

# The effects of intervention based on supportive leadership behaviour on Iranian nursing leadership performance: a randomized controlled trial

MANDANA SHIRAZI <sup>PhD</sup><sup>1,2</sup>, AMIR HOSSEIN EMAMI <sup>MD</sup><sup>3</sup>, SEYED JAMAL MIRMOOSAVI <sup>MD, MSc</sup><sup>4</sup>, SEYED MOHAMMAD ALAVINIA <sup>MD, PhD</sup><sup>5</sup>, HADI ZAMANIAN <sup>MD</sup><sup>6</sup>, FAEZEH FATHOLLAHBEIGI <sup>MSc</sup><sup>7</sup> and ITALO MASIELLO <sup>PhD</sup><sup>8</sup>

<sup>1</sup>Associate Professor, *Educational Development Centre (EDC), Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran*, <sup>2</sup>Senior Researcher, *LIME Department, Karolinska Institutet, Sweden*, <sup>3</sup>Associate Professor, *Dean of Faculty of Medicine, Department of Medical Education, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran*, <sup>4</sup>Deputy of Health, *Sabzevar University, Iran*, <sup>5</sup>Assistant Professor of Epidemiology, *North Khorasan University of Medical Sciences-Bojnurd, Iran*, <sup>6</sup>Deputy of Research, *Qom University of Medical Sciences, Iran*, <sup>7</sup>Clinical Nurse, *Nursing and Midwifery Care Research Center, Tehran University of Medical Sciences, Tehran, Iran* and <sup>8</sup>Associate Professor, *Director Klinikum, Soder Hospital, Karolinska Institutet, Sweden*.

## Correspondence

Seyed Jamal Mirmoosavi  
Sabzevar University of Medical  
Science  
Sabzevar  
Iran  
E-mail: mandana.shirazi@ki.se

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## The effects of intervention based on supportive leadership behaviour on Iranian nursing leadership performance: a randomized controlled trial

**Aims** To assess the effects of a workshop on supportive leadership behaviour (SLB) on the performance of head nurses, using a randomized controlled trial design.

**Background** The effect of transformational leadership on SLB in nursing management is emphasised.

**Methods** A total of 110 head nurses working at university hospitals were included randomly in two control and intervention groups. The head nurses in the intervention group participated in supportive leadership training, but the control group did not. Performance in supportive leadership was assessed with a validated instrument, which six subordinates used to assess their head nurse ( $n = 731$ ).

**Results** There was a significant difference in SLB scores from baseline to the 3 month follow-up ( $P < 0.0001$ ). Moreover, the post-intervention scores were significantly higher in the intervention group, compared with the control group ( $P < 0.0001$ ). The results showed that in the intervention group, the effect sizes were greater for males (50%) than for females (36%) and greater for married participants (42%) than for single participants (37%).

**Conclusion** The workshop on supportive leadership behaviour, particularly the interactive multifaceted training, improved the leadership performance of the head nurses who participated in this study.

**Implications for nursing managers** Health policy decision makers should apply SLB, which is a significant leadership style, to improve the outcomes in other groups of health-care management, such as physicians. Future studies are needed to investigate the effects of such workshops in longer periods of follow up.

**Keywords:** nursing, randomised controlled trial, supportive leadership, training

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## Introduction

Some leadership categorisation styles, including transactional and transformational leadership, are frequently used. However, desirable outcomes in health-care systems, such as hospitals, will not be achieved by transactional leadership, which focuses on tasks and the sense of duty (Cummings *et al.* 2010). Nonetheless, in some countries, such as Iran, transactional leadership has been traditionally predominant (Anderson *et al.* 2004). In contrast, transformational leadership focuses on supportive leadership behaviours (SLB) in organisations (Bass & Bass 2008, Kvist *et al.* 2013). In this style of leadership, in order to improve the results of staff, leaders consider their needs and try to motivate them. They also build relationships with their staff, based on intellectual stimulation, individual consideration, and effective interpersonal communication (Cummings *et al.* 2010).

