9.59)	75.80 (10.13)	114.01 (13.61)	<0.001	75.32 (28.11)	76.96 (26.52)	91.84 (26.43)	$\chi^2 = 15.45^b$	2	<0.001	2	<0.001	[1,3] [2,3] ^d
PND-SV Score, mean (SD)	37.81 (9.59)	75.80 (10.13)	114.01 (13.61)	<0.001	75.32 (28.11)	76.96 (26.52)	91.84 (26.43)	$\chi^2 = 15.45^b$	2	<0.001	2	<0.001	[1,3] [2,3] ^d

df, degrees of freedom; ND, nursing diagnosis; PND-SV, positions on nursing diagnosis (Spanish Version); SD, standard deviation.

^aSignificant differences between clusters. ^bKruskal–Wallis. ^cChi-square. ^dMann–Whitney.

results for each cluster and the inter-group comparisons for demographic variables.

Only one professional variable, the field of work, yielded statistically significant results when comparing the attitude clusters ($\chi^2 = 6.92$; $df = 2$; $p = 0.031$). Nurses involved in management were grouped into more positive attitude clusters than those who worked directly with patients. Furthermore, the nurses' work experience was significantly different between the utilisation clusters ($\chi^2 = 6.69$; $df = 2$; $p = 0.035$), as the more experienced participants tended to be grouped into high rate utilisation clusters. Table 2 shows in detail the results obtained for professional variables.

4.4 | Practice environment and nursing diagnosis

The nurses who achieved higher PES-NWI overall scores belonged to clusters with a more positive attitude ($\chi^2 = 13.41$; $df = 2$; $p \leq 0.001$) and a higher utilisation rate of ND ($\chi^2 = 6.76$; $df = 2$; $p = 0.034$) with significant differences between clusters. Similar results were found for the PES-NWI subscales "participation" and "foundations of care" for both attitude and utilisation clusters, as well as "managers' support", but only for the attitude clusters. Scores achieved in "workforce adequacy" and "nurse-physician relations" subscales were not significantly different between clusters. Further details on the above-mentioned results are presented in Table 3.

5 | DISCUSSION

This study has provided evidence on the profile of nurses regarding the utilisation of and attitude towards ND. Previous studies have found a strong direct relationship between attitudes towards ND and the behaviour of using ND in their professional practice worldwide (D'Agostino et al., 2016; Netto & Almeida, 2009; Romero-Sánchez et al., 2014). The results obtained in this study support this statement, as it was found that nurses with a more positive attitude towards ND are the ones who most frequently used it. Despite this association, there may be factors that influence only one of these aspects and, therefore, they have been independently explored. This provides a better understanding of the phenomenon and, in the case of modifiable factors this also facilitates the design and planning of interventions that may have an impact on both aspects, thus promoting the use of ND across the board.

With regard to nurses' demographic factors, age was the only variable that seemed to be different with respect to the utilisation rate of ND. However, this should be discussed together with one of the professional variables evaluated, i.e., nurses' work experience, because, usually, the older the nurse is, the greater the number of years worked. In this study, older and more experienced nurses are grouped into higher utilisation clusters, while younger and less experienced nurses were grouped into lower utilisation clusters. Although the logical interpretation would be that the greater the number of years of experience, the greater the use of ND, other studies found no differences in utilisation according to

professional experience and even a greater rejection of ND utilisation in experienced nurses (Dolák, Scholz, & Tóthová, 2012; Kaashoek 2000). This contradiction may be due to the presence of a performance-based payment policy in the institutions in which the study was conducted, where the use of ND is rewarded. In this case, these payments were only made to the staff working in permanent positions, mainly held by experienced nurses, while young nurses hold mainly temporary positions. This incentive could be a reason why more experienced nurses use ND regularly. The fact that professional experience did not concurrently improve with attitudes towards ND supports this interpretation. Researchers on rewards systems in organisations, such as Kohn (1999), suggest that incentives do not alter the attitudes that underlie behaviours and do not create a lasting commitment to any action, but rather a transient change in behaviour. Nevertheless, it would be desirable to confirm the influence of performance-based rewards on the utilisation of and/or attitude towards ND in future studies.

