

## Relation between Inclusive Leadership and Nurses' Green Work Behaviors

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### Abstract

**Background:** Inclusive leadership is a crucial aspect in the hospitality sector, where nurse leaders enable nurses to realize their own potential and achieve good performance, making their workplace more supportive of sustainable views and green work behaviors. **Aim of the Study:** To assess the relation between inclusive leadership and nurses' green work behaviors. **Subjects and Method: Design:** Descriptive-correlational research design was applied. **Setting:** The study was conducted at Tanta University International Teaching Hospital in all departments. **Subjects:** A stratified random sample was taken from nurses (n= 301), who are working in the previously mentioned settings. **Tools:** Two tools for data collection were used, involving the questionnaire of inclusive leadership and initial nurses' green work behaviors. **Results:** Less than two-thirds of nurses had a moderate perception level of inclusive leadership, whereas more than one-third of them had a moderate perception level regarding green work behaviors. **Conclusion:** There was a highly statistical positive correlation between inclusive leadership and nurses' green work behaviors. **Recommendation:** Develop training programs, conferences, and seminars for nurse leaders on the importance of inclusive leadership to help organizations reach sustainability goals and create a healthy work environment. Develop tailored strategies for nurses and their leadership to implement strengths-based feedback methodologies that promote organizational sustainability and green nurse behaviors.

**Keywords:** Green work behaviors, Inclusive leadership, Nurses, Nurse Leaders.

## Introduction

Nursing leadership is an essential component of healthcare systems, serving as the driving force for improving patient care, staff performance, and overall organizational success (**Pattison & Corser, 2023**). The success or failure of healthcare organizations has been largely credited to the nature of their nurse leaders and managers' leadership styles (**Alsadaan et al., 2023**). One contemporary nursing leadership style is inclusive leadership (**Ali & Abood, 2020**).

Inclusive leadership is a recent approach that emphasizes the importance of diversity, equity, and inclusion within nursing teams. This style is increasingly important these days and helps to harness the full potential of a diverse workforce, leading to more innovative solutions and stronger team performance. It fosters a sense of belonging and trust within the team, as well as enhances collaboration and reduces turnover (**Van Knippenberg & van Ginkel, 2022**).

Inclusive leadership has four dimensions: providing equal opportunity and fair treatment to all nurses; encouraging the integration of synergy among all nurses; directly addressing all hospital nurses' fundamental needs for uniqueness, authenticity, and belonging, and implementing organizational diversity and inclusion-related policies and

programs in the work unit (**Barton, 2021; Shore, Cleveland, & Sanchezore, 2018**).

The dimension of providing equal opportunity and fair treatment to all nurses describes the extent of the nurse leader's ability to provide fair treatment and discrimination absence in the employment process and the elimination of social exclusion. The dimension of encouraging integration and synergy among all hospital networks focuses on realizing the potential performance benefits of diversity (**Wu & Li, 2023; Leroy, Buengler, Verstraete, Shemla, & Hoefer, 2022**).

The dimension of satisfying hospital nurses' fundamental needs for belonging, uniqueness, and authenticity indicates the conceptualization of inclusion needs to achieve synergistic outcomes at the work unit level (**Leroy et al., 2022**). The dimension of implementing organizational diversity and inclusion-related policies and programs in the work unit builds on a variety of management systems using a typology of levels, including recruitment, management of harassment, discrimination claims, and implementation of inclusion-related programs (**Li, 2021**).

Inclusive nurse leaders embody a leadership approach that appreciates diversity, welcomes nurses' contributions, and encourages full engagement in the decision-making

process and shaping reality (**Barton, 2021**). These leaders help their nurses feel safe and more likely to speak up freely to contribute ideas and disclose errors to improve patient safety (**Lee & Dahinten, 2021**).

Nurses are healthcare professionals who provide care, support, and advocacy for patients across their lifespan. Those professionals possess a unique combination of clinical skills, critical thinking abilities, and emotional intelligence that enable them to respond effectively to a wide range of medical and psychosocial needs (**Yoost & Crawford, 2021**). Those inclusive nurse leaders have a positive effect on their nurses' behaviors, which extends to making them adopt their behaviors in a safer environment (**Aboramadan, Crawford, Turkmenoglu, & Farao, 2022**).

Nurses' green work behaviors are actions and behaviors that are linked to environmental sustainability (**Francoeur, Melé, & Magnan, 2021**). These behaviors help healthcare providers to achieve their environmental sustainability goal (**AlSuwaidi & Agag, 2021**). These behaviors have five categories: working sustainably, avoiding harm, conserving resources, influencing others, and taking initiative.

Working sustainably includes a set of behaviors that help nurses' work processes and products be more sustainable. Avoiding harm

incorporates behaviors that can enhance the earth and make its ecosystems healthier. Conserving resources indicates preserving all human and non-human resources, as well as reducing waste. Influencing others involves social behaviors used to affect others to engage in positive environmental activities. (**Francoeur, Paillé, Yuriev, & Boiral, 2021**).

Taking initiative involves stepping outside the box, taking risks, and encouraging environmentally related change (**Su & Swanson, 2019**). Nurses' green work behaviors are incredibly important to practice in any hospital. These behaviors impact not only how well nurses work together, but also how productive they are and how safe the workplace is. Nurses who have good work behaviors tend to be more productive, work better with others, and follow safety rules more carefully (**Ercantan & Eyupoglu, 2022**).

