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PREDICTING NURSING LEADERSHIP ROLES OF PATIENT SAFETY IN THE OPERATING ROOM

PAPÉIS DE LIDERANÇA EM ENFERMAGEM PREDITORES DA SEGURANÇA DO DOENTE NO BLOCO OPERATÓRIO

ROLES DE LIDERAZGO DE ENFERMERÍA QUE PREDICEN LA SEGURIDAD DEL PACIENTE EN EL QUIRÓFANO

Ana Sofia de Carvalho Mota[1]
Amélia Filomena de Oliveira Mendes Castilho[2]
Maria Manuela Ferreira Pereira Martins[3]

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Objective: to identify the leadership perceived by perioperative nurses and to determine the role of leadership predictors of patient safety in the operating room. Method: descriptive and explanatory study in a sample of 1,001 nurses, using the patient safety questionnaire in the operating room and Quinn's leadership instrument adapted to health. The IBM SPSS Statistics application, version 25.0, was used in the data processing. Result: all leadership dimensions were higher than the midpoint of the scale (M>4). A minimum value was observed in the role of Innovator (M=4.63) and maximum in the Producer (M=5.04). The regression models allowed pointing out that leadership roles are predictors of patient safety in the operating room, especially the roles Monitor, Producer and Facilitator. Conclusion: perioperative nurses have moderately positive perception of leadership exercise, indicating the need to promote the development of different leadership roles exercised by perioperative management nurses.

Descriptors: Leadership. Patient Safety. Operating Rooms. Perioperative Nursing. Perioperative Care.

Objetivo: identificar a liderança percecionada pelos enfermeiros perioperatórios e determinar os papéis de liderança preditores da segurança do doente no bloco operatório. Método: estudo descritivo e explicativo numa amostra de 1.001 enfermeiros, com recurso ao questionário de segurança do doente no bloco operatório e ao instrumento de liderança de Quinn adaptado à saúde. No tratamento de dados utilizou-se a aplicação IBM SPSS Statistics, versão 25.0. Resultado: todas as dimensões de liderança obtiveram valor superior ao ponto médio da escala (M>4). Observado um valor mínimo no papel de Inovador (M=4,63) e máximo no Produtor (M=5,04). Os modelos de regressão permitiram salientar que os papéis de liderança são preditores da segurança do doente no bloco operatório, destacando-se os papéis Monitor, Produtor e Facilitador. Conclusão: os enfermeiros perioperatórios têm perceção moderadamente positiva do exercício da liderança, indiciando a necessidade de se promover o desenvolvimento dos diferentes papéis de liderança exercidos pelos enfermeiros gestores perioperatórios.

Descritores: Liderança. Segurança do Paciente. Salas Cirúrgicas. Enfermagem Perioperatória. Cuidados Perioperatórios.

[1] Nurse. MSc in Medical-surgical Nursing. Nurse Manager at the Operating Room at Centro Cirúrgico de Coimbra. Coimbra, Portugal. anasofiacarvalhomota@esenfc.pt. https://orcid.org/0000-0002-3547-0761.
[2] Nurse. PhD in Nurisng Sciences. Adjunct Professor at the Escola Superior de Enfermagem de Coimbra. Coimbra, Portugal. https://orcid.org/0000-0002-4420-8861
[3] Nurse. PhD in Nurisng Sciences. Coordinator Professor at the Escola Superior de Enfermagem do Porto. Porto, Portugal. https://orcid.org/0000-0003-1527-9940.

Objetivo: identificar el liderazgo percebido por las enfermeras perioperatorias y determinar el papel de los predictores de liderazgo de la seguridad del paciente en el quirófano. Método: estudio descriptivo y explicativo en una muestra de 1.001 enfermeras, utilizando el cuestionario de seguridad del paciente en el quirófano y el instrumento de liderazgo de Quinn adaptado a la salud. La aplicación IBM SPSS Statistics, versión 25.0, se utilizó en el procesamiento de datos. Resultado: todas las dimensiones de liderazgo fueron superiores al punto medio de la escala (M>4). Se observó un valor mínimo en el rol de Innovador (M=4,63) y máximo en el Productor (M=5,04). Los modelos de regresión permitieron señalar que los roles de liderazgo son predictores de la seguridad del paciente en el quirófano, especialmente los roles Monitor, Productor y Facilitador. Conclusión: las enfermeras perioperatorias tienen una percepción moderadamente positiva del ejercicio de liderazgo, indicando la necesidad de promover el desarrollo de diferentes roles de liderazgo ejercidos por las enfermeras administradoras de quirofano.