The field of work is another professional variable worth discussing. As outlined, nursing managers were grouped into more positive attitude clusters than those who performed direct health care tasks. Another study, also conducted in Spain, obtained similar results for nurses recruited from all clinical settings (Romero-Sánchez et al., 2014). The aforementioned study argued that the awareness of the Spanish nursing managers regarding the benefits of using ND in nursing practice could be related to this finding. In fact, the nursing managers who directed the PHC management were responsible for developing strategies for the implementation of ND and nursing practice in Spanish settings (Mañá, Fernández, & Mesas, 2004).

Although the influence of specific institutional administrative factors on ND utilisation has been previously examined, no studies were found on the perception of the general organisational characteristics of a work environment and ND. The results of the study determined that nurses working in more supportive NPEs are grouped into more positive attitude clusters where ND is used to a greater extent. This finding could be explained by the fact that greater nurse control over practice and decisions about patient care is a major feature of practice-friendly professional environments (Lake, 2007). ND is considered as a practice framework for nursing care, which facilitates the conceptualisation of the nursing domain (Wooldbride, Brown, & Herman, 1993), thus increasing both the professional accountability and autonomy of nurses (Carpenito-Moyet, 2010).

Mensik, Maust Martin, Scott, and Horton (2011) reported that the incorporation of a nursing practice framework in a health care setting demonstrates that the organisation has embraced nursing as a profession and facilitates professional development. This fact is supported by the significant differences found in the PES-NWI subscale "participation," which represents the participatory role of nurses and their valued status at their health care centre (Lake, 2002), between the clusters of utilisation of and attitude towards ND. This implied that ND, as a practice framework, would be better accepted in institutions where the contribution of nurses is well acknowledged.

TABLE 3 Description of sample characteristics regarding the practice environment and comparison between attitude toward nursing diagnosis and utilisation rate clusters

Variables	Attitude clusters						Utilisation clusters							
	Total n = 239	Cluster 1: Negative		Cluster 2: Neutral		Cluster 3: Positive		Cluster 1: Low rate		Cluster 2: Medium rate		Cluster 3: High rate		
		n = 32	n = 122	n = 85	Statistic	df	p-value	Clusters ^a	n = 46	n = 70	n = 123	Statistic	df	p-value
PES-NWI, mean (SD)														
Overall score	2.75 (0.55)	2.45 (0.62)	2.72 (0.55)	2.91 (0.46)	$\chi^2 = 13.41^b$	2	<0.001	[1,2] [1,3] [2,3] ^c	2.67 (0.56)	2.63 (0.56)	2.85 (0.52)	$\chi^2 = 6.76^b$	2	0.034
Participation	2.65 (0.70)	2.28 (0.73)	2.61 (0.71)	2.84 (0.62)	$\chi^2 = 13.79^b$	2	<0.001	[1,2][1,3] [2,3] ^c	2.61 (0.77)	2.48 (0.69)	24.86 (6.02)	$\chi^2 = 7.24^b$	2	0.027
Foundations care	2.90 (0.55)	2.60 (0.67)	2.86 (0.53)	3.07 (0.50)	$\chi^2 = 14.55^b$	2	<0.001	[1,2][1,3] [2,3] ^c	2.66 (0.61)	2.78 (0.55)	3.06 (0.50)	$\chi^2 = 17.90^b$	2	<0.001
Managers support	2.96 (0.86)	2.62 (1.04)	2.92 (0.89)	3.16 (0.71)	$\chi^2 = 6.80^b$	2	0.033	[1,3][2,3] ^c	2.88 (0.93)	2.89 (0.86)	3.04 (0.85)	$\chi^2 = 1.80^b$	2	0.406
Workforce adequacy	2.23 (0.77)	2.05 (0.82)	2.22 (0.76)	2.32 (0.77)	$\chi^2 = 2.66^b$	2	0.265	-	2.29 (0.76)	2.17 (0.80)	2.25 (0.76)	$\chi^2 = 0.80^b$	2	0.669
Physician/nurse relationship	2.89 (0.71)	2.67 (0.70)	2.91 (0.71)	2.94 (0.70)	$\chi^2 = 4.01^b$	2	0.134	[1,3] ^c	3.02 (0.54)	2.78 (0.74)	2.90 (0.74)	$\chi^2 = 2.92^b$	2	0.231

df, degrees of freedom; PES-NWI, Practice Environment Scale of the Nursing Work Index; SD, standard deviation.

