


## EMPIRICAL STUDIES

# Associations between nurse managers' leadership styles, team culture and competence planning in Norwegian municipal in-patient acute care services: A cross-sectional study

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## Funding information

The study was funded by University of Agder, Institute for Health and Nursing Sciences.

## Abstract

**Background:** Increased complexity in the primary healthcare services has followed in the wake of health reforms and reveals the need for competence enhancement in the nursing services. Effective and visionary leadership, sufficiently qualified staff and cooperation among professionals are considered as key measures to safeguard quality in the services.

**Aims:** To identify which leadership styles characterise first-line nurse managers in Norwegian municipal in-patient acute care (MipAC) units and to investigate how first-line nurse managers' leadership styles are associated with team culture and documented nursing competence planning.

**Methods:** A cross-sectional survey was distributed to all the first-line nurse managers in Norwegian MipAC units ( $n = 229$ ). Data were collected between March and June 2019. The response rate was 80.5% ( $n = 182$ ). First-line managers' background information and data about their focus on team culture and competence planning were recorded. Furthermore, we noted organisational structural characteristics, and managers' transformational (relational) leadership and transactional (task-oriented) leadership styles.

**Results:** The managers exhibited a high degree of transformational leadership behaviour, which was significantly associated with team culture. No significant associations between leadership behaviours and documented competence planning were found. Notably, we found a significant correlation between transformational and transactional leadership styles, indicating that the managers adapt their leadership behaviours to actual requirements and situations. Organisational structural factors: the share of registered nurses (RNs) on the staff and having a position for a professional development nurse were positively associated with competence planning.

**Conclusion:** A relational leadership style promotes team culture and both factors may empower the professional nursing environment. However, first-line nurse

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managers need to acknowledge nursing competence planning as a central part of effective leadership. Having a professional development nurse position seems to complement leadership and ease the manager's responsibilities regarding team culture and competence planning.

#### KEYWORDS

inter-professional teamwork, nursing, primary healthcare, relational leadership, task-oriented leadership, teambuilding

## INTRODUCTION

In several European countries, health reforms are aimed at reducing hospital admissions and strengthening the primary healthcare service, for instance by establishing municipal in-patient acute care (MipAC) units as is the case in Norway. The purpose is to manage costs and offer high-quality health services. Consequently, increasingly complex situations are handled in primary healthcare, which requires a highly qualified nursing workforce [1–2] and cooperation, collaboration and coordination among healthcare professionals [3]. However, a lack of professional nursing competence in primary healthcare [4–5] challenges the quality of these services and reveals an urgent need to focus on nursing competence enhancement [1–6]. Likewise, the structural changes in the wake of health reforms reveal the need for visible and supportive nursing management and leadership [7–9] and mean that nursing leaders must be held accountable for a range of activities in the organisation [10]. In a qualitative study performed in Norwegian MipAC units [11], competence enhancement, staffing and team culture were identified as important leadership responsibilities. There is, however, a need for research focusing on the managers' role in enhancing healthcare delivery [9], and the impact of leadership styles on nursing is pointed out as a central area in which more knowledge is required [9]. Thus, this study examines the leadership styles of first-line nurse managers in the MipACs across Norway and explores whether leadership style is associated with team culture and documented nursing competence planning in the units.

## BACKGROUND

In Norway, MipAC services have been established as an alternative to hospital admission [12] and should be considered as a service in-between traditional institution-based care in the municipality and specialised hospital treatment and care. The patients admitted to the MipAC services are, thus, primarily older people with complex and comprehensive care needs [11, 13, 14], although not yet

in need of hospital treatment. Many MipAC patients still have acute conditions that can easily become critical [15]. Therefore, a high level of competence among the nursing staff and physicians is needed to be able to respond to rapid deteriorations in the patients' health condition.

Municipal in-patient acute care services were offered in nearly all Norwegian municipalities by January 2016 [16]. The municipalities have been free within the applicable legal requirements to organise the services in accordance with their needs and resources [17], and, therefore, the organisational context of the MipAC services differs. About 67% of the municipalities have organised MipAC services as intermunicipal cooperation [14], and the services are located at a variety of short-term and long-term care institutions (e.g. nursing homes, out-of-hours medical services and local medical centres) [6, 14].

