

Relationship between Staff Nurses' Core Competencies and their Voice Behaviors: A Cross Sectional Study

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Abstract

Background: Nurses' voice behavior, regarded as a significant indicator of organizational development, and it is influenced by a variety of individual, group, and organizational characteristics. It is unknown, how nurses' core competencies affect their voice behaviors. **This study aimed** to investigate the relationship between staff nurses' core competencies and their voice behaviors as perceived by staff nurses at Alexandria Main University Hospital. **Subjects and Method: Research design:** A descriptive correlational design was utilized. **Setting:** The current study was executed in Alexandria Main University Hospital. **Subjects:** A non-probability convenience sample of staff nurses where included in this study, (n=352). **Tools: Tool I:** Competency Inventory for Registered Nurses (CIRN) which composed of 55 items and **tool II:** Employee Voice Behavior Scale (EVBS) which composed of 10 items. **Results:** Competencies of staff nurses as perceived by them were ranked as follows; the highest was leadership, and the lowest was interpersonal relationship competency. While voice behavior dimensions ranked as follows: prohibitive then promotive voice behavior. **Conclusion:** The current study revealed there are statistically significant positive strong correlations between total nurses' core competencies and total voice behavior. **Recommendations:** Hospital administrators should conduct competency training program to promote nurses' core competencies and further promote their voice behavior. Also, there is a critical need for research on developing a strategy to improve nurses' core competencies, and their voice behaviors.

Key words: Core Competencies, Voice Behaviors, Staff Nurses

Introduction

Change is inevitable in the world, and organizations cannot be kept remote from an ever-changing environment. Globalized work environments promoted healthcare organizations to transform and update constantly for long term survival and value-added organizational performance ^(1,2). Growing complications of workplace surroundings require healthcare personnel especially nurses to achieve beyond what is expected of them and to perform extra-role activities ^(3,4).

With the increasing complexity of healthcare services, the nursing profession should have a considerable attention to professional nurses' competency ^(5,6).

In the nursing context, the definition of competence is a comprehensive capability that embraces knowledge, skills and personal traits and viewpoints required to implement nursing functions and accomplish the requirements of hospital administrators ⁽⁴⁾. Core competence identifies the deep origin of the essential cognitive, behavioral and social knowledge and skills for individual nurses and nursing team ⁽⁶⁾.

The Core Competence Scale has seven metrics namely: critical thinking and research aptitude, clinical care, leadership, interpersonal relationship, legal/ethical practice, professional development and teaching and coaching ⁽⁷⁾.

Regarding critical thinking and research aptitude, it implies nurses' ability in clinical decision making and problem solving through appropriate data collection, analysis and awareness of research applications. Clinical care defines nurses' ability to promote and

support optimal human functions, comfort measures, assessment, observations, interventions and evaluation of the nursing care provided. Leadership clarifies nurses' ability to demonstrate effective managerial and leadership skills in the provision of quality nursing care ⁽⁶⁻⁹⁾. Furthermore, Interpersonal relationship describes nurses' ability to initiate and maintain professional nurse-patient relationship and interact with other members of healthcare professionals. Concerning legal/ethical practice, nurses demonstrate understanding, knowledge, accountability and responsibility of the legal and ethical obligations for nursing practice. Professional development demonstrates accountability for one's development and status as a professional Registered Nurse. Teaching and coaching measure application of teaching principles and methods to provide instructions for patients, family, students and colleagues ⁽⁶⁻⁹⁾. Core competence has been found to directly affect nurses' self-efficacy ⁽³⁾. Nurses with high self-efficacy tend to implement voice behavior as a coping strategy to keep and acquire additional resources in stressful situations. Therefore, nurses' voice behavior and nonexistence of their silence can be determined by the progresses of nurses' core competence ⁽¹⁰⁾.

The dynamic, indefinite, and uncertain work environment has fostered the significance of proactive behaviors for the healthcare organization's long term survival and effectiveness. An instance of such proactive behaviors is the nurses' voice behavior⁽¹⁰⁾.

Voice behavior is proactive in nature,

It supports the improved workplace functioning and tends to confront the existing status quo⁽¹¹⁾. Voice behavior is of ultimate importance for healthcare organization's innovation⁽¹²⁾.

Healthcare organizations, where nurses prefer to remain silent and do not share their feedback turn as risky and indicate low commitment and motivation of staff⁽¹³⁾. The nurses' voice behavior has an important role in enriched organizational functioning⁽¹⁴⁾. Organizations have taking place to pay more consideration to nurses' voice behavior due to its profitable nature⁽¹⁵⁾.

Voice is defined as an expression of the challenge with intentions to improve ways of doing things at the workplace. Furthermore, voice has a constructive impact on the better functioning of an organization as it recognizes better ways of performing tasks, and guides management attention to solve the critical issues⁽¹⁶⁾. Voice behavior is defined as a form of change oriented communication which intends to improve and recommend suggestions to the status quo even when faced lots of disagreement from others at workplace⁽¹⁷⁾.

