Problem Solving Training Strategy and Its Effect on Nurse Managers' Thinking and Decision Making Styles

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Abstract: **Nurse managers must have critical thinking and effective problem-solving skills in order to improve the patient care system, make effective decision, and attain the institutional outcomes, and achieve institutional aims. Aim: Assess the effect of implementing a training strategy about problem solving and measuring its' effect on thinking and decision making styles of nurse managers. Research design: One group pre- test / post- test research design was used to achieve the aim of the current study. Setting: This study was conducted at Nasser General Hospital. This hospital is affiliated to Ministry of Health hospitals at Qalyoubia Governorate, Egypt. Subjects: The study included 50 nurse managers. Tools: Data were collected by two main scales namely; thinking styles scale, and decision-making styles scale. Results: There were significant statistical differences regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy. There were significant statistical differences regarding all dimensions of decision-making style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre. Conclusion: There were an improvement of nurse managers' thinking and decision making styles throughout implementing the problem solving training strategy. Recommendations: Conducting a regular workshop for nurse managers about decision making as needed, conduct regular meeting with staff nurses to identify problems early and manage it, and continuous application of needs assessment to recognize nurse manager regarding decision making.**

Keywords: **Problem Solving, Thinking, Decision Making, Styles, Strategy, Nurse Managers.**

I. INTRODUCTION

Hospitals are unit of individuals that are formed and managed in order to follow the collective goals, and are functioning under the leadership, direction and vision of their managers. Managers are continuously involved in taking decisions during planning, implementing and evaluation of routine tasks. It is necessary for managers to create a committed vision, and assessment to promote learning among staff and to concentrate on the needs of the workplace environment and staff (**Ahmed & Al-Dhuwaihi, 2020**).

The management of nursing requires thinking style and problem solving skills.

A nurse manager should have the ability to implement proficient nursing management in the actual field of clinical nursing as solving problems smoothly. Nurse managers must acquire important characteristics or behaviors which related to thinking and problem solving skills. **(Doyle, 2020).**

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A nurse manager is someone who has problem solving and decision-making powers and control over certain processes in an organization. Nurse managers have decision-making authority over a certain group of people and control the processes in an organization or department. Some of their responsibilities include creating and maintaining a budget, overseeing staff scheduling and (**Shirazi & Heidari, 2019**).

Problem solving is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action (**Durmaz et al. 2018**).

Effective problem solving skills based on sound knowledge are expected from professional nurses. Problem solving process, which requires creative thinking, is at the heart of nursing practices. For nurse managers to have adequate problem-solving skills when they start working as nurses, must be integrated theoretical knowledge with practice throughout their education, they must be encouraged to think critically of the circumstances faced and must be provided to them with an education that promotes the thinking style (**Patterson,2019**).

Thinking is perhaps one aspect of mental activity which continues even when persons are asleep. The difference between what is thinking and what is not thinking is just the awareness about the particular thinking process. Hence thinking is a complex mental process which involves manipulation of information. Such information is collected through senses (such as vision, hearing, smelling etc.) from the environment, as well as the information which is stored in the memory because of the encounter with many events and situations in the past (**Mangold, et al., 2018**).

The thinking styles as different techniques used by the people in processing the data. Thinking style does not denote the ability. Instead, it shows the way people use their abilities. Thinking styles are different from the intelligence; intelligence refers to the individual potentials and abilities; however, thinking styles refer to the individual preferences, define "thinking styles correspond to the preferred manner of utilizing one's own abilities. Style of thinking is unique and adaptive **(Sands,etal., 2018).**

Decision making is a process of selecting alogical choice from the positives and negatives of each option, and good decision, aperson must weight the available options. When trying to make a consider all the alternatives. For an effectivedecision making, a person must be able to forecast the outcome of each option as well, and based all these items, determine which option is the best of that special situation (**Muntean, 2018**).

Decision support in nursing has potential to: Improve care processes help nurses make 'better' decisions, Improve outcomes for patients, Reduce adverse events, need to be clear before design and implementation, (what decisions nurse are supporting, who is the intended user of the system) give organizational support for design and implementation (**School of Healthcare, 2018**).