The construct of leadership is multidimensional as it can impact outcomes in complex ways. Leadership can, thus, be explored through several theoretical approaches. Some approaches, like the traits- and skills approaches, focus on who leaders *are*, but the current study uses the behavioural approach which focuses on how leaders *act*.

Leaders' behaviours are strongly related to organisational and environmental factors, including professional practice environments, employees' performance, staffing, best practices guidelines, outcomes, and the well-being of employees [10, 18]. Leadership styles 'consist of the behaviour pattern of a person who attempts to influence others' [18, p. 96].

Leadership styles are commonly categorised into two core behaviour dimensions: *task-oriented behaviours* or *relational behaviours* [10, 18, 19]. Task-oriented leaders are concerned about production and focus on achieving goals and enabling employees to achieve their objectives. Studies have found that task-oriented leadership promotes structure, coordination, clarification of roles and monitoring of operations [10, 19]. Relation-oriented leaders are concerned with the individual members of the staff and focus on their well-being, and they promote meaningfulness in work and the self-confidence of the individual employees' and the groups to which they belong [18, 20]. Although the advantages of both types of leadership are

important and necessary in an emergency unit such as MipAC, relational leadership behaviour is found to promote competence development and a positive organisational and teamwork climate [10, 20].

The leadership capabilities of first-line nurse managers may prove crucial if high quality care is to be realised, especially establishing a direction and applying strategies. Despite being constrained by budget restrictions, resource scarcity and heavy administrative workloads [8, 21], first-line nurse managers are expected to ensure sufficient competence in their staff to achieve goals [21] and to promote the health and well-being of their employees [20]. Examples of their roles include competence enhancement and planning, staff retention, recruitment, career planning and the promotion of the professional growth of staff. They should also motivate and inspire their employees, initiate and evaluate the development of competence, and support and strengthen the team culture and inter-professional cooperation [10].

## TEAM CULTURE AND COMPETENCE PLANNING

Professional teams in healthcare may take many forms and is conceptualised in many ways [22]. The main purpose is, however, to secure and provide safe, comprehensive and coordinated health services to the patients [3]. In the current study, we wanted to explore the first-line nurse managers' emphasis on facilitating a professional team culture in MipAC units. Team culture is described as a 'a sense of effective team functioning among clinicians and staff' [23 p 230]. Team culture can be identified by quality in social interactions and task-related interactions, and typically depends on communication, information, qualified participants, familiarity between the participants, shared objectives, respect and social support [23]. A positive and professional team culture is recognised as important as it improves the individual nurse's accomplishment, competence, communication and teamwork [24, 25]. A constructive team culture has, for example, a positive impact on person-centred care [26, 27] and team members' perceptions of empowerment [28]. It also helps to prevent adverse events [29], reduce staff turnover [30] and promote job satisfaction and quality in care [24]. Nurses' experiences of handling acute care challenges are found to be associated with a professional and positive team culture and interprofessional collaboration [31]. However, a lack of team orientation in terms of supporting each other to improve performance has also been reported among nurses in acute and other care settings [24]. This underlines the nurse managers' responsibility for improving team culture among nurses. Nevertheless, team

culture, nursing competence and quality in care depend on the individual team member's professional expertise and experience [31–33].

Professionalism, communication, teamwork and education are found to be the most common aspects of nursing competence standards in primary healthcare [34]. In our study, focus was on competence planning in terms of documented minimum standard competence requirements, documented enhancement plan and a training plan for the nursing services. In the literature, nurse managers' proactive role in competence planning is emphasised [35], both in the development of competence requirements for the nursing services and in education to prepare nurses to handle complex situations and to work well in teams [33, 34]. Halcome et al. (2016) highlighted that evidence-based competence standards are important tools to define and communicate the nurses' role in the primary healthcare services [34]. Nonetheless, in a study conducted in the MipAC services [6], the authors found that the extent of developed standard requirements for the nursing services varied across different organisational contexts. Studies indicate that nurse managers do not often prioritise proactive planning [35].

The aims of this study were (1) to identify which leadership styles characterise the first-line nurse managers in Norwegian MipAC units, and (2) to investigate how first-line nurse managers' leadership styles are associated with team culture and nursing competence planning.

## METHODS

### Study design and sample recruitment

A cross-sectional, questionnaire-based design was used in this study. Information on the types of institutions in which the MipAC units were located was obtained from the Norwegian Directorate of Health (2019), and we got in contact with the MipACs first-line managers through the municipal service operators. The questionnaire was distributed to the email addresses of all registered first-line nurse managers, representing 226 Norwegian MipAC units. Survey-software (SurveyXact™) was used for the web distribution. Two reminders were sent out, and a total of 207 questionnaires were returned.