### **Significance of the study**

In nursing, a clinical practice environment is supported by nurse leaders to improve the quality of care and patient safety. Therefore, inclusive nurse leaders who prioritize green intrinsic motivation in their nurses, foster a sense of competence, autonomy, and relatedness within the workplace, and play a crucial role in this dynamic environment (**Bannay, Hadi, Amanah, 2020**).

Within this dynamic environment, nurses need to be empowered to take

the initiative, adapt to changing circumstances, freely share information, and opinions, and enable them to overcome these challenges. An inclusive nurse leader enables nurses to reach their self-potential, achieve good performance and enhance green work behaviors. Inclusive leadership is an essential aspect of nursing work, helping nurses reaches sustainable outcomes. Hence, this study aimed to assess the relationship between inclusive leadership and nurses' green work behaviors.

### **Aim of the study**

Assess the relation between inclusive leadership and nurses' green work behaviors.

### **Research Questions :**

1. What are the levels of inclusive leadership as perceived by nurses?
2. What are the levels of nurses' green work behaviors?
3. What is the relation between inclusive leadership and nurses' green work behavior?

### **Subjects and Method**

#### **Study design:**

A descriptive- correlational research design was used in the present study.

#### **Setting:**

**The study was conducted at Tanta University International Teaching Hospital in all departments (General surgery, orthopedic, neurological, vascular, cardiothoracic, and oncology), and all Intensive Care Units (anesthesia, cardiac, medical,**

**pediatric, burn, kidney and neonates).**

#### **Subjects:**

A stratified random sample was taken from nurses (n= 301), who are working in the previously mentioned settings. The technique for selecting the sample from the previously mentioned setting was proportional to the number of nurses in each department.

#### **Tools:**

The data of the study collected using two tools:

**Tool (I): Inclusive Leadership Questionnaire (ILQ):** This tool consisted of two parts as follows:

**Part (1): Nurses' personal and work-related data:** It included nurses' personal data such as age, sex, marital status, number of children, department, educational level, years of experience, and previous attending training program about leadership styles or green work behaviors.

**Part (2): Nurses' perceptions of inclusive leadership Questionnaire:**

It was developed by Li (2021) and was adapted by the researcher based on relevant literatures (Wu & Li, 2023; Henshall et al., 2022; Barton, 2021). It used to assess the inclusive leadership as perceived by nurses. It consisted of 36 items categorized into four dimensions:

- Providing equal opportunity and fair treatment for all nurses: It included 10 items, encouraging integration and synergy among all nurses: It included

13 items, directly addressing nurses' fundamental needs for uniqueness, authenticity, and belongingness: It included 8 items, and implementing organizational diversity and inclusion related policies and programs in the work unit: It included 5 items.

#### **Scoring system:**

Nurses' responses were measured on a five-point Likert Total ranging from almost always (5) to almost never (1). score was categorized according to statistical cut-off point and summing scores of all categories. The total scores represent varying levels as follows :

- High inclusive leadership level >80%.
- Moderate inclusive leadership level 50%- 80%.
- Low inclusive leadership level <50%.

#### **Tool (II): Initial Nurses' Green Work Behaviors Questionnaire:**

This tool was developed by researcher based on relevant literature reviews (McConnaughy, 2014; Nisar et al., 2022). It was used for assessing nurses' green work behaviors. It consisted of 36 items categorized into five dimensions: working sustainability (8 items), avoiding harm (8 items), conserving resources (9 items), influencing other (5 items), and taking initiative (7 items).

#### **Scoring system:**

Nurses' responses were measured on 5-points Likert Scale ranging from strongly agrees (5) to strongly disagree (1). Total score was categorized according to statistical cut-off point

and summing scores of all categories. The total scores represent varying levels as follows :

- High level of green work behavior >75%.
- Moderate level of green work behavior 60% -75%.
- Low level of green work behavior < 60%.

#### **Method**

-An official permission was obtained from the Dean of Faculty of Nursing and the authoritative personnel that was submitted to the previously mentioned settings

#### **-Ethical consideration:**

-Approval of ethical committee at faculty of Nursing was obtained with code number 327-11-2023.

-The researcher introduced herself to the participants; a full explanation of the main method of the study was done to obtain their acceptance and cooperation as well as their informed consent.

-The right to abstain or terminate participation at any time was respected.

-Assuring nurses about the privacy and confidentiality of collected data and explaining that it will be used only for study purposes only.

-The nature of the study was not causing any harm or pain for the entire subject.

-Confidentiality and anonymity were maintained regarding data collection, and the participants have withdrawal rights.

-The study's tools (I & II) were translated into Arabic and presented to a jury of five experts in specialty to check their face content and validity.

-The expert formed of three professors and two assistant professors in the nursing administration area from The Faculty of Nursing, Tanta University.

-The experts' responses were represented on four points rating scores ranging from; 4 =strongly relevant to and 1= not relevant. Necessary modifications were made, including clarification, omission of certain items, adding others, and rephrasing of some word. The face validity value of nurses' perceptions of inclusive leadership (Tool I) was 96.5%, and green work behaviors (Tool II) was 96.1%.

-A pilot study was carried out on a sample (10%) of the subjects (n=30), who were included in the main study sample during the actual collection of data. A pilot study was carried out after the experts' opinions and before starting the actual data collection. The pilot study was done to test the clarity, sequence of items, applicability, relevance of the questions, and to determine the time needed to complete the questionnaire. No modifications were made.

