



## Perception on Quantum Leadership Among Nursing Leaders in the Philippines: A Cross-Sectional Study

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### ABSTRACT:

**Background:** Quantum leadership is a modern leadership paradigm that has gained popularity recently and is being used in several professional fields, including healthcare. The focus on empowerment, cooperation, and adaptability that defines quantum leadership fits particularly well with the changing landscape of the healthcare industry. It is based on participatory leadership concepts and promotes flexibility in response to the complex issues of contemporary healthcare by fostering teamwork, shared decision-making, innovation, and stimulation. [3] This study aimed to investigate the perceptions on quantum leadership among nursing leaders in the Philippines regarding quantum leadership style in terms of leadership skills and characteristics.

**Methods:** A multicenter cross-sectional, descriptive study was conducted using a survey questionnaire with a purposive sample of Nursing Leaders from three hospitals in the Philippines. The data were analyzed using frequencies and percentages, and to explore the relationship between the demographic variables and participants' overall perception scores, inferential statistics was employed.

**Results:** Data analysis revealed that across various demographic factors—age, sex, marital status, job designation, educational attainment, years in the field, and duration of employment—there are no statistically significant differences in the perception of quantum leadership skills among the respondents. This suggests a uniform perception of these leadership qualities across the sample, regardless of demographic differences.

**Conclusion:** These findings lay the groundwork for leadership development programs in healthcare institutions and add to the growing body of knowledge about leadership in the nursing field by offering a sophisticated examination of perceptions of quantum leadership that transcends demographic distinctions and has important implications for theory and practice.

**Keywords:** Leadership, Quantum Leadership, Leadership Style, Nursing Leaders

### Introduction

For years, the nursing profession has faced numerous challenges due to evolving healthcare systems, changing patient needs, and the increasing complexity of healthcare delivery. There has also been a heightened awareness of the significance of effective leadership in nursing. Nurse leadership is essential in determining the caliber of patient care, cultivating happy workplaces, and negotiating the intricacies of ever-changing healthcare systems. Impacting patient outcomes, staff happiness, and overall organizational success highlights the need for effective nursing leadership. [1] [2]

Quantum leadership is a modern leadership paradigm that has gained popularity recently and is being used in several professional fields, including healthcare. The focus on empowerment, cooperation, and adaptability that defines quantum leadership fits particularly well with the changing landscape of the healthcare industry. It is based on participatory leadership concepts and promotes flexibility in response to the complex issues of contemporary healthcare by fostering teamwork, shared decision-making, innovation, and stimulation. [3]

In the context of Tehran University of Medical Sciences (TUMS) hospitals in Tehran, Iran, a cross-sectional, descriptive, and analytical study was meticulously conducted among 25 nursing administrators. The study aimed to comprehensively assess quantum skills, quantum leadership characteristics, and the functional roles undertaken by these administrators within the healthcare setting. This study, rooted in the distinctive healthcare landscape of

TUMS hospitals in Tehran, contributes to the growing body of knowledge surrounding quantum leadership in nursing. Dargah's discussions on the application of quantum leadership in the nursing domain serve as a conceptual framework, guiding the inquiry into the potential implications and relevance of this leadership approach within the intricate fabric of nursing administration. [4]

The significance of this study is underscored by the pivotal role that nurse leaders play in shaping the trajectory of healthcare delivery in the Philippines. As the demand for healthcare services continues to grow, nurse leaders are tasked with orchestrating teams, managing resources, and ensuring the highest standards of patient care. Exploring their perceptions of quantum leadership is not merely an academic pursuit but holds practical implications for leadership development and the enhancement of healthcare delivery strategies. [5]

As the nursing profession in the Philippines grapples with the need for leadership models that address the complexities and uncertainties of healthcare delivery, understanding nurse leaders' perceptions regarding quantum leadership becomes imperative. This study aims to bridge this knowledge gap by quantitatively investigating nurse leaders' demographic profiles and perceptions in selected hospitals across the Philippines. By examining both the demographic profile and the perception of nurse leaders regarding quantum leadership, this research endeavors to contribute valuable insights that can inform leadership development strategies tailored to the unique challenges nurse leaders face in the Philippines.