The data were collected during the period from March to June 2019.

### Measures

The questionnaire consisted of four parts: background information on the first-line managers; their leadership

styles (the Multifactor Leadership Questionnaire (MLQ) form 5); their emphasis on team culture; and questions on competence planning and the organisational characteristics of the MipAC units.

The managers' background information pertained to their age; gender; professional affiliation (registered nurse (RN) or other); length of management education; master's degree/specialisation; size of managerial position; years of leadership experience; and the length of management training/education.

Organisational characteristics are associated with organisational outcomes [32, 36]. Since the organisational contexts and the extent of standard requirements of the nursing services varies considerably across MipAC units [6, 14], six organisational variables were included. These were: MipACs organised as intermunicipal services or not, number of RNs per bed; number of admissions; percentage of nurses; and physician contracted to be present (hours per week) and position for professional development nurse (yes/no). The variable concerning professional development nurse was added as these nurses typically act as supervisors and educators in clinical settings and are commonly regarded as leadership partners in relation to the achievement of organisational goals [37, 38]. We differentiated between managers of MipAC units located in short-term care units (intermediate units in nursing homes, out-of-hours medical services and local medical centres) and units located in long-term nursing homes. Thus, a question was added regarding short-term care or long-term care institution.

## The Multifactor Leadership Questionnaire (MLQ) form 5

The managers' leadership styles were explored through the Multifactor Leadership Questionnaire (MLQ) form 5. The original instrument consists of 45 items that measure self-evaluated leadership styles and outcomes. The MLQ is a widely used, validated and adapted instrument used across various cultures, samples and settings [18, 39], including nursing [10, 40]. The research team translated the MLQ form 5 from the original language (English) into the target language (Norwegian) through a back-translation and monolingual test procedure [41].

In the current study, an adapted MLQ version consisting of 37 items was used to measure leadership styles and outcomes. All items were measured through a five-point Likert-scale.

The MLQ identifies three different leadership styles: transformational leadership (14 items), transactional leadership (seven items) and passive-avoidant

leadership (seven items). The *transformational* leadership style displays the degree of relational leadership behaviour, which emphasises and encourages employees' potential, innovation, creativity and intellectual stimulation. The *transactional* leadership style displays the degree of task-oriented leadership behaviour, which is concerned with providing rewards for completed tasks and addressing potential problems. The *passive-avoidant* leadership style characterises leaders who initiate involvement when it might be too late. The items measuring the three respective leadership styles were summarised and adapted to three 0–100 scales where higher values indicate higher degrees of transformational and transactional leadership styles. Cronbach's alpha for coefficients for the transformational leadership scale was 0.8, transactional leadership was 0.7 and passive-avoidant leadership was 0.6 [42].

The questionnaire included two questions about team culture, focusing on the importance of facilitating (a) professional nursing teams and (b) an inter-professional team culture. A Likert scale ranging from 1 (totally disagree) to 5 (totally agree) was used. These two questions were summed [43], giving a scale from 2 to 10, and transformed into a composite score from 0 to 100 acting as a proxy for focus on team culture. Median (25–75 quartile) score was 75 (50–100) points with range 0–100 (higher values = larger focus).

Three questions on competence planning were included. These were related to the existence of a documented plan for (a) competence requirements, (b) competence enhancement and (c) training plan. The response options were 'yes', 'no' and 'in progress'. The 'yes' and 'in progress' values were coded together and given the value of 1, and 'no' was given the value of 0. The three variables were summed [43] resulting in a composite score with a range of zero (no plans) to three completed (or in progress) plans. The composite score is understood as a proxy for the individual manager's focus on competence planning. The range was 0–3 plans, with 30 (16.5%) having zero plans, and 31 (17.0%), 47 (25.8%) and 74 (40.7%) having 1, 2 and 3 plans respectively.

## Statistical analyses

Categorical data are presented as frequencies ( $n$ ) and percentages (%). Due to skewness and ordinal variables, numerical data are presented as median (Md) and interquartile range (IQR).

