Educational Program for Nursing Management Staff about Green Management and its Effect on Patient Safety

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Abstract

Background: Green management become important part of our life, as it provides benefits to patients and staff, in a larger sense, to communities near and far and to unborn generations, and with no maleficence. **The aim of the study:** Was to assess the effect of nursing management staff about green management program on patient safety. **Research design:** Quasi experimental research design was used to conduct the aim of this study. **Setting:** The study was conducted in the Elaraby Hospital (ICU and inpatient department) affiliated to Menoufia, Egypt. **Subjects:** The subjects included in study consisted of two group's namely nursing management staff (60) and patients' groups (40). **Tools:** Three tools were used; (1) Green management Knowledge Questionnaire, it involved the nursing staff management socio demographic characteristics, green management knowledge questionnaire (2) Green management observation checklist and (3) Patient safety assessment questionnaire. **Results:** There was highly statistically significant positive correlations between total knowledge and total practices of nursing management staff at pre& immediately post and follow up (after 3 months) program phase. Highly statistically significant positive correlations are found between total knowledge and total patient safety at pre& immediately post and follow up (after3months) the program. As well, there are highly statistically significant positive correlations between Total practices and Total patient safety at pre& immediately post and follow up (after 3 months) the program .**Conclusion:** Improving nursing management staff knowledge ,practice about green management post program. **Recommendations:** Ongoing educational and training programs are needed for nursing management staff about green management and providing patient's education to improve their safety at Elaraby Hospital.

Key words: Green management, Patient safety

Introduction

Green organizations reflect the green stage of consciousness, which strives for harmony, tolerance and equality. Green organizations focus on empowerment to lift motivation and to create great workplaces. Green Organizations have a responsibility not only to investors, but also to management, employees, customers, suppliers, local communities, society at large, and the environment. Maintaining a green environment reflects a level of compassion and vigilance for patient safety that is as important as any other aspect of competent health care. At its broadest, green environment used to capture the whole set of values, issues and processes that medical organization must address in order to maximize the positive impacts of their activities and generate added medical, social and environmental value. Also used to refer to a framework for measuring

and reporting corporate performance against medical quality (**Ansoff, 2021**).

Green management has become a topic of interest in recent years. Issues of environmental damage, air pollution, flooding, clean water, unhealthy snacks, and many others have awakened the community to the importance of healthy living, i.e. the needs of environmentally friendly products and services. Green management is work activity to make inputs as raw materials and auxiliaries into outputs as goods and services by prioritizing the balance and synergy between economic, social, and environmental benefits (**Mutaminah & Siyatimah, 2020**).

Future historians of the late 20th and early 21st centuries may well mark the growth of environmentalism as one of the epochal transformations of the time. Governments, industries, and the public have come to understand the importance of sustainability and of environmental protection, and the necessary science, technology, and policy have evolved rapidly. The health care sector, which accounts for one-sixth of the United States economy, has come relatively late to environmental thinking, but the rise of "green health care" signals a major step forward (**Agan, Acar, & Borodin, 2020**).

Green management operates on at least three scales to enhance health benefits: local, community, and global. On the local scale, within the walls of a hospital, research facility, or clinic, green construction and operation can protect patients, workers, and visitors. As choosing safe cleaning agents or limiting the use of pesticides can reduce the potential for toxicity among those exposed. On the community scale, reducing the ecological footprint of a hospital reduces environmental hazards and protects natural resources and maintains patient safety. As linking a hospital to its community with pedestrian infrastructure and mass transit can reduce motor vehicle traffic and help achieve clean air. Reducing packaging in the hospital cafeteria or adopting biodegradable cutlery and plates can reduce the volume of waste sent to landfills. (**Link, & Naveh, 2019**).

On the global scale, green practices help steward scarce resources and reduce environmental degradation. As a hospital that purchases food or supplies from local sources reduces the need for long-distance transport of goods, thereby reducing the associated greenhouse gas emissions that contribute to climate change. (**Gotschol, Giovanni, & Esposito Vinzi, 2020**)

Significance of study.

After the exposure of the country's revolutions, especially the revolutions in Egypt and notable development and change for the better, It happened in many areas, especially in health care in all over the world, all of these stimulate the need and important of green management and important of patient safety to positive change toward the best, so that, green management is required because it is a vital part of the ability to successfully nourishing the quality of environment. Green management can be applied to all aspects of our lives (**Darnall, Jolley, and Handfield, 2018**).