-The estimated time needed to complete the questionnaire items from nurses was 20-25 minutes, in which 10-15 minutes for the first tool and 10 minutes for the second tool.

-The reliability of tools was tested using Cronbach's Alpha Coefficient test, where the reliability value of nurses' perceptions of inclusive leadership questionnaire (Tool I) was 0.952 and the reliability value of initial nurses' green work behaviors questionnaire was 0.889.

**-Data collection phase:** The data was collected from nurses who were working in the previously mentioned settings by the researchers, where the data was collected over six months from starting from June until the end of December 2024.

-The researcher met the participants' nurses in the form of small groups in different settings during working hours to distribute the questionnaire. The questionnaire was completed in the presence of researchers to ascertain that all questions were answered.

### **Statistical analysis**

The statistical analysis of the data was performed using IBM SPSS software version 20.0 (Armonk, NY: IBM Corp, released 2011). Categorical data were summarized as numbers and percentages. For continuous data, normality was assessed using the Kolmogorov-Smirnov test. Quantitative data were described using range (minimum and maximum), mean, and standard deviation, median and interquartile range (IQR).

The Chi-square test was used for categorical variables to compare between different groups, while Fisher's Exact test was used for

correction for chi-square when more than 20% of the cells have expected counts less than 5, finally the Pearson coefficient test was used to correlate between two normally distributed quantitative variables. The significance of the results obtained was judged at the 5% level.

## Results

**Table (1):** illustrates the frequency and distribution of nurses' personal data and work related. It shows that less than half (49.8%) of nurses were in the age group ranging from 25 to less than 30 years old with a mean score of  $29.41 \pm 5.27$ , and around three-quarters (75.1%) of them were females. More than sixty percent (62.5%) of them were married with a maximum number of four children. Moreover, 50.2% of nurses had a bachelor's degree in nursing, and more than half (52.5%) of studied nurses had less than or equal 5 years of experience in nursing with a mean year of experience  $7.03 \pm 5.67$ . Furthermore, more than half (55.8%) of them worked in the intensive care unit. The majority (84.7%) of studied nurses did not attend any training program about leadership style or green work behaviors, and most of them (98.7%) did not participate in environmental projects.

**Figure (1):** demonstrates the overall nurses' perception levels of inclusive leadership. It reveals that less than two-thirds (64.8%) of the studies nurses had a moderate perception level

of inclusive leadership, 19.6% of them had a low perception level, and 15.6% of them had a high perception level.

**Table (2):** illustrates the nurses' perception levels of inclusive leadership dimensions. It shows that the highest percentage (70.8%) of the studied nurses had a moderate perception level of implementing organizational diversity and inclusion-related policies and programs in the work unit. Furthermore, more than sixty percent (66.4%, 62.5%, 60.5%) of nurses had a moderate perception level of providing equal opportunity and fair treatment, encouraging the integration of synergy, and directly addressing their fundamental needs for uniqueness, respectively.

**Table (3):** clarifies the ranking of overall average mean scores of nurses' perceptions of inclusive leadership dimensions. It is noticed that the dimension of encouraging integration of synergy among all nurses had the highest overall average mean score ( $3.54 \pm 0.77$ ), followed by the dimension of providing equal opportunity and fair treatment to all nurses ( $3.49 \pm 0.77$ ) then the dimension of implementing organizational diversity and inclusion-related policies and programs in the work unit ( $3.41 \pm 0.78$ ) and finally the dimension directly addressing nurses' fundamental needs for uniqueness ( $3.39 \pm 0.85$ ).

**Figure (2):** demonstrates the overall levels of nurses' perceptions of green

work behaviors. It reveals that the high percentage (44.5%) of the studies nurses had a moderate perception level regarding green work behaviors, and 37.9% of them had a high perception level. While 17.6% of studied nurses had a low perception level regarding green work behaviors.

**Table (4):** illustrates nurses' perceptions of green work behaviors dimensions. It is discovered that less than half (48.8%) of studies nurses had a high perception level of avoiding harmful behaviors and a moderate perception level of influencing others. While 48.2%, 43.2%, and 40.5% of nurses had a moderate perception level toward the dimensions of taking initiative, working sustainably, and conserving green work behaviors, respectively.

**Table (5):** clarifies the ranking of overall average mean scores of nurses' perceptions of green work behaviors. The avoiding harmful behavior had the highest overall average mean score ( $4.11 \pm 0.64$ ), followed by conserving resource behavior ( $3.95 \pm 0.64$ ), then influence others' behaviors ( $3.94 \pm 0.69$ ), taking initiative ( $3.78 \pm 0.68$ ), and finally working sustainably ( $3.67 \pm 0.65$ ).

**Table (6):** presents the relation between overall nurses' perception levels of inclusive leadership and their personal data. The table shows no statistically significant relation between the overall nurses' perception levels of inclusive leadership and their

personal data except for their years of experience ( $\chi^2=8.752$ ,  $p < 0.013$ ).

**Table (7):** depicts the relation between overall nurses' perception levels of green work behaviors and their personal data. There was no statistically significant relation between the overall nurses' perception levels of green work behaviors and their personal data except for their educational level ( $\chi^2=13.721$  and  $p < 0.033$ ).