Studies in health and nursing research showed that transformational leadership can potentially increase staff motivation (Cowden *et al.* 2011), decrease workplace conflict (Munir *et al.* 2012) and increase job satisfaction (Nielsen *et al.* 2008, Cummings *et al.* 2010, Munir *et al.* 2012, Wang *et al.* 2012), which can result in better leadership outcomes (Casida & Parker 2011). The results of one study showed that a large number of nurses working in nursing homes left their jobs because of the lack of teamwork and communication skills, as well as poor leadership styles (Anderson *et al.* 2004). This study suggested that a working environment that supported both leaders and staff could solve these problems (Anderson *et al.* 2004). Furthermore, transformational and supportive leadership can solve the problem of the shortage of nurses and ensure that nurses have appropriate workloads in the future (Thyer 2003, Cowden *et al.* 2011, Abualrub & Alghamdi 2012).

In recognising the importance of supportive leadership in the health system, attention should be paid to leadership development and empowerment through educational programmes (Abualrub & Alghamdi 2012). In recent years, leadership development has increasingly become an urgent issue in medical education (Steinert *et al.* 2012). Some studies have investigated the effects of leadership through various educational interventions, such as programmes, curricula, courses, workshops, and so on (Fox *et al.* 2000, Moore & Klingborg 2001, Dannels *et al.* 2008, 2009, Malling *et al.* 2009, Varkey *et al.* 2009, Romanowska *et al.* 2011). A recent systematic review was conducted to identify the effects of leadership training

programmes on physicians in academic centres. The results showed a significant effect of leadership programmes on the advancement of participants in academic ranks, hospital leadership positions, and the number of publications (Straus *et al.* 2013). However, only a few previous studies have investigated the effects of an ‘especially supportive leadership’ educational programme on nurses and other health professionals. Studies in other areas of medical education showed that multifaceted training in the objectives of education and the status of trainees may be more effective than the usual programmes (Johnson & Johnson 1989, Oxman *et al.* 1995). A study conducted by Paterson *et al.* (2014) revealed that effective leadership is associated with improved workplace culture, staff satisfaction and patient outcomes; their study also suggests that enhanced leadership in practice settings and better communication among nurses can be achieved through improved education. Little research has focused on using multifaceted training in leadership styles.

The aim of the present study is to assess the effects of a multifaceted workshop, based on supportive leadership style content, on the leadership performance of head nurses through evaluating the viewpoints of their subordinates in a large-sample, randomized controlled trial (RCT).