Providing professional nursing services requires the cognitive skills such as problem-solving, decision-making and thinking, and information synthesis.Managing the complexities and challenges of health systems requires competent nurses with high levels of thinking skills (**An Official Dartmouth, 2018**).

A nurse's thinking skills can affect patient safety because it enables nurses to correctly diagnose the patient's initial problem and take the right action for the right reason. Problem-solving and decision-making are complex and difficult processes for nurse manager, because they have to carefor multiple patients with different problems in complex and unpredictable treatment environments (**Cherry, 2020**).

SIGNIFICANCE OF THE STUDY:

Nasser General Hospital is located in Qalyoubia Governorate, Shoubra Alkhaima near Cairo - Alexandria Agricultural Road, so it is considered the nearest emergency hospital to this road

and serves two governorates (Cairo and Qalyoubia).

According to the frequent visits of the researcher to this hospital, as a quality specialist, it was noticed that nurse managers, when faced with a problem or critical situations, they cannot reach to the effective solution and make correct decisions which affect all related aspects either nurses or patients.

Nurse managers in the study setting have not initiative sense toward solving problems and taking decision. The researcher hopes that at the end of the study, the research findings will help the nurse managers to improve the way of thinking and to have the ability to make decision correctly.

AIM OF THE STUDY:

This study aimed to assess the effect of implementing a training strategy about problem solving and measuring its' effect on thinking and decision making styles of nurse managers through:

➢ Measuring thinking and decision making styles among nurse managers before implementing the strategy.

➢ Designing and implementing problem solving training strategy based on assessment.

➢ Measuring thinking and decision making styles among nurse managers after implementing the strategy.

RESEARCH HYPOTHESIS:

There is an improvement of nurse managers thinking and decision making styles after implementing the problem solving training strategy.

II. SUBJECTS AND METHODS

RESEARCH DESIGN:

One group pre- test / post- test research design was used to achieve the aim of the current study.

RESEARCH SETTINGS:

This study was conducted at Nasser General Hospital. This hospital is affiliated to ministry of health hospitals at Qalyoubia Governorate, Egypt. Total bed capacity is (182) bed. It consists of four buildings: First building: Inpatient Departments: consists of (2) units and (5) departments; (7) Critical Departments, the third building consists of Outpatient Clinics (7 clinics) (inside the main building of the hospital), Physiotherapy unit, and the forth building is special building for outpatient clinics located outside the hospital (15 clinics) and their pharmacy. The total nursing work force (360) nurses.

This is one of the largest Hospitals in Qalyoubia Governorate. It serves (2) Governorates. Total patients in (2021): 37733 patients.

SUBJECTS:

The study included 50 nurse managers who represents in different managerial position in the hospital. They categorized as: (1) nursing director, (2) assistants, (10) supervisors, and (37) head nurses.

TOOLS OF DATA COLLECTION:

Two scales were used to carry out this study namely; thinking styles scale, and decision making styles scale.

FIRST TOOL: THINKING STYLES SCALE:

This scale aimed to assess nurse managers thinking styles. It consists of two parts:

Part 1: It aimed to collect data regarding personnel characteristics of the study subjects including age, gender, qualifications, and years of experience as well as attendance of training course.

Part 2: This part was developed by **Sternberg, et al., (2007)** and modified by **Mohammadi, (2010).** This scale consists of (65) items, classified into five dimensions namely; functions (15 items), forms (20 items), levels (10 items), scopes (10 items), and leanings (10 items).

Scoring system:

Responses were measured on five point likert scale where 1 = not at all well and 5 = extremely well. A mean subscale rating that is close to 5 is a high score and is interpreted as a preference for that thinking style.

2- **Second tool: Decision making styles scale:**

It aimed to assess nurse managers' decision making styles. It was developed by **Scott and Bruces** (**1995**) and modified by the researcher. This scale consisted of (25) items, which comprised under five subscales: rational, intuitive, dependent, avoidant, and spontaneous decision-making style. Each subscale contains five items.

Scoring system:

Decision-Making Style: Decision-making style was measured using **Scott and Bruce's (1995).** It comprised of five subscales: rational, intuitive, dependent, avoidant, and spontaneous decision-making style. Each scale contains five items. **A higher score** on any of the five scales indicates a higher usage of that particular decision-making style.