Descriptores: Liderazgo. Seguridad del paciente. Quirófanos. Enfermería Perioperatoria. Cuidados perioperatorios.

Introduction

Patient safety (PS) is assumed as a priority by health organizations and national and international bodies that regulate this sector[1-2]. Despite the numerous awareness-raising and improvement efforts made in the last two decades, very high numbers of incidents in the scope of care are still recorded, recognizing that progress in the area of PS has been too slow[3]. The complex context in which healthcare is developed requires effective leadership in order to promote a commitment of professionals to the quality and healthcare safety[2]. Nurses constitute the largest workforce of hospital organizations[4] and have a strong influence on PS[5-6], consequently, the action of leaders is also reflected in this domain[7]. The evidence indicates that effective nursing leadership has been associated with a lower number of adverse events, medication errors, lower mortality, lower rates of healthcare-related infections, lower rate of pressure ulcers and falls and improvements in the care practice environment[7-10].

The World Health Organization (WHO)[11] argues that, for the effective and sustained implementation of projects to improve PS, it is essential that, locally, these are led efficiently. Based on this premise, recognizing the operating room (OR) as a common place of occurrence of adverse events[12-13] and the existence of a study gap in the scope of leadership in the context of OR, it is essential to identify the leadership perceived by perioperative nurses and to determine the predictive leadership roles of PS in the OR.

The growing interest in leadership has directed research to characteristics of the leadership practice that ensure success in organizational results. Quinn and Roughbaug conceptualized a leadership model, the Contrasting Values Model[14]. This model is a differentiated and privileged model, because it is based on several leadership theories that include different roles[15]. The Contrasting Values Model is based on four models (Model of Human Relations, Open Systems, Rational Objectives and Internal Processes) divided into eight roles, which are part of the two key dimensions of leadership: flexibility/stability and external/internal orientation[16]. These key dimensions form four quadrants, where the different models are distributed[14]. The Human Relations Model is located in the quadrant of flexibility and internal orientation, being represented by the roles of Mentor and Facilitator[14]. This model assumes that involvement results in commitment, emphasizing participation, conflict resolution and consensus building, being team-oriented[16]. The leader must thus become a process-centered facilitator and an empathic mentor[15]. Facilitators are process-oriented, promoting collective efforts, cohesion, teamwork and conflict management. Mentors focus on the development of people, seeking to exercise an empathic orientation, an active listening, supporting individually those led in their development of competencies[17].

The Open Systems Model is located in the flexibility and external orientation quadrant, integrating the roles of Innovator and Broker[14].

This model is based on the premise that continuous adaptation and innovation lead to the acquisition and maintenance of external resources[15]. It emerges from the need for leadership in a world that is constantly changing and has a great development of knowledge[15]. This context requires the leader to be a creative innovator and a negotiator who exerts his influence on the organization[14]. Innovators are characterized by being visionaries, change managers, integrator of innovation and creative in problem solving. Brokers represent influential leaders, who exercise power, who create and maintain a power base, a connection with the outside world and present a negotiating ability that guarantees the acquisition of resources[17].

The Rational Objectives Model is located in the quadrant of external control and orientation, integrating the roles of Director and Producer[14]. This model is more focused on productivity and profit, based on the principle that a clear direction leads to positive results[15]. The leader must thus be a pragmatic producer and a director who decides[15]. The Directors define goals, plan and set objectives, take initiatives and delegate effectively. Producers are focused on tasks, are motivated and motivate leaders to accept responsibilities and maintain high productivity[17].

Finally, the Internal Processes Model is located in the quadrant of internal control and orientation, integrating the roles of Monitor and Coordinator[14]. This model emphasizes the definition of responsibilities, measurement and documentation, based on the premise that normalization leads to stability[15]. As Monitors, leaders must be informed of what is happening in the unit, ensure that the leaders meet the standards and achieve the objectives. As Coordinators, they emphasize the organization and coordination of team efforts, minimizing dysfunctions and conflicts[17]. The effective leader is the one who simultaneously plays the eight leadership roles, contemplating the complexity that characterizes healthcare organizations[15].

Thus, this study aims to identify the leadership perceived by perioperative nurses and determine the role of leadership predictors of patient safety in the operating room.