## Methods

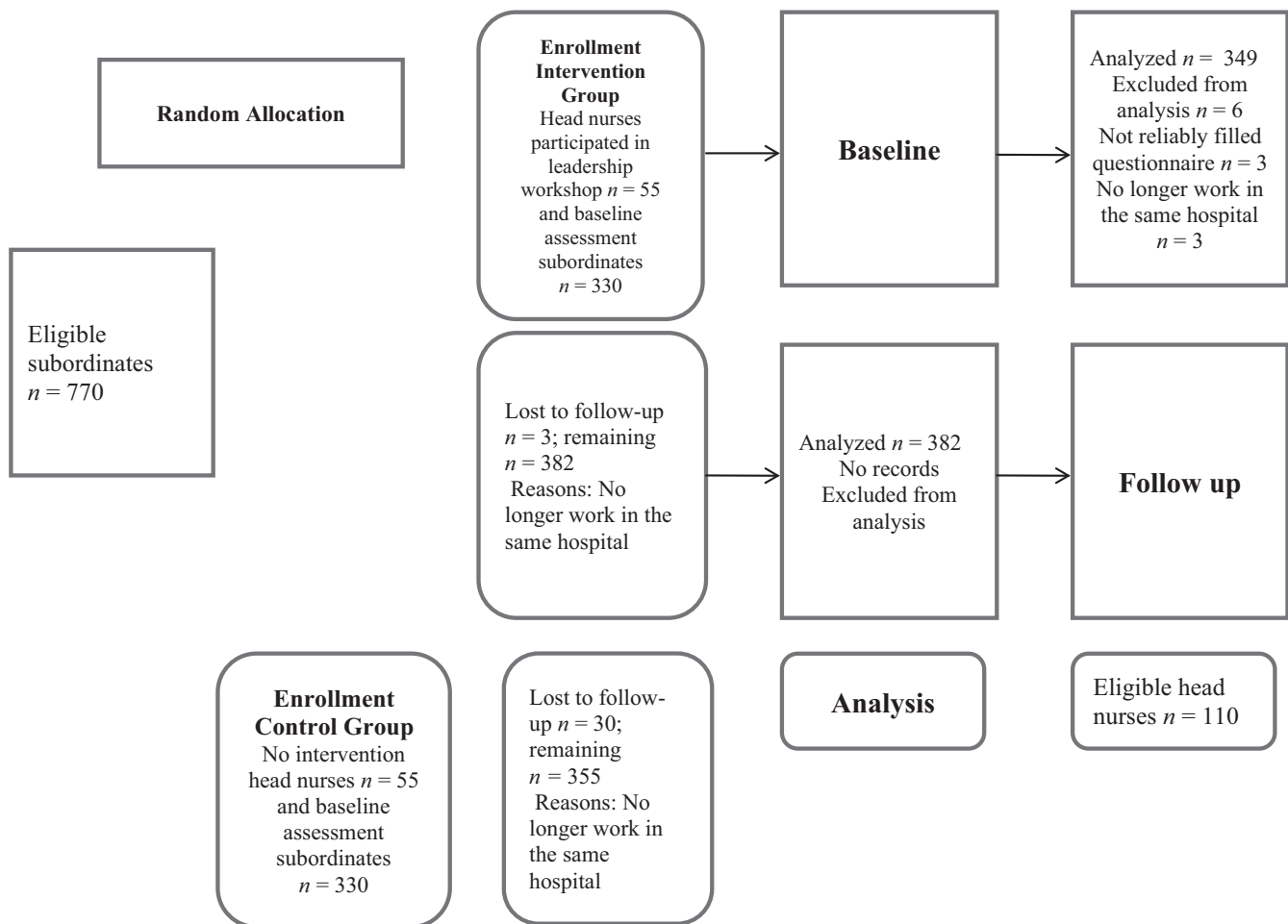
### Design and setting

In this randomised controlled intervention study, the participants in the intervention group attended a one-day multifaceted supportive leadership workshop that was designed for head nurses working in academic hospitals at the Tehran University of Medical Sciences (TUMS).

Supportive leadership behaviours were assessed by a newly developed and validated instrument. The subordinates’ points of view were assessed in both the control and intervention groups before the intervention and 3 months after it. The head and subordinate nurses in 16 main metropolitan academic hospitals of TUMS were included. The study was performed from July 2010 to April 2011 (Figure 1).

### Participants

A total of 110 head nurses were selected by stratified randomized sampling among 235 head nurses in 16 metropolitan academic hospitals. Moreover, for each

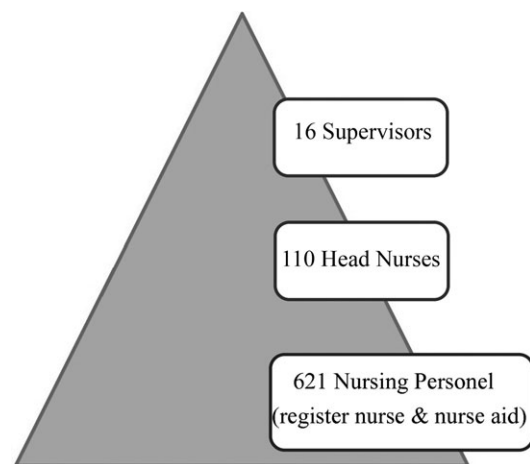


**Figure 1**  
Study design.

head nurse, six subordinates with different levels of nursing education were selected (660 subordinates), such as registered nurse and nurse aids. Therefore, the total number of participants was 770. The sampling was conducted with the help of 16 nurse managers (matrons) in the 16 hospitals at the university. The participants were included in the study based on the inclusion criteria. In order to avoid bias, the 16 nurse managers were excluded from the study population (Figure 2). In the baseline phase, face-to-face visits yielded a response rate of 95%. The inclusion criteria were: nurses having more than 2 months of work experience in the same ward and the intention of staying in that position for an additional 3 months.