**Figure (3):** declares a correlation between nurses' perceptions of inclusive leadership and their initial green work behaviors. There was a strong positive statistically significant correlation between nurses' perceptions of inclusive leadership and their initial green work behaviors, where  $r = 0.376$  and  $p < 0.001$



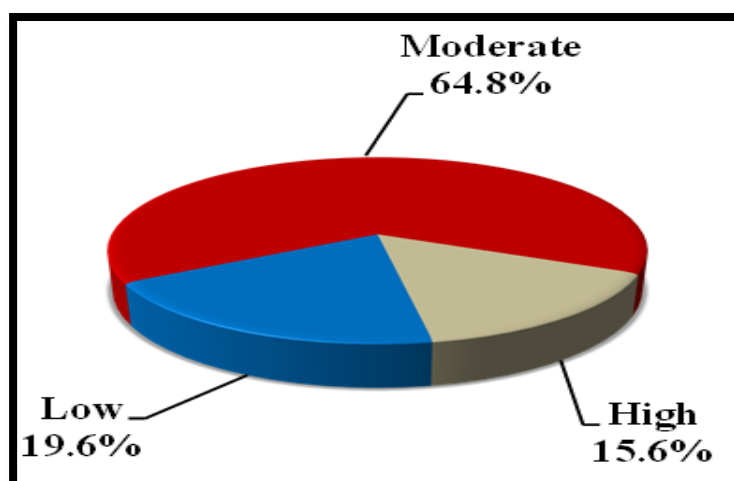
**Table (1): Frequency and distribution of nurses' personal data (n = 301)**

Personal data of nursing staff	No.	%
<b>Age (years)</b>		
<25	37	12.3
25 – <30	150	49.8
≥30	114	37.9
Min. – Max.	21.0 – 52.0	
Mean ± SD.	29.41 ± 5.27	
Median (IQR)	28.0 (26.0 – 32.0)	
<b>Sex</b>		
Male	75	24.9
Female	226	75.1
<b>Marital status</b>		
Married	188	62.5
Unmarried	113	37.5
<b>No. of children</b>		
Min. – Max.	0.0-4.0	
Mean ± SD.	1.09 ± 1.15	
Median (IQR)	1.0 (0.0-2.0)	
<b>Educational level</b>		
Secondary nursing diploma	13	4.3
Technical nursing institute	104	34.6
Bachelor science in nursing	151	50.2
Postgraduate studies	33	11.0
<b>Years of experience (years)</b>		
≤5	158	52.5
>5	143	47.5
Min. – Max.	1.0 – 30.0	
Mean ± SD.	7.03 ± 5.67	
Median (IQR)	5.0 (3.0 – 10.0)	
<b>Department</b>		
General Surgery	39	13.0
Orthopedic	21	7.0
Neurological	15	5.0
Vascular	16	5.3
Cardiothoracic	17	5.6
Oncology	25	8.3
Intensive care units	168	55.8
<b>Attending a previous training program about leadership styles or green work behaviors</b>		
No	255	84.7
Yes	46	15.3
<b>Did you Participate in any environmental projects</b>		
No	297	98.7
Yes	4	1.3

IQR: Inter quartile range

SD: Standard deviation

### Overall nurses perceptions of inclusive leadership



**Figure (1): Overall nurses' perception levels of inclusive leadership**

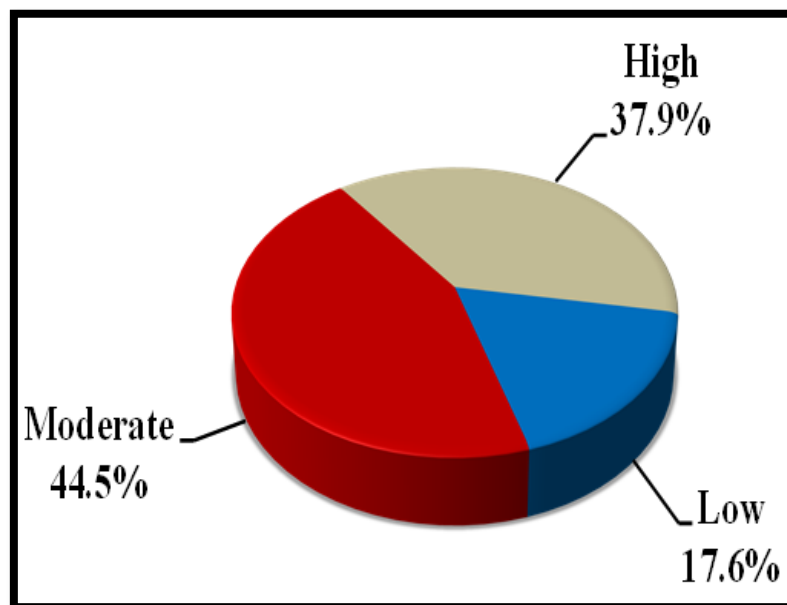
**Table (2): Nurses' perception levels of inclusive leadership dimensions**

Dimensions of inclusive leadership	No.	%
<b>Providing equal opportunity and fair treatment to all nurses</b>		
Low (<50%)	56	18.6
Moderate (50 –80%)	200	66.4
High (> 80%)	45	15.0
<b>Encouraging integration of and synergy among all nurses</b>		
Low (<50%)	55	18.3
Moderate (50 –80%)	188	62.5
High (> 80%)	58	19.3
<b>Directly addressing nurses' fundamental needs for uniqueness</b>		
Low (<50%)	72	23.9
Moderate (50 –80%)	182	60.5
High (> 80%)	47	15.6
<b>Implementing organizational diversity and inclusion related policies and programs in the work unit</b>		
Low (<50%)	53	17.6
Moderate (50 –80%)	213	70.8
High (> 80%)	35	11.6

