Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

EFFECT OF AGILE LEADERSHIP EDUCATIONAL PROGRAM ON NURSE MANAGERS'KNOWLEDGE AND PRACTICE

BADR BAHGAT MOHAMED SOLIMAN
Researcher, Nursing Administration, Faculty of Nursing, Cairo University, Egypt.
Email: badr.soliman134@gmail.com

EGLAL AHMED ABDELWAHAB
Emeritus Assistant professor, Nursing Administration, Faculty of Nursing, Cairo University, Egypt.

EMAN ABD ELALIM ETAWY
Professor, Nursing Administration, Faculty of Nursing, Cairo University, Egypt.

Abstract

Background: Agile leadership is a dynamic approach that supports innovation, fosters adaptability and enhances an organizational ability to survive and succeed in highly competitive and uncertain environment. **Aim:** to examine the effect of agile leadership educational program on nurse managers' knowledge and practice. **Methods:** A quasi-experimental design with one group pretest-posttest used in current study; this study was conducted at Al Moneira pediatric university hospital affiliated to Cairo University, Egypt; on a convenient sample of nurse managers their numbers (31). Three tools were utilized, namely :(1) Personal data sheet, (2) agile leadership knowledge questionnaire and (3) agile leadership practices observational check list. **Results:** revealed that there were statistically significant differences in nurse managers total knowledge mean scores (t=8.39, p=.000*) immediately post-program than pre-program as well as statistically significant differences in nurse mangers total practices mean scores (t=14.71, p=0.00*) immediately post-program than pre-program. Also, the current study findings revealed a positive statistical correlation between the nurse managers' total knowledge and their practices of agile leadership immediately post-program (r= 0.40, p=0.00*). **Conclusion:** Educational program has a positive effect on nurse managers' agile leadership knowledge and practices. **Recommendations:** develop in service guidelines and further training program for agile leadership and conduct regular monitoring to identify gaps also, incorporate agile leadership in different levels of nursing curricula.

Keywords: Agile Leadership, Educational Program, Knowledge, Nurse Managers, Practices.

1. INTRODUCTION

Agile leadership is a leadership approach that adapts to organizational innovation processes and enables organizations to survive in competitive environments characterized by uncertainty and rapid change. Agile leadership is considered one of the most effective in enhancing the career success of employees because of its flexibility, competency results, and change-oriented approach [1].

Agile leadership is a style of management that changes to accommodate employee empowerment initiatives and strengthens an organization's capacity to survive in unpredictably changing work environments. Agile leadership is responsive to emerging challenges or opportunities, and it works in quick development cycles of adaptation, learning, and improvement. [2].

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

The main tasks of an agile leadership are to support staff nurses, stakeholders, and nursing managers to understand and apply agile methods and facilitate and monitor effective implementation of agile throughout the whole organization. The main goal of an agile leadership is to increase teams' capabilities to attain higher levels of accomplishment and is like the goal of a regular team coach [3].

Agile leadership is based on listening, empathy, and openness to dialogue. Therefore, the leader should demonstrate a high level of emotional intelligence, be sensitive to signals from within the organization, and be able to adjust their actions to the individual needs of team members. Rather than dominating, the leader should build an atmosphere of shared responsibility and co-creation of goals and strategies [4].

Agile leaders play an essential role in the success of an organization. Design culture, make strategies to redesign the organization's culture so that everyone working in the organization can be taught to follow agility in work approach. The primary roles of agile leaders are creating the right environment for the team to flourish, identifying blockers to progress and removing them, finding out essential interfaces and developing a system of transport across them [5]

Agile leadership is built around several core principles that distinguish it from more traditional leadership models: first principles are flexibility and adaptability (leaders foster a culture that not only accepts change but actively encourages it and inspire their teams to remain open-minded and responsive), second principles are decentralized decision making (agile leadership fosters an environment where teams make decisions on their own, allowing them to tackle real-time challenges) [6].