Normally distributed data are presented as mean and standard deviation (SD). Spearman's rho was calculated to explore the correlations between leadership styles and

The first-line nurse managers' characteristics			
Female	<i>n</i> (%)	163	(90)
Age	Md (IQR)	47	(41–53)
Registered Nurses	<i>n</i> (%)	176	(97)
Master's degree/specialisation	<i>n</i> (%)	121	(67)
Bachelor's degree	<i>n</i> (%)	60	(33)
Leadership experience (years)	Md (IQR)	10	(5–15)
Leadership education (months)	Md (IQR)	12	(0.75–18.0)
Transformational leadership style	Md (IQR)	75	(69.6–80.4)
Transactional leadership style	Md (IQR)	63	(53.6–68.6)
Organisational characteristics			
Intermunicipal MipAC units	<i>n</i> (%)	62	(34)
Short-term care unit	<i>n</i> (%)	104	(57)
Number of employees	Md (IQR)	40	(30–54)
Number MipAC beds	Md (IQR)	2	(1–4)
Number of beds in total	Md (IQR)	19	(13–25)
Proportion (%) of RNs in staff	Md (IQR)	57	(40–77)
Professional development nurse position (yes)	<i>n</i> (%)	100	(55)
Physician contracted (hours per week)	Md (IQR)	10	(4–37.5)
Totally agree to facilitating a professional team culture			
Professional nursing team	<i>n</i> (%)	106	(58)
Inter-professional team culture	<i>n</i> (%)	122	(67)
Nursing competence plans			
Documented competence requirements	<i>n</i> (%)	97	(53)
Documented plan for competence enhancement	<i>n</i> (%)	105	(58)
Documented training plan	<i>n</i> (%)	145	(80)

**TABLE 1** Overview of the respondents' and organisational characteristics, team culture and nursing competence planning (*n* = 182)

Transformational leadership		<i>n</i> (%)		<i>n</i> (%)		<i>n</i> (%)	
	High	12	(6.6)	18	(9.9)	38	(20.9)
	Medium	23	(12.6)	13	(7.1)	20	(11.0)
	Low	37	(20.3)	14	(7.7)	7	(3.8)
		Low		Medium		High	
		Transactional leadership					

**TABLE 2** Overview of first-line nurse managers' scores on transactional and transformational leadership styles (*n* = 182)

team culture and competence planning, and Pearson's correlation analysis were performed to calculate point-biserial correlation coefficients of dichotomous variables. Mann–Whitney *U*-tests were used to calculate differences between groups. Hierarchical regression analysis was used to test the strength of association between groups of variables representing (1) organisational factors (intermunicipal organisation, institution type, number of admissions, percentage of nurses, professional development nurse and hours per week physician contracted to be present) and (2) individual factors

(age, length of management education, master's degree/specialisation educated and transformational and transactional leadership styles). The purpose of the analysis was to test whether organisational or individual factors added unique variance in the two dependent variables (i.e. team culture and competence planning). This allowed us to assess and compare the amount of variance explained by each group of variables after previously included blocks of variables are controlled for, rather than just the effects of each individual variable. Explained variance ( $r^2$ ) and adjusted explained variance (adj  $r^2$ )

are presented. We also performed linear regression analyses to determine how much each independent variable accounted for the highest percentage of explained variance in the two dependents. To calculate unique explained variance for each variable squared part correlations are presented, together with unstandardised and standardised regression coefficients.

A  $p$ -value  $<0.05$  was set as the limit for statistical significance. All analyses were performed using SPSS v. 25.

## RESULTS

Of the 226 distributed questionnaires, 207 were returned (91.6%). Respondents who stated they were not first-line nurse managers ( $n = 15$ ; 6.6%), and those who responded to less than 75% of the MLQ questions ( $n = 10$ ; 4.4%), were excluded from the analyses. Thus, the final sample consisted of 182 participants (80.6%).

Registered nurses constituted 97% of the sample. Only one participant had an educational background lower than a bachelor's degree, and no one had a PhD. Their mean (SD) age was 47 [8] years, and 90% were females. Six managers (3.3%) did not know whether a standard for minimum competence requirements had been prepared in their unit; five managers (2.7%) did not know whether a written competence plan had been prepared; and three (1.6%) did not know whether a training plan was available. Nursing home institutions accounted for 118 (65%) of the MipAC units, of which 42 (36%) were organised into short-term care units. Further characteristics of the respondents and the MipAC units are presented in Table 1.