The nurse mangers were requested to indicate their answers regarding each item based on a five- point Likert scale with 1 scoring disagree to 5 scoring strongly agree.

TOOLS VALIDITY AND RELIABILITY:

Face and content validity of the study tools was assessed by jury group consisted of seven professors experts in faculty of nursing at Ain Shams and Cairo Universities (Five professors from nursing administration department and two professors from psychiatry department). Jury group members judge tools for comprehensiveness, accuracy and clarity in language.

RELIABILITY:

Study tools were tested for its internal consistency by Cronbachs Alpha. It was (0.97) for thinking styles tools and (0.86) for decision making styles tools.

PILOT STUDY:

This stage conducted in December 2019 and took about one month. Five nurse managers were included in the pilot study and selected randomly. They represent 10% of the total study subjects. The aim of pilot study was to examine clarity, feasibility and applicability of the tools. It also serves to estimate time needed for filled the sheets. It was 50 to 60 minutes for every sheet.

FIELD WORK:

Data collection of the study was started at the beginning of February 2020, and completed by the beginning of March 2021. The field work of this study was carried out through assessment, planning, implementation, and evaluation phases.

Assessment phase: The researcher introduced herself to nurse managers, explained the aim of the study and its implications and how to fill thinking styles scale, and decision making styles scale, and sought their cooperation. The researcher distributed tools to nurse managers in their working setting. Each participant filled in the sheet and handed it back to the researcher after one month. Data collection tools was distributed three times throughout the study phases. The first distribution was at the beginning of February 2020.

Each nurse manager was filled sheets in working place. Each her sheet was given a code number. The assessment was done during morning, evening and night shifts. The assessment was taken within 50 to 60 minutes. The researcher assessed from 5 to 6 nurse managers every day three times weekly over one month, from the beginning of February 2020 to the beginning of March 2020.

Planning phase: based on the analysis of the data obtained from the assessment phase, and review of the related literature, the researcher pointed out the component of the training program. The schedule was set and the place to carry out the program at Nasser General Hospital was booked, after consultation with the nursing director. The audiovisual aids as data show also handouts are used.

Implementation phase: the program was implemented throughout three months started from the beginning of April 2020 to the end of June 2020. Nurse Managers divided into six groups, each group attended one session every week.

The session started from 11.30 am to 1.30pm. In the first session the researcher explains the aim of the study, program objectives, plan, and implication of the study. At the beginning of each session the objectives of the session were explained.

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The teaching methods used during the implementation of the program were; lectures, discussions. Audio-visual media were used such as data show, flip chart and video films.

Evaluation phase: Immediate after implementing the training program evaluation of nurse managers thinking and decision making styles was done immediately after the program using the same data collection tools used at the assessment phase. This phase took two months from the beginning of July 2020 to the end of August 2020.

Evaluation of retaining knowledge and skills gaining from program completion was performed. After three months of the program, assessment phase for measuring thinking and decision making styles among nurse managers. This phase took six months from the beginning of September 2020 to the end of beginning of March 2021. The researcher was infected with the Corona virus twice during this period.

III. ADMINISTRATIVE DESIGN

An official letter requesting permission to conduct the study was directed from the dean of the faculty of nursing Ain-Shams University to Nasser general hospital directors either medical or nursing to obtain their approval to carry out this study. This letter included the aim the study and photocopy from data collection tools in order to get their permission and seek their support and help during the implementation of the training strategy.

ETHICAL CONSIDERATION

Prior study conduction, ethical approval was obtained from the scientific research ethical committee of the faculty of nursing, Ain Shams University. The researcher also met the study subjects to explain the purpose of the study and to obtain their approval to participate in the study. They were reassured about the anonymity and confidentiality of the collected data, which was used only for the purpose of scientific research. The subjects right to withdraw from the study at any time was assured.

IV. STATISTICAL DESIGN

Data entry was done using SPSS v25 computer software package. Quality control was done at the stages of the coding and data entry. Statistical presentation and analysis of this study was conducted using frequency distribution, repeated measures ANOVA was used to compare means of the study variables throughout implementing a strategy stages, chi square test was used to compare the levels of the study variables throughout implementing a strategy stage.

