Correlation between Nurses' Attitude toward 5S kaizen technique, its Implementation and their Perception of Psychosocial Safety Climate.

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Abstract:

Background: *5S kaizen technique, a lean approach to workplace organization, has gained attention lately as a possible way to raise the standard of government healthcare provided in low- and middle-income nations.* ***Aim of the study*** *to identify relationship between Nurses' Attitude toward 5S kaizen technique, its Implementation and their Perception of Psychosocial Safety Climate.* ***Settings:*** *This study was conducted in all the intensive care units (ICUs) at two hospitals namely: El-Agamy hospital and Sharq Elmadina Hospital. They are affiliated to the general secretariat of specialized medical centers.* ***Subjects:*** *All nurses working in the ICUs of the study settings (n=197) and who provide direct and indirect care to patients and Sample of equipment and supplies were included in the study these are crush cart, medication cupboards and supplies cupboards.* ***Tools:*** *Three tools were used in the study as follows:* ***Tool (1)*** *Visual Workplace Audit checklist of 5S for healthcare.* ***Tool (2)*** *Attitude of nurses toward implementation of 5S.* ***Tool (3)*** *Psychosocial Safety Climate scale.* ***Results:*** *illustrate that there was negative non statically significance correlation between nurses' attitude application implementation 5s kaizen technique for healthcare, while, there was positive non statically significance correlation between nurses' attitude and implementation 5s kaizen technique in preparation of crash cart for healthcare. In addition, there was positive non statically significance correlation between psychosocial safety climate and implementation 5s kaizen technique by studied nurses. Also, there was positive statically significance correlation between nurses' attitude and psychosocial safety climate as perceived by studied nurses.* ***Conclusion:*** *there was positive non statically significance correlation between psychosocial safety climate and application of 5s kaizen technique Also, there was positive statically significance correlation between nurses' attitude and psychosocial safety climate.* ***Recommendation:*** *Developing 5s kaizen technique training program for nursing staff to develop their planning skills to achieve high quality of patient care.*

Introduction

Work environment in patient care units is characterized by a full of different devices, supplies, equipment, and facilities in large quantities that are needed in patient care and kept in different places such as medication cupboards, supplies cupboards, crash carts, emergency medication, etc. (Ahlstrom, 2014), which enforce nurses to spend a considerable amount of time searching for the required devices and materials. These issues increase waste of the time at work, lead to loss of energy, and exhaustion, affect work productivity, quality of patient care, and ultimately reduce satisfaction among the nursing staff. Hence, workplace characteristic is considered one of the most effective factors in nursing staff safety and retention. (Hosseini et al., 2016).

Kaizen approach is known as Tian, which is an idea that originates from anyone who wishes to improve a current circumstance by quickly identifying a solution and noticing the difference, 5S is one of the kaizen approaches. (Flug JA, 2022). it is considered as a powerful organized technique in health care organization, It is defined as a system of the workplace that can be viewed as a set of guidelines developed to offer efficient and effective organization as well as a safe and productive work environment. (Abuzied Y,2021, Gupta S, 2015).

Japan International Cooperation Agency (JICA) has used 5S kaizen as part of its technical cooperation program to enhance the quality of healthcare services. Through collaboration protocols, JICA has aided various low- and middle-income countries, including Egypt. (Kanamori et al., 2016).

Workplace organized by 5S kaizen technique incorporate five dimensions namely Seiri, Seiton, Seiso , Seiketsu and Shitsike. Seiri (sort), defined as detecting and separating necessary and unnecessary items and disposing of the latter, Seiton (set in order), defined as neatly arranging the required materials for easy access, Seiso (shine), refers to discarding unwanted items and cleaning the objects, Seiketsu (standardization), refers to controlling and correcting the three previous steps at frequent intervals, and lastly, Shitsike (sustain), means By making it a habit to constantly follow to the first four S's, make 5S a way of life. (Hosseini et al.,2016, Jackson T, 2009).

In general, nurses experienced 5S kaizen technique as a beneficial practice that made it possible for them to talk about work-related activities in greater detail. Sometimes, though, nurses were less inclined to offer advice since there was little discernible progress being made in the workplace. The attitudes of nurses toward 5S kaizen varied throughout hospitals based on staffing numbers, managerial support, and accessible resources including infrastructure.. (Shatrov ,2021).