Additionally, when the researchers contact with nursing management staff at study setting during practical training found that they don't use the concept of green management in their work. When using green management and patient safety this can be improve our peripheral surroundings and environment, and it can manage our mental and physical well-being. So this study was studied the educational program

for nursing management staff about green management its effect on patient safety.

Aim of study

The present study was conducted to assess the effect of nursing management staff about green management program on patient safety at Elaraby Hospital.

Research Hypotheses

There will be improving in nursing management staff knowledge and practice toward green management and will improve patient safety level after implementing the educational program.

Subjects and Method

Study design:

A quasi-experimental study design with pretest, posttest and follow up assessments was carried out in the study.

Study setting:

The current study was conducted at Elaraby Hospitals (**ICU and inpatient department**). : It was composed of separated medical building , its beds capacity was 300 patient beds at Medical departments .The Medical building consisted of 7 units divided into 4 critical unites (**ICU**)**.** 3 general medical units (**inpatient departments**) which contains all medical specialties **as**

Medical departments	No of units	Total no nurses	Selected no of nurses
ICU department	(4) units	35	All
Inpatient department.	(3) units	25	All
Total	**(7) units**	**60**	**60**

Medical Departments	No of units	Total no patients	Selected no of patients
-ICU department	(4) units	24	18
Inpatient department.	(3) units	33	22
Total	**(7) units**	**57**	**40**

Neurological, Surgical, Chest, Pediatric, Gynecology& Obstetrics, Ophthalmology& Dermatology etc..

Elaraby Hospital consisted of the two separated buildings; Medical and administrative, services, and stores building. unit, radiotherapy unit, CT scan unit, two atomic scan unit, outpatient pharmacy.

Subjects:

The subjects included in study consisted of two groups' namely nursing management staff and patients groups:-.

A) The nursing management staff group:

Included (60) all the available nursing management staff (Hospital director, assistant director, supervisors and head nurses) who were working in the above mentioned study setting having at least one year of job experience distributed as following

Table (A): Distribution of studied nursing management staff in the study setting (Medical departments) at Elaraby Hospital (n=60).

B) Patients group:

The patients group included in the study was selected by convenience sample who admitted to the study setting according to the following criteria (conscious, their age above 18 years and admitted for at least 7 days). The total number of patients was 57 patients but 6 patients

unconscious & 11 refused to participate in the study. So the final number of patients included in the study and treated in the above mentioned study setting was 40 patients distributed as following:-

Table (B): Distribution of studied patients in the study setting (Medical departments) at Elaraby Hospital (n= 40).

Tools of data collection:

Data for this study was collected by using three tools as a following:

Tool (I):-Green management Knowledge Questionnaire:

Developed by (**Cres well, 2014**) and modified by the researchers this tool aimed to assess nursing management staff knowledge about green management at work before, immediately, after and follow up implemented of educational program , **It included two parts:**

Part (1): Nursing staff demographic data like (age, education, years of experience …etc.).

Part (2): Green management Knowledge Questionnaire, It was included different questions to assess knowledge of nursing management staff about green management as (definition, characteristics, advantages, types basic elements, main objectives, green guide criteria for judging green hospitals, focus areas for green hospital design, green information technology in the field of nursing, benefits of knowledge management for nursing, advantages of cooperative nursing work, Important skills for cooperation and necessary skills for nursing leadership, nursing cultural characteristics that indicate the effectiveness of the hospital and beliefs come from different sources).

Scoring system

For answers in each question, scores were allocated as follows: (1) correct answer and (0) wrong answer, Total knowledge scores ranged from (0- 13) points. In this respect the level of nursing management staff knowledge was classified into 2 categories as the following:

- **Satisfactory knowledge** ($\geq$ 70 %.) was ranged from (8-13points).

- **Unsatisfactory knowledge** ($<70\%$) was ranged from (0-6 points).

Tools II: - Green management observation checklist:

Developed by (Cres well, 2014) and modified by the researchers this tool aimed to assess nursing management staff practice about green management at work before, immediately, after and follow up implemented of educational program, It will be include three sections :

Section (1) Nursing strategies for green management practice use in hospital settings, It consisted of four items contained 18 items, which are green practice regarding to management 5 items, Training and development of the staff 4 items, Performance management and green appraisal 4 items, Nurses empowerment and participation in green management 5 items.