One-way ANOVA and independent t-test were used to assess the relation between the study variables throughout implementing a strategy stages and participants personnel data. Pearson's correlation was used to assess the relationship between the study variables. P value is considered significant at ≤0.05, and highly significant at ≤0.001, but insignificant at >0.05.

V. RESULTS

Table (1): Frequency distribution of participants' personnel data (n=50).

Personal data	No.	%
Age:		
< 30 years	10	20
30 ≤ 40 years	25	50
40 ≤ 50 years	11	22
> 50 years	4	8
Gender:		
Male	10	20
Female	40	80
Marital status:		
Married	31	62
Widowed	12	24
Single	7	14

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Years of Experience:		
< 5 years	5	10
5 <10 years	11	22
10 < 15 years	19	38
≥ 15 years	15	30
Attending training programs about thinking and decision making styles		
No	50	100

Table (1) illustrates that half (50 %) of the nurse managers had age ranged between 30 < 40 years old, the majority (80%) of them were female, near two thirds (62%) of them were married. More than one third (38%) of them were 10 < 15 years of experience, and all of them didn't attend any training program about thinking and decision making styles.

Table (2): Comparison among nurse managers' thinking style functions dimension throughout implementing problem solving strategy stages.

Functions Dimension	Pre strategy		Post strategy		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Legislative	14.48	5.01	22.14	2.62	18.70	2.14	13.35	0.00
Executive	12.38	4.33	21.46	2.64	18.62	3.59	7.99	0.00
Judicial	11.30	5.02	21.10	2.43	17.92	3.13	9.32	0.00
Total	38.16	10.50	64.70	4.45	55.24	6.425	19.77	0.00

Table (2) shows that there were significant statistical differences ($p \leq 0.05$) regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

Table (3): Comparison among nurse managers' thinking style levels dimension throughout implementing problem solving strategy stages.

Levels Dimension	Pre strategy		Post strategy		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Global	12.84	5.30	20.66	3.43	18.54	2.79	6.80	0.00
Local	14.54	5.34	20.38	3.25	18.90	2.92	3.00	0.05
Total	26.38	7.70	41.04	4.76	37.44	3.80	9.28	0.00

Table (3) demonstrates that there were significant statistical differences ($p \leq 0.05$) regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

Table (4): Comparison among nurse managers' thinking style leanings dimension throughout implementing problem solving strategy stages .

Leanings Dimension	Pre strategy		Post strategy		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Liberal	14.84	5.66	20.18	2.34	18.70	2.70	4.70	0.01
Conservative	15.74	4.16	21.34	2.94	19.90	3.23	3.20	0.04
Total	29.58	7.00	41.52	3.63	38.60	4.47	7.62	.001

Table (4) shows that there were significant statistical differences ($p \leq 0.05$) regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

Table (5): Comparison among nurse managers' thinking style forms dimension throughout implementing problem solving strategy stages .

Forms Dimension	Pre strategy		Post strategy		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Hierarchical	16.36	4.29	20.92	3.72	19.54	3.75	1.56	0.01
Monarchic	13.60	5.11	21.28	2.42	20.08	3.08	2.71	0.01
Oligarchic	11.86	4.96	21.68	2.89	20.62	3.88	2.61	0.00
Anarchic	12.30	4.83	21.36	3.04	18.30	4.08	13.66	0.00
Total	42.12	11.09	85.24	7.95	78.54	9.75	10.03	0.00

Table (5) reveals that there were significant statistical differences ($p \leq 0.05$) regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

Table (6): Comparison among nurse managers' thinking style scopes dimension throughout implementing problem solving strategy stages .

Scopes Dimension	Pre strategy		Post strategy		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Internal	11.28	6.38	21.42	2.09	18.64	3.33	11.89	0.00
External	13.00	5.14	22.36	1.52	20.70	3.22	5.64	0.00
Total	24.28	7.45	43.78	2.61	39.34	5.57	17.724	0.00

Table (6) reveals that there were significant statistical differences ($p \leq 0.05$) regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

Table (7): Comparison among nurse managers' total thinking styles mean score throughout implementing problem solving strategy stages .