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## Methods

### Design, Participants, Settings

The study's method was a multicenter cross-sectional descriptive approach. Data collection took place from October 30 to November 20, 2023, utilizing a survey. The three hospital settings where the study took place include one government primary hospital in Cavite, one private secondary hospital in Taguig, and one private tertiary hospital in Manila. The study's population was nurse leaders, specifically supervisors, nurse managers/head nurses, and charge nurses involved in hospital nursing management. A sample size of 101 participants has taken part in the study, which was feasible to recruit and retain within the time and resource constraints of the study and will be ethically justifiable based on the principles of minimizing participant burden while obtaining meaningful and reliable results.

The study's inclusion criteria are the nursing supervisors, nurse managers/head nurses, and charge nurses who have worked in their hospitals for at least six months. Exclusion includes staff nurses regardless of years of service in their respective hospitals and staff who are absent or on leave during the study period that have no access to the survey.

### Data collection procedures

We designed the survey questionnaire using straightforward language, avoiding technical terms to ensure participants could easily understand it. We have given the participants ample time to review and grasp the contents of the survey, reducing rushed responses and improving the accuracy of their input. Clear explanations were provided to participants about how their responses would be used, aiming to establish transparency and build trust in the research process. The researcher was available to address any questions or concerns participants had about the study, promoting engagement and ensuring a clear understanding of the research goals. Google Forms, a widely accessible online survey tool known for its user-friendly interface and secure data storage, was chosen to administer the survey questionnaire.

### Instrument Tool

The research instrument we developed and utilized in this study consisted of a questionnaire administered via Survey Questionnaires, employing a Likert scale to capture participants' perceptions on the quantum leadership style and their experiences with decision-making and problem-solving management. It was also designed to collect demographic data of the study participants such as age, sex, marital status, degree, designation, number of professional years in the nursing field, and duration of current hospital employment. The tool was validated by asking 5 respondents to answer the survey tool individually and checking whether they had the same understanding of the questions before we started the study. Cronbach's alpha was used to determine the internal consistency of the instrument used. A value of 0.97 is considered good reliability and internal consistency for newly developed instruments.

A purposive sampling technique was used for this study. Participants were provided with information on how their responses would be utilized. The questionnaire was given to the respondents to the questioners by attendance, requesting participants to select one response option from the provided choices for each of the 20 statements between "Strongly Agree," "Agree," "Neither Agree nor Disagree," "Disagree," and "Strongly Disagree" based on their level of agreement.

### Statistical Analysis

Descriptive statistics were employed in the demographic profiling of nursing leaders in order to offer a thorough summary of the study participants, for categorical variables like age, sex, marital status, designation, highest educational attainment, number of years in the nursing field, and length of current hospital employment, frequencies, and percentages were computed. This gave rise to a more sophisticated comprehension of the sample's composition and established the foundation for later inferential analyses.

Quantum Leadership perception was assessed using a quantitative approach. Respondents' perceptions of Quantum Leadership skills and characteristics were measured using a Likert-type scale in the survey instrument. Mean scores, standard deviations, and ranking analyses were employed to quantify and rank the perceived strength of each leadership skill and characteristic.

To explore potential differences in Quantum Leadership perception based on demographic factors, inferential statistics were applied. Analysis of Variance (ANOVA) was utilized for categorical variables with more than two groups (e.g., age groups, job designation), while t-tests were employed for binary comparisons (e.g., male vs. female). The chosen significance level was set at 0.05.