Voice behavior is a tool through which nurses facilitate their organizations to remain innovative and adapt to the uncertain environment. Voice behavior is aimed at improving organizational working methods, helps to prevent workplace from problems that may hinder organizational effectiveness and helps in taking benefits from opportunities^(16,17).

Promotive and prohibitive are two dimensions of voice behavior^(16,18). The promotive voice tells about suggestions for improvement of the processes of the organization. In opposition, the

prohibitive voice states the anxieties linked to work behaviors, procedures and practices that can possibly be troublesome^(18,19). Promotive voice is related to better functioning of existing work practices, behaviors, and policies which might help the workplace to adjust to the uncertain environment whereas the prohibitive voice is related to existing harmful organizational work practices⁽¹⁹⁾.

Significance of the Study:

It is hoped that such study shed the light in the nursing profession, accounting for the largest proportion of professionals in hospitals, for promoting clinical service of nurses and steady advance of hospitals. A voice behavior of nurses with abundant clinical experience is realistic, practical, and enhances hospital efficiency. Therefore, understanding the voice behavior of nurses is imperative, especially in countries with a bulky nursing workforce as Egypt⁽²⁰⁾. Nurse managers and leaders can create a work atmosphere that encourages and promotes open communication among nurses and other health care team members, likewise, creating an environment conducive to translating experiences into organizational learning of promoting voice behaviors⁽²¹⁾.

Aim of the study

The current study aims to investigate the relationship between staff nurses' core competencies and their voice behaviors as perceived by staff nurses at Alexandria Main University Hospital.

Research question:

What is the relationship between staff nurses' core competencies and their voice behaviors as perceived by staff nurses at Alexandria Main University Hospital?

Subjects and Method

Research design:

A descriptive correlational cross sectional design was utilized to conduct this study. As the data of the study variables collected at one given point in time across the pre-defined study subjects. The researchers measured the outcome (staff nurses' voice behaviors) and the exposures (staff nurses' core competencies) in the study participants at the same time.

Setting:

The current study was executed in all inpatient medical, surgical and critical care units at Alexandria Main University Hospital. It is a university hospital equipped with 1825 beds. The capacity of medical care units and its specialties is 952 beds, while surgical care units and its specialties include 773 beds and critical care units include 100 beds. Medical care units and its specialties include 25 units, while surgical care units and its specialties include 17 units and critical care units include 13 units.

Subjects:

A non-probability convenience sample of staff nurses who are working in the previously mentioned units with experience more than six months and who will be available during the time of data collection and willing to participate in this study (n=352). They were classified as follows: Staff nurses who are working in medical units (n= 90), in surgical units (n= 120), and in critical care units (n= 142) based on Power Analysis as follows:

1. Total population of staff nurses n= 750
2. Acceptable error=5%
3. Expected Frequency 50%
4. Epi-Info Program denotes the confidence coefficient at 99% with sample size (n= 352)

Study Instrument and Scoring System:

The researchers used two tools to gather data

pertinent to fulfill the study aim as follows:

Tool I: Competency Inventory for Registered Nurses (CIRN):

It was developed by Liu (2009) ⁽⁷⁾ and composed of 55 items to measure core competencies for registered nurses. This tool is classified into seven dimensions namely: critical thinking and research aptitude (CT) (8 items), clinical care (CC) (10 items), leadership (LD) (9 items), interpersonal relationship (IR) (8 items), legal/ethical practice (LE) (8 items), professional development (PD) (6 items), and teaching and coaching (TC) (6 items).

The responses were measured on five points Likert scale ranging from 0 (not competent at all) to 4 (very competent). The reversed score was applied for negative statements. The overall score ranged from zero to 220. Lower scoring of nurses' core competencies ranged from zero to < 73, moderate competencies ranged from 74 to < 146 and higher competencies ranged from 147 to 220. The higher scoring indicates more positive perception of nurses' core competencies.

Tool II: Employee Voice Behavior Scale (EVBS):

It was developed by Liang et al. (2012) ⁽¹⁶⁾ and composed of 10 items to determine nurses' voice behavior in the hospital. This tool is classified into two dimensions namely: Promotive and prohibitive voice behaviors (five items for each dimension). A 5-point Likert Scale (1 = strongly disagree, 5 = strongly agree) was employed. The scores for prohibitive and promotive voice behavior were average scores of their included items. The reversed score was

applied for negative statements. The overall score ranged from 10 to 50. Lower scoring of nurses' voice behavior ranged from 10 to < 23, moderate scoring ranged from 24 to < 37 and higher scoring ranged from 38 to 50. Higher scores represent higher levels of prohibitive and promotive voice behavior.

In addition, the staff nurses' demographic data sheet was developed by the researchers to collect data about their age, gender, current working unit, and years of experience.