Thinking style	Pre strategy		Post strategy		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Total thinking styles	160.52	65.52	276.28	35.32	249.16	41.83	19.81	0.00

Table (7) shows that there were significant statistical differences ($p \leq 0.05$) regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

Table (8): Comparison between participants' decision making style dimensions throughout implementing problem solving strategy stages .

Decision making style	Pre strategy		Post strategy		Follow up		Repeated measures ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F	P
Rational	15.90	4.62	22.74	1.80	21.04	2.85	9.37	0.00
Intuitive	13.64	4.21	22.68	1.87	20.88	3.71	27.98	0.00
Dependent	14.08	4.37	22.34	2.05	20.70	2.64	22.94	0.00
Avoidant	16.20	4.49	21.94	1.50	20.50	2.76	62.85	0.00
Spontaneous	15.34	4.39	22.40	1.76	21.14	2.98	68.06	0.00
Total Decision making	75.16	22.07	112.10	8.98	104.26	14.95	105.57	0.00

Table (8) reveals that there were significant statistical differences ($p \leq 0.05$) regarding all dimensions of decision making style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

Table (9): Correlation between decision making style and thinking style throughout implementing problem solving strategy stages.

	Time	Total decision making styles	
		R	p
Total thinking style	**Pre strategy**	.477**	.000
	Post strategy	.599**	.000
	Follow up	.667**	.000

Table (9) concluded that there were highly significant statistical correlations ($p \leq 0.001$) between total thinking style and decision making style throughout implementing a strategy stages.

VI.   DISCUSSION

Problem solving is related to a person's thinking skills, and the development of these skills is considered a prerequisite to nurses' professional practice.   Nurse Managers are faced with problem-solving challenges in a constantly changing and developing health care world. They also play an important role in creating a positive environment with a high quality of care which benefits both patients and health staff.

For this reason, nurse managers must have critical thinking and effective problem-solving skills in order to improve the patient care system, attain positive patient and institutional outcomes, and achieve institutional aims (**Mohammed et al., 2022).** So, the current study aimed to assess the effect of implementing a training strategy about problem solving and measuring its effect on thinking and decision-making styles of nurse managers.

Regarding nurse managers' thinking style functions dimension throughout implementing problem solving strategy stages,this current study result revealed that there were significant statistical differences regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.From the researcher point of view, this result may be due to value of problem solving strategy for enhancing dimensions of thinking style .

This result was accordance with **Lee , Shin, & Ko,(2020)** who conducted a study entitled " Influences of critical thinking disposition, nurse managers' transformation and transactional leadership style on nurses' competency with evidence based practice. "and found that there were significant statistical differences regarding all dimensions of thinking style and total thinking style.

Also, this result was supported with **Mahmoud,& Mohamed, (2017)** who conducted a study entitled " Critical thinking disposition among nurses working in public hospitals at port-said governorate" found that there were significant statistical differences regarding all dimensions of thinking style and total thinking style among participants.

In contradictory, with **Ludin, (2017)** who conducted a study entitled " Does good critical thinking equal effective decision-making among critical care nurses? A cross-sectional survey. Intensive and Critical Care Nursing "and found that there wasn't significant statistical differences regarding all dimensions of thinking style and total thinking style.

Regarding nurse managers' thinking style levels dimension throughout implementing problem solving strategy stages ,this current study result revealed that there were significant statistical differences regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy. From the researcher point of view, this result may be due to acquisition of sufficient knowledge about thinking style which lead to improve thinking level.

This result was accordance with **Kassam**,(**2015**) who conducted a study and found that there were significant statistical differences regarding all dimensions of thinking style and total thinking style level. In contradictory, with **Ocak, & Eğmir, (2016)**   who conducted a study entitled " The relationship between pre-service teachers" critical thinking tendencies and problem solving skills" and found that there wasn't significant statistical differences regarding all dimensions of thinking style and total thinking style level.

Regarding nurse managers' thinking style leanings dimension throughout implementing problem solving strategy stages, this current study result revealed that there were significant statistical differences regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre

strategy. From the researcher point of view, this result may be due to effective utilisation from this strategy by enhancing positive work environment and leaning dimensions of thinking.