**Table (3): Overall average mean scores of nurses' perceptions of inclusive leadership dimensions**

Nurses' perception of inclusive leadership dimensions	Score Range	Total score			Average Score (1 – 5)	Ranking
		Min. –Max.	Mean $\pm$ SD.	Median	Mean $\pm$ SD.	
Providing equal opportunity and fair treatment to all nurses	(10 – 50)	10.0 – 50.0	34.94 $\pm$ 7.74	35.0	3.49 $\pm$ 0.77	2
Encouraging integration of and synergy among all nurses	(13 – 65)	14.0 – 65.0	46.04 $\pm$ 10.06	46.0	3.54 $\pm$ 0.77	1
Directly addressing nurses' fundamental needs for uniqueness	(8 – 40)	8.0 – 40.0	27.11 $\pm$ 6.79	27.0	3.39 $\pm$ 0.85	4
Implementing organizational diversity and inclusion related policies and programs in the work unit	(5 – 25)	5.0 – 25.0	17.03 $\pm$ 3.89	17.0	3.41 $\pm$ 0.78	3

SD: Standard deviation

**Overall perception level of green work behaviors****Figure (2): Overall levels of nurses' perceptions of green work behaviors**

**Table (4): Nurses' perceptions of green work behaviors dimensions**

Initial Nurses' Green Work Behaviors	No.	%
<b>Working sustainability</b>		
Low (<60%)	103	34.2
Moderate (60 –75%)	130	43.2
High (> 75%)	68	22.6
<b>Avoiding Harm</b>		
Low (<60%)	40	13.3
Moderate (60 –75%)	114	37.9
High (> 75%)	147	48.8
<b>Conserving</b>		
Low (<60%)	60	19.9
Moderate (60 –75%)	122	40.5
High (> 75%)	119	39.5
<b>Influencing Other</b>		
Low (<60%)	56	18.6
Moderate (60 –75%)	147	48.8
High (> 75%)	98	32.6
<b>Taking initiative</b>		
Low (<60%)	82	27.2
Moderate (60 –75%)	145	48.2
High (> 75%)	74	24.6

**Table (5): Overall average mean scores of nurses' perceptions of green work behaviors**

Initial Nurses' Green Work Behaviors	Score Range	Total score			Average Score (1 – 5)	Ranking
		Min. – Max.	Mean ± SD.	Median	Mean ± SD.	
<b>Working sustainability</b>	<b>(8 – 40)</b>	14.0 – 40.0	29.39 ± 5.18	30.0	3.67 ± 0.65	5
<b>Avoiding Harm</b>	<b>(7 – 35)</b>	14.0 – 35.0	28.75 ± 4.50	28.0	4.11 ± 0.64	1
<b>Conserving Resources</b>	<b>(9 – 45)</b>	21.0 – 45.0	35.56 ± 5.77	36.0	3.95 ± 0.64	2
<b>Influencing Other</b>	<b>(5 – 25)</b>	10.0 – 25.0	19.69 ± 3.45	20.0	3.94 ± 0.69	3
<b>Taking initiative</b>	<b>(7 – 35)</b>	14.0 – 35.0	26.43 ± 4.73	27.0	3.78 ± 0.68	4

SD: Standard deviation

**Table (6): Relation between overall nurses' perception levels of inclusive leadership and their personal data**

Persona data	Level of Nurse nurses' perception of inclusive leadership						Test of Sig.	P
	Low (n =59)		Moderate (n = 195)		High (n = 47)			
	No.	%	No.	%	No.	%		
<b>Age (years)</b>								
<25	6	10.2	27	13.8	4	8.5	$\chi^2=$ 1.307	0.520
>=25	53	89.8	168	86.2	43	91.5		
<b>Gender</b>								
Male	11	18.6	47	24.1	17	36.2	$\chi^2=$ 4.491	0.106
Female	48	81.4	148	75.9	30	63.8		
<b>Marital status</b>								
Married	37	62.7	122	62.6	29	61.7	$\chi^2=$ 0.014	0.993
Unmarried	22	37.3	73	37.4	18	38.3		
<b>Educational level</b>								
Secondary Nursing Diploma	4	6.8	8	4.1	1	2.1	$\chi^2=$ 7.519	0.276
Technical Nursing Diploma	17	28.8	73	37.4	14	29.8		
Bachelor of Sciences in Nursing	27	45.8	97	49.7	27	57.4		
Post-graduate studies	11	18.6	17	8.7	5	10.6		
<b>Years of experience</b>								
<15	46	78.0	177	90.8	44	93.6	$\chi^2=$ 8.752*	0.013*
≥15	13	22.0	18	9.2	3	6.4		
<b>Attending a previous training program about leadership styles or green work behaviors</b>								
Yes	9	15.3	31	15.9	6	12.8	$\chi^2=$ 0.287	0.866
No	50	84.7	164	84.1	41	87.2		
<b>Did you participate in environmental projects?</b>								
Yes	1	1.7	3	1.5	0	0.0	FET= 0.581	1.000
No	58	98.3	192	98.5	47	100.0		