Third principles of agile leadership are customer-centricity (shifting the emphasis towards prioritizing customer needs, and integrating direct feedback into every stage of the development process), the fourth principles are continuous learning and improvement (Agile leadership places a strong emphasis on fostering a culture that prioritizes continuous improvement, recognizing that this is vital for both individual and organizational growth. [7]

Numerous researchers have addressed the dimensions of agile leadership, which can be outlined as follows: 1. leadership wisdom (This refers to the agile leaders use of rationality in dealing with employees and in their approach to solving complex administrative issues they seek to control), 2.Calmness (A calm leader can think more deeply and effectively tackle difficult problems), 3.Objectivity (reflecting a leader's capacity to understand and influence the thoughts and behaviors of others),4.trust (When trust is established, it strengthens individuals' connection to leadership, ultimately contributing to greater institutional success), 5. Humility(means flexibility, simplicity, and gentleness in dealing with the institution's employees, prioritizing their needs, and having a constant desire to achieve the best,6. Patience (Leaders need to approach challenges and obstacles with both patience and resilience, understanding that change often requires time and effort [8], [9] and [10]. According to study by [11] reported that agile leadership can promote the perception of career success among healthcare employees and agile leadership

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

positively impacted career success. A study by [12] concluded that the characteristics of an agile leader empower employees to accept changes in the environment and become more flexible in the complex, unpredictable, and dynamic environment in their organization. Another study by [13] reported that agile leadership educational program can provide nurse managers with the necessary skills and knowledge to adapt to the rapidly changing healthcare landscape.

Based on the researcher' experience with nurse managers at the study setting, it was observed that managerial practices were predominantly routine- oriented, with limited effort to introduce innovative ideas or adopt creative approaches to solving unit -related problems and improving performance. In addition, communication between nurse managers and their subordinates was largely formal and indirect which may hinder effective collaboration and employee engagement. Given the critical role of nurse manager in providing effective leadership and contributing to the overall success of health care organization. Implementing an agile leadership educational program is expected to equip them with essential principles and practices of agile leadership.

2. METHODS

2.1 Aim

The current study aimed to examine the effect of agile leadership educational program on nurse managers' knowledge and practice.

Research hypothesis:

Based on the literature and theoretical framework, the following hypothesis will guide the research study:

H1: There will be increase in knowledge test total scores of nurse managers ' agile leadership immediately after the program implementation compared to preprogram implementation

H2: There will be increase in total mean scores of nurse managers ' agile leadership practices immediately after implementation of the program compared to preprogram implementation

2.2 Design

A quasi-experimental design with one group pretest-posttest was utilized in the study. Quasi experimental research design is approach used to create a cause-and-effect link between an independent and dependent variable [14].

2.3 Setting

This study was conducted at Al Moneira pediatric university hospital affiliated to Cairo University. It's a governmental hospital which provides free and paid service for pediatric patients. This hospital consisted of nine floors with 265 beds and seven ICUs (Neonatal ICU: 40 Incubators, Emergency ICU: 5 beds, Hemodialysis ICU: 8 beds, General ICU: 30

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

beds, Surgery ICU: 6 beds, Endocrine and Diabetes ICU: 6 beds, Gastrointestinal ICU: 2 beds). The study data was collected from previously mentioned ICUs units.

2.4 Participants

A convenient sample of nurse managers (n=31) was divided into (1) nurse director, (1) assistant director, (8) unit managers and (21) charge nurses.

2.5 Data Collection Tools

Data of the current study was collected using these three tools:

First tool: Personal data sheet developed by the investigator which includes personal data about nurse managers such as (age, gender, educational level, job title, years of experience in nursing and attending previous training programs about agile leadership).

Second tool: Agile leadership Knowledge Questionnaire: It was developed by the investigator and guided by [15] and [16]. It was used to assess nurse managers' knowledge regarding agile leadership. It consisted of (22) items divided into six dimensions as follows 1. concept of agile leadership (3items) 2. Importance of agile leadership (3 items) 3. characteristics of agile leader (4 items), 4. agile leadership principles (5 items), 5. dimensions of agile leadership (5 items), 6. Barriers of agile leadership (2 items). The questionnaire was in the form of multiple-choice questions. The questionnaire was in the form of multiple-choice questions. Two -point response was used as following "1 score " for the correct answer, and "zero" for incorrect answer. The nurse manager knowledge was considered good of score ≥ 75%, moderate knowledge 50- 75% and poor knowledge of score ≤ 50%. This questionnaire was used during different periods of assessment (before program, immediately post program)