### Leadership styles

As expected, both transformational and transactional leadership styles were present among the respondents. However, a transformational leadership style was more dominant [median (IQR) = 3.00 (2.70–3.21)] than the transactional leadership style [MD (IQR) = 2.50 (2.14–2.74)]. The passive-avoidant leadership style proved almost negligible [MD (IQR) = 0.43 (0.14–0.71)] and was thus excluded from further analysis. The results showed significant correlations between transformational leadership and transactional leadership styles ( $r = 0.49$ ). As shown in Table 2, and as indicated by the correlation analyses (Table 3), the managers often combined these two leadership styles.

About 68% of the first-line nurse managers showed high to medium scores on transformational leadership style (37.4 and 30.7, respectively). About as many (approximately 20%) were in the low–low category as in the high–high category (Table 2).

We also found higher transformational leadership scores among the managers in short-term care units [MD (IQR) = 3.07 (2.87–3.21)] than in long-term care units [MD (IQR) = 2.93 (2.69–3.14)],  $p = 0.007$ .

### Association between leadership styles, team culture and competence planning

As shown in Table 3, significant correlations were found between team culture and competence planning, and the transformational and transactional leadership styles. The correlation between competence planning and the two leadership styles was about equally strong. Managers in general scored higher on the transformational leadership style than on the transactional leadership style. Short-term care units had significantly higher numbers of beds designated for MipACs ( $r = 0.63$ ) and RNs per bed ( $r = 0.49$ ). Having a professional development nurse was found to be significantly higher in short-term care units compared to long-term care units ( $r = 0.25$ ). Significant correlations were also found between organisational characteristics of the MipACs and team culture, competence planning and leadership styles.

As shown in Table 4, there were significant associations between organisational factors and both team culture and competence planning, with adjusted explained variance = 15.4% and 21.7% respectively. When adding individual characteristics into the regression model on team culture, explained variance increased by 11%, which was highly significant ( $p < 0.001$ ). The individual characteristics did not increase the explained variance on the competence planning variable significantly (i.e. 1%).

The complete regression model, with all included variables, is presented in Table 5.

The most important predictor for variance in team culture seems to be the transformational leadership style. Although having a professional development nurse on the staff appears to be important (2.87%), the transformational leadership style displayed a higher single explained variance (9.17%). We found no significant associations between competence planning and leadership styles. The ratio of nurses on the staff and having a position for a professional development nurse seem to be the major predictors of the degree of competence planning.

**TABLE 3** Bivariate correlations between competence planning, team culture, and organizational and individual characteristics

	Planning	Team culture	Intermun. org.	STCU vs LTCU	Number admissions	Percentage of nurses	Professional development nurse	Physician	Age	Length of management education	Master's degree or specialization	TFLS	TSLs
Planning	1												
Team culture	0.386**	1											
Intermunicipal org.	-0.104	-0.233**	1										
STCU vs LTCU	-0.391**	-0.336**	0.341**	1									
Number admissions	0.367**	0.230**	-0.394**	-0.601**	1								
Percentage of nurses	0.373**	0.246**	-0.464**	-0.510**	0.543**	1							
Professional development nurse	0.391**	0.317**	-0.231**	-0.265**	0.247**	0.188*	1						
Physician contracted (hours per week)	0.386**	0.291**	-0.300**	-0.497**	0.682**	0.358**	0.392**	1					
Age	-0.130	-0.104	-0.001	0.112	-0.070	-0.042	-0.067	-0.097	1				
Length of management education	0.056	0.063	-0.048	-0.059	0.053	0.075	0.144	0.123	0.123	1			
Master's degree/specialization	0.001	-0.009	0.030	0.003	0.017	-0.017	-0.035	0.076	0.134	0.376**	1		
TFLS	0.240**	0.416**	-0.058	-0.201**	0.071	0.130	0.143	0.157*	0.058	0.157*	0.085	1	
TSLs	0.256**	0.185*	0.141	-0.063	0.030	0.066	0.218**	0.048	0.009	0.057	0.002	0.490**	1

Abbreviations: LTCU, long-term care units; STCU, short-term care units; TFLS, transformational leadership style; <sup>a</sup>TSLs, transactional leadership style.\* $p < 0.05$ . \*\* $p < 0.001$ .