Successful implementation of this technique has many importance such as enhancing teamwork through everyone's participation in organizing workplace, identifying abnormalities, identifying different type of wastes and reduce it. In addition, nurses who have favorable attitude toward implementation of 5s technique, will improve the probability of optimal and consistent performance, lower the likelihood of accidents or unintended occurrences, build a good reputation, and progress in their career, improve productivities and efficiency of healthcare service, reduce the time at work, expenses, decrease turnover of healthcare providers and help to create safety climate for patients and providers (Young 2014).

Teoh & Kee (2020). Defined psychosocial safety climate (PSC) at work is a policy to protect employees' well-being from psychosocial threats. Therefore, psychosocial safety climate (PSC) embodies the role of nurses and the philosophy of job-related stress, and nurses' ability to focus on the psychological well-being of nurses against output requirements of the organization (Dollard, 2018).

Therefore, a psychosocial safety climate (PSC) is crucial for healthcare organizations as it precedes working conditions, allows staff to grow in

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their own capacities and become universally and skillfully proficient, promotes staff psychological health and safety, and provides protection against psychological hazards. (Mansour & Tremblay, 2018). Additionally, Julia Schulte- Braucks,(2019) found that support the health impairment of the nurses as well as the motivational pathway and further validate PSC's importance as an organizational resource capable of preventing job stress through higher resources and fewer demands.

The four main components of the psychosocial safety climate are as follows: management commitment, which measures how supportive and committed senior management is to stress prevention through involvement and commitment; management priority, which measures

Aim of the study

This study aimed to assess relationship between Nurses' Attitude toward 5S kaizen technique, its Implementation and their Perception of Psychosocial Safety Climate.

Materials and Method

Materials:

Research design: Descriptive- Correlational research design was used in this study.

Settings: This study was conducted at two hospitals namely: El-Agamy hospital and Sharq Elmadina Hospital. all the intensive care units (ICUs) were included in the study settings (n=13). El-Agamy hospital (n = 9 units)includes general intensive care unit ,post cardiac catheterization care unit, open heart intensive care unit ,cardiac care unit, surgical intensive care unit ,neonatal intensive care unit, intermediate adult care unit , intermediate pediatric care unit , pediatric intensive care unit, and Sharq Elmadina Hospital (n = 4 units) includes general intensive care unit ,post cardiac catheter care unit, open heart intensive care unit ,cardiac care unit .

Tools: Three tools were used in the study as follows:

whether management places an emphasis on employees' psychological well-being and safety over productivity targets; and organizational communication, which measures how well an organization listens to employee input regarding factors that affect psychological well-being. Organizational engagement is the degree to which all organizational levels actively consult and participate in matters pertaining to health and safety.(Berthelsen, H,2019)

Organizing the physical work space becomes a crucial feature of the nursing work environment which lead to reducing nurses' time, exhaustion, improves their accuracy, safety, management and productivity in the workplace. (Nouri et al., 2014).

Research Questions:

What is the relationship between Nurses' Attitude toward 5S kaizen technique, its Implementation and their Perception of Psychosocial Safety Climate?

Subjects:
This study included the following subjects and equipment.
A- Nurses:
All nurses working in the ICUs of the study settings and who provide direct and indirect care to patient were included the study (n=197).Their number amounted to: Elagamy hospital is 105 nurses and Sharq Elmadina hospital is 92 nurses.

B- Equipment and supplies

Sample of equipment and supplies were included in the study, specifically, crush carts n=13, medication cupboards n=13 and supplies cupboards n=13 available in the previously mentioned ICUs at the study setting.

Tool (1) Visual Workplace Audit checklist of 5S for healthcare

This tool was developed by Jackson,(2009), and adopted by the researcher to assess the level of implementation of 5S organizing technique by visual inspection of workplace. It consists of 25 items classified into five dimensions namely, sort (5 items), set in order (5 items), shine (5 items), standardize (5 items) and sustain (5 items). The researcher observed crash cart, medication cupboards and supplies cupboards. The result of the observation was scored as done (1) or not done (0). The total score ranged from 0 to 25.The scoring system was ranged from 0-8.32 indicated low level of organized workplace, the range from 8.33-16.66 indicated moderate level of organized workplace level range and the range from 16.67-25which indicated high level of organized workplace.