Third tool: Agile leader practices observational checklist: This tool was developed by the investigator and guided by [17] and [18]. It was used to assess agile leader practices among nurse managers and consisted of 47 items covering the following 12 dimensions 1. organizing working environment (5 items), 2. continuous improvement (5 items) 3. humility trait (3 items) 4. Persuasion skills (3 items), 5. Negotiation skills (3 items), 6. Social leadership skills (3 items) 7. wiseness trait (4 items) 8. Decision making skills (5 items) 9. placidness traits (4 items) 10. patience trait (3 items) 11. objectivity trait (5 items) and 12. confidence trait (4 items). Two-point responses of practices "1" (done), "zero" (not done). These scores were converted into percentage scores. The level of agile leadership practices was considered high level ≥75% of total scores, while moderate level 50- 75% of total scores and low level ≤ 50%. This questionnaire was used during different periods of assessment (before program, immediately post program)

The tools were checked for validity and reliability, Content validity was established by a panel of three experts from nursing administration department at faculty of nursing, Cairo university. They were asked to examine the data collection tools for content coverage, clarity, wording, length, format, and overall appearance. In addition, the reliability was determined statistically by testing the internal consistency using Cronbach's Alpha Coefficient test. The Cronbach's Alpha for nurse managers agile leadership knowledge

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

test was (0.86) while nurse managers agile leadership practices observational checklist reliability was (0.90).

2.6 Procedure

The study was conducted on six phases:

I. Assessment Phase: Prior to program implementation, an initial assessment of the nurse managers about agile leadership was done using the developed knowledge questionnaire as well as the investigator assessing the nurse managers agile leadership practices by using agile leadership practices observational checklist.

II. Planning Phase: Based on the results of the initial assessment of nurse managers' knowledge that was analyzed, the researcher designed educational program including seven sessions.

III. Validation Phase: The suggested educational program was tested, revised by group of three experts' professors from the nursing administration department at faculty of nursing - Cairo University

IV. Communication and approval phase: After testing the validity of suggested program, it was communicated to the director of Al Moniera hospital, then taking an approval for implementing the preparation program for nurse mangers in hospitals.

V. Implementation Phase: After designing the educational program, taking approval for implementation, the researcher implemented the program on seven sessions. The sessions were provided with international training activities like "brainstorming, group discussion, role play, lectures, scenarios and workshops). The first day of training included general orientation about aim and significance of the program, concept of agile leadership and its importance. The second day included characteristics of agile leadership and difference between traditional leadership and agile leadership. The third day included features of agile leader and his role in health care organization. The fourth day included principles of agile leadership. The fifth day included dimensions of agile leadership. The sixth day includes benefits of applying agile leadership and results about its application in health care organization. And finally, the last day of training included barriers for applying agile leadership in health organization and strategies to overcome these barriers.

VI. Evaluation phase: evaluating the immediate effect of the educational program on nurse managers was done through utilizing the previous tools (agile leadership knowledge questionnaire and agile leadership practices observational checklist)

2.7 Statistical data analysis

The collected data was tabulated, computed and analyzed statistically using Statistical Package for the Social Sciences (SPSS) program version 24. Descriptive statistics in the form of frequency distribution, percentages, mean and standards deviations, and independent t-test were utilized. Correlation between variables was evaluated using Pearsons's correlation coefficient (r) test.

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

3. RESULTS

Table 1 shows that the majority (64.5%) of nurse managers were female. The highest percent (51.6%) of them were in the age range of 30 to less than 40 years, while 35.5% of them were aged more than 40 years. As regards to educational background, the highest percentage (58.1 %) of nurse managers had diploma in nursing, while 41.9% of them had bachelor's degrees on other hand, the highest percent (67.7%) of nurse managers were charge nurses, (25.8%) were unit managers while the lowest percent (6.5%) of them were nurse directors. Moreover, 32.3% of the nurse managers were working in hemodialysis intensive care, while 22.6% were working in neonatal intensive care. Regarding years of experience, this table illustrates that 45.2% of the nurse managers had more than 15 years of experience, while 29% of them had 10 to less than 15 years of experience as well as all nurse managers (100%) didn't attend previous educational program regarding agile leadership.