Method

The present descriptive and explanatory study is inserted in an initial investigation[18-19], using the same sample and ethical-legal procedures. The target population consists of 2,975 perioperative nurses that develops its activity in OR (of adult patients) at hospitals of the national health service with surgical valences, included in the benchemarking groups of the Administração Central do Sistema de Saúde[20]. For greater sample representativeness, hospitals from each group of benchemarking and Regional Health Administrations (RHA) were selected and cluster sampling was performed. The sample included 24 hospitals, with a percentage per benchemarking group between 50% (groups B and E) and 66.7% (group F) and RHA between 42.86% (Lisbon and Tagus Valley) and 100% (Algarve), corresponding to 46 OR. The inclusion criteria was to have professional experience time of more than 6 months. Exclusion criteria were: to perform functions as a nurse manager and to be temporarily absent from the service during the period of data collection by medical leave, vacation or other reason. The data collection period occurred between January and October 2018. A total of 1,798 questionnaires were delivered, covering all nurses who met the inclusion criteria, obtaining a response rate of 55.70%. The sample, consisting of 1,001 participants, has an estimated sampling error of 2.6%. The nurses surveyed were mostly female (84.90%), with a mean age of 42.74 years (SD = 0.27) and an average of 19.76 years (SD = 0.27) of professional ativity time. The participants have professional experience time in OR and in the current service, respectively, of 13.52 years (SD = 0.28) and 11.56 years (SD = 0.27). Regarding the academic degree, the majority have a graduate degree in nursing (79.10%), 18.50% are MsN, 1.90% has bachelors degree and 0.50% are PhD. Only 17.90% hold the title of clinical specialist. Most perioperative nurses work in general OR (76.9%), 15.60% work in outpatient surgery OR and 7.40% in specialized OR. More than half work in accredited/certified OR (59.7%).

The data collection instrument used the Segurança do Doente no BO (SDBO) questionnaire[18-19] and the Quinn Leadership instrument[14,21] adapted to the healthcare area[17]. The SDBO questionnaire consists of 79 items, scored on a Likert scale from 1 (never) to 5 (always), which allows evaluating 19 dimensions of PS, namely: Internal Environment Safety Culture (D1), Communication Safety – Good Practices (D2), Communication Safety – Audits (D3), Surgical Safety – Good Practices (D4), Surgical safety – Audits (D5), Safety in the use of medication – good practices (D6), Safety in the use of medication – audit (D7), Safety in the use of medication – prescription (D8), Unambiguous identification of patients – good practices (D9), Unambiguous identification of patients – audits (D10), Prevention of falls – good practices (D11), Prevention of falls – audits (D12), Pressure Ulcer Prevention – good practices (D13), Prevention of Pressure Ulcers – audits (D14), Prevention of Pressure Ulcers – resources (D15), Incident Notification (D16), Incident Analysis and Prevention (D17), Prevention and Control of Infection and Antimicrobial Resistance (PCIRA) – Good Practices (D18) and PCIRA – Epidemiological Surveillance and Training (D19). This questionnaire presented adequate psychometric values, with Cronbach's alpha values between 0.66 and 0.98 in the 19 dimensions[18]. The majority of items, with two exceptions, presented saturation levels in factor ≥ 0.48 and corrected correlation values of each item with a dimension between 0.41 and 0.96. The convergent-discriminating validity of the items revealed a greater correlation of the items with the total dimension to which they belong than with the dimension to which they do not belong. Quinn's Leadership instrument adapted to the healthcare area[17] is composed of 32 items that assess leadership skills, based on the perceptions of the leaders, distributed in 8 roles: Mentor, Facilitator, Broker, Innovator, Monitor, Coordinator, Director and Producer. The items are grouped on a Likert scale with seven response options ranging from "almost never" (1) to "almost always" (7). The midpoint of the scale corresponds to the value four, and values greater or equal reflect a perceived positive leadership. This instrument was used in several national studies[15,17,22-23], showing good psychometric characteristics.

The Research Ethics Committee Unit from the Unidade de Investigação em Ciências da Saúde da Enfermagem of the Escola Superior de Enfermagem de Coimbra was requested to give advice, as well as the authorization to collect information was made to the boards of directors (BD) of the hospitals involved in the study. A positive opinion was obtained (P 458-09-2017) from the aforementioned Ethics Committee and the BD of the 24 hospitals. Later, meetings were held with the nurse managers of the different OR to explain the objective of the study and request their collaboration in the distribution of questionnaires, delivered in open envelopes with explicit objectives and request for informed consent. The return of the questionnaire was carried out in a closed envelope and the informed consent was collected separately.