Section (2) Nursing strategies for reducing incineration of medical waste, it composed of (9 items).

Section (3) Nursing strategies for reducing microbial levels on hard surfaces in health care (5 items).

Scoring system:

The questions were scored as "1" for done, and "zero" for not done .Total skills score was calculated as follows;

- **Competent level** (≥ 75%) was ranged from (23-32 points).

- **Incompetent level** (<75%) was ranged from (0-22 points).

Tools III: - Patient Safety assessment questionnaire:

It was developed by **(Agency for Healthcare Research and Quality. 2018)** and modified by the researchers to assess the level of patient safety; it consisted of two parts:

Part (1): demographic data like (age, education, years of experience …etc.).

Part (2): patient safety assessment questionnaire to assess patient safety, it will consisted of two items, green work environment 14 items & and quality of health care 11 items.

Scoring system:

For answers in each question, scores were allocated as follows:

(2) always ,(1) sometimes and (0) never .

Total scoring of patient quality of care:

Patient quality of care was scored as:-

Satisfactory : ≥ 80% of total quality scores = ≥ **62**

Unsatisfactory: < 80% of total quality scores = < **62**. **(Amin , 2012).**

Content validity:

These three tools were tested for validity (Face, Content) through distribution of the tool to a Jury of five Experts on field of Nursing Administration consisting of Seven Professors of Nursing Administration from Tanta University, Ain shams University and Menoufia University. Modifications were done in the light of their valuable comments such as modify some words to give the most appropriate meaning for the phrase which were not clear.

Some words to give the most appropriate meaning for the phrase which were not clear.

Reliability of tools:

The reliability was done by Cronbach's Alpha Coefficient test. The internal consistency of knowledge was 0.75, for practice tool was 0.71and for patients safety assessment tool was 0.83.

Ethical Considerations:

An official approval was obtained from the Dean of Faculty of Nursing and the hospital director of Elaraby Hospital through official letters explaining the aim of the study to request permission to conduct the study . Assured complete confidentiality of the obtained information, and the study would not affect in any way their training in the hospital, official permission for data collection and implementation of the program were obtained. Meetings were held between the researcher and staff nurses. The aim of the study was discussed with them. The time for data collection and program implementation were also determined based on their views, to gain their approval and cooperation.

Pilot Study

The revised questionnaires were piloted with 10 % form the subject (5) nursing management staff and (8) patients were included in the main study subject because there no modifications are required. To evaluate the effectiveness of the proposed data collection tools, and assess the feasibility of the study. In addition to estimating the time required to fill the different appendices that approximately were 30 minutes ranged for 10 minutes for green management knowledge questionnaire, 10 minutes for green management observation checklist and 10 minutes for patient safety assessment questionnaire.

Field work:

In this phase the educational program was initiated in January 2022 and continued for a period of two months. Program targets were nursing staff management working at Elaraby Hospital with least one year of experience. It was aiming to prepare and develop an educational program of the green management at work. Different instructional strategies, method of teaching, media and method of evaluation were selected to suit the learner's needs, and achieve the objectives and contents of the program. The teaching sessions were 14hours distributed as the follows: 7sessions, 2 hours for each session, achieved by using available resources, relevant contents and instructional strategies for each session. Different methods of teaching were used such as lecture, group discussion, and brain storming. Instructional media included, handout prepared by the researchers and distributed to participants in the first day of the program implementation.

- The subjects were divided in to 4 groups according to their departments, group were 14 nursing management staff and the other group were 20 nursing management staff and the other group were 15 nursing management staff and the other group were 11 nursing management staff. Green management staff program took about 10 days. The duration of each session was two hours depending on workload and including periods of discussion according to their achievement, progress and feedback. It started at (10.00) A.m. to (12.00) P.m. At the beginning of each sessions an orientation to the training and its aims took place. Feedback was given at the beginning of each session about the previous one and at the end of each session about the current session and program

situations given to participants to write their suggestion for alternative solutions.

- During evaluation phase, the impact of the educational program was evaluated (immediately post program phases), using the same tools which were used before the program.

During the period from May 2022 to Augest 2022 sufficient questionnaires for the number of nursing management staff and the patients within each unit were distributed (follow up phases) after three months of program implementation. And the data was analyzed and the results interpreted and clinical significance of findings were evaluated for comprehended discussion of the data analysis results of the study.