Table 1: Frequency Distribution of nurse managers According to Personal data (n=31)

personal characteristics	No.	%
Gender		
Male	11	35.5
Female	20	64.5
Age		
25-<30	4	12.9
30-<40	16	51.6
40+	11	35.5
Educational qualifications		
Bachelor's degree in nursing	13	41.9
Diploma in nursing school	18	58.1
Position		
Nurse director	2	6.5
Unit manager	8	25.8
Charge nurse	21	67.7
Name of workplace		
Neonatal intensive care	7	22.6
Emergency department	5	16.1
Surgery intensive care	2	6.5
Hemodialysis intensive care	10	32.3
Diabetic and Endocrine intensive care unit	3	9.7
General intensive care unit	2	6.5
gastrointestinal intensive care unit	2	6.5
Years of experience		
<5	4	12.9
5-<10	4	12.9
10-<15	9	29.0
15+	14	45.2

Table 2 shows that here was a highly statistically significant difference in mean scores regarding agile leadership knowledge dimensions during different periods of assessment (pre- program and immediately post-program) which was reflected on the total mean score respectively (10.3±3.2, 17.3±1.6) and all differences were statistically significant (T=8.39, p=.000).

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

Table 2: Comparison of The Total Mean Scores of Nurse Managers' Agile Leadership Knowledge Dimensions During Different Periods of Assessment (Pre-program and Immediately Post-Program) (n=31)

Agile leadership knowledge dimensions	Pre program		immediately post program		T test	p-value
	Mean	Sd	mean	Sd		
Concept of agile leadership	0.67	0.48	0.94	0.18	2.78	.000*
Importance of agile leadership	0.42	0.48	0.73	0.44	2.15	.000*
Characteristics of agile leader	0.45	0.46	0.81	0.39	2.35	.000*
Principles of agile leadership	0.36	0.45	0.71	0.46	2.38	.000*
Dimensions of agile leadership	0.43	0.47	0.75	0.44	2.04	.000*
Barriers of agile leadership	0.68	0.47	0.82	0.39	1.01	.35
Total M±SD	10.3	3.2	17.3	1.6	8.39	.000*

*Statistically significant at p value < 0.05

Table 3 reveals that there was a statistically significant difference in total agile leadership knowledge levels during different periods of assessment which (61.3%) of nurse managers scored low (<60%) pre-program, while 64.5% of nurse managers scored moderate (60- <75%) immediately post program, compared to (38.7%) preprogram. All differences as were statistically significant (χ^2=59.9, p=.00).

Table 3: Frequency Distribution of Total Agile Leadership Knowledge Levels Among Nurse Managers During Different Periods of Assessment (Preprogram and Immediate post program) (n=31)

Total agile leadership knowledge levels	Preprogram		immediately post program		X2	p-value
	No.	%	No.	%		
Low (<60%)	19	61.3	0	0.0	59.9	0.00*
Moderate (60- <75%)	12	38.7	20	64.5		
High (≥75%)	0	0.0	11	35.5		

*Statistically significant at p value < 0.05

Table 4 represents that there was a highly statistically significant difference in means scores of all dimensions of agile leadership practices during different periods of assessment (preprogram, immediately post-program) which was reflected on the total mean score respectively (19.5±4.1, 42.0±5.8) all differences were statistically significant (T=14.71, p=.00)

Table 4: Comparison of The Total Mean Scores of Nurse Managers' Agile Leadership Practices Dimensions during Different Periods of Assessment (Preprogram and immediately post-program) (n=31×3=93)

Agile leadership practices dimensions	Preprogram		immediately post program		T test	p-value
	mean	Sd	Mean	Sd		
Organizing work conditions	0.50	0.44	0.93	0.19	3.8	0.00*
Continuous improvement	0.41	0.37	0.89	0.26	3.76	0.00*
Humility traits	0.49	0.50	0.91	0.27	2.80	0.00*
Persuasion skills	0.48	0.50	0.91	0.27	2.95	0.00*
Negotiation skills	0.33	0.41	0.86	0.35	3.77	0.00*