Data collection

The study was conducted as follows:

- An official permission was obtained from the authoritative authorities of the Faculty of Nursing, Alexandria and Damanshour University and from the director of nursing at Alexandria Main University Hospital to conduct the current study.
- The two tools were adapted, translated into Arabic and submitted to a panel of five experts, four professors from the Faculty of Nursing, Alexandria University and one professor from the Faculty of Nursing, Damanshour University to review and test content validity, to give their suggestions and recommendations regarding the tools' contents, the nature of questions, clarity of items. Their comments are taken into consideration to ensure accuracy and minimize potential threats to the study's validity.
- Tools reliability was tested to measure the internal consistency of the items composing each of them employing Cronbach's alpha coefficient and it was 0.90 for the tool one (Competency Inventory for Registered Nurses, CIRN) and 0.88 for tool two (Employee Voice Behavior Scale, EVBS).
- The pilot study was carried out on 10% of staff

nurses (n =35) from previously mentioned study settings in order to check and ensure clarity and feasibility of items, identify obstacles and problems that may be encountered during data collection and to test needed time for filling the tools. Some items required clarification from researchers with no modification needed. Participants who shared in the pilot study were not included in the study sample.

-The researchers arranged a time to meet staff nurses and give a full description of the aim of the study and written informed consents were collected from staff nurses who agreed to participate in the study.

- Data collection spent time for three months starting from March 2022 to June 2022 using a self-administered questionnaire. Time needed for completing the questionnaire was 15-20 minutes. All questions were answered and explanations were given accordingly.
- After completion of data collection, the necessary statistical analysis was used.

Ethical considerations:

The study protocol was approved by the ethical committee of the Faculty of Nursing, Damanshour University and the authoritative authorities of Alexandria Main University Hospital to conduct the current study. An informed written consent was obtained from the study sample after explanation of the aim of the study. The confidentiality and anonymity were applied through assigning a code number for each staff nurse instead of names to protect their privacy. The right to withdraw from the study at any time was assured. The staff nurses were assured that data are confidential and used only for

research purposes.

Data Statistical Analysis:

Data were coded by the researchers and statistically analyzed using statistical program SPSS (version 20). Frequency and percentages were used for describing demographic and work-related characteristics. Descriptive statistics (means, standard deviations) and inferential statistics (Pearson correlation coefficient). All statistical analyses were performed using an alpha error of .05.

Results

Table 1 shows that, the highest percentage of nurses 68.8% were female and only 31.3% were male while 44.3% of them had 30 to 40 years old and the lowest percentage of them 23% had less than 30 years old and nobody had more than 50 years old. In relation to the working department 41.2% of the nurses were working in ICU Care Units while 26.1% were working in medical Care Units. Pertaining to educational qualifications, more than half of nurses 50.6% had technical nursing secondary school diploma while 8.2% had technical Nursing Institute diploma. Moreover, 44.6% of nurses had from 5 to 10 years of experience in nursing while 8.2% had more than 20 years of experience in nursing. Furthermore, 46.3 % of nurses had from 5 to 10 years of experience in working units while 8.0% of them had more than 20 years of experience in working units.

Table 2 reveals that 69.6% of nurses had moderate level of overall core competencies while 30.4% of them had high level. Also, the majority of nurses 83.2% had moderate level of teaching-coaching dimension while, 16.8% of them had high level. Moreover, 78.4% of nurses had moderate level of interpersonal relation dimension while, 21.6% of them had

high level. Regarding overall voice behavior 70.5 % of nurses had high level while 29.5% of them had moderate level. Also, pertaining to promotive voice 52.8% of nurses had high level while 38.9% of them had moderate level. Moreover, 66.2% of nurses had high level of prohibitive voice while 33.8% of them had moderate level. The same table reveals the mean percent score and standard deviation of nurses` competencies and voice behavior. Total nurses` competencies score is 61.69 ± 7.65 . Competencies of nurses as perceived by them could be ranked in a descending order as follows; leadership 67.36 ± 17.25 , clinical care 64.78 ± 14.06 , critical thinking/research aptitude 62.06 ± 17.22 , legal/ethical practice 59.60 ± 6.86 , professional development 59.47 ± 15.34 , teaching-coaching 58.19 ± 14.68 respectively and finally interpersonal relationship 57.69 ± 11.17 . Total voice behavior is 73.69 ± 14.57 , while voice behavior dimensions could be ranked in descending order as follows: prohibitive behavior 76.89 ± 15.94 ; promotive voice 70.48 ± 19.59 .

Table 3 reveals that, there is a strong positive statistically significant relationship between total nurses` competencies and all nurses` demographic characteristics where $P < 0.001$. On the other hand, there is not a statistically significant relationship between teaching-coaching and critical thinking/research aptitude with sex where $P = 0.873, 0.540$ respectively.

In table 4, there is a strong positive statistically significant relationship between total nurses` voice behavior and all nurses` demographic characteristics where P

<0.001. On the other hand, there is not a statistically significant relationship between nurses' promotive voice behavior with sex and educational qualification where $P= 0.357$, 0.072 respectively. Moreover, there is not a statistically significant relationship between nurses' prohibitive voice behavior with years of experience in nursing and years of experience in working units where $P= 0.523$, 0.552 respectively.

Table 5 revealed that, there are a statistically significant positive strong correlations between total nurses' core competencies and total voice behavior, where $P < 0.001$.