Statistical analysis:

Data entry and statistical analysis were done by using (SPSS) Version 22 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and Means and standard deviation and range of quantitative variables. Student t-test (t) was used for comparisons between two-independent quantitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the developed tool through its internal consistency. Statistical significance was considered at p-value <0.05 and highly significant at p-value <0.01. Correlation Coefficient (r) test was used to test the closeness of association between two variables.

Results:

Table (1): Shows that, more than half of studied nursing management staff (56.7%) their age between $30 < 40$ years old with Mean $\pm$SD (34.83$\pm$3.02). As regarding of working department about two thirds of them (65.0%)

were worked at critical ICU department. According to marital status most of nursing management staff (61.7%) were married. About two thirds of them (65.0%) were male. Half of them (50.0%) had 5<10 years of experience with Mean ±SD (7.60±1.52). As for their educational qualification, more than two fifth of them (43.4%) were studied at Associated degree in nursing, while, one quarter of them (25%) attended green management training courses; Majority of them (86.7%) attained '1' training course**.**

Table (2): Shows that, more than half of patient their age between 41-≥50 years old with Mean ±SD (38.75±4.36). Two thirds of them are males. Most of them are married. Two thirds of them have Intermediate education, while (5.0%) of them read and write. (65.0%) of them stay in hospital for 10 to 20 days with Mean ±SD (12.50±1.22). Half of them admitted to hospital once, whilst nearly one quarter of them (22.5%) admitted three times and more with Mean ±SD (1.70±0.84).

Figure (1): Illustrates that, there was highly statistical significant difference improvement of nursing management staff knowledge level throughout post and follow- up (after 3 months) program phases, which indicated that the program had an positive effect on improvement of nursing management staff knowledge level throughout immediately post program and follow up phases(after3 months) of the program compared with the preprogram phase; majority of nursing management staff (93.3% & 83.30%) had satisfactory knowledge level during immediately post program phase and follow up phase (after 3 months) respectively compared with pre-program phases.

Figure (2): Shows that, Majority of nursing management staff (91.7% & 85.0%) have competent total practice immediately post program phase and follow up (after 3 months) program phase more than preprogram phase (66.70%).

Figure (3): Clarifies that, nearly two thirds of the studied patients (62.5%) have high total level of safety immediately post program, more than one third of them (35.0%) have moderate level at follow up (after 3 months) phase, but more than one third of them (37.5%) have low level pre-program phase.

Table (3): Illustrates that, there was highly statistically significant positive correlations between total knowledge and total practices of nursing management staff at pre& immediately post and follow up(after 3 months) program phase .Highly statistically significant positive correlations are found between total knowledge and total patient safety at pre& immediately post and follow up(after 3 months) the program .As well, there are highly statistically significant positive correlations between Total practices and Total patient safety at pre& immediately post and follow up (after 3 months) the program .

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Table (1): Frequency distribution of nursing management staff regarding socio demographic characteristics (n=60)

Personal characteristics items	No	%
Age in years		
25 < 30	15	25.0
30 < 40	34	56.7
40 ≥ 50	11	18.3
Mean ±SD 34.83±3.02		
Working department		
Critical ICU department	39	65.0
Inpatient department	21	35.0
Marital status		
Married	**37**	**61.7**
Unmarried	23	38.3
Gender		
Male	39	65.0
Female	21	35.0
Years of experience		
1< 5	17	28.3
5< 10	30	50.0
10 ≥20	13	21.7
Mean ±SD 7.60±1.52		
Educational qualifications		
Diploma degree in nursing	18	30.0
Associated degree in nursing	26	43.4
Bachelor degree of nursing	14	23.3
Others	2	3.3
Attending training courses about green management		
Yes	15	25.0
No	45	75.0
If yes no. of training courses no=15		
1	13	86.7
2	2	13.3