Tool (2) Attitude of nurses toward implementation of 5S

This tool was developed by Hutchins, (2006), and adopted by the researcher to assess of nurses' attitudes toward implementation of 5S kaizen in ICUs. It consists of 19 items and five open end questions. Nurses' response were measured on a 5-point Likert scale ranged from 1= strongly disagree, to 5= strongly agree. The total score ranged from 19 to 95. The scoring of type of nurses' attitude towards implementation of 5S technique in

Method

1. Approval for conducting the study was obtained from the Research Ethics Committee (REC), Faculty of Nursing, Alexandria University.
2. An official Permission for conducting the study was obtained from the Faculty of Nursing, Alexandria University.
3. Permission for conducting the study was obtained from the administrators of the study settings to collect the necessary data after explaining the aim of the study.
4. The study tools were translated into Arabic, and back to back translations were done.
5. The study tools were tested for their face and content validity by a jury composed of fiexpert

ICUs was as followed: negative attitudes was less than 60% and positive attitudes was more than 60%.

Tool (3) Psychosocial Safety Climate scale

This tool was developed by Inoue, (2021), and was adopted by the researcher to assess nurses' perception of Psychosocial Safety Climate. This tool consisted of 12 items classified into four dimensions namely, management commitment (3items), management priority of PSC (3items), organizational communication (3 items) and organizational participation (3items). Nurses' response were measured on a 5-point Likert scale ranged from 1= strongly disagree to 5= strongly agree. The overall score was ranged from 12 to 60, the range from 12<28 indicated low level of nurses' perception of psychosocial safety climate, range from 28<44 indicated moderate level of nurses' perception of psychosocial safety climate and range from 44-60 indicated high level of nurses' perception of psychosocial safety climate.

In addition, a socio demographic and work-related characteristics sheet was developed by the researcher to collect data about the study subjects including sex, age, marital status, educational qualification , years of experience in nursing and years of experience in the current department.

who were one professor, two assistant professors and one lecture of nursing administration, faculty of nursing Alexandria University and one professor of nursing administration, faculty of nursing, Damanhur University and necessary modification were done.

6. The study tools were tested for their reliability by using statistical test to measure the internal consistency using cronbach's alpha test, correlation of coefficient test. It was found as follows:

- Tool (1)Visual Workplace Audit checklist for 5S for health care was r= 0.646 because the pilot study done on specific of crush cart ,

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medication cupboard and supplies cupboard (n = 13)

- Tool (2) Attitude of nurses toward implementation of 5S was r= 0.860
- Tool(3) Psychosocial Safety Climate scale was r=0.949

7. A pilot study was carried out on 10% of total staff nurses from Emergency Intensive Care Unit of Elagamy hospital and Sharq Elmadina hospital (n= 20) that were excluded from the study sample. The pilot study was done to ascertain the relevance of the tool, , clarity and applicability of the tools, estimate the average time needed to collect the necessary data and identify the obstacles that might be encountered during data collection, so as to make necessary arrangement to deal with them. Based on the obtained data, necessary modifications were done.

8. Data collection for this study was conducted by the researcher through:

Ethical considerations:
- Written informed consent from the study subjects were obtained after an explanation of the aim of the study.
- Witness consent from head nurses for conducting the observation.

Statistical analysis
- After data were collected it was revised, coded, and fed to statistical software IBM SPSS version 25. The reliability of the tools was determined by Cronbach's alpha. Frequency tables and cross-tabulation were used to illustrate the results. Quantitative data were summarized by the arithmetic mean, standard deviation, and mean score percent. All statistical analysis was done using two-tailed tests and an alpha error of 0.05. A P-value less than or equal to 0.05 was considered to be statistically significant.

- **Descriptive statistical analysis:** included the mean with standard deviation, Median, minimum and maximum for the numeric data

(A) Observation by using tool 1. Visual Workplace Audit checklist of 5S for healthcare. It was conducted in the morning shift in six consecutive days from 18-4-2023 to 24-4-2023, first day was observed 5 units, second day was observed 4 units, third day was observed 4 units.

(B) Tools 2, 3 were hand-delivered to the study subjects at their study settings, after explaining the aim of the study. Each nurse was asked to return them back to the researcher after the time required from each nurse. Data collection took three months from 1-4-2023 to 30-6-2023.