Table 6 presents the results of hierarchical linear regression analysis between nurses' competencies and nurses' promotive voice behavior where adjusted $R^2=0.550$, this means that 55.0% of the explained variance of nurses' promotive voice behavior is related to nurses' competencies dimensions, where the model is strong statistically significant $F=60.083$, $p < 0.001$. However, table 5 has displayed that all nurses' core competencies dimensions are significant predictors of nurses' promotive voice behavior except clinical care, interpersonal relationship, and professional development competencies where $P= 0.430$, 0.109 , 0.321 respectively.

Additionally, table 6, shows the results of hierarchical linear regression analysis between nurses' competencies and nurses' prohibitive voice behavior where adjusted $R^2=0.733$, this means that 73.3% of the explained variance of nurses' prohibitive voice behavior is related to nurses' competencies dimensions, where the model is strong statistically significant $F=135.085$, $p < 0.001$. Also, this table has displayed that all nurses' core competencies

are significant predictors of nurses' prohibitive voice behavior where $P < 0.001$ except teaching –coaching dimension where $P= 0.897$.

Table (1): Distribution of the studied nurses according to their socio-demographic characteristics (n =352)

Q	Nurses' Socio-demographic characteristics	No.	%
1	Sex		
	Male	110	31.3
	Female	242	68.8
2	Age (years)		
	Less than 30 year	81	23.0
	From 30 – 40 year	156	44.3
	From 41 – 50 year	115	32.7
	More than 50 year	0	0.0
3	Working department		
	Medical Care Units	92	26.1
	Surgical Care Units	115	32.7
	ICU Care Units	145	41.2
4	Educational qualifications		
	Bachelor of Nursing	145	41.2
	Technical Nursing Institute Diploma	29	8.2
	Technical Nursing Secondary School Diploma	178	50.6
5	Years of experience in nursing		
	Less than 5 years	50	14.2
	From 5 – 10 years	157	44.6
	From 11 – 20 year	116	33.0
	More than 20 year	29	8.2
6	Years of experience in working units		
	Less than 5 years	54	15.3
	From 5 – 10 years	163	46.3
	From 11 – 20 year	107	30.4
	More than 20 year	28	8.0

Table (2): Distribution of the studied nurses according to their levels and mean percent score of Nurses competencies and voice behavior (n =352)

	Low (<33.3%)		Moderate (33.3 – 66.6%)		High (≥ 66.6%)		% score	Mean score out of 5
	No.	%	No.	%	No.	%	Mean ± SD.	Mean ± SD.
Nurses Competencies	0	0.0	245	69.6	107	30.4	61.69 ± 7.65	2.47 ± 0.31
Clinical care	0	0.0	170	48.3	182	51.7	64.78 ± 14.06	2.59 ± 0.56
Leadership	0	0.0	140	39.8	212	60.2	67.36 ± 17.25	2.69 ± 0.69
Interpersonal relationship	0	0.0	276	78.4	76	21.6	57.69 ± 11.17	2.31 ± 0.45
Legal/ethical practice	0	0.0	236	67.0	116	33.0	59.60 ± 6.86	2.38 ± 0.27
Professional development	0	0.0	244	69.3	108	30.7	59.47 ± 15.34	2.38 ± 0.61
Teaching-coaching	0	0.0	293	83.2	59	16.8	58.19 ± 14.68	2.33 ± 0.59
Critical thinking/ research aptitude	0	0.0	243	69.0	109	31.0	62.06 ± 17.22	2.48 ± 0.69
Voice behavior								
Promotive voice	29	8.2	137	38.9	186	52.8	70.48 ± 19.59	3.82 ± 0.78
Prohibitive voice	0	0.0	119	33.8	233	66.2	76.89 ± 15.94	4.08 ± 0.64

SD: Standard Deviation Low score: $0 < 33.3\%$ Moderate score: $33.3 - 66.6\%$ High score: $\geq 66.6\%$

Table (3): Relation between mean percent score of staff nurses' competencies with demographic data (n=352)