The IBM SPSS Statistics software, version 25.0, was used in the data processing. Descriptive statistics were analyzed in the data analysis and the multiple linear regression model was analyzed, based on the stepwise method. This method was chosen to identify the variables with the highest predictor power, eliminating the superfluous ones. In the descriptive analysis, frequencies (absolute and percentage), central trend measures (mean, maximum and minimum) and dispersion measures (standard deviation (SD)) were calculated. To evaluate reliability, the internal consistency of each dimension was calculated by Cronbach's Alpha coefficient.

Results

Initially, a descriptive analysis of the items that constitutes Quinn's[17] leadership scale was performed. As can be seen in Table 1, all items obtained values between minimum and maximum, evidencing heterogeneity of responses and an appreciable dispersion (minimum SD ≥1.30), indicating discriminative power. The higher mean values mean better perception of the exercise of leadership by

the hirarchy. In a global assessment, all items had mean values higher than the midpoint of the scale (4). The items that obtained the most positive values were: Have access to people of higher level (item 18; M=5.62; SD=1.30), keep track of what is happening in the unit (item 21; M=5.40; SD=1.46), Work with technical information (item 17; M=5.24; SD=1.45) and define areas of responsibility for subordinates (item 7; M=5.24; SD=1.55). On the other hand, the items Propose creative ideas (item 1; M=4.20; SD=1.60); Compares records and reports in the search for discrepancies (item 14; M=4.44; SD=1.68) and Presents new ideas to hirarchy in a persuasive way (item 27; M=4.48; SD=1.61), with lower mean values.

Table 1 – Descriptive analysis of the Leadership scale items: minimum, maximum, mean and standard deviation. Coimbra, Portugal – 2018. (N = 1,001) (continued)

Itens	n	Minimum	Maximum	Mean	Standard deviation
1. Propose creative ideas	998	1	7	4.20	1.60
2. Promotes the continuity of daily unit operations	994	1	7	5.04	1.54
3. Has a positive influence on the unit	998	1	7	4.65	1.62
4. Carefully and thoroughly review all available information	998	1	7	4.89	1.52
5. Maintains a results orientation in the unit	994	1	7	4.89	1.58
6. Facilitates consensus building in the unit's work	998	1	7	4.67	1.58
7. Defines areas of responsibility for subordinates	999	1	7	5.24	1.55
8. Listen to subordinates' personal problems	998	1	7	4.96	1.66
9. Minimizes workflow disruption	998	1	7	4.69	1.59
10. Use/try new concepts and procedures	997	1	7	4.69	1.58
11. Encourages participatory decision making	997	1	7	4.69	1.64
12. Ensures that everyone knows the unit's objectives	997	1	7	5.01	1.64
13. Influences decisions made at higher levels	991	1	7	4.60	1.59
14. Compare records and reports for discrepancies	983	1	7	4.44	1.68
15. Checks if the unit meets the defined objectives	990	1	7	5.10	1.56
16. Demonstrates empathy and concern in the relationship with subordinates	999	1	7	4.84	1.69
17. Works with technical information	996	1	7	5.24	1.45
18. Has access to higher level people	991	1	7	5.62	1.30
19. Sets clear objectives for work in the unit	999	1	7	4.94	1.56
20. Treats people gently and carefully	998	1	7	4.99	1.66
21. Keeps track of what is happening in the unit	998	1	7	5.40	1.46
22. Solve problems with creativity and intelligence	999	1	7	4.81	1.59
23. It drives the unit to fulfill its objectives	997	1	7	5.17	1.53
24. Encourage subordinates to share ideas as a group	998	1	7	4.72	1.67
25. Looks for potential innovations and improvements	998	1	7	4.82	1.60
26. Clarifies priorities and directions	996	1	7	4.85	1.56
27. Persuasively introduces new ideas to superiors	992	1	7	4.48	1.61
28. Gives the unit a sense of order	998	1	7	4.63	1.72

Table 1 – Descriptive analysis of the Leadership scale items: minimum, maximum, mean and standard deviation. Coimbra, Portugal – 2018. (N = 1,001) (conclusion)

Itens	n	Minimum	Maximum	Mean	Standard deviation
29. Demonstrates concern for the needs of underlings	999	1	7	4.65	1.75
30. Emphasizes the achievement of the objectives proposed by the unit	996	1	7	4.96	1.60
31. Develop team work	999	1	7	4.77	1.67
32. Analyzes written plans and projects	993	1	7	4.63	1.69

Source: Created by the authors.