 $\chi^2$ : Chi square test

FET: Fisher Exact test

p: p value for comparison between the different categories

\*: Statistically significant at  $p \leq 0.05$

**Table (7): Relation between overall nurses' perception of green work behaviors and their personal data**

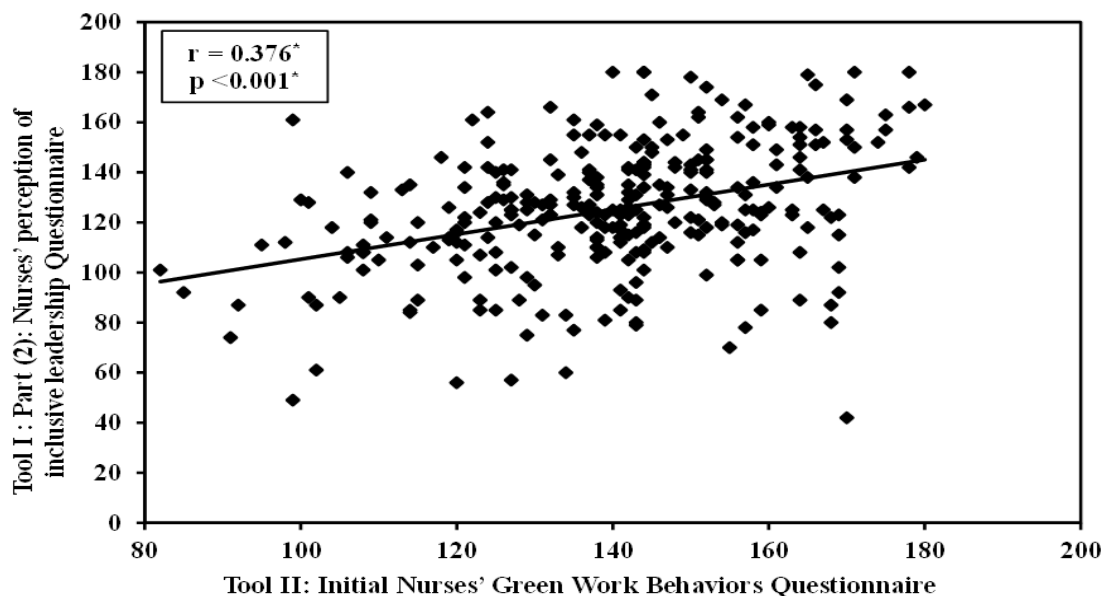
Personal data	Level of nurses' perception of green work behaviors						Test of Sig.	P
	Low (n =53)		Moderate (n = 134)		High (n = 114)			
	No.	%	No.	%	No.	%		
Age (years)								
<25	4	7.5	19	14.2	14	12.3	$\chi^2=$ 1.549	0.461
>=25	49	92.5	115	85.8	100	87.7		
Gender								
Male	16	30.2	32	23.9	27	23.7	$\chi^2=$ 0.957	0.620
Female	37	69.8	102	76.1	87	76.3		
Marital status								
Married	29	54.7	82	61.2	77	67.5	$\chi^2=$ 2.703	0.259
Unmarried	24	45.3	52	38.8	37	32.5		
Educational level								
Secondary Nursing Diploma	32	60.4	8	6.0	5	4.4	$\chi^2=$ 13.721*	0.033*
Technical Nursing Diploma	11	20.8	45	33.6	48	42.1		
Bachelor of Sciences in Nursing	0	0.0	69	51.5	50	43.9		
Post-graduate studies	10	18.9	12	9.0	11	9.6		
Years of experience								
<15	48	90.6	118	88.1	101	88.6	$\chi^2=$ 0.240	0.887
≥15	5	9.4	16	11.9	13	11.4		
Attending previous training program about leadership styles or green work behaviors								
Yes	6	11.3	20	14.9	20	17.5	$\chi^2=$ 1.106	0.575
No	47	88.7	114	85.1	94	82.5		
Did you participate in any environmental projects?								
Yes	0	0.0	4	3.0	0	0.0	FET= 3.620	0.178
No	53	100.0	130	97.0	114	100.0		

 $\chi^2$ : Chi square test

FET: Fisher Exact test

p: p value for comparison between the different categories

\*: Statistically significant at  $p \leq 0.05$



**Figure (3): Correlation between nurses' perceptions of inclusive leadership and their initial green work behaviors**

### Discussion

The healthcare environment is becoming increasingly competitive and challenging, marked by rising work demands and limited resources. Therefore, it is essential to create a work atmosphere that enables nurses to take the initiative, adapt to changing circumstances, and achieve green behaviors in healthcare organizations. Inclusive nursing leadership is the most suitable style that can help nurses achieved these outcomes (**Pattison & Corser, 2023; Fagan, Guenther, Wells, Matkin, 2022**). Therefore, this study aimed to assess the relation between inclusive leadership and nurses' green work behaviors.

### Nurses' Perceptions of Inclusive Leadership

The findings of the current study revealed that slightly less than two-thirds of nurses had a moderate

perception level of inclusive leadership in their nurse leaders. Furthermore, around one-sixth of the nurses surveyed had both low and high perceptions of inclusive leadership among their nurse leaders. These findings could be attributed to nurses' lack of familiarity with the inclusive leadership style, which is a relatively new concept and the vast majority them did not attend a previous training program about leadership or participated in any environmental projects.