9. After completion of data collection, the appropriate statistical analysis was adopted to carry out asset the relationship between Nurses' attitude toward 5S Workplace Organizing Technique, its Implementation, and their Perception of the Psychosocial Safety Climate.

- The subject participation in the study was on a voluntary base.
- Confidentiality of the data was maintained and the anonymity of the study subjects was assured.
- The subject's right to withdraw at any time from the study was assured.

while percent to describe the frequency of each category for categorical data.

- **B. Inferential statistical analysis:**

- **Pearson correlation test:** is a test that measures the statistical relationship, or association, between two continuous variables. It is known as the best method of measuring the association between variables of interest because it is based on the method of covariance. It gives information about the magnitude of the association, or correlation, as well as the direction of the relationship.

- **Independent Samples Test :**This test is used to measure the significant difference between the averages of two independent samples.

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- **One Way ANOVA (F):** The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups. And compares the means between the groups you are interested in and determines whether any of those means are statistically significantly different from each other. Specifically, it tests the null hypothesis:

$$H_O: \mu_1 = \mu_2 = \mu_3 = \cdots = \mu_k$$

Comparison between each variables and the socio demographic data

- **Mann Whitney test (Z) :** This test is used to compare the differences between two independent samples when the sample distributions are not normally distributed and the sample sizes are small

- **Kruskal Wallis test (H) :** This test is one of the non-parametric tests that is used as a generalized form of the Mann Whitney U test. It is used to test the null hypothesis which states that 'k' number of samples has been drawn from the same population or the identical population with the same or identical median.

- **A one sample t-test**: This test is used to test whether or not the mean of a is equal to some value.

Results:

Table (1) shows that less than two thirds of studied nurses (63.5 %) were female .Regarding nurse's age 73.6% of the studied nurses were in the age group from 20 to > 30 years. While, (2.0%) were in the age group from 50 to > 60 years and the mean scores of the age of studied nurses was (28.32±6.02).While, 57.4% of studied nurses were single and only (1.0%) of nurses were divorced. In relation to nurses' qualifications, slightly less than half of nurses (48.7%) held bachelor degree in nursing science. The same table shows that , half of

nurses (50.8%) had experience from 5 years to less than 10 years .and the lowest percentage of nurses (2.0%) had experience ranged from 15 years to less than 20 years .the mean scores of studied nurses' years of experience was (7.25±5.83). In relation to nurses years of experience in their current department table 1 shows that, the highest percentage of the nurses (60.4%) had experience less than 5 years and the lowest percentage of them (0.5%) had experience from 15 years to less than 20 years .and the mean scores of the nurses experience in the current department was (4.42±3.88).

Table (2) shows that 84.62% of the overall application of 5s kaizen technique for observed crash carts had high level of application of dimensions of 5s technique. While, 15.38%of crash carts had moderate level of overall application of dimensions of 5s technique. Regarding the levels of application of dimensions of 5s technique set in order, shines and sustains dimensions had high level of application 84.62%, 100% and 100% respectively, while sort and standardize dimensions had moderate level of application 100% and 92.31% respectively.

Table (3) illustrates that 61.54% of the overall application of 5s kaizen technique for observed medication cupboards showed that had moderate level of application of dimensions of 5skaizen technique. And 38.46% of medication cupboards had high level of overall application of dimensions of 5s kaizen technique. Regarding application of dimensions of 5s kaizen technique for medication cupboards, the highest percentage was assigned to the moderate level of performance of both sort and standardize dimensions (92.31% and 84.62% successively) and the high level of performance was assigned to shine dimension (84.62%).

Table (4) presents that 76.92%% of the overall application of 5s kaizen technique for the observed supplies cupboards had moderate level of application of dimensions of 5s kaizen technique. While, 23.08% of supplies cupboards had high level of overall application of dimensions of 5s kaizen

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technique. Moreover, the high level of application of dimensions of 5s kaizen technique was devoted to shine, standardize and sustain 61.54% ,69.23% and 53.85% respectively , while , the dimensions sort and set in order had moderate level of application 76.92% and 53.85% respectively.