The dimensions of the leadership scale were calculated according to the proposal of the author of the version adapted to the healthcare[17] area and presented Cronbach's Alpha values that ranged from 0.87 (Broker) to 0.94 (Facilitator), indicating good internal consistency. The analysis of the measures of central tendency and the value of the standard deviation, observed in the eight dimensions, allows to highlight the good discriminative power of each dimension (SD ≥1.30) (Table 2). Heterogeneity was found in the responses obtained at all points of the scale in all items. Leadership perception is globally positive, observing, in all dimensions, mean values higher than the midpoint of the scale (M>4). However, the professionals have a higher average perception in Producer (M=5.07; SD=1.41) and Director (M=5.01; SD=1.39) roles. The roles of Innovator and Facilitator were perceived with less emphasis (M=4.63; SD=1.43 and M=4.72; SD=1.50), respectively.

Table 2 – Descriptive analysis and Cronbach's alpha of the dimensions of the Leadership scale: items, minimum, maximum, mean and standard deviation. Coimbra, Portugal – 2018. (N = 1,001)

Dimensions	Itens	n	Cronbach's Alpha	Minimum	Maximum	Mean	Standard deviation
Broker role	3; 13; 18; 27	981	0.87	1	7	4.85	1.30
Innovator role	1;10; 22; 25	995	0.92	1	7	4.63	1.43
Producer role	5; 15; 23; 30	982	0.92	1	7	5.04	1.41
Director role	7; 12; 19; 26	994	0.91	1	7	5.01	1.39
Coordinator Role	2; 9; 21; 28	991	0.89	1	7	4.94	1.37
Monitor role	4; 14; 17; 32	977	0.89	1	7	4.80	1.38
Mentor role	8; 16; 20; 29	997	0.93	1	7	4.86	1.54
Facilitator role	6; 11; 24; 31	995	0.94	1	7	4.72	1.50

Source: Created by the authors.

In order to analyze the extent to which PS in OR can be explained by leadership roles, the multiple linear regression technique was used. The analysis considered as dependent variables the 19 dimensions of the SDBO questionnaire and as predictor variables the 8 dimensions of leadership were considered as dependent variables[17]. Table 3 presents a summary of the results of leadership roles that enter the predictor models of PS dimensions in the OR. All leadership roles are predictors of PS in the OR, with the exception of the Broker role. The models showed greater explanatory power in the dimensions: Prevention and control of infection and antimicrobial resistances – epidemiological surveillance and training (35%), Surgical safety – audits (32%), Culture of internal environment safety (30%), Safety of communication –

audits (27%) and Surgical safety - good practices (27%). On the other hand, they revealed lower explanatory power in the dimensions Safety in the use of medication – prescription (8%), Prevention of pressure ulcers - good practices (9%), Prevention of pressure ulcers – resources (10%) and Notification of incidents (12%). The positive predictive effect of the Roles of Monitor, Producer and Facilitator was highlighted, since they entered most explanatory models, with positive Beta values, which indicate high explanatory weight. The inverse relationship of the role of Mentor with negative Beta values (Table 3) is emphasized.

Table 3 – Dimensions of leadership that enter the predictor models of the Patient Safety dimensions in the Operating Room: adjusted Beta regression weights, t-tests and explanatory percentage of each model. Coimbra, Portugal – 2018. (N = 1,001) (continued)