Table (2): Frequency distribution of studied patients regarding their personal characteristics (n=40)

| Personal characteristics items	No	%
Age		
<20 -30	6	15.0
31-<40	13	32.5
41->50	21	52.5
Mean ±SD 38.75±4.36		
Gender		
Male	26	65.0
Female	14	35.0
Marital status		
Married	35	87.5
Unmarried	5	12.5
Educational level		
Illiterate	0	0
Read and write	2	5.0
Intermediate education	27	67.5
Bachelor's degree	11	27.5
Duration of stay in hospital:		
5-<10	14	35.0
10-20	26	65.0
Mean ±SD 12.50±1.22		
Number of hospital admissions		
1	20	50.0
2	11	27.5
≥3	9	22.5
Mean ±SD 1.70±0.84		
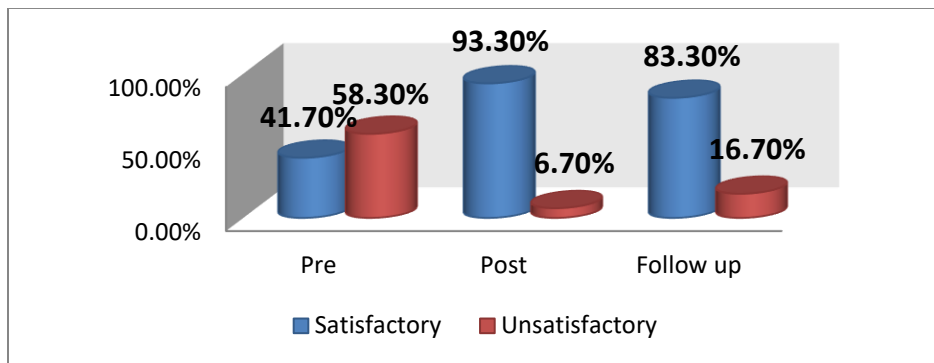
Figure (1): Knowledge levels about green management among nursing management staff through the program phases (n=60)
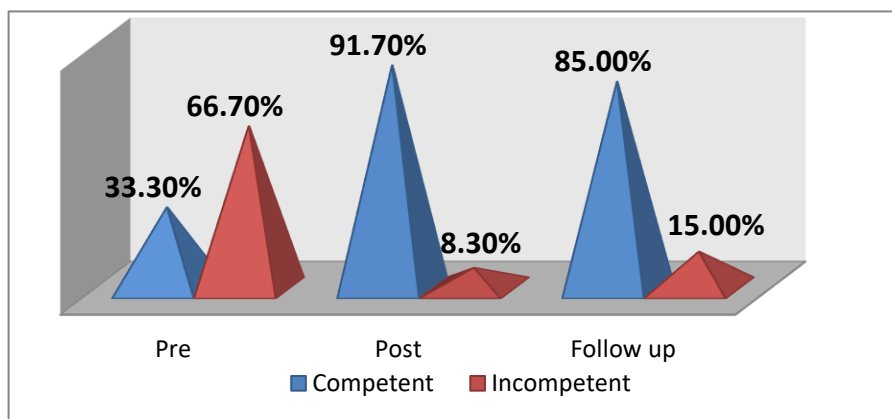

Figure (2): Percentage distribution of studied nursing management staff regarding their total practice levels through the program phases (n=60)
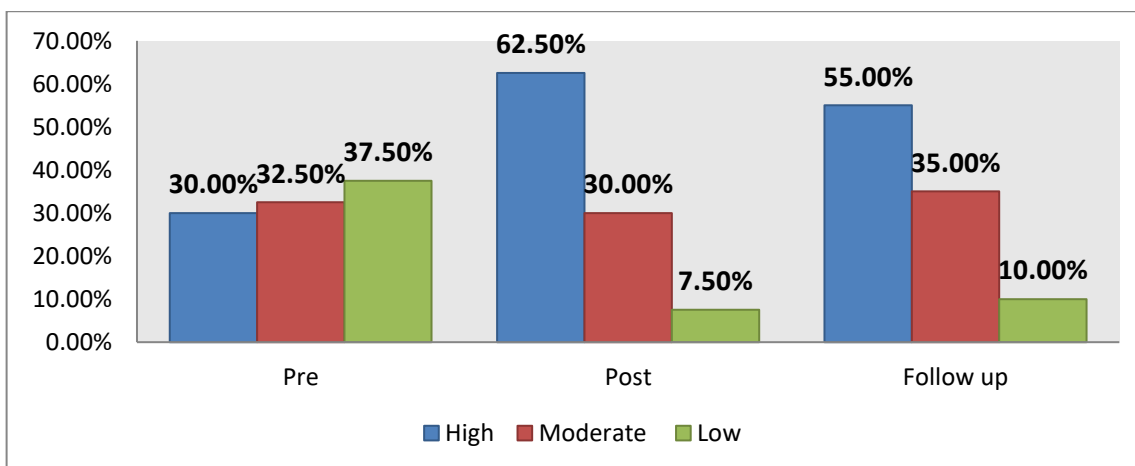