Additionally, around half of the nurses had less than five years of experience in the age group ranging from 25 to less than thirty; that is an indicator of practical immaturity, less life experience, superficial social relations, and difficulty accommodating different perspectives.

These findings are supported by **Elsayed, Abdel-ghani, and Ibrahim (2020)**, who revealed that the nurses' perception level of inclusive leadership was moderate. The study of **Taie and Zoromba (2022)** discovered a poor perception level of inclusive leadership among nurses in Egyptian hospitals toward their nurse managers. Moreover, the study conducted by **Abualruz, et al. (2022)** declared that the nurses' participants had a midpoint mean score of inclusive leadership among nurses.

On the other hand, these results contradict with the studies of **Abdelaziz et al. (2023)**; **Ahmed, Zhao, Faraz, and Qin (2021)**, who concluded that nurses, perceived a high level of inclusive leadership. Moreover, **Jin, Song, Wu, and Ding (2022)** confirmed that the nurses' perception level of the inclusive leadership style was low. Additionally, **Wang et al. (2019)** mentioned that Chinese head nurses perceived themselves as having a high level of inclusive leadership.

The findings of the current study show that a significant percentage of nurses had a moderate perception level in all dimensions of inclusive leadership. Moreover, less than two-thirds of nurses perceived that the dimension of encouraging integration of synergy had the highest mean score, followed by providing equal opportunity and fair treatment, implementing

organizational diversity and inclusion-related policies and programs in the work unit, and finally the dimension of directly addressing nurses' fundamental needs for uniqueness.

These results are aligned with **Abdelaziz et al. (2023)** who revealed that the extent to which nurse managers encourage integration and synergy in the work unit had the highest mean score, followed by the extent to provide equal opportunity and fair treatment. On the other side, **Foley (2022)** disclosed that the extent to which nurse leader implements organizational diversity and inclusion related policies and programs in the work unit had the highest mean score. While **Taie and Zoromba (2022)** reported that the extent to which the nurse managers provide equal opportunity and fair treatment had the highest mean score.

### **Nurses' Perceptions of Green work behaviors**

The findings of the current study revealed that less than half of nurses had a moderate perception level regarding green work behaviors, more than one-third of nurses had a high perception level, and around one-sixth of them had a low perception level regarding green work behaviors. The interpretation of these findings can be explained by nurses' sense of responsibility towards their work; more than half of them had a bachelor's degree in nursing, in which



sustainability has become a top priority for many healthcare organizations around the world. The present study indicates no clear workplace policy to guide nurses in this process, in which they are not aware of their obligations to reduce environmental hazards to improve the workplace's sustainability.

These results are agreement with the study performed by **El-sawah and Elkholy (2024)**, who revealed that the overall perception level of nurses of green work behavior was moderately associated with a high level of organizational sustainability. Additionally, the findings of **Li et al. (2021)** claimed that nurses perceived a range between moderate to low levels of green behaviors. In the same context, **Anwar (2017)** also revealed that the study's participants had a moderate level of green behaviors toward their workplace. **El-Sayed, Alsenany, Abdelaliem, and Asal (2025)** stated that the healthcare sector faces an increasing in environmental demands, making it critical to promote green work habits, even though the study's nurses had a moderate level of climate activism and green work practices.

In contrast with the current study's results, **Ahmed et al. (2021)** and **Ababneh (2021)**, who ascertained that the level of green work behavior was high among the study's participants. **Leppänen et al. (2022)** found that the

dimension of sustainable development was poorly perceived among nurses and nurse managers. In this aspect, **Essawy, Gaber, and Elaraby (2024)** exhibited that less than half of nurses reported good green behavior while around one-third of them reported weak green behaviors.

According to the findings of this study, slightly less than half of nurses had a high perception level of the extent to which nurses avoid harm as a green work behavior. This finding can be attributed to the fact that the nurses surveyed consider avoidance of harm to be an ethical principle in nursing that necessitates the delivery of safe, effective, and high-quality care. Nurses are obligated by their duty to avoid harm both intentionally and unintentionally.

On the other hand, the highest percentage of nurses had a moderate perception level of influencing others, followed by taking initiative, working sustainably, and finally conserving resources for green work behaviors. These results reflect that several nurses are willing to practice green work behaviors unintentionally.

This finding is in line with the research of **Mohideen, Selvakumar, Harasudha, Hari, and Maran (2019)**, which showed that avoiding harm dimension of green work behaviors is the highest mean score, followed by taking initiatives, sustaining work, and conserving

resources. This result is contradictory with **Abdullah et al. (2024)** who showed that high mean scores for green behaviors dimension perceived by nursing staff were working sustainability followed by influencing others and avoiding harm, while conserving resources and taking initiative dimensions had moderate mean scores.

### **Relation between Study's Variables and Nurses' Personal Data**

The present study shows that there was a statistically significant relation between overall levels of nurses' perceptions of inclusive leadership and their years of experience. This result could be attributed to the prolonged working hours that aggregate their years of experience in which nurses contact their nurse leaders more often in different situations. Therefore, nurses may recognize the benefits of an inclusive leadership style.

This finding is supported by the study of **Abdelaziz et al. (2023)**, who showed a statistically significant relation between the inclusive leadership level of nurses and their years of experience. In the same line, consonant with **Wang et al. (2019)**, who found a statically significant relation between nurses' inclusive leadership level and their experience, and this result was contradicted by **Elsayed et al. (2020)**, who found no statistically significant relation

between staff nurses' inclusive leadership level and their experience.