Demographic data	Nurses competencies							
	Clinical care	Leadership	Interpersonal relationship	Legal/ethical practice	Professional development	Teaching-coaching	Critical thinking/research aptitude	Overall
	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.
Sex								
Male	51.50 ± 14.28	59.90 ± 9.15	49.12 ± 3.91	57.34 ± 6.32	51.78 ± 14.42	59.05 ± 17.01	61.96 ± 18.16	55.60 ± 8.12
Female	70.82 ± 8.86	70.75 ± 18.93	61.58 ± 11.22	60.63 ± 6.85	62.96 ± 14.47	57.80 ± 13.51	62.11 ± 16.82	64.46 ± 9.24
U(p)	4785.0*(<0.001*)	7360.0*(<0.001*)	3992.0*(<0.001*)	10616.50*(0.002*)	9912.0(<0.001*)	13171.0(0.873)	12775.0(0.540)	5418.0*(<0.001*)
Age (years)								
Less than 30 year	50.74 ± 7.34	48.11 ± 9.51	50.79 ± 3.08	52.20 ± 1.75	57.77 ± 13.09	52.67 ± 8.21	67.48 ± 17.96	53.92 ± 5.55
From 30 – 40 year	67.69 ± 15.78	74.61 ± 12.34	64.41 ± 12.60	58.68 ± 6.11	58.97 ± 18.99	59.40 ± 16.32	62.42 ± 18.41	64.52 ± 12.37
From 41 – 50 year	70.72 ± 6.69	71.09 ± 17.23	53.43 ± 6.88	66.06 ± 3.12	61.34 ± 10.38	60.43 ± 15.01	57.77 ± 13.64	63.33 ± 3.07
H(p)	105.223*(<0.001*)	104.173*(<0.001*)	69.203*(<0.001*)	191.875*(<0.001*)	8.318*(0.016*)	13.843*(0.001*)	16.281*(<0.001*)	111.802*(<0.001*)
Working department								
Medical Care Units	54.89 ± 10.87	52.60 ± 13.64	51.90 ± 9.64	57.03 ± 7.72	46.24 ± 13.55	47.69 ± 11.26	50.82 ± 10.52	51.98 ± 9.52
Surgical Care Units	70.72 ± 6.69	71.09 ± 17.23	53.43 ± 6.88	66.06 ± 3.12	61.34 ± 10.38	60.43 ± 15.01	57.77 ± 13.64	63.33 ± 3.07
ICU Care Units	66.34 ± 16.69	73.77 ± 13.45	64.73 ± 11.04	56.11 ± 4.41	66.38 ± 14.47	63.07 ± 12.97	72.61 ± 17.26	66.55 ± 9.11
H(p)	88.059*(<0.001*)	115.464*(<0.001*)	95.122*(<0.001*)	149.620*(<0.001*)	90.093*(<0.001*)	48.944*(<0.001*)	86.771*(<0.001*)	75.151*(<0.001*)
Educational qualification								
Bachelor of Nursing	66.34 ± 16.69	73.77 ± 13.45	64.73 ± 11.04	56.11 ± 4.41	66.38 ± 14.47	63.07 ± 12.97	72.61 ± 17.26	66.55 ± 9.11
Technical Nursing institute Diploma	77.50 ± 0.0	86.11 ± 0.0	47.22 ± 0.0	60.71 ± 0.0	62.50 ± 0.0	41.67 ± 0.0	37.50 ± 0.0	60.45 ± 0.0
Technical Nursing Secondary School Diploma	61.43 ± 11.20	59.08 ± 16.81	53.65 ± 8.55	62.26 ± 7.75	53.35 ± 14.76	56.91 ± 14.98	57.48 ± 11.60	57.93 ± 9.44
H(p)	62.853*(<0.001*)	142.887*(<0.001*)	99.541*(<0.001*)	64.758*(<0.001*)	53.168*(<0.001*)	51.188*(<0.001*)	130.957*(<0.001*)	24.163*(<0.001*)
Years of experience in nursing								
Less than 5 years	45.0 ± 0.0	55.56 ± 0.0	53.0 ± 1.57	53.57 ± 0.0	66.67 ± 0.0	58.33 ± 0.0	78.50 ± 12.12	57.82 ± 1.81
From 5 – 10 years	66.69 ± 16.03	67.99 ± 19.91	61.0 ± 14.01	55.21 ± 4.88	55.23 ± 20.29	55.68 ± 17.51	59.89 ± 19.50	61.07 ± 14.09
From 11 – 20 year	69.42 ± 7.14	68.30 ± 16.26	55.75 ± 9.14	66.07 ± 3.11	61.35 ± 10.33	61.49 ± 14.90	54.69 ± 10.29	62.68 ± 2.28
More than 20 year	70.0 ± 0.0	80.56 ± 0.0	55.56 ± 0.0	67.86 ± 0.0	62.50 ± 0.0	58.33 ± 0.0	75.0 ± 0.0	67.73 ± 0.0
H(p)	85.253*(<0.001*)	30.306*(<0.001*)	8.898*(0.031*)	243.167*(<0.001*)	71.013*(<0.001*)	29.418*(<0.001*)	88.719*(<0.001*)	75.311*(<0.001*)
Years of experience in working units								
Less than 5 years	46.39 ± 6.69	56.17 ± 6.02	53.19 ± 3.68	53.57 ± 1.20	65.59 ± 7.60	58.02 ± 5.71	76.68 ± 14.39	57.79 ± 4.33
From 5 – 10 years	66.95 ± 15.62	68.22 ± 19.66	60.75 ± 13.81	55.89 ± 5.42	55.70 ± 19.74	55.96 ± 17.29	59.66 ± 19.11	61.25 ± 13.64
From 11 – 20 year	69.39 ± 7.12	68.25 ± 16.28	55.84 ± 9.23	66.12 ± 3.08	61.33 ± 10.38	61.64 ± 14.86	54.96 ± 10.36	62.75 ± 2.34
More than 20 year	70.0 ± 0.0	80.56 ± 0.0	55.56 ± 0.0	67.86 ± 0.0	62.50 ± 0.0	58.33 ± 0.0	75.0 ± 0.0	67.73 ± 0.0
H(p)	80.716*(<0.001*)	29.547*(<0.001*)	8.769*(0.033*)	220.951*(<0.001*)	60.181*(<0.001*)	25.310*(<0.001*)	79.091*(<0.001*)	73.785*(<0.001*)