### Ethical Considerations

Ethical considerations guided the entirety of this study, aligning with established guidelines and principles to safeguard the rights, privacy, and confidentiality of participants. Each participant was requested to provide informed consent, emphasizing the study's objectives, their voluntary involvement, and the assurance of confidentiality. Measures were implemented to ensure participant anonymity and any identifiable information was handled with utmost care. Additionally, participants were informed of their freedom to withdraw from the study at any point without facing any penalties.

## Results

In this study, of the 101 total participants, 49.5% fall into the 31-40-year-old bracket, and 81.2% were female. Marital status data show that more than half of the respondents are married. Most of them held the designation of Charge Nurse (55.4%). Educational attainment is predominantly at the Bachelor's degree level, with 72.3% of respondents holding this qualification, and they had more than 10 years of experience (60.4%). Moreover, the majority of participants (48.5%) had been employed in their current hospital for 1- 5 years (table 1).

Table 1. Demographic Profile of the Respondents

Demographic Profile		Frequency	Percent
<b>Age</b>	21-30 years old	16	15.80
	31-40 years old	50	49.50
	41-50 years old	17	16.80
	51-60 years old	18	17.80
	<b>Total</b>	101	100.0
<b>Sex</b>	Male	19	18.80
	Female	82	81.20
	<b>Total</b>	101	100.00
<b>Marital Status</b>	Single	43	42.60
	Married	56	55.40
	Separated/Divorced/Annulled	2	2.00
	<b>Total</b>	101	100.00
<b>Designation</b>	Nurse Supervisor	11	10.90
	Nurse Manager/Head Nurse	34	33.70
	Charge Nurse	56	55.40
	<b>Total</b>	101	100.00
<b>Highest Educational Attainment</b>	Bachelor's Degree Holder	73	72.30
	MSc/MAN Units	16	15.80
	Master's Degree Holder	12	11.90
	<b>Total</b>	101	100.0
<b>Number of Years in the Nursing Field</b>	1-5 years	30	29.70
	6-9 years	10	9.90
	10 years and above	61	60.40
	<b>Total</b>	101	100.00
<b>Duration of Current Hospital Employment</b>	1-5 years	49	48.50
	6-9 years	14	13.90
	10 years and above	38	37.60
	<b>Total</b>	101	100.00

The analysis presents an assessment of quantum leadership skills using several indicators. For each indicator, a mean score and standard deviation (SD) are given, alongside a rank and an interpretation. The mean scores range from 4.50 to 4.77, indicating a high level of agreement or manifestation of the skills assessed.

The highest-ranked leadership skill, with a mean of 4.77, is valuing learning from acknowledging team efforts and collaboration. This skill is marked as "Strongly Manifested" and is given rank 1, indicating it is the most prominently observed trait among the respondents.

The second and third ranks are held by indicators related to motivating and guiding staff in decision-making, and valuing the virtue of kindness, with mean scores of 4.75 and 4.74 respectively, both interpreted as "Strongly Manifested."

The fourth rank, with a mean of 4.70, is the encouragement of staff participation in organizational planning and visioning. This, along with indicators ranked fifth to eighth, which include viewing one's role as crucial to organizational success and using compassion to gain respect, all have mean scores in the range of 4.60 to 4.70, reflecting a strong presence of these skills.

The indicator "I have confidence in the individuals within the organization" has a slightly lower mean score of 4.50 and is the only skill interpreted as "Highly Manifested," ranking it at number 10. This suggests that while still a significant trait, it is slightly less pronounced compared to the others.