Table (5) shows that the highest percentage (55.84%) of the overall nurses' perception of psychosocial safety climate was assigned to the high level. While, the least percentage (9.14%) was devoted to low level of psychosocial safety climate as perceived by the study nurses. Regarding nurses' perception of the dimensions of psychosocial safety climate the same table visualize that the highest percent was related to the high level (57.87 %) of organization communication dimensions as perceived by the study nurses .on the other hand, the lowest percentage (10.15%) was assigned to the low level of nurses' perception of organizational participation.

Table (6) shows that the majority (97.5%) of the studied nurses had positive attitude toward implementation of 5s kaizen technique at their work place.

Table (7) illustrates that there was positive statically significance correlation between overall nurses' attitude and overall nurses' perception of psychosocial safety climate scale and all dimensions of psychosocial safety climate namely management commitment, management priority, organizational communication and organizational participation as perceived by studied nurses (p= <0.001* r= 0.458* ,

p= <0.001* r= 0.377* p= <0.001* r= 0.365*, p= <0.001* r= 0.455*, p= <0.001* r= 0.433*) respectively.

Also, there was positive statically significance correlation between overall attitude and overall implementation of 5s kaizen technique, crash cart, supplies cupboard and medication cupboard of implementation of 5s kaizen technique (p= <0.001* r= 0.325*, p= <0.001* r= 0.293*, p= <0.001* r= 0.322*, p= <0.001* r= 0.322*) respectively.

In addition, there was positive statically significance correlation between overall psychosocial safety climate scale and overall implementation of 5s kaizen technique, crash cart, supplies cupboard and medication cupboard of implementation of 5s kaizen technique (p= <0.001* r= 0.483*, p= <0.001* r= 0.426*, p= <0.001* r= 0.474*, p= <0.001* r= 0.485*) respectively.

Table (8) demonstrates that there was no statically significance relationship between nurses' attitudes toward implementation of 5s kaizen technique and their demographic & work-related characteristics except qualifications F=2.970(0.033), nurses held masters degree had the highest mean score (80.50±5.97). As evident in this table there was no statically significance difference between nurses' perception of psychosocial safety climate scale and their demographic & work-related characteristics except nurses qualifications F=5.387(0.001).Nurses held three years high school diploma had the highest mean score (50.63±6.41).

Discussion

5S Kaizen technique is an approach to improve the quality of healthcare services. While implementation of 5S kaizen technique help in improving the work environment ,strengthen the teamwork, identifying different types of wastes and reducing them ,improving productivities and efficiency of healthcare services, reducing expenses, increasing satisfaction of clients. Also, 5s kaizen technique allows us to optimize work process. Succeed in 5s kaizen technique

implementation not only to improve the workplace but also to motivate and satisfy the staff members (Young, 2014; EL-Sherbiny, 2017; Flug JA, 2022).

Concerning the level of application of 5s kaizen technique for crash carts, findings of the present research revealed that the nurses have high level of application of 5s technique. While, they have moderate level of implementation of 5s technique for medication cupboards and supplies cupboards, regarding the correlation between

overall of nurses' attitudes and implementation of 5s kaizen technique, developing positive attitude and behavior of staff regarding applying the principles of the 5S management approach.. This study's finding may be related to nurses' qualifications, slightly less than half of nurses (48.7%) held bachelor degree in nursing science. This increased their willingness to work toward maintaining a better workplace. improving the workplace through 5S, feel better about themselves and their work, and they restore the self-discipline that is found in winning teams, also the 5S management method's implementation helped to raise staff motivation by changing attitudes and behaviors.. Enhances teamwork and engagement among nurses, increasing awareness and morale.

These results are in accordance with Karvounis & Nickolaos (2021) who found statistically significant improvements from the implementation of 5S kaizen technique in both quality and product cost for this facility. Also, EL-Sherbiny,(2017) conducted interviewers for hospital staff and found that application of the 5S Kaizen technique saved time, money, and effort, as well as decreased routine work-related stress and resource waste, according to the positive impressions and satisfaction of the healthcare staff members .

Regarding, the study finding revealed that the highest percentage of the overall nurses' perception of psychosocial safety climate was assigned to the high level represented in all dimensions. Nurses improved and maintain high level of psychosocial safety climate in the work area it is related to nurses had positive attitude toward implementation of 5s kaizen technique at their work place. In addition there was positive statically significance correlation between overall nurses' attitude and overall nurses' perception of psychosocial safety climate scale and all dimensions

of psychosocial safety climate namely management commitment, management priority, organizational communication and organizational participation as perceived by studied nurses.