U: Mann Whitney test H: H for Kruskal Wallis test
 Not statistically significant at p > 0.05

r: Pearson coefficient

*: Statistically significant at p ≤ 0.05

*: Highly statistically significant at p < 0.001

Table (4): Relation between mean percent score of staff nurses' voice behavior with demographic data (n=352)

Demographic characteristics	Voice behavior		
	Promotive voice	Prohibitive voice	Overall
	Mean ± SD.	Mean ± SD.	Mean ± SD.
Sex			
Male	65.09 ± 23.98	70.05 ± 8.47	67.57 ± 16.09
Female	72.93 ± 16.71	80.0 ± 17.51	76.47 ± 12.94
U (p)	12505.50 (0.357)	8667.0* (<0.001*)	8787.50 (<0.001*)
Age (years)			
Less than 30 year	73.95 ± 16.10	66.23 ± 14.13	70.09 ± 14.83
From 30 – 40 year	65.29 ± 22.97	86.03 ± 13.56	75.66 ± 16.66
From 41 – 50 year	75.09 ± 14.67	72.0 ± 13.18	73.54 ± 10.38
H(p)	10.950* (0.004*)	89.678* (<0.001*)	16.645* (<0.001*)
Working department			
Medical Care Units	63.70 ± 28.30	67.23 ± 18.65	65.46 ± 22.09
Surgical Care Units	75.09 ± 14.67	72.0 ± 13.18	73.54 ± 10.38
ICU Care Units	71.14 ± 14.55	86.90 ± 9.09	79.02 ± 7.22
H(p)	16.875* (<0.01*)	100.960* (<0.001*)	42.507* (<0.001*)
Educational qualification			
Bachelor of Nursing	71.14 ± 14.55	86.90 ± 9.09	79.02 ± 7.22
Technical Nursing institute Diploma	65.0 ± 0.0	60.0 ± 0.0	62.50 ± 0.0
Technical Nursing Secondary School Diploma	70.84 ± 24.15	71.49 ± 16.69	71.17 ± 18.13
H(p)	5.263(0.072)	112.201* (<0.001*)	53.388* (<0.001*)
Years of experience in nursing			
Less than 5 years	82.60 ± 14.96	76.30 ± 7.48	79.45 ± 11.22
From 5 – 10 years	57.61 ± 15.45	77.68 ± 18.75	67.64 ± 14.55
From 11 – 20 year	75.30 ± 14.79	76.64 ± 15.74	75.97 ± 13.60
More than 20 year	100.0 ± 0.0	74.66 ± 10.17	87.33 ± 5.09
H(p)	140.994* (<0.001*)	2.245(0.523)	51.745* (<0.001*)
Years of experience in working units			
Less than 5 years	80.56 ± 16.73	76.11 ± 8.94	78.33 ± 12.22
From 5 – 10 years	58.83 ± 16.08	77.76 ± 18.51	68.30 ± 14.57
From 11 – 20 year	75.42 ± 14.84	76.45 ± 15.78	75.93 ± 13.66
More than 20 year	100.0 ± 0.0	75.0 ± 10.18	87.50 ± 5.09
H(p)	125.317* (<0.001*)	2.10(0.552)	46.919* (<0.001*)

U: Mann Whitney test H: H for Kruskal Wallis test r: Pearson coefficient *: Statistically significant at $p \leq 0.05$

*: Highly statistically significant at $p < 0.001$ Not statistically significant at $p > 0.05$

Table (5): Correlation matrix between staff nurses` core competencies and their voice behaviors (N=352)

Dimensions		Clinical care	leadership	Interpersonal relationship	Legal/ethical practice	Professional development	Teaching-coaching	Critical thinking/research aptitude	Overall Nurses' Competencies	Promotive voice	Prohibitive voice	Overall voice behaviors
		Clinical care	r	1.000								
	p											
Leadership	r	0.747	1.000									
	p	<0.001*										
Interpersonal relationship	r	0.391	0.371	1.000								
	p	<0.001*	<0.001*									
Legal/ethical practice	r	0.438	0.322	0.105	1.000							
	p	<0.001*	<0.001*	0.049*								
Professional development	r	0.389	0.281	0.488	0.354	1.000						
	p	<0.001*	<0.001*	<0.001*	<0.001*							
Teaching-coaching	r	0.515	0.392	0.367	0.477	0.577	1.000					
	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*						
Critical thinking /research aptitude	r	0.179	0.174	0.296	0.226	0.697	0.626	1.000				
	p	0.001*	0.001*	<0.001*	<0.001*	<0.001*	<0.001*					
Overall nurses' competencies	r	0.784	0.737	0.624	0.511	0.748	0.780	0.649	1.000			
	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*				
Promotive voice	r	0.235	0.242	0.141	0.502	0.508	0.434	0.624	0.520	1.000		
	p	<0.001*	<0.001*	0.008*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*			
Prohibitive voice	r	0.321	0.430	0.782	0.263	0.452	0.439	0.449	0.641	0.339	1.000	
	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*		
Overall Voice behavior	r	0.334	0.398	0.523	0.481	0.589	0.532	0.665	0.700	0.857	0.775	1.000
	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	

r: Pearson correlation coefficient Low correlation (r < 0.5) Moderate correlation (r: 0.5<0.7) High correlation (r: 0.7<0.9) *:

Statistically significant at p ≤ 0.05 *: Highly statistically significant at p < 0.001 Not statistically significant at p > 0.05

Table (6): Hierarchical linear regression analysis for staff nurses` voice behavior (N=352)

Dependent variables	Independent variables	B	Beta	t	P	95% CI	
						LL	UL
Promotive voice	Clinical care	-0.069	-0.050	-0.790	0.430	-0.241	0.103
	Leadership	0.133	0.117	2.116	0.035*	0.009	0.257
	Interpersonal relationship	-0.125	-0.071	-1.605	0.109	-0.278	0.028
	Legal/ethical practice	1.195	0.418	9.505	<0.001*	0.947	1.442
	Professional development	0.075	0.059	0.994	0.321	-0.073	0.224
	Teaching -coaching	-0.230	-0.173	-3.009	0.003*	-0.381	-0.080
	Critical thinking /research aptitude	0.690	0.606	10.275	<0.001*	0.558	0.822
R² = 0.550 , F = 60.083 , p <0.001*							
Prohibitive voice	Clinical care	-0.280	-0.247	-5.114	<0.001*	-0.388	-0.172
	Leadership	0.246	0.266	6.247	<0.001*	0.169	0.324
	Interpersonal relationship	1.076	0.754	22.043	<0.001*	0.980	1.172
	Legal/ethical practice	0.460	0.198	5.838	<0.001*	0.305	0.615
	Professional development	-0.180	-0.173	-3.810	<0.001*	-0.273	-0.087
	Teaching -coaching	0.006	0.006	0.129	0.897	-0.088	0.101
	Critical thinking /research aptitude	0.274	0.296	6.518	<0.001*	0.191	0.357
R² = 0.733 , F = 135.085 , p <0.001*							

F, p: f and p values for the model determination

B: Unstandardized Coefficients

t: t-test of significance

CI: Confidence interval

*: Statistically significant at $p \leq 0.05$

R²: Coefficient of

Beta: Standardized Coefficients

LL: Lower limit UL: Upper Limit

Discussion

As a result of the significant effect of nurses' voice behaviors on health care organizations' development, and nurses' performance. So, it is of a great importance for nurse managers to examine nurses' core competencies that influence nurses' voice behaviors^(19,20).

The current study revealed that staff nurses demonstrated moderate perception level of core competencies, and the highest was leadership competency, and the lowest was interpersonal relationship competency. This result may be attributed to that staff nurses had a high ability to apply effective leadership skills in nursing practice. On the other hand, staff nurses had a low ability to maintain effective relationships with patients and other healthcare team members.

The study's results were consistent with Blomberg et al. (2019)⁽²²⁾ and Guo et al. (2021)⁽²⁰⁾ who revealed that nurses' competencies in direct clinical practice, professional development, critical thinking, ethical decision-making, clinical leadership, cooperation, and consultation were moderate. Additionally, the result of the current study is consistent with Wu et al. (2018)⁽²³⁾ who reported that

nurses demonstrated moderate level of clinical competences. Furthermore, the result of the present study is consistent with Nantsupawat et al. (2017)⁽²⁴⁾ and Cao et al. (2019)⁽²⁵⁾ studies, who revealed that in various contexts and circumstances, different core competencies are needed for nurses in order to meet job demands and overcome obstacles. Also, Guo et al. (2021)⁽²⁰⁾ reported that the performance, job satisfaction, and high quality of clinical care services provided by nurses are all significantly correlated with core competencies. The findings of the current study showed that staff nurses had high levels of voice behaviors and prohibitive voice behavior more than promotive voice behavior.

This may be attributed to that staff nurses had more organizational commitment, more job satisfaction, low levels of psychological burnout, and low levels of work-related stress and intern promote staff nurses' voice behaviors. Also, this result may be related to that hospital administrators promote staff nurses' prohibitive voice behavior and provide them chances to provide suggestions to solve organizational problems.

The result of the current study is

consistent with Cao et al. (2019)⁽²⁵⁾ who revealed that individuals from wealthy nations had high levels of voice behavior. Also, this study consistent with Ross et al. (2017)⁽²⁶⁾ and Church et al. (2018)⁽²⁷⁾ who stated that working long shift hours having detrimental impact on nurses' voice behavior.

On the other hand, the results of the current study inconsistent with Rubbab et al. (2020)⁽²⁸⁾ and Li et al. (2020)⁽²⁹⁾ who stated that clinical nurses' prohibitive and promotive voice practices were mild to moderate.