The head nurses and their related subordinates ( $n = 660$ ) were randomized into an intervention group and a control group. The researchers were blinded during the randomization process. The head nurses in the intervention group ( $n = 55$ ) participated in a multifaceted course on supportive leadership style; the head nurses in the control group ( $n = 55$ ) did not

receive training. All 770 participants were blinded regarding the group in which they were placed. They completed the questionnaires at the baseline and after the intervention. Thirty-nine subordinate participants



**Figure 2**  
Hierarchy of nursing samples in the study.

were excluded from the study because of a change in their hospital work place. The remaining participants ( $n = 731$ ) filled out the questionnaires in the post-test. The variables consisted of SLB, age, gender, marital status and employment background.

### Ethics statement

This study was approved by the university's ethical committee and registered as a clinical trial at Clinical Trial.gov (NCT 01169623). All participants in the study signed an informed consent form.

### Intervention

The intervention was presented using a multifaceted learning and teaching style. The intervention consisted of two 1-day, 8-hour workshops held at the Educational Development Centre (EDC) of TUMS, with 25–27 head nurses participating in each workshop. The content and expected outcomes of the workshop were based on the concepts of different leadership styles, including the fundamentals of SLB and parts of a similar workshop held recently in Canada (Toronto University 2008).

To increase the effectiveness of the workshops, we used an interactive multifaceted approach. The teaching methods included role playing, mini-lectures and the modified 'goldfish bowl technique' (a small-group technique used in medical education). The workshop first used the ice-breaking method to introduce the participants and facilitators of the workshop to each other. An expert in the field presented a 30-minute lecture on the current terminology of leadership and differences ways of implementing it. Next, the participants were encouraged to discuss the 'subject.' The session then continued with a 15-minute lecture regarding different types of leadership (task oriented leader, behaviourist leader, etc.) and their strengths and weaknesses. During the workshop, three role playing activities in three different scenarios based on different leadership styles and managerial dilemma in hospitals were performed by our simulated nurse managers and nursing staff. They were carried out through the goldfish bowl technique. This method was previously used in changing behaviours, such as communication skills, problem solving through creative and indirect approaches and alternative approaches to solving dilemmas (Mohanna *et al.* 2003, Thistlethwaite & Ridgway 2006). The participants then discussed the role-playing exercise, reflected on the actors' roles, and discussed their points of view. In

addition, the participants were expected to distinguish between different leadership behaviours and styles and then select one, based on the workshop programme. Finally, the facilitators of the workshop summarised the discussions and gave the participants feedback regarding each role play, focusing on important learning objectives of the leadership style. The workshop targeted the strengths of supportive leadership, compared with other leadership styles.

### Questionnaires

The main instrument used in this study was the SLB questionnaire. Because no valid and reliable instrument was available to assess SLB, and none had been adapted or developed for use in the nursing context, the provisional questions were extracted by experts from SLB questions on three different questionnaires: Ohio State (OSQ) (Larsson 2006), Developmental Leadership (DL) (Hersey & Blanchard 1979), and Hersey and Blanchard's Situational theory (HBS) (Halpin 1962), which provide valid, common generic scales related to leadership styles. Some items related to SLB were extracted from these questionnaires and translated into Farsi and then back-translated to English by two bilingual English language experts. Moreover, some new questions were developed and added to the first draft, which resulted in 50 items on the questionnaire. The content and face validity of the instrument were ensured through discussion and consensus within the group of experts. The reliability of the questionnaire was assessed using a test-retest approach in the pilot study, which was conducted among 30 nurses, who were then excluded from the main study population. The kappa coefficient was used to assess the correlation of the results of the test and retest. All items with kappa less than 0.7 were excluded from the final version.

The second version of the questionnaire comprised 40 items, and the mean kappa for all questionnaires was 0.86. The internal consistency of the SLB scale, as measured by Cronbach's alpha, was 0.84. The second version of the instrument comprised 40 items in four dimensions of supportive leadership: support for development (18 items of 40-item questionnaire); integrity (seven-item subscale reflecting trustworthiness, encouragement and good interpersonal communication skills); sincerity (eight items showing high-quality loading in demonstrating friendly and approachable behaviours); and recognition (seven-item subscale about a supportive environment where everyone is recognised and appreciated). An exploratory

factor analysis was conducted based on principle axis factoring and varimax rotation to evaluate the construct validity of the scale. The Cronbach's alpha for each factor was above 0.3 (range 0.3–0.9).