Figure (3): Percentage distribution of studied patients regarding total patients Safety levels as reported by them through program phases (n=40)

Table (3): Correlation between total knowledge, practice and patient safety, about green management through the program phases

Program phase	Study variables		Total knowledge	Total practices	Total patient safety
Pre Program	Total knowledge	R	1	.875	0.652
		p-value		.000**	.000**
	Total practices	R	.875	1	.748
		p-value	.000**		.000**
	Total patient safety	R	0.652	.748	1
		p-value	.000**	.000**	
Immediately Post Program	Total knowledge	R	1	0.508	.796
		p-value		.001**	.000**
	Total practices	R	0.508	1	0.527
		p-value	.001**		.001**
	Total patient safety	R	.796	0.527	1
		p-value	.000**	.001**	
Follow-up program	Total knowledge	R	1	.754	.896
		p-value		.000**	.000**
	Total practices	R	.754	1	.842
		p-value	.000**		.000**
	Total patient safety	R	.896	.842	1
		p-value	.000**	.000**	

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Discussion

Maintaining a safe environment reflects a level of compassion and vigilance for patient welfare that is as important as any other aspect of competent health care. The way to improve safety is to learn about causes of error and use this knowledge to design systems of care to make errors less common and less harmful when they do occur policymakers and providers have intensified their efforts to understand and change organizational conditions, components, and processes of health care systems as they relate to patient safety (**Darnall, Jolley, & Handfield, 2018).** Management or managers must pre-set green goals, targets, and responsibilities for their strategic management, corporate must should assess number of green incidents, use of environment responsibility, and successful communication of environmental policy within their scope of their operations for improving the performance (**Renwick , 2017**)

Green management is the organization-wide process of applying innovation to achieve sustainability, waste reduction, social responsibility, and a competitive advantage via continuous learning and development and by embracing environmental goals and strategies that are fully integrated with the goals and strategies of the organization. Green management defined as practices that produce environmentally friendly products and minimize the impact on the environment through green production, green research and development, and green marketing. Improved environment considered basic goals of green management, we believe that a more specific and extensive conceptualization is warranted (**Darnall, Jolley, and Handfield, 2018).**

Therefore, the aim of this study was to assess the educational program for nursing management staff about green management and its effect on patient safety through, assessing knowledge of nursing management staff about green management through program phases, assessing practice of nursing management staff about green management through program phases, assessing level of patient safety through program phases, designing and implementing educational program about green management at work, assessing the effect of green management educational program on patient safety through program phases.

Discussion of the study was presented in the following sequence; **The first part** was concerned personal data of studied subjects in the study; **The second part** was elaborate nursing management staff knowledge regarding green management through program phases; **The third part** was focus on nursing management staff practice about green management through program phases; **The fourth part** was focus on levels of patient safety through program phases; **The fifth part** was focus on Correlation between study variable through program phases; **and The sixth part** focus on relations study variable and their personal characteristics

The present study showed that, the distribution of personal data of the studied nursing management staff .About more than half of studied nursing management staff their age between 30 < 40 years old, as regarding to their gender about two third of them were male, as regarding of working department about two thirds of them were worked at critical ICU department, for their educational qualification more than two fifth of them (43.4%) were studied at Associated degree in nursing, and for their years of experience half of them had 5<10 years of experience.

This finding was consisted with **Billanes et al., (2018),** who conducted study about The

bright green hospitals case studies of hospitals' energy efficiency and flexibility in Philippines, and found that, half(50%) of participants nursing management staff their age between 30 < 40 years old and less than two thirds of them were worked at critical ICU department.

Concerning on studied patients personal characteristics, the present study showed that, more than half of patient their age between 41-≥50 years old. Two thirds of them are males and have Intermediate education. Most of them are married

The present study was in agreed with **Källman et al., (2022),** who conduct evaluation of the green cross method regarding patient safety culture and incidence reporting" and noted that, according to patient 58% aged 40-50. Participant's sexes 64% are males. And majority is married

The present study illustrated that, there was highly statistical significant difference improvement of nursing management staff knowledge level throughout post and follow-up (after 3 months) program phases, which indicated that the program had an positive effect on improvement of nursing management staff knowledge level throughout immediately post program and follow up phases(after3 months) of the program compared with the preprogram phase; majority of nursing management staff had satisfactory knowledge level during immediately post program phase and follow up phase (after 3 months) respectively compared with pre-program phase revealed in their study that all the participants had been worked as head of nursing unit for different durations; more than two fifth of participants had experience as head of nursing unit for 1 – 5 years.