**TABLE 4** The impact of organisational and individual factors on team culture and competence planning. Hierarchical linear multiple regression analysis

	Team culture			Competence planning		
	Explained variance ( $r^2$ )	Adjusted explained variance (adj $r^2$ )	$p$ -value change	Explained variance ( $r^2$ )	Adjusted explained variance (adj $r^2$ )	$p$ -value change
Organisational factors <sup>a</sup>	0.187	0.154	<0.001	0.243	0.217	<0.001
Individual factors <sup>b</sup>	0.297	0.247	<0.001	0.253	0.204	0.861

<sup>a</sup>Intermunicipal organisation, institution type, number of admissions, percentage of nurses, professional development nurse and number of physician hours per week.

<sup>b</sup>Age; length of management education; master's degree/specialisation; and transformational and transactional leadership styles.

## DISCUSSION

This study aimed to identify which leadership styles characterised the first-line nurse managers in the Norwegian MipAC units and to investigate how first-line nurse managers' leadership styles were associated with focus on team culture and documented nursing competence planning. The high degree of transformational leadership style found, representing a relational management focus, indicates that the majority of nurse managers emphasise good work conditions and encourage their employees to strive towards improving their performance. Our results also clearly demonstrated that relation-oriented managers emphasised team culture in the MipAC units, which is in line with previous research [10, 20]. This may in turn promote high quality care and synthesise the individual nurse's accomplishment [23, 26–30]. Hence, we argue that the organisation's ability to establish professional team culture may depend on its ability to recruit, retain and develop the skills of competent professional nurses. Concerning the general lack of RNs and particularly the lack of RNs who exhibit advanced nursing competence in MipAC units [4, 6], the managers' ability to facilitate nurses' growth, healthy work environments and staff satisfaction may be crucial regarding recruitment, retention [10] and preventing professional nurses from leaving the profession [44].

Our results revealed that the nurse managers in MipACs also exhibited a high degree of task-oriented leadership style. The high correlation found between the two leadership styles was expected, as managers possess all leadership styles to some degree [39]. Overlap between task-oriented and relational leadership implies that managers adapt their leadership behaviours towards various managerial requirements and situations. Thus, appropriate leadership behaviours can either be supportive or directive, depending on the situation's demands, and employees' motivation and competence [18, 45]. The managers' variety of leadership behaviours, as revealed in our study, may, therefore, reflect their strategies for dealing with the varied levels of competence in the nursing staff. This is found to be the case in the

primary healthcare services [4, 6], as the managers balance their behaviour to accommodate patient safety requirements in increasingly complex care situations.

Although task-oriented leadership is claimed to limit the trust and motivation building required to realise the staff's full potential [39], it plays an important role in establishing structure, coordination, clarifying roles and monitoring operation [19]. It is also claimed that a task-oriented leadership style implies a planning-focused management style. Notwithstanding, our results showed almost no difference between competence planning and leadership styles. However, the lack of statistically significant association between managers' task-oriented leadership style and competence planning discovered in this study, is supported by previous research which found that the task-oriented leadership style is concerned with maintaining the status quo [46]. The lack of associations between managers' leadership styles and competence planning concurs with previous studies which conclude that proactive strategic planning has a limited focus in nurse management [35].

The overall high score on leadership scales in MipAC first-line nurse managers indicates proactive leaders. However, one fifth of the managers scored in the lower third on both leadership styles. One explanation may be that the nurse managers' heavy administrative workload and resource scarcity overburden them; restrict their freedom of action; and divert their attention from being a clear and visible leader [8, 21].

## Impact of organisational factors

An important revelation in our study is the significant association between organisational factors and the managers' emphasis on team culture and competence planning in the MipAC units. Moreover, we found that having a position for a professional development nurse was associated with both team culture and competence planning. Professional development nurses play an important role



TABLE 5 Linear multiple regression of all organisational and individual factors' impact on team culture and competence planning