The responses, based on a five-point Likert scale, were: 'completely agree', 'agree', 'don't know', 'disagree,' and 'completely disagree'. Each item was scored between 1 and 5 (1 = 'completely agree', 5 = 'completely disagree'). The instrument yielded an overall score ranging from 40 to 200. This questionnaire was completed by both the control group and the intervention group before and 3 months after the intervention.

## Data analysis

The Statistical Package for Social Sciences (SPSS) version 16 for Windows (SPSS Inc., Chicago, IL, USA) was used for the data entry and analyses. The mean scores of the SLB in each group were calculated. A *t*-test and chi-square tests were used to compare age, gender, marital status, and employment history between the two groups. The Mann–Whitney *U*-test was used to compare the baseline scores in the two groups. The Wilcoxon non-parametric test was used to compare the scores of the two groups, and a paired *t*-test was applied to compare the scores before and after the SLB in two groups; *P*-values less than 0.05 were considered significant.

## Results

Of the 770 participants, 731 completed the entire study (382 and 349 participants in the control group and the intervention group, respectively (Figure 2). The baseline assessment included 55 head nurses and 330 subordinates in the control group and the intervention group (385 in each group). After the follow up in the post-test assessment, there were 55 head nurses in the control and the intervention group and 327 and 294 subordinates, respectively, ( $n = 382$  and  $n = 349$ , respectively). The 39 nurses who moved to other hospitals were excluded. Questionnaires were returned by 731 participants, with response rate of around 95%. The mean age was 35.87 (SD = 8.25), and the female to male ratio was about 4 : 1 (male 17.6%, female 82.4%).

At the beginning of the study, there were no statistically significant differences between the two groups with respect to age, gender, employment history, marital status and SLB score (Tables 1 and 4).

After the intervention (3-month follow up), we found a significant increase in the SLB score of the

**Table 1**

The base line participants' of 731 participants in the study

	Control group ( $n = 382$ )	Intervention group ( $n = 349$ )	<i>P</i> -value
Age (mean $\pm$ SD)	35.87 $\pm$ 8.25	36.03 $\pm$ 8.54	0.342
Gender			
Male	62	67	0.228
Female	320	282	
Employment history	11.19 $\pm$ 8.11	11.65 $\pm$ 8.18	0.339
Marital status			
Single	109	101	0.222
Married	273	248	

**Table 2**

Comparison of supportive leadership behaviour (SLB) scores between two groups

	SLB score after 3 months		<i>P</i> -value
	Control group ( $n = 382$ )	Intervention group ( $n = 349$ )	
Mean	128.64	150.05	0.000
Standard deviation	24.27	19.99	
Mean difference	1.02	21.4	
<i>P</i> -value	0.3	0.000	

intervention group ( $P < 0.0001$ ), with a mean difference of 17.82, compared with the baseline. In addition, there was a significant difference after 2 months between the SLB scores of the control and the interventional groups ( $P < 0.0001$ ), with a mean difference of 21.4. No significant change was observed in the control group regarding the SLB score both before and after the follow up ( $P = 0.3$ ) (Table 2).

We conducted multivariate and paired *t*-test analysis to determine the effect of background variables, such as gender and marriage status (Table 3) and observed a significant statistical change in SLB scores after the intervention among males than among females. The effect sizes were greater for the males (50%) than for the females (36%). Moreover, the results revealed more changes in the SLB scores among single than among the married participants in the intervention group, with effect sizes of 42% and 37%, respectively (Table 3). There was no significant statistical difference between the effect sizes of males and females in the control group.