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

Social leadership skills	0.28	0.46	0.83	0.38	3.52	0.00*
Wiseness trait	0.32	0.43	0.91	0.28	4.51	0.00*
Decision making skills:	0.33	0.40	0.88	0.31	4.26	0.00*
Placidness trait:	0.40	0.45	0.91	0.29	3.7	0.00*
Patience trait	0.54	0.99	0.86	0.35	4.28	0.00*
Objectivity trait	0.54	0.48	0.90	0.29	2.06	0.00*
Confidence trait:	0.33	0.48	0.90	0.30	3.89	0.00*
Total M±SD	19.5	4.1	42.0	5.8	14.71	0.00*

*Statistically significant at p value < 0.05

Table 5 denotes that there was a statistically significant difference in total agile leadership practices level during different periods of assessment which (96.8%) of nurse managers scored low level (<50%) pre-program, while (77.4) % of nurse managers scored high level (≥75%) immediately post-program. All differences as were statistically significant (χ^2=141.1, p =.00).

Table 5: Frequency Distribution of Total Agile Leadership Practices Levels Among Nurse Managers During Different Periods of Assessment (Pre-Program and Immediately Post-Program) (n=31×3=93)

Total agile leadership practices levels	Preprogram		immediately post program		X2	p-value
	No.	%	No.	%		
Low (< 50%)	30	96.8	0	0.0		
Moderate (50- < 75%)	1	3.2	7	22.6		
High (≥75%)	0	0.0	24	77.4	141.1	0.00*

*Statistically significant at p value < 0.05

Table 6 shows that there was a positive statistical correlation between the nurse managers' total knowledge and their practices of agile leadership immediately post-program (r= 0.40, p=0.00)

Table 6: Correlation between Nurse Managers Total Agile Leadership Knowledge and Practices after Agile Leadership Educational Program Implementation (Immediately Post-Program) (n=31)

Nurse managers total agile leadership knowledge	Nurse managers total agile leadership practices	
	R	P
immediately post program	0.40	0.00*

4. DISCUSSION

Agile leadership promotes a flexible organizational structure that supports nurses in pursuing diverse career paths. It also fosters an environment of innovation and continuous improvement, which is vital for enabling nurses to adapt to new technologies and evolving patient care needs [19]

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

The present study revealed that more than half of the nurse managers were aged between thirty to less than forty years. This aligns with [20], who reported that the average age of our respondents was almost 25 to 45 years However, this finding contrasts with [21], who found that the most significant proportion of respondents (32%) were aged between 41 and 45 years

Regarding gender, the findings showed that the majority of the nurse managers were females. This result is consistent with [22], who found that most of study sample were female. Conversely, [20] suggest that the majority of respondents are male

Besides, this study revealed that more than half of the nurse managers held diploma in nursing, this agrees with [23] who showed that most of study sample possessed a diploma in Nursing. However, [1] demonstrated that 65 % of respondents hold a bachelor's degree.

Furthermore, nearly half of the nurse managers had more than fifteen years of experience. This finding is supported by [24] who reported that (62.5%) of head nurses had years of experience ranged from 10 to less than 20 years. In contrast, [25] argue that show that only 23.3 percent had experience of 10 years or over. As regard work setting, the study showed that most of the nurse managers worked in hemodialysis intensive care. The current study revealed that none of the nurse managers attended previous educational program regarding agile leadership before carrying out the current study. This congruent with [22] found that the majority (90.9%) of study participants didn't attend the training course about agile leadership.

The current study revealed that the mean knowledge scores of nurse managers' knowledge test was significantly higher immediately after program implementation than before implementation. This finding attributed to the impact of educational program on increasing nurse mangers awareness regarding concept of agile leadership and equipped them with necessary information. These findings are consistent with [16] who displays more than one third (34.2%) of the head nurses had satisfactory knowledge of the agile leadership at the pre-program phase, this increased to (70.8%) at the post-program phase.