Dimensions Patient Safety in the Operation Block	**Leadership (Predictive Dimensions)**	**Beta-adjusted regression weights**	**T Test**	**p***	**explained %**
D1 Internal safety culture	Producer	0,29	4,28	-	30%
	Monitor	0,23	3,29	-	
	Mentor	-0,25	-4,17	-	
	Facilitator	0,25	3,27	-	
D2 Communication safety – good practices	Producer	0,34	4,83	-	17%
	Mentor	-0,18	-3,90	-	
	Monitor	0,21	2,90	-	
D3 Communication safety – audits	Innovator	0,28	3,45	-	27%
	Producer	0,11	1,48	0,04	
	Mentor	-0,26	-4,41	-	
	Facilitator	0,23	2,55	0,01	
	Monitor	0,15	1,98	0,05	
D4 Surgical safety – good practices	Monitor	0,31	4,50	-	27%
	Producer	0,17	2,52	0,01	
D5 Surgical safety – audits	Monitor	0,29	4,09	-	32%
	Producer	0,25	3,57	-	
	Mentor	-0,21	-3,55	-	
	Facilitator	0,22	2,88	-	
D6 Safety in the use of medication – good practices	Producer	0,45	6,72	-	19%
	Coordinator	-0,25	-3,44	-	
	Innovator	0,22	3,10	-	
D7 Safety in the use of medication – audits	Innovator	0,26	4,53	-	24%
	Producer	0,24	4,17	-	
D8 Safety in the use of medication – prescription	Director	0,16	2,37	0,02	8%
	Monitor	0,14	2,07	0,04	
D9 Unambiguous identification – good practices	Producer	0,47	7,08	-	17%
	Facilitator	-0,29	-4,26	-	
	Coordinator	0,20	2,68	0,01	
D10 Unambiguous identification - audits	Monitor	0,21	3,23	-	18%
	Innovator	0,18	2,06	0,04	
	Mentor	-0,27	-4,23	-	
	Facilitator	0,27	2,88	-	
D11 Fall prevention – good practices	Director	0,27	4,28	-	19%
	Monitor	0,19	3,03	-	
D12 Fall prevention – audits	Monitor	0,30	5,19	-	19%
	Mentor	-0,24	-3,86	-	
	Facilitator	0,35	4,48	-	

Table 3 – Dimensions of leadership that enter the predictor models of the Patient Safety dimensions in the Operating Room: adjusted Beta regression weights, t-tests and explanatory percentage of each model. Coimbra, Portugal – 2018. (N = 1,001)

Dimensions Patient Safety in the Operation Block	Leadership (Predictive Dimensions)	Beta-adjusted regression weights	T Test	p*	explained %
D13 Pressure Ulcer Prevention – good practices	Innovator	0,16	2,37	0,02	9%
	Monitor	0,15	2,31	0,02	
D14 Pressure Ulcer Prevention – audits	Monitor	0,28	4,81	-	14%
	Mentor	-0,20	-3,02	-	
	Facilitator	0,28	3,40	-	
D15 Pressure Ulcer Prevention – resources	Monitor	0,32	10,44	-	10%
D16 Incident notification	Monitor	0,34	11,07	-	12%
D17 Incident Analysis and Prevention	Producer	0,47	16,06	-	22%
D18 Prevention and Control of Infection and Antimicrobial Resistance – good practices	Producer	0,20	2,43	0,02	21%
	Monitor	0,21	2,71	0,01	
	Facilitator	-0,32	-4,04	-	
	Director	0,18	2,27	0,02	
	Innovator	0,17	2,02	0,04	
D19 Prevention and Control of Infection and Antimicrobial Resistance – Epidemiological Surveillance and training	Monitor	0,37	5,57	-	35%
	Producer	0,25	3,77	-	
	Mentor	-0,21	-3,62	-	
	Facilitator	0,15	2,08	0,04	

Source: Created by the authors.

Note: Conventional signal used:
- Numeric data equal to zero not resulting from rounding.

*Significant two-tailed correlation for p≤ 0.05.

Discussion

Cronbach's Alpha values obtained in the different dimensions of the leadership questionnaire indicate good internal consistency of the generality of the dimensions, being higher than those found by the author of the original scale[21], those of the author of the version adapted to the health area[17] and those of other authors[15, 22-23].

The analysis of leadership perception, with mean values higher than 4.5 in different dimensions, allowed verifying that professionals have a moderately positive image of leadership exercise. Despite identifying in their leader the eight leadership roles, the average values show a wide space for the development of the various leadership roles. Portuguese perioperative nurses highlight a slightly higher perception in the roles of Producer and Director, corroborating the results of other studies[15,17,23]. Leaders, while playing all roles, focus more on productivity and goal setting. Thus, there is a predominance of the model of rational objectives, of an orientation for relations with the outside and of focus on the control of processes. Perioperative nurses understand that the leader "Drives the unit to meet its objectives (item 23)", "Verify that the unit meets the defined objectives (item 15)", "Defines areas of responsibility for subordinates (item 7)", as well as "Ensures that everyone knows the objectives of the unit (item 12)". These data may reflect the focus of business management hospitals that are very focused on results[15]. On the other hand, perioperative nurses demonstrate a less positive perception of the roles of Innovator and Facilitator, results corroborated by other investigations[15,17]. Participants understand the leader's lower capacity for change management (item 10), innovation integration (item 25), as well as to be a creative thinker (item 1). Competencies are fundamental in complex and