Results of this study showed that all of the understudy factors (leadership, patient-centeredness, learning, communication, justice, teamwork and evidencebased practices) have a statistically direct and significant relationship with nurses' overall attitude towards safety climate in the general hospital

In this respect, Hall (2013) concluded that related to high safety performance can maintain higher level of job satisfaction in an environment, and enhance nurses' attitude, where they feel that their mental health is as important as their productivity

From ongoing discussion, it can be noted that overall application of 5s kaizen technique for observed crash carts had high level, medication cupboards and supplies cupboards had moderate level of application of dimensions of 5s kaizen technique, studied nurses had positive attitude toward implementation of 5s kaizen technique at their work place. And a statically significance correlation between overall nurses' attitude and overall nurses' perception of psychosocial safety climate. These finding were enhanced positive impact of nurses' attitude on application of 5s kaizen technique and nurses' perception of psychosocial safety climate at workplace.

In this respect Srinivasan, (2012) The study's application of 5S effectively raised employee safety awareness. This study addressed these worries and offered statistical proof that 5S improves the safety environment for factory workers. It also improved cycle time, floor area usage, and inventory holdup.5-SThis contributed to raising the safety climate questionnaire's "work environment" score. Because of these

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enhancements, the overall safety climate was positively altered in all four dimensions, resulting in a significant rise.

Conclusion :

The current study highlighted several important conclusions that the level of applying 5s kaizen technique was as the following achieves crash carts had high level of application of 5s technique .While, the medication cupboards and supplies cupboards had moderate level of application of 5s kaizen technique. Likewise, most of studied nurses had positive attitudes toward implementation of 5s, and more than two third of them had high level of psychosocial safety climate. The current study revealed that there was non statically significance correlation between nurses' attitude and application of 5s kaizen technique , supplies cupboard and medication cupboard perceived by Visual Workplace Audit checklist of 5Sfor healthcare while, there was positive non statically significance correlation between nurses' attitude and crash cart application of 5s kaizen technique for healthcare In addition, there was positive non statically significance correlation between psychosocial safety climate and application of 5s kaizen technique Also, there was positive statically significance correlation between nurses' attitude and psychosocial safety climate.

Based on the findings of the present study, the following recommendations are suggested to increase the level of implementation of 5s kaizen technique on nurses' attitude and psychosocial safety climate.

Recommendation:

- Creat and implement change strategies that enhance nurses' implementation 5s kaizen technique.
- Arrange and conduct a training program to develop nurses 'skills in implementation 5s kaizen technique.
- Arranging for series of workshops and training program to head nurses to explain the concept, importance and how to implementation 5s kaizen technique.
- Teach the nursing the concept, importance and how to implementation 5s kaizen technique to improve nurses' attitude toward implementation and their Perception of Psychosocial Safety Climate.

Table (1): Distribution of nurses according to their demographic & work- related characteristics (N=197

Demographic and work-related data	Frequency (N=197)	Percent
Sex		
▪ male	72	36.5
▪ female	125	63.5
Age		
▪ 20-<30	145	73.6
▪ 30-<40	42	21.3
▪ 40-<50	6	3.0
▪ 50-<60	4	2.0
Min. – Max.	20 -56	
Mean ± SD.	28.32±6.02	
Marital status		
▪ Single	113	57.4
▪ Married	79	40.1
▪ Widowed	3	1.5
▪ Divorced	2	1.0
Qualifications		
▪ Three years high school diploma	16	8.1
▪ Two years after high school diploma	81	41.1
▪ Bachelor degree	96	48.7
▪ Masters	4	2.0
Years of experience in nursing		
▪ < 5 years	56	28.4
▪ 5- < 10 years	100	50.8
▪ 10- < 15 years	26	13.2
▪ 15- < 20 years	4	2.0
▪ ≥ 20 years	11	5.6
Min. – Max.	1month – 36 years	
Mean ± SD.	7.25±5.83	
Years of experience in the current department		
▪ < 5 years	119	60.4
▪ 5- < 10 years	58	29.4
▪ 10- < 15 years	15	7.6
▪ 15- < 20 years	1	0.5
▪ ≥ 20 years	4	2.0
Min. – Max.	1month – 24 years	
Mean ± SD.	4.42±3.88	