The foregoing findings of the present study were consistent with **Tarkar, 2022,** who

reported in his study about Role of green hospitals in sustainable construction: Benefits, rating systems and constraints, and found that, there was highly statistical significant difference improvement of nursing management staff knowledge level. Also the current study was in harmony with **Ozdemir & Tuna (2022),** who conduct Green and Smart Hospitals: A Review in the Context of Indoor Air Quality (IAQ). Indoor Air Quality Assessment for Smart Environments and found that, majority of nursing management staff had satisfactory knowledge level.

The present study showed that, majority of nursing management staff have competent total practice immediately post program phase and follow up (after 3 months) program phase

The present study result was in the same with **Benzidia et al., (2021).** Who conduct a study about the impact of big data analytics and artificial intelligence on green supply chain process integration and hospital environmental performance and noted that, majority of participants have competent total practice immediately post program phase and follow up, also the current study was supported with **Jemai et al., (2020).** Who conduct environmental effect for a complex green supply-chain management to control waste, a sustainable approach.

The present study was in harmony with **Kamath et al., (2019)** who conduct engineering green hospitals, an Imperative for a sustainable future and noted that, there is a highly statistically significant difference between nursing management staff practice post educational compared to pre educational program.

The current study illustrated that there is a highly statistically significant difference between pre and immediately post program

related to all items. As well, a statistically significant difference exists between immediately post program and follow up (after 3 months) program phase related to all items. While the majority of nursing management staff reported done related to items (Supported actively environmental practice in hospital.) in immediately post program phase and follow up (after 3 months) program phase more than preprogram phase .

The present study was in agreement with **Garg & Dewan, (2022)**, who conduct green hospitals. In manual of hospital planning and designing and found that there is a highly statistically significant difference related to green management practice.

The present study clarifies that, nearly two thirds of the studied patients have high total level of safety immediately post program, more than one third of them have moderate level at follow up (after 3 months) phase, but more than one third of them have low level pre-program phase.

The present study was consistent with **Wahl et al., (2022),** who conduct Experience of learning from everyday work in daily safety huddles—a multi-method study and found that two thirds (65%) of patients have high total level of safety immediately post program, more than one third of them (37.0%) have moderate level at follow up (after 4 months), but more than one third of them (37.5%) have low level.

There is a highly statistically significant difference between their total patient safety pre and immediately post program phase with .As well, non-statistically significant difference is found between their total patient Safety immediately post program and follow up phase (after 3 months) .nearly two thirds of the studied patients have high total level of safety immediately post program phase, more than

one third of them have moderate level at follow up (after 3 months) phase, but more than one third of them have low level pre-program phase.

The present study was consistent with **Bentahar et al., (2022),** who conduct green supply chain taxonomy in healthcare: critical factors for a proactive approach and found that, there is a highly statistically significant difference between total patient safety post educational compare to pre education. Moreover the present study was in same opinion with **Garfield et al., (2022),** who conduct To What Extent Is the World Health Organization's Medication Safety Challenge Being Addressed in English Hospital Organizations'

Concerning on correlation matrix between total knowledge, total practice and total patient safety, toward green management, the present study illustrates that, there was highly statistically significant positive correlations between total knowledge and total practices of nursing management staff at pre& immediately post and follow up(after 3 months) program phase .Highly statistically significant positive correlations are found between total knowledge and total patient safety at pre& immediately post and follow up(after 3 months) the program .As well, there are highly statistically significant positive correlations between Total practices and Total patient safety at pre& immediately post and follow up (after 3 months) the program .

From researchers point of view this might be due to effective knowledge had good impact on practices that increase quality of patient safety. All this due to effective of education program.

The present study was in harmony with **Hines & Alexander, (2022)**, who conduct An Evidence-based Teaching Plan to Increase Awareness of Nurse Anesthetists to Patient Safety' and noted that, there was highly

statistically significant positive correlations between total knowledge and total practices of nursing management staff post educational compared to pre educational.

The present study was supported with **Tarkar, (2022), who found that,** there were highly statistically significant positive relation between total knowledge and total patient safety and total practices.