^aSignificant differences between clusters. ^bKruskal–Wallis. ^cMann–Whitney.

A similar result was found in the PES-NWI subscale “foundations of care,” which represents the nursing foundations for high-quality standards of patient care, which includes a pervasive nursing philosophy, a nursing model of care and a nurse’s clinical competence (Lake, 2002). The nursing process, including ND as a core phase, has been suggested as an appropriate method to explain the essence of nursing, its scientific underpinnings, technologies and humanist assumptions that encourage critical thinking and qualify nursing care (Hagos, Alemseged, Balcha, Berche, & Aregay, 2014). This adjustment between the characteristics of the nursing process and the construct represented by the subscale “foundations for quality of care” could be a reason why in institutions where a solid foundation of good quality care was established, ND is better accepted and used in the nursing process context.

Another finding regarding the PES-NWI subscale “managers’ support” should be highlighted. Nurses who perceived greater ability and leadership in their nursing managers and support from their institutions were grouped into clusters with more positive attitudes towards ND, but not into the higher utilisation clusters. A consistent result was found in a study in which the perception of nursing documentation was evaluated according to the type of PHC management (Törnvall, Wahren, & Wilhelmsson, 2007). This study determined that having managers with a focus on nursing could result in a more positive perception of the nursing documentation, but did not affect documentation performance. ND and nursing documentation are related concepts, as ND is considered a core element of nursing records that helps to avoid redundancy and encourage nurses to structure better their reports (Wilkinson, 2007). Nevertheless, although the type of management appears to be a factor that only influences attitudes towards ND, this should be considered a positive element for the given health care organisation, as, in previous studies, a favourable attitude has been associated with a higher utilisation in different types of institution (D’Agostino et al., 2016; Guedes et al., 2012; Romero-Sánchez et al., 2014).

Finally, no significant results were found for either attitude or use for the subscale “physician–nurse relationship”, which represents the collaborative relationship between nurses and physicians. This could be explained from the perspective that NDs represent the independent role of the nurse (Carpenito-Moyet, 2010), as they lead to autonomous nursing interventions. Similar results were found for the subscale “workforce adequacy”, although another study conducted with a small sample in one ward supported that the patient–nurse ratio interferes with the implementation of ND (Paganin et al., 2008). Further research should be conducted to assess the actual impact of the nurses’ workload on ND more than the perception of their workload.

5.1 | Limitations

First, the cross-sectional nature of the data facilitates the identification of associations rather than clear cause–effect relationships between the variables tested. Secondly, the national convenience

sample limits the generalisability of the results. In addition, voluntary participation implies the risk of self-selection of the sample and generates the consequent response bias. Thirdly, the effects of response bias and the use of self-assessment on the results, particularly on ND utilisation, should be considered, as it introduces the risk of common method variance (Jakobsen & Jensen, 2015). Finally, confounds not accounted for in the present study could have influenced the results. These limitations should be considered in future research, which could be improved using longitudinal designs, representative national and international samples, and observed measures whenever possible, as well as a better control of possible confounding factors.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

While nurses’ characteristics seem to have a limited impact on ND, in this study, a favourable NPE has been shown to be an important common factor in nurses’ use of and attitude towards ND. This means that NPEs that support nurses to have control over their practice and professional autonomy are good breeding grounds for implementing and maintaining ND as a framework for nursing practice. Among the elements of NPE, the participation of nurses in their health care centre affairs, foundations for quality of care, and managers’ support must be particularly enhanced to promote the use and improve the attitudes regarding ND, thus benefiting patients, nurses and the nursing profession as a whole.

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ETHICAL APPROVAL

The clinical research ethics committee of the Institute in Primary Care Research Jordi Gol approved the project (P14/094). Anonymity of participants and confidentiality of data were guaranteed. Each participant read an informed consent form and showed their agreement and willingness to participate by clicking on a confirmation box before accessing the survey.

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