Regarding knowledge levels in the current study, the findings indicated statistically significant difference in total knowledge levels during different assessment periods as 64.5% of nurse managers scored moderate (60- <75%) immediately post program. This result is supported by [26] who revealed that most of the staff have a high level regarding their total agile leadership. Conversely, [27] depicted that half of the nurses' managers had a low perception level regarding their total agile leadership.

Regarding nurse managers' practices related to agile leadership, the present study revealed that the mean scores of nurse managers' agile leadership practices were significantly higher immediately after program implementation than before implementation. From the researcher point of view, this improvement may be attributed to increased awareness among nurse managers regarding the importance and value of agile leadership. The educational program appears to have been effective in enhancing

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

their leadership practices by equipping them with the skills needed to adapt and respond to rapid organizational changes and to foster a harmonious work environment. At the same line, [24] clarified that, there was general improvement in total levels of head nurses' agile leadership practice after intervention of the program. In contrast, [28] found that there was a low improvement in agile leadership skills among head nurses.

As regard to nurse managers' levels of agile leadership practices, the current study denoted a statistically significant difference in total agile leadership levels across different periods of assessment. The majority of nurse managers had low level pre-program, most of them reached a moderate level immediately post-program. This congruent with [29] found that two thirds of head nurses exhibited positive agile leadership behaviors during the immediate-intervention phase.

Finally, the results revealed that there was a positive statistical correlation between the nurse managers' total knowledge and their agile leadership practices immediately post-program implementation. From the researcher's perspective, this result can be attributed to the educational program raising awareness among nurse managers who acknowledged that practicing each skill contributes to establishing therapeutic relationships, fostering continuous improvement, using appropriate decision-making skills according to the situation, employing suitable approaches for negotiation and effective social skills. This understanding assists them in overcoming daily challenges and achieving both organizational and personal goals. This agrees with [30] who mentioned that there was statistically significant positive correlation among head nurses' agile leadership knowledge and practice scores. In contrast, [16] displayed that there was no statistically significant correlation of head nurse regarding agile leadership knowledge and skills.

5. CONCLUSION AND RECOMMENDATIONS

In the light of the present study findings, it can be concluded that there was a statistically significant difference in the mean scores of knowledge test regarding agile leadership of nurse managers indicating a marked improvement immediately post-program implementation compared to pre-program. Additionally, there was a statistically significant difference in nurse managers' mean scores of practices pertaining to agile leadership immediately post program implementation compared to pre-program. This indicated that there was positive effect of implementing an educational program about agile leadership of nurse mangers equipping them with the knowledge and practices needed to be competent in clinical environment. Moreover, the study findings supported all of the proposed research hypotheses.

Additionally, Hospital administration should conduct regular and ongoing educational program , workshops and training courses on agile leadership to maintain that nurse mangers update knowledge and skills, and develop comprehensive guidelines and polices for application of agile leadership in health care settings, integrate agile leadership concepts , competencies and practical applications into nursing curricula, encourage all nursing staff to participate in workshops, seminars regarding agile leadership to enhance

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

their knowledge and practical skills, for nursing research, replicate the study with a larger sample size and in different settings to confirm and generalize the findings, conduct research studies to identify barriers in practice settings that hinder the implementation of agile leadership and develop strategies to overcome them.

Declarations

Ethical Considerations

A primary official approval was obtained from the research ethics committee, Faculty of Nursing, Cairo University, to conduct the proposed study then an approval from the director of Al Moneira hospital. All participants reported that Participation in the study is voluntary. The ethical considerations include explaining the purpose, nature of the study and stating the possibility to withdraw at any time. To ensure confidentiality for the participants; data will not be accessed by any other party without taking permission of the participants.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare that they have no competing interests.

Funding

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Acknowledgement

The authors would like to thank all participants for their cooperation and help achieving the aim of the present study.