	Team culture				Competence planning			
	Unstd coeff	Std coeff	p-value	Expl. Variance (%)	Unstd coeff	Std coeff	p-value	Expl. Variance (%)
Organisational factors								
Intermunicipal org.	-6.603	-0.116	0.142	0.91	0.005	0.002	0.979	0.00
Short-term vs long term institution	-9.030	-0.165	<b>0.038</b>	1.82	0.071	0.032	0.694	0.07
Number admissions	0.006	0.079	0.337	0.39	0.001	0.031	0.716	0.06
Percentage of nurses	-0.019	-0.017	0.836	0.02	0.016	0.335	<b>&lt;0.001</b>	6.96
Professional development nurse position.	10.457	0.192	<b>0.010</b>	2.87	0.537	0.241	<b>0.002</b>	4.52
Physician contracted (hours per week)	-0.048	-0.064	0.471	0.22	0.002	0.059	0.513	0.19
Age	-0.295	-0.087	0.193	0.71	-0.002	-0.016	0.811	0.03
Length of management education	0.028	0.013	0.857	0.01	0.002	0.018	0.807	0.03
Master's degree/specialisation	0.180	0.003	0.964	0.00	0.106	0.045	0.526	0.18
Transformational leadership style	1.122	0.369	<b>&lt;0.001</b>	9.19	0.004	0.031	0.700	0.07
Transactional leadership style	-0.096	-0.049	0.535	0.16	0.005	0.064	0.430	0.27

as contributors to competence enhancement and change processes related to nursing practices in the workplace [37, 38]. Hence, we argue that the association found between first-line managers' team culture focus and competence planning and having a professional development nurse position may reflect a partnership between the professional development nurse and nurse manager, and, thus, that the two complement each other. A first-line nurse manager with a heavy administrative workload [8] may have to depend on a close cooperation with others to realise competence enhancement visions. The results of the current study appear to confirm the importance of having a professional development nurse as a partner in clinical leadership, which is also found in previous studies [38]. However, to uncover how organisational structural features impact on competence enhancement in the MipACs, additional research is needed.

## Strengths and limitations

A general limitation of cross-sectional survey design is that we cannot identify causality or reveal changes over time. Thus, the results may differ when measured at another point in time. To adapt the original MLQ questionnaire for a Norwegian primary healthcare setting, we examined its structural validity and slightly modified the instrument. However, since all components were measured by a minimum of three items, we considered the modified instrument appropriate to examine leadership styles in MipAC units' first-line nurse managers.

Strengths of the study pertain to the high response rate and the fact that all regions in Norway were represented in the sample.

## CONCLUSION AND REFLECTIONS

The high proportion of nurse managers in the MipAC units exhibiting a relational leadership style indicates a potential to promote nursing competence enhancement in the services. Relational leadership behaviours are essential to promoting the value of a professional team culture in the organisation and the staff and to enhance healthcare delivery in increasingly complex and challenging nursing practices. However, different competence levels of the nursing staff in the MipAC units challenge the managers' capability to adapt their leadership styles to specific situations and ensure adequate care quality. Although no associations were found between specific leadership styles and competence planning, we argue that nursing competence enhancement is an important managerial responsibility. Thus, to promote change and enhancement in the

nursing services, managers need to recognise competence planning as a central part of an effective leadership.

The significance of organisational factors pertained to RN staffing and to having a professional development nurse to complement, support and share the manager's responsibility for facilitating nursing competence enhancement in the unit. However, more research is needed to understand professional development nurses' impact on and roles regarding quality improvement and competence enhancement in MipAC units.

## ACKNOWLEDGEMENT

The authors would like to thank the first-line nurse managers who participated in this study and give special thanks to those who participated in the pilot testing of the questionnaire. Thanks to Kim Richard Arntzen and Edward Milsom who back translated the MLQ. We also want to thank the municipal service operators for their assistance in contacting the MipACs first-line managers.

## AUTHORS' CONTRIBUTIONS

All authors contributed to the design of the study, and analysis and interpretation of data TKV, BD, MSS and T-IK. All authors also drafted the work or revised it critically and approved the manuscript before submission. All agreed to be accountable for all aspects of the work and to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

## ETHICAL APPROVAL

This study was conducted in accordance with the Declaration of Helsinki (1964). It was approved by the Norwegian Centre for Research Data 28.01.2019 (ref. 815471) and by the Faculty of Health and Sport Science University of Agder. The participants were contacted individually to provide them with information about the study. Participants also received written information about the study that included a description of their legal rights regarding participation. They were informed that participation was voluntary and that responding to the questionnaire was considered as consent to participation.

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**How to cite this article:** Vatnøy TK, Dale B, Sundlisæter Skinner M, Karlsen T-I. Associations between nurse managers' leadership styles, team culture and competence planning in Norwegian municipal in-patient acute care services: A cross-sectional study. *Scand J Caring Sci*. 2022;36:482–492. <https://doi.org/10.1111/scs.13064>