Because the SLB questionnaires were completed by both head nurses and subordinates, in order to minimize the self-assessment bias, we repeated the analysis in different strata of participants, dividing them according to the assessments of head nurses and subordinates (Table 4). Assessments in both groups of head nurses and of the subordinates in the control group showed no



**Table 3**

Multivariate analysis for comparing supportive leadership behaviour (SLB) scores between two groups before and after intervention

	SLB score, mean (SD)									Effect size
	All participants			Control group			Intervention group			
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change	
Overall	129.8 (20.8)	138.9 (24.76)	9.0 (23.4)	127.6 (24.5)	128.6 (24.3)	1.0 (19.1)	132.2 (15.6)	150.1 (20.0)	17.8 (24.4)	38% (1.0)
Male	129.0 (20.0)	140.71 (24.7)	11.7 (22.6)	126.4 (25.2)	126.5 (24.4)	0.5 (16.0)	131.4 (13.4)	153.9 (16.3)	22.5 (22.4)	
Female	130.0 (21.0)	138.5 (24.8)	8.5 (23.5)	127.9 (24.5)	129.1 (24.3)	1.2 (19.7)	132.4 (16.1)	149.2 (20.7)	16.7 (24.8)	
Married	130.76 (21.3)	139.5 (23.5)	8.7 (22.6)	128.5 (24.9)	130.5 (22.9)	2.0 (18.3)	133.3 (16.1)	149.4 (19.9)	16.1 (24.4)	
Single	127.5 (19.5)	137.4 (27.7)	9.8 (25.3)	125.4 (23.3)	124.0 (27.0)	-1.4 (21.0)	129 (14.1)	151.7 (20.3)	22.0 (24.0)	

**Table 4**

Multivariate analysis for comparing supportive leadership behaviour (SLB) scores between head nurses self-assessment and subordinates assessment

	SLB score, mean (SD)					
	Control group			Intervention group		
	Pre	Post	P-value	Pre	Post	P-value
All participants	127.6 (24.5)	128.6 (24.3)	0.3	132.2 (15.6)	150.1 (20.0)	0.000*
Only head nurses (n = 110)	145.4 (9.6)	145.8 (10.1)	0.599	144.7 (10.9)	151.7 (12.2)	0.000*
Only Subordinates (n = 621)	124.6 (25)	125.7 (24.8)	0.331	129.9 (15.2)	149.7 (21.1)	0.000*

\*P-values  $\leq 0.05$  are significant.

significant differences in SLB scores. However, following the intervention, a significant change in the SLB scores in the intervention group was observed in the assessments of both head nurses and subordinates. Moreover, to prevent the sharing of information between the two groups, we conducted the intervention in separate hospitals and required the head nurses in the intervention group not to disclose the content of the workshop. The head nurses in the intervention group did not receive educational materials.

## Discussion

We found that the SLB scores increased following the participation of the head nurses in the intervention. The multifaceted leadership workshop was effective in improving the supportive leadership performance behaviours of head nurses, based on the SLB effect sizes in the intervention group. No significant change was observed in the control group. The workshop was also effective in improving job satisfaction by means of influencing the behaviour of the head nurses and promoted better relationships among head nurses and their subordinates.

The researchers found that the differences in SLB scores between groups regarding demographic characteristics were greater in male than in female participants and greater in the single participants than in the

married participants. Inconsistencies in these demographic characteristics could be explained by the fact that leadership styles and learning vary according to culture, gender, and context (Davidhizar & Cramer 2000, Streiff *et al.* 2011, Wayne *et al.* 2012, Wong *et al.* 2012). Although women's behaviour was found to be more sensitive and supportive than men's behaviour, our results showed the opposite (Ayman & Korabik 2010). This could be related to the smaller number of males, compared with females, or to the task-based discipline in the training received by female nurses (the nurses were trained according to the strict British nursing training programme before the Iranian revolution), which could have affected the results. The higher SLB scores observed in the single participants might have been caused by the concentration of single participants in learning.

It seems that married participants were busier than single nurses and that this was due more to their family duties than to their workloads. However, these results are inconsistent with Mousavi-Nasab *et al.*'s (2012) findings.