References

1) Siregar AA, Afiff AZ, Halim RE. Linking agile leadership and business sustainability through the mediation of political and social capabilities. Journal of Open Innovation: Technology, Market, and Complexity. 2023 Dec 1;9(4):100153. https://doi.org/10.1016/j.joitmc.2023.100153

2) Stray, Viktoria, Anastasiia Tkalich, and Nils Brede Moe. “The agile coach role: coaching for agile performance impact”. In: Proceedings of the Annual Hawaii International Conference on System Sciences (HICSS), AIS Electronic Library, 2021 pp. 6816–6825. https://doi.org/10.24251/HICSS.2021.817

3) Ozbayrac, G. Enterprise Agility: A Practical Guide to Agile Business Management, 1st ed., CRC Press, 2022, United State of America, P.124

4) Aftab, S., Khalid, K., Waheed, A., Aftab, A., & Adnan, A. Role of agile leadership in managing inter-role conflicts for a satisfying job and life during COVID-19 in a VUCA world. Frontiers in psychology, (2022). 13, 979792. DOI:10.3389/fpsyg.2022.979792

5) Attar, M., & Abdul-Kareem, AThe role of agile leadership in organizational agility. In B. Akkaya (Ed.), Agile business leadership methods for industry 4.0. (2020). (pp. 131-143). Emerald Publishing Limited. https://doi.org/10.1108/978-1-80043-380-920201011

ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

6) Porkodi, S. The effectiveness of agile leadership in practice: A comprehensive meta-analysis of empirical studies on organizational outcomes. Journal of Entrepreneurship, Management and Innovation, (2024). 20(2), 117-138. DOI: https://doi.org/10.7341/20242026

7) Cabrera L, Cabrera D. Developing personal mastery in systems thinking. Routledge handbook of systems thinking. 2021 Jan 1. DOI:10.54120/jost.0000043

8) Al-Qawasmi MA. The role of agile administrative leadership in enhancing the effectiveness of digital transformation in Palestinian higher education institutions. Arado Business Journal. 2026:71-96. https://search.emarefa.net/detail/BIM-1776008

9) Linani, H., & Kadira Toumi, H. Orientation Towards Agile Leadership for Coaches to Enhance the Culture of Entrepreneurship Among Business Incubator's Students at Laghou at University. Dirassat Journal Economic Issue, (2025). 16(1). https://doi.org/10.34118/djei.v16i1.4127

10) Abdulla, D. F., Al Askari, P. S., & Sadq, Z. M. Agile Leadership Behaviors and Their Role in Promoting Workplace Spirituality: An Analytical Study of the Prespectives of a Sample of Lecturers at Knowledge University-Erbil. Qalaai Zanist Journal, (2021). 6(1), 551-579. DOI:10.25212/lfu.qzj.6.1.22

11) Akkaya, B. Panait, M. Apostu, S. A., & Kaya, Y. Agile leadership and perceived career success: The mediating role of job embeddedness. International Journal of Environmental Research and Public Health, (2022). 19(8), 1-9. https://doi.org/10.3390/ijerph19084834

12) Al-Ghazali BM. Transformational leadership, career adaptability, job embeddedness and perceived career success: a serial mediation model. Leadership & Organization Development Journal. 2020 Oct 28;41(8):993-1013.doi: https://doi.org/10.1108/LODJ-10-2019-0455

13) Nghe M, Hart J, Ferry S, Hutchins L, Lebet R. Developing leadership competencies in midlevel nurse leaders: An innovative approach. JONA: The Journal of Nursing Administration. 2020 Sep 1;50(9):481-8. https://doi.org/10.1097/nna.0000000000000920

14) Singh, A. Quasi experimental design in scientific psychology. SSRN Electronic Journal, (2021) https://doi. org/10.2139/ssrn, 3793568

15) Gabrielsson, L., and Hasan, Z., The influence of Agile Project Management on Knowledge Sharing in a Team, Degree Project In Real Estate And Construction Management Construction Management Master of Science, (2019) Available athttp://kth.divaportal. org/smash/record.jsf?pid=diva2%3A 1342539&dswid=4379.