The overall assessment of Quantum Leadership Skills has a mean of 4.67, with a low SD of 0.53, indicating a strong agreement among respondents and is interpreted as "Strongly Manifested." The table effectively demonstrates that the respondents possess quantum leadership skills to a high degree, with slight variations in the extent of manifestation across different indicators. (table 2)

Table 2. Perception of Quantum Leadership Skills

Indicators	Mean	SD	Rank	Interpretation
I encourage the participation of staff in planning and visioning for the organization.	4.70	0.69	4	Strongly Manifested
I motivate and guide my staff in decision-making in the organization.	4.75	0.57	2	Strongly Manifested
I view that solutions to solve a complex problem will always be through the analysis and collaboration of ideas.	4.67	0.66	6	Strongly Manifested
I consider that due to some uncertainties, one needs to adapt to changes to better understand the present conditions.	4.60	0.68	8	Strongly Manifested
I view my role as an important part in the success of the organization.	4.68	0.69	5	Strongly Manifested
I use the motivation of using compassion and appreciation over fear and frustration to gain respect from others.	4.66	0.64	7	Strongly Manifested
I search for solutions to complex problems in the organization by innovation related to quantum leadership.	4.60	0.65	8	Strongly Manifested
I value the virtue of kindness by showing compassion and boosting life satisfaction and physical and mental well-being.	4.74	0.61	3	Strongly Manifested
I have confidence in the individuals within the organization.	4.50	0.70	10	Highly Manifested
I value learning from acknowledging team efforts and collaboration.	4.77	0.56	1	Strongly Manifested
Quantum Leadership Skills	4.67	0.53	-	Strongly Manifested

Scale: 1-1.50: not manifested; 1.51-2.50: slightly manifested; 2.51-3.50: manifested; 3.51-4.50: highly manifested; 4.50-5.00: strongly manifested.

Table 3 delineates the assessment of various leadership indicators within an organizational context, specifically relating to nursing leadership. Each indicator is evaluated based on its mean score, standard deviation (SD), and rank, with an accompanying interpretation.

The indicator "I understand that positive collaboration and interaction of staff leads to productive outcomes" holds the highest mean score of 4.75, with a low standard deviation, indicating a strong consensus about its presence, earning it the rank of 1 and the interpretation of "Strongly Manifested."

Close behind, with a mean of 4.73, is the indicator "I value my commitment to developing my personal, emotional, and spiritual growth," which also demonstrates a strong manifestation of this characteristic among the respondents, coming in at rank 2.

The third rank goes to "I value a positive exchange of ideas between other nursing leaders and staff," with a mean of 4.71, reflecting a robust culture of idea-sharing within the organization.

Indicator four, "I view that exploring and understanding the whole organization guarantees the creation of solutions to problems," has a mean score of 4.65, suggesting a proactive approach towards organizational challenges is strongly manifested among the leaders.

The fifth rank is assigned to the indicator "I always look for new solutions for the better good of the organization," with a mean of 4.60, paralleling the overall Quantum Leadership Characteristics score, which also averages 4.60 but is not assigned a rank.

The ranks of six to nine are occupied by indicators that deal with staff satisfaction, strategic planning, exploring possibilities, and comfort in group cooperation, with mean scores ranging from 4.51 to 4.58, all of which are interpreted as "Strongly Manifested."

The tenth and final rank, with a mean of 4.43 and the only one not to be interpreted as "Strongly Manifested," is the indicator "I view that the organization is on the right path heading toward a promising future." It is, however, still deemed "Highly Manifested," indicating a positive outlook on the organization's direction, though slightly less pronounced compared to the other characteristics.

Table 3. Perception of Quantum Leadership Characteristics

Indicators	Mean	SD	Rank	Interpretation
I always look for new solutions for the better good of the organization.	4.60	0.69	5	Strongly Manifested
I value a positive exchange of ideas between other nursing leaders and staff.	4.71	0.61	3	Strongly Manifested
I view that the organization is on the right path heading toward a promising future.	4.43	0.79	10	Highly Manifested
I am comfortable in a group and eagerly seek cooperation and engagement from others.	4.51	0.70	9	Strongly Manifested
I regard exploring all the possibilities to identify and implement solutions to problems within the organization.	4.52	0.70	8	Strongly Manifested
I understand that positive collaboration and interaction of staff leads to productive outcomes.	4.75	0.61	1	Strongly Manifested
I value my commitment to developing my personal, emotional, and spiritual growth.	4.73	0.58	2	Strongly Manifested
I consider remodeling strategic plans to best suit the organization.	4.53	0.66	7	Strongly Manifested
I understand that staff satisfaction is dependent on both intrinsic (e.g. organization) and extrinsic (e.g. rewards) factors.	4.58	0.68	6	Strongly Manifested
I view that exploring and understanding the whole organization guarantees the creation of solutions to problems.	4.65	0.71	4	Strongly Manifested
Quantum Leadership Characteristics	4.60	0.57	-	Strongly Manifested