constantly evolving contexts, such as OR. These results reveal the need for leaders to develop competencies under the Open Systems Model (Innovator role), demonstrating greater flexibility. Perioperative nurses also observe opportunities for improvement in consensus creation (item 6), participatory decision-making (item 11), group idea sharing (item 24) and teamwork development (item 31). Given that the work in OR is fundamentally developed as a team and that teamwork decisively influences PS, it is essential that leaders also develop greater focus on the Human Relations Model, in the role of Facilitator.

The regression models of leadership roles with the dimensions of the SDBO questionnaire allow pointing out that all roles are predictors of PS in the OR, with the exception of the Broker role. The explanatory effect of the Monitor, Producer and Facilitator roles, which are part of most predictive models of PS in OR, stands out. These results emphasize the importance of leadership skills for the promotion of PS, particularly concerning the ability of leaders to ensure that people meet standards and are achieving the objectives, the ability to motivate leaders to accept responsibilities and maintain high productivity, as well as develop collaborative work. This is in line with national health policies, namely the Estratégia Nacional para a Qualidade em Saúde[24], which defines as a strategic objective the strengthening of PS, through the achievement of the objectives of the Plano Nacional de Segurança dos Doentes[2].

Conversely, the role of Mentor has an inverse relationship with the dimensions of PS, which seems contradictory to us, considering that this leadership role is based on the development of the led, valuing active listening and the empathic relationship. On the other hand, it can indicate that the implementation of safety policies is still predominantly linked to compliance with standards and not in a collective commitment to safety. The fact that broker's role is not a predictor can be explained by representing a role of a leader more focused on the exercise of influence with the outside and less on internal processes.

The predictor effect of the Facilatator role, together with the fact that it is one of the leadership roles perceived less positively by the led, alerts to the imperative need for nurse managers to develop skills to promote teamwork and conflict mediation in favor of increasing PS. Perioperative management nurses should thus seek to have a greater focus on the development of people that allow training other professionals, giving them autonomy and opportunity to participate in decision-making processes, to reach consensus and produce sustainable changes[25].

The limitation of this study was the fact that only what is characteristic in the leader was evaluated and that it was not evaluated what should be characteristic from the perspective of the led. A dominantly quantitative study was chosen, but it should be mentioned that this option limits the understanding of phenomena.

The results obtained in this investigation allow a greater understanding of the exercise of nursing leadership in the OR, evidencing its influence on PS, particularly regarding the most relevant leadership roles in this context. The diagnosis made, by highlighting the perception of the led about the exercise of leadership and the predictor roles of PS, alert to the priority areas in the development of leaders' competencies.

Conclusion

Perioperative nurses have a moderately positive perception of leadership exercise, indicating the need to promote the development of different leadership roles exercised by Portuguese perioperative management nurses. Although nursing leaders play all leadership roles, there is a predominance of roles focused on productivity, control and results-oriented roles. However, the results show that, from the perspective of perioperative nurses, Portuguese nurse managers should seek to develop their competencies in facilitating the processes of adaptation and change, in the generation of commitment and collective effort of the led. The regression models revealed the positive influence of the overall leadership roles in PS in the OR, with emphasis on roles

focused on objectives, productivity and teamwork development.

Future studies should evaluate the gap between what is characteristic of leadership and what is expected from the leaders' perspective. The development of qualitative studies would allow greater understanding of the leadership process and its influence on PS.

Collaborations:

1 – conception, design, analysis and interpretation of data: Ana Sofia de Carvalho Mota and Amélia Filomena de Oliveira Mendes Castilho;

2 – writing of the article and relevant critical review of the intelectual content: Ana Sofia de Carvalho Mota, Amélia Filomena de Oliveira Mendes Castilho and Maria Manuela Ferreira Pereira Martins;

3 – final approval of the version to be publiched: Amélia Filomena de Oliveira Mendes Castilho and Maria Manuela Ferreira Pereira Martins.

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