This result was accordance with **Paarima, Ofei, & Kwashie, (2020) & Ofei, Paarima, Y., & Barnes, (2020)** who found that there were significant statistical differences regarding all dimensions of thinking style and total thinking style. Also, this result was supported with   who conducted a study entitled found that there were significant statistical differences regarding all dimensions of thinking style and total thinking style among participants.

Regarding nurse managers' total thinking styles mean score throughout implementing problem solving strategy stages, the current study showed that there were significant statistical differences regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy. From the researcher point of view, this result may be due to nurse managers were interested to share in training program and enhancing their thinking style. emphasize the importance of thinking skills to nurse managers.

This result was supported with **Patel, N., Baker, S. G., & Scherer, (2018)** who conducted a study entitled "Increases in thinking style after an online training program are associated with better decision-making" and found that there was a statistically improvement in total thinking style throughout implementing training program. Also, this result was in agreement with **Tambunan, (2019)** who conducted a study and found that majority of nurse managers had improvement in total thinking style.

Regardingparticipants' decision making style dimensions throughout implementing problem solving strategy stages, revealed that there were significant statistical differences regarding all dimensions of decision making style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy.

This result was accordance with **Camacho et al., (2020),**   who conducted a study entitled " A Conceptual Framework to Study the Implementation of Clinical Decision Support Systems " and found that there were significant statistical differences regarding all dimensions of decision making style and total thinking style . Also, this result was disagreement with **Mohamed.(2018)** who conducted a study entitled "Does good critical effective survey intensive and critical care nursing, decision-making thinking amongcriticalcarenurses?" and found that there weren't significant statistical differences regarding all dimensions of decision making style and total thinking style.

Regarding correlation between decision making style and thinking style throughout implementing problem solving strategy stages, the current study concluded that there were highly significant statistical correlations between total thinking style and decision-making style throughout implementing a strategy stage. This might be due to effective educational program for nurses which made an improvement of their problem-solving skills that reflected in the reduction of the level of nurses" making decisions, and the development of problem-solving skills is the core ability in nursing practice. In order to expand nurses" abilities in a specialized field, make nurses able to make decisions and apply knowledge to work settings.

This result was accordance with **Salami et al., (2017)** who conducted a study and found that there were highly significant statistical correlations between total thinking style and decision-making style.

VII.   CONCLUSION

This study was undertaken aimed to assess the effect of implementing a training strategy about problem solving and measuring its' effect on thinking and decision making styles of nurse managers. The study findings concluded that there were significant statistical differences regarding all dimensions of thinking style and total thinking style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy. There were highly significant statistical differences regarding all items of avoidant style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy. More than quarter of the participants avoids making important decisions until the pressure is on in the pre-intervention phase while improved in the post intervention phase to reach more than three quarters and there was some decline in the follow up phase. There were highly significant statistical differences regarding all items of spontaneous style throughout implementing a strategy stages with elevation in post strategy and follow up than pre strategy. One third of the participants making impulsive decisions in the pre-intervention phase while improved in the post intervention phase to reach more than two thirds and there was some decline in the follow up phase .There were significant statistical differences regarding all dimensions of decision making style and total thinking style throughout implementing a

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strategy stages with elevation in post strategy and follow up than pre. There was significant statistical relationship between thinking style, age group in post strategy, and with qualification in post strategy. There was significant statistical relationship between thinking style, and position in follow up.

Finally, there were highly significant statistical correlations between total thinking style and decision making style throughout implementing a strategy stages. This finding confirmed the research hypothesis which were "There is improvements of nurse managers thinking and decision making styles after implementing the problem solving training strategy".

VIII. RECOMMENDATIONS

Based on the results of the present study, the researcher came up with the following recommendations:

Conducting a regular workshop for nurse manager about decision making as needed.

Conduct regular meeting with staff nurses to identify problems early and manage it.

 Continuous application of needs assessment to recognize nurse manager regarding decision making.

Periodic assessment of knowledge and performance of nurse manager regarding decision making abilities and critical thinking.

Training program should be implemented on a longer period of time, with more emphasis on the application and practice of thinking style.

Future researches can be conducted:

Assess the relation of problem solving skills training strategy and its effect on nurse managers' self- efficacy and self-management.

Assess the relation of critical thinking and problem solving with productivity, and Performance

Assess the relation between decision making ability with commitment.

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