Scale: 1-1.50: not manifested; 1.51-2.50: slightly manifested; 2.51-3.50: manifested; 3.51-4.50: highly manifested; 4.50-5.00: strongly manifested.

Table 4 presents an analysis of how quantum leadership varies across different demographic segments of a sample population. The table evaluates mean scores, standard deviations (SD), statistical values (F or t-test values), p-values, and the resultant decision or interpretation concerning the null hypothesis (H<sub>0</sub>) for each demographic category.

Age is the first demographic profile examined, with groups ranging from 21 to over 60 years old. The mean scores indicate a slight variation in perceived quantum leadership skills across age groups, with the 31-40-year-old group scoring the highest (mean=4.69) and the 41-50-year-old group scoring the lowest (mean=4.51). However, the F-test statistic value of 0.52 and the corresponding p-value of 0.67 lead to the acceptance of the null hypothesis, implying that the differences in means are not statistically significant.

Sex is analyzed with a t-test, comparing the mean scores of males (4.54) and females (4.66). The t-test statistic value is -0.85 with a p-value of 0.40. This p-value exceeds the typical threshold of 0.05 for statistical significance, leading to the acceptance of the null hypothesis, indicating no significant difference in quantum leadership perception between male and female respondents.

Marital status categories include single, married, and separated/divorced/annulled individuals. The highest mean is observed in the separated/divorced/annulled group (mean=4.80), suggesting a higher perception of quantum leadership skills. Despite this, an F-test value of 0.50 and a p-value of 0.61 indicate that any differences across marital statuses are not statistically significant.

The designation within the organization is categorized into nurse supervisor, nurse manager/head nurse, and charge nurse, with means ranging from 4.55 to 4.77. An F-test value of 1.77 with a p-value of 0.18 again leads to the acceptance of the null hypothesis, showing no significant differences based on job designation.

Educational attainment is broken down into bachelor's degree holders, MSc/MAN units, and master's degree holders. The means are close, with no significant difference found (F= 0.57, p-value= 0.94).

The number of years in the nursing field is divided into three groups: 1-5 years, 6-9 years, and 10 years and above. The means suggest a small variance, yet the F-test statistic (0.62) and p-value (0.54) indicate no significant difference.

Finally, the duration of current hospital employment is also explored, with no significant differences found among those employed for different lengths of time (F= 0.18, p-value= 0.84).

Overall, the table indicates that across various demographic factors—age, sex, marital status, job designation, educational attainment, years in the field, and duration of employment—there are no statistically significant differences in the perception of quantum leadership skills among the respondents. This suggests a uniform perception of these leadership qualities across the sample, regardless of demographic differences.