The present study was in consistent with **Alruwaili et al., (2022),** who conduct experiences, perceptions, and coping Patterns of Emergency Department Nurses with Occupational Stressors in Saudi Arabian Hospital' and noted that, there were highly statistically significant positive relation between the patients green work environment and total quality of health care.

Conclusion:

▪ There was highly statistically significant differences improvement of nursing management staff regarding to total knowledge about green management between pre and post program and between pre-program and follow up phase of program.

▪ There were the nursing management staff had poor knowledge (58.30%) about green management throughout preprogram and it improved by which (93.30%) of nursing management staff had adequate knowledge at post program and slightly decreased through follow-up to (83.30%).

▪ There was highly statistically significant differences improvement of nursing management staff regarding to total practice about green management between pre and post program and between pre-program and follow up phase of program.

▪ There were the nursing management staff had poor practice (66.70%) about green management throughout preprogram and it improved by

which (91.70%) of nursing management staff had adequate knowledge at post program and slightly decreased through follow-up to (85.00%).

▪ there was highly statistically significant positive correlations between total knowledge and total practices of nursing management staff at pre& immediately post and follow up(after 3 months) program phase .Highly statistically significant positive correlations are found between total knowledge and total patient safety at pre& immediately post and follow up(after 3 months) the program .As well, there are highly statistically significant positive correlations between Total practices and Total patient safety at pre& immediately post and follow up (after 3 months) the program .

Recommendations

1. Orientation program for newly graduated nurses should be established about policies and regulations in the departments through a member of safety committee and supervisor of the department.

2. Develop &disseminated policy and system of green management procedures that cover all aspects of safety to all health care team.

3. Make use of technology as information system that influence nursing practice and improve patient safety.

4. Hospitals should provide a safe environment to staff and patient by supporting green management system.

5. Encourage nurses to notify the safety committee about any potentially hazardous condition they may observe and require immediate attention and management.

6. Build good relationships based on their values, norms, behaviors, perceptions and culture improves on how the nurses view their work.

7. **Further research on suggested;** green management training programs, workshops and seminars for nursing staff to

refresh their knowledge, skills and practice related to green management and patient safety

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البرنامج التعليمي للهيئة الإدارية للتمريض عن نظام الإدارة الخضراء وتأثيرها على سلامه المريض

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أصبحت الإدارة الخضراء جزءًا مهمًا من حياة هيئة التمريض ، حيث أن فوائدها للمريض وفريق الرعاية الصحية كثيرة ، وتطبيق نظام الإدارة الخضراء في المستشفى يؤدي إلى تحسين جودة العمل وسلامة المريض . لذا هدفت الدراسة الي تقييم البرنامج التعليمي حول الإدارة الخضراء وتأثيرها على سلامه المريض ،وقد تم استخدام تصميم شبه تجريبي . وقد أجريت الدراسة في مستشفى العربي (قسم العناية المركزة وأقسام الداخلى) ،تكونت عينة الدراسة من (60) من أعضاء الهيئة الإدارية للتمريض وعدد (40) من المرضى المتاحين.و أظهرت نتائج الدراسة أن للبرنامج تأثير إيجابي على تحسين المعرفة لدى الهيئة الإدارية للتمريض حول الإداة الخضراء بعد البرنامج مباشرة وبعد ثلاث أشهر (93٪ و 83.30%) مقارنة بمرحلة ما قبل البرنامج. وايضا يوجد تحسن فى مستوى ممارسة الهيئة الإدارة للتمريض للإدارة الخضراء بعد البرنامج مباشرة وبعد ثلاث أشهر (91.7٪ و 85.0٪) مقارنة بمرحلة ما قبل البرنامج .وما يقرب من ثلثي المرضى الخاضعين للدراسة (62.5٪ و 55.00٪) يتمتعون بمستوى عالٍ من الأمان بعد البرنامج مباشرة وبعد ثلاث أشهر. كما تبين أن هناك إرتباط إيجابى بين معرفة وتطبيق الإدارة الخضراء وسلامه المريض فى مرحله ما بعد تطبيق البرنامج مباشره وبعد ثلاث أشهر مقارنة بمرحله ما قبل البرنامج . واوصت الدراسة بأن هناك حاجة إلى برامج تعليمية وتدريبية مستمرة للهيئة الإداريه للتمريض حول الإدارة الخضراء والمبادئ التوجيهية حول السياسات واللوائح للحفاظ على إجراءات الإدارة الخضراء.