16) Marouf Abdelhamid Amr A, Mostafa Shazly M, Ali Hasan Omar H, Ibrahim Mahmoud S. Agile Leadership Training Program for Head Nurses and its Effect on Their Innovative Behavior. Journal of Nursing Science Benha University. 2023 Jul 1;4(2):687-701. article_310299_2f776c300b2c8e3d2b8798a196bc8df6.pdf

17) James A, Crowder FS. Agile Project Management: Manager for Support Spring Publishing Company. United State of America, Pp7. 2019.. DOI 10.1007/978-3-319-09018-4

18) Ahmed Mohamed Ibrahim S, Mohammed Araby Ebraheem S, Hassan EL-Sayed Mahfouz H. Effect of Educational Program about Head Nurses' Agile Leadership on Staff Nurses' Workplace Spirituality and Job Reputation. Egyptian Journal of Health Care. 2022 Mar 1;13(1):1661-80. article_231783_ae9fdb4519a4c962b121d0a38f70ca6f

19) Sahin, S., and Alp, F, Agile Leadership Model in Health Care: Organizational and Individual Antecedents and Outcomes, Agile Business Leadership Methods for Industry, Emerald Publishing Limited, (2020) 4.0,47–-68. DOI:10.1108/978-1-80043-380-920201004

20) Kamal A, Ul Hassan F. The Impact of Agile Leadership on Individual Career Success and Mediating Effect of Interpersonal Trust [Internet] [Dissertation]. 2022. Available from: https://urn.kb.se/resolve?urn=urn:nbn:se:hig:diva-41070</div

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue: 07:2026
DOI: 10.5281/zenodo.21468042

21) HUSEIN MA. Pengaruh agile leadership, organizational learning, dan social capital terhadap competitive advantage dimediasi oleh sustainable organizational performance pada sekolah dasar swasta di dki jakarta (Doctoral dissertation, Universitas Mercu Buana Jakarta) 2025 http://repository.mercubuana.ac.id/id/eprint/99107

22) Mostafa Mohamed H, Mostafa Shazly M, Mohamed Elsayed S. Relationship between Agile Leadership Behaviors and Workplace Spirituality among Staff Nurses. Egyptian Journal of Health Care. 2024 Dec 1;15(4):1053-63. DOI:10.13140/RG.2.2.10999.33444

23) Alharbi, E. S.). Leadership Training Program and Their Effect On Nursing Job Performance and Head Nurses Competency,2022 https://api.semanticscholar.org/CorpusID:251733302

24) Mostafa Mohamed, H., Mostafa Shazly, M., & Mohamed Elsayed, S. (2024). Relationship between Agile Leadership Behaviors and Workplace Spirituality among Staff Nurses. Egyptian Journal of Health Care, 15(4), 1053-1063.

25) Muhammad, U., Nazir, T., Muhammad, N., Maqsoom, A., Nawab, S., Fatima, S. T., ... & Butt, F. S. Impact of agile management on project performance: Evidence from IT sector of Pakistan. Plos one, (2021). 16(4), e0249311. https://doi.org/10.1371/journal.pone.0249311

26) Mahmoud, G., El-Sabahy, H., & Kassem, A. Organizational Agility and Teamwork as Perceived by Nursing Staff at Main Mansoura University Hospital. Mansoura Nursing Journal, (2022). 9(2), 237–249. https://doi.org/10.21608/mnj.2022.295576

27) Badran F, Khaled A. Organizational agility and job engagement among staff nurses. Evidence-Based Nursing Research. 2023;5(4):92-9. https://doi.org/10.47104/hjgxzv66

28) Özdemir G. The relationship between school administrators' agile leadership and their innovation management competencies. International Journal of Education and Literacy Studies. 2023 Jan 30;11(1):175-84. DOI: 10.7575/aiac.ijels.v.11n.1p.175

29) Abdulla DF, Al Askari PS, Sadq ZM. Agile Leadership Behaviors and Their Role in Promoting Workplace Spirituality: An Analytical Study of the Prespectives of a Sample of Lecturers at Knowledge University-Erbil. Qalaai Zanist Journal. 2021 Mar 30;6(1):551-79.https://doi.org/10.25212/lfu.qzj.6.1.22

30) Ahmed Mohamed Ibrahim, S., Mohammed Araby Ebraheem, S., & Hassan EL-Sayed Mahfouz, H. Effect of Educational Program about Head Nurses' Agile Leadership on Staff Nurses' Workplace Spirituality and Job Reputation. Egyptian Journal of Health Care, (2022). 13(1), 1661-1680.