Table 4. Differences in Quantum Leadership Based on Demographic Profile

Demographic Profile		Mean	SD	Stat. Value	P-Value	Decision/ Interpretation
Age	21-30 years old	4.58	0.59	F= 0.52	0.67	Accept H <sub>0</sub> / Not significant
	31-40 years old	4.69	0.38			
	41-50 years old	4.51	0.92			
	51-60 years old	4.67	0.40			
Sex	Male	4.54	0.53	t= - 0.85	0.40	Accept H <sub>0</sub> / Not significant
	Female	4.66	0.54			
Marital Status	Single	4.69	0.29	F= 0.50	0.61	Accept H <sub>0</sub> / Not significant
	Married	4.59	0.68			
	Separated/Divorced/Annulled	4.80	0.07			
Designation	Nurse Supervisor	4.68	0.42	F= 1.77	0.18	Accept H <sub>0</sub> / Not significant
	Nurse Manager/Head Nurse	4.77	0.28			
	Charge Nurse	4.55	0.66			
Highest Educational Attainment	Bachelor's Degree Holder	4.63	0.59	F= 0.57	0.94	Accept H <sub>0</sub> / Not significant
	MSc/MAN Units	4.67	0.36			
	Master's Degree Holder	4.66	0.39			
Number of Years in the Nursing Field	1-5 years	4.68	0.43	F= 0.62	0.54	Accept H <sub>0</sub> / Not significant
	6-9 years	4.47	0.73			
	10 years and above	4.64	0.55			
Duration of Current Hospital Employment	1-5 years	4.64	0.47	F= 0.18	0.84	Accept H <sub>0</sub> / Not significant
	6-9 years	4.71	0.35			
	10 years and above	4.61	0.67			

## Discussion

The current study findings revealed that despite exploring various demographic segments such as age, sex, marital status, job designation, education, tenure in the field, and duration of hospital employment, there were no statistically significant differences detected in the perception of quantum leadership. This suggests a uniformity or consistent perception of these leadership traits across the sample. As we delve into the discussion, it becomes evident that these results align with well-established leadership theories, providing a delicate understanding of the leadership landscape within the nursing profession.

This uniform perception of key leadership traits implies a strong foundation of shared leadership values and qualities within the studied nursing participants. [25] Organizational culture plays a pivotal role in shaping leadership behaviors and influencing the acceptance of specific leadership values. The strong presence of quantum leadership traits may signify that the hospital has cultivated a culture that emphasizes collaboration, visionary thinking, and a commitment to personal and collective growth. [26]

Knowing how quantum leadership traits and different leadership theories align has a significant impact on leadership development programs in the healthcare industry. The practical strategies and quantum leadership principles can both be explicitly incorporated into leadership training programs. Healthcare organizations can create environments that support innovation, collaboration, and long-term growth by developing leaders who exemplify the holistic and interconnected approach promoted by Quantum Leadership. The acknowledgment of these theories in the study's findings enhances our understanding of the multifaceted nature of leadership dynamics within the nursing profession.

## Limitations of the study

This study has some limitations including limited access to only a small demographical population which may not provide an overall scope of responses, in addition, the study was cross-sectional and assessed the perceptions of the respondents at a specific time, furthermore, the topic of quantum leadership is a relatively new leadership style and therefore needs more similar research studies to support it.

## Conclusion

While the study provides valuable insights into leadership perceptions, it is essential to acknowledge the limitations inherent in the sample size and the specific demographics studied. Future research endeavors might explore more nuanced aspects within demographics or expand the analysis to encompass a more extensive and diverse population.

Given the limitations and contributions of the study, the knowledge acquired can be a useful starting point for leadership development programs in healthcare institutions. The study emphasizes how important it is for nurse leaders to develop their quantum leadership abilities to promote cooperative, flexible, and values-driven leadership practices.

Finally, this research adds to the growing body of knowledge about leadership in the nursing field by offering a sophisticated examination of perceptions of quantum leadership that transcends demographic distinctions and has important implications for theory and practice.

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#### **Author's Contribution**

Norodom Oidem and Gretchen Tagle are responsible for the conceptualization, data curation, analysis, investigation, literature search, methodology, manuscript preparation, final approval of the version. Jasmin Natino, Norbeth Acaba, and Maria Karen Bartolo assisted in the literature search, data collection, data analysis, validation, and manuscript preparation and editing, final approval of the version.

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#### **Availability of data and materials**

The data relating to this manuscript are available upon request.

#### **Conflict of Interest**

The researchers declare no conflicts of interest exist for this research work.

#### **Declaration of Competing Interest**

All authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

#### **Consent for publication**

Not applicable

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