The strength of the current study is its design. Most previous studies used the descriptive-correlational approach, which only showed a relation between leadership style and outcomes, such as satisfaction and knowledge. A few studies were designed as clinical trials, especially in the nursing context, of supportive

leadership behaviour. Our results support some similar studies in this field (Fox *et al.* 2000, Moore & Klingborg 2001, Dannels *et al.* 2008, 2009, Romanowska *et al.* 2011). Another strength of the present study concerns the results of the behaviour change assessment, which were higher than those of other studies, according to the Kirkpatrick outcome pyramid. Other research focused on the knowledge base and used the self-assessment method, whereas because this study measured the practice of leaders according to assessments by their subordinates, the outcomes were more accurate than those in previous studies (Malling *et al.* 2009, Wong *et al.* 2012). In addition, the 3-month interval between the intervention and the assessment helped us to obtain a better estimate of the effects of our leadership workshop.

Because the content and the instrument used in the workshop are appropriate for all medical specialties, these results could be applied in other medical education professions. Obviously, scenarios and examples should be adopted based on the target training group. Another positive attribute of this study was the use of a multifaceted approach to teaching and learning. The strong results regarding the effectiveness of the workshop lead to the following two points. First, because the multifaceted approach to teaching had a positive effect on results, the present study suggests that attitudes toward and the performance of tasks related to mixed issues, such as environment-supportive leadership behaviour (which consists of human development, dignity, and sincerity), should be taught by applying this approach. Second, the educational programme's objectives, which are based on participants' actual needs (such as improved interpersonal communications, workplace sincerity, and developmental support), should strongly influence employee performance. These findings support our hypothesis. Hence, providing educational interventions that are based on supportive leadership behaviour and make use of interactive teaching methods, such as workshops, can improve nurses' collective performance in areas such as interpersonal communication (Davis *et al.* 1995).

Future research is needed to distinguish between the effects of the leadership course, using at least two intervention groups, with and without the multifaceted approach.

## Limitations

One of the limitations of this study is that only one post-intervention assessment was done to measure the

short-term effects of the workshop (3 months later). More studies are needed to assess the effects of the workshop over longer periods, as well as outcomes in addition to SLB. Another limitation is that the participants in this study were from only the hospitals at TUMS, which might reduce the generalisability of the study's results. However, the selection of samples from different levels of subordinates helped to compensate this limitation to some extent.

## Conclusion

This study showed the effectiveness of a multifaceted learning approach in a workshop based on supportive leadership behaviour. Planning a leadership workshop based on supportive leadership behaviour and applying interactive multifaceted methods could improve the leadership performance and supportive behaviours of head nurses. An appropriate method for assessing leadership is rating leaders' performance based on their followers' points of view. We recommend using the assessment of the performance of leaders by not only their subordinates but also their peers and superiors. It seems insufficient to assess the outcomes of leadership courses using only the self-assessment method. Health policy decision makers should consider applying SLB as a significant leadership style in order to improve the outcomes in other groups of health-care management, such as physicians. Future studies with longer follow-up times and assessments are needed to evaluate such outcomes in depth.

## Implications for nursing managers

Nursing managers play crucial roles in achieving the organisational goals of health care, such as optimal patient outcomes. Leadership is a key required skill of nursing managers. Moreover, it is critical in delivering high-quality care, ensuring patient safety, and facilitating positive staff development (Chu *et al.* 2014). The leadership behaviour of nursing managers can influence both the ward and the performance of staff (Jurado-Campos *et al.* 2014). Thus, adopting an appropriate leadership style could improve patients' outcomes.

The findings of the present study indicate that a multifaceted educational intervention based on transactional or developmental leadership concepts, can improve the leadership abilities of head nurses. Indeed, modifying leadership behaviours can improve staff performance and raise job satisfaction levels (Abualrub & Alghamdi 2012), and the adoption of SLBs can enhance the work environment, increasing

staff members' professional commitment to their workplace. Consequently, the intervention presented in the present study was based on supportive leadership concepts. For example, interactive intervention, an emphasis on specific scenarios, and a reliance on the main content of SLB theory were incorporated. The present study also made use of role-playing techniques in performing each exercise. A programme targeting administrators and managers' performance is recommended.

The main benefit of this study is that it provides insight into the application of SLB in clinical settings where transactional leadership predominates.

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## Ethical approval

This study was approved by the university's ethical committee and registered as a clinical trial at Clinical Trial.gov (NCT 01169623).

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