Furthermore, the current study revealed that there is a strong positive statistically significant relationship between total nurses' core competencies and all nurses' demographic characteristics.

This result is consistent with Cao et al. (2019)⁽²⁵⁾ and Guo et al. (2021)⁽²⁰⁾ who stated that nurses who have more years of experience and provided chances for training and development have more core competencies.

Moreover, the finding of the present study revealed that there is a strong positive statistically significant relationship between total nurses' voice behavior and all nurses' demographic characterist

This result is consistent with Duan et al. (2017)⁽³⁰⁾, Church et al. (2018)

⁽²⁷⁾, Song et al. (2020)⁽¹⁵⁾ and Guo et al. (2021)⁽²⁰⁾ who revealed that males nurses are more likely to speak up than female nurses and nurses with longer years of experience, who have higher educational qualifications, and higher organizational positions have more confidence to engage in voice behaviors. Also, regression analysis of the current study revealed that clinical care was negative predictor of prohibitive voice behavior. This result may be attributed to that clinical care provided for patients lead nurses to stay longer shift work hours which lead to nurses' burnout, diminished nurses' self-efficacy and in turn reduced nurses' prohibitive voice behavior. This result is consistent with Linares (2020)⁽³¹⁾ and Guo et al. (2021)⁽²⁰⁾ who revealed that less voice behavior is produced in nurses' work environments where shifts are worked more frequently.

Furthermore, regression analysis revealed that leadership was primary positive influencing factor for both prohibitive and promotive voice behaviors. This result may be attributed to that nurses who have leadership skills become more effective in decision-making, and problem-solving and in turn have more ability for prohibitive voice behavior.

This result is consistent with Linares (2020)⁽³¹⁾ and Guo et al. (2021)⁽²⁰⁾ who stated that nurses with high levels of leadership skills inspire them to speak out more strongly and provide more prohibitive voice behavior.

Also, the regression analysis of the current study revealed that interpersonal relationship was the primary positive influencing factor for prohibitive voice behaviors. This result may be attributed to that nurses who have an effective relationships are more effective in advising other healthcare professionals against undesirable behaviors, and ultimately, nurses have more prohibitive voice behaviors.

This result is consistent with Papp et al. (2019)⁽³²⁾ and Guo et al. (2021)⁽²⁰⁾ who revealed that nursing staff who have effective relationships have more prohibitive voice behaviors and able to discuss honestly the problems that affect seriously the health care organization.

Furthermore, regression analysis of the current study indicated that legal and ethical practice was positive predictor of promotive and prohibitive voice behaviors.

This result may be attributed to that legal and ethical practice promote

nurses' capacity to act morally and lawfully in accordance with organizational policies, ethical principles and ultimately, enhance nurses' voice behaviors. The result of the current study is in agreement with Dowie (2017)⁽³³⁾, Lamont et al. (2019)⁽³⁴⁾ and Guo et al. (2021)⁽²⁰⁾ who stated that high legal and ethical standards promote nurses' voice behaviors.

Moreover, regression analysis revealed that critical thinking/research aptitude was the primary positive influencing factor for both prohibitive and promotive voice behaviors. This result may be attributed to that nurses who have critical thinking and research ability are more effective in making decisions and solving work related problems which promote nurses' voice behaviors.

This result is consistent with Colln and Giuliano (2017)⁽³⁵⁾, Papp et al. (2019)⁽³²⁾, Lamont et al. (2019)⁽³⁴⁾, and Guo et al. (2021)⁽²⁰⁾, who revealed that nurses who are higher-order critical thinkers and researchers able to speak more constructively and make proposals for hospital improvement.

Also, the current study indicated that professional development is a significant predictor of prohibitive voice behavior and teaching-coaching is a

significant predictor of promotive voice behavior. This result may be attributed to that professional development, and teaching-coaching promote nurses' capacity for continual personal and professional improvement. Also, promote nurses' ability to mentor newer nurses and in turn promote nurses' voice behaviors. This result is consistent with Papp et al. (2019)⁽³²⁾ and Guo et al. (2021)⁽²⁰⁾ who stated that professional development, mentoring, and coaching promote nurses' ability to speak up and enhance their voice behaviors.

Conclusion

The current study revealed that staff nurses had a moderate perception level of core competences and a high level of voice behaviors. Also, there are statistically significant positive strong correlations between total nurses' core competencies and total voice behavior.

Recommendations

- Nursing administrators should assess nurses' core competencies and voice behaviors levels at regular intervals.
- Nursing administrators should conduct education, and training programs for nurses on core competencies and voice behaviors.
 - Faculty nursing administrators should teach and train the nursing

students the core competencies and voice behaviors by incorporating these concepts in the nursing curricula.

- Nurses should attend development programs on core competencies and voice behaviors to improve quality of patients' care and organizational development.

There is a critical need for research on:

- 1) The effect of contributing factors, such as personality traits, coping mechanisms, burnout, cultural, social, and organizational variables on nurses' voice behaviors.
- 2) Developing a strategy to improve nurses' core competencies, and their voice behaviors.

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Conflicts of Interest Disclosure

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