The present study shows a statistically significant relation between the overall level of nurses' perceptions of green work behaviors and their educational level. From the researcher's point of view, this result is due to nurses with higher educational levels being more likely to be more informed about environmental sustainability and green work behaviors. In this study, the surveyed nurses who had a bachelor's degree in nursing had moderate and high perception levels of green work behaviors.

This finding is supported by the study of **Katz, Rauvola, Rudolph, and Zacher (2022)**, who revealed a positive statistically significant relation between the study's participants educational level and green work behaviors. In the same vein, **Weerakoon, Sellar, and Arulrajah (2021)** showed that the level of green work behavior varies significantly depending on educational level. Furthermore, **Chen and Wu (2022)** found that the education level had an influence on practicing green behaviors at their workplace.

Contradictory, the result documented by **Dey, Bhattacharjee, Mahmood, Uddin, and Biswas (2022)** revealed no significant association of educational level with voluntary environmental behaviors. In nursing, **Li et al. (2021)** showed no statistically

significant relation between the level of nurses' perception of green work behaviors and their educational level.

### **Correlation between nurses' perceptions of inclusive leadership and green work behaviors**

The present study findings indicate a positive statistically significant correlation between overall nurses' perceptions of inclusive leadership and their green work behaviors. According to the researcher's perspective, this result may be attributed to the inclusive leadership that often involves creating an environment where all nurses feel valued, respected, and included. This sense of belonging and empowerment can lead nurses to feel more motivated to contribute positively to sustain their work environment. Nurse leaders who have an inclusive leadership style may lead to higher levels of engagement, empowerment, job satisfaction, and alignment with organizational values, all of which can encourage nurses to adopt green work behaviors.

This result agreement with the study of **Abdou et al. (2023)** revealed that inclusive leadership significantly enhances nurses' green creativity, green innovative work behaviors. Also, **Aboramadan et al. (2022)**, who showed that green inclusive leadership boosts green behaviors and outcomes. In the same line, **Quan, Tian, and Qiu (2022)** concluded that an inclusive leadership strategy can significantly

increase green behaviors. Moreover, **Fang et al. (2021)** demonstrated a positive statistically significant correlation between inclusive leadership and career sustainability.

As well as **Khan, Jaafar, Javed, Mubarak, and Saud agar (2020); Rehman (2020)**, who found that inclusive leadership can help organizations to create diverse and inclusive work environments, fostering innovative solutions and enhanced problem-solving to address sustainability concerns. Conversely, this result is contradictory to **Abdelaziz et al. (2023)**, who proved that there was a positive significant relation between inclusive leadership and work engagement.

While **Abualruz et al. (2023)** stated that inclusive leadership had a positive impact on nurses' job satisfaction and psychological wellness. Several studies of **Fang et al. (2019); Javed, Naqvi, Khan, Arjoon, and Tayyeb (2019); Qi, Liu, Wei, and Hu (2019); Javed, Khan, and Quratulain (2018)** verified that there was a positive significant relation between inclusive leadership and innovative behaviors.

### **Conclusion**

In the light of the present study's findings, it is concluded that less than two-thirds of nurses had a moderate perception level of inclusive leadership, whereas more than one-third of them had a moderate perception level of green work

behaviors. There was a strong positive statistically significant correlation between nurses' perceptions of inclusive leadership and their initial green work behaviors.

### **Recommendations**

Based on the findings of the current study, the following recommendations can be suggested:

#### **For hospital /management:**

- Raise green consciousness awareness of environmental sustainability through conducting workshops, symposiums, and hang posters about green practices to improve nurses' professionalism.
- Establish policies and practices aimed at reducing healthcare waste, leading green initiatives, and driving positive environmental change.
- Develop tailored strategies for nurses and their leadership to implement strengths-based feedback methodologies that promote organizational sustainability and green nurse behaviors.
- Design an authentic evaluation system tailored to identify unique needs of nurses that are updated periodically.
- Enhance the efficient utilization of green information technology (IT) that benefits the environment by reducing waste and emissions, as well as improving recycling rates.
- Create a reward system such as recognition, bonuses, and certificates of appreciation for nurses who

commitment to green work behaviors and sustainability.

- Develop workplace green teams, influence workplace practices to educate patients and families on climate change and health.

#### **For nurse leaders:**

- Attend more workshops and training programs about the inclusive leadership.
- Foster a sense of belonging and culture of inclusiveness within the healthcare organization.
- Encourage strict mentorship programs for nurses' performance and behaviors to support learning, promote professional growth, and enhance the quality of their nursing practices.
- Motivate nurses to express their ideas and opinions about environmental issues.

#### **For nurses:**

- Inform management about the barriers to integrate work behaviors at their workplace.
- Stay informed and adhered to new policies of their hospital that reduce negative impact on the environment.

#### **For nursing education:**

- Incorporate sustainable development and green work behaviors to nursing curriculum at undergraduate and postgraduates' levels.

#### **Nursing research:**

- Conduct a longitudinal research study to look at the impact of inclusive leadership and nurses' green behaviors on patient outcomes.

- Further future research studies need to include head nurses, both males and females, to explore moderation role of inclusive leadership in the relationships between green work behaviors and innovation.

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