Table (2): Levels of nurses application of kaizen technique for crash carts (N=13)

variables	levels	Frequency	Percent
Sort	low	0	0.00%
	Moderate	13	100.00%
	High	0	0.00%
Set in order	low	0	0.00%
	Moderate	2	15.38%
	High	11	84.62%
Shine	low	0	0.00%
	Moderate	0	0.00%
	High	13	100.00%
Standardize	low	0	0.00%
	Moderate	12	92.31%
	High	1	7.69%
Sustain	low	0	0.00%
	Moderate	0	0.00%
	High	13	100.00%
Overall level of application of 5s kaizen technique for crash carts	low	0	0.00%
	Moderate	2	15.38%
	High	11	84.62%

Table (3): Levels of application of 5S kaizen technique for Medication cupboards (N=13).

variables	levels	Frequency	Percent
Sort	low	1	7.69%
	Moderate	12	92.31%
	High	0	0.00%
Set in order	Low	0	0.00%
	Moderate	8	61.54%
	High	5	38.46%
Shine	low	0	0.00%
	Moderate	2	15.38%
	High	11	84.62%
Standardize	low	0	0.00%
	Moderate	11	84.62%
	High	2	15.38%
Sustain	Low	0	0.00%
	Moderate	4	30.77%
	High	9	69.23%
Overall level of application of 5skaizen technique for Medication cupboards	low	0	0.00%
	Moderate	8	61.54%
	High	5	38.46%

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Table (4): Levels of application of

5S kaizen technique for supplies cupboards (N=13

variables	levels	Frequency	Percent
Sort	Low	3	23.08%
	Moderate	10	76.92%
	High	0	0.00%
Set in order	Low	1	7.69%
	Moderate	7	53.85%
	High	5	38.46%
Shine	low	0	0.00%
	Moderate	5	38.46%
	High	8	61.54%
Standardize	low	0	0.00%
	Moderate	4	30.77%
	High	9	69.23%
Sustain	low	0	0.00%
	Moderate	6	46.15%
	High	7	53.85%
Overall level of application of 5s kaizen technique for Supplies cupboards	low	0	0.00%
	Moderate	10	76.92%
	High	3	23.08%

Table (5): Levels of Psychosocial Safety Climate as perceived by study nurses (N=197).

Psychosocial Safety Climate dimensions	levels	Frequency	Percent
Management commitment	low	31	15.74%
	Moderate	72	36.55%
	High	94	47.72%
Management priority	low	48	24.37%
	Moderate	63	31.98%
	High	86	43.65%
Organizational communication	low	15	7.61%
	Moderate	68	34.52%
	High	114	57.87%
Organizational participation	low	20	10.15%
	Moderate	73	37.06%
	High	104	52.79%
Overall level of nurses' perception of Psychosocial Safety Climate	low	18	9.14%
	Moderate	69	35.02%
	High	110	55.84%

Table (6): Studied nurses' attitudes towards implementation of 5s kaizen technique (N=197)

Variables	levels	Frequency	Percent	Mean score percent
	Positive	192	97.5%	

Table (7): Correlation between nurses' attitude, toward implementation of 5S kaizen technique and their perception of Psychosocial Safety Climate scale (n= 197).

		Overall attitude	Management commitment	Management priority	Organizational communication	Organizational participation	Overall Tool3Psychosocial Safety Climate scale
Management commitment	r	0.377*					
	p	<0.001*					
Management priority	r	0.365*	0.814*				
	p	<0.001*	<0.001*				
Organizational communication	r	0.455*	0.666*	0.674*			
	p	<0.001*	<0.001*	<0.001*			
Organizational participation	r	0.433*	0.656*	0.632*	0.731*		
	p	<0.001*	<0.001*	<0.001*	<0.001*		
Overall Psychosocial Safety Climate scale	r	0.458*	0.904*	0.904*	0.860*	0.843*	
	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	
Implementation of 5s technique for Crash cart	r	0.426*	0.222*	0.245*	0.329*	0.248*	0.293*
	p	<0.001*	0.002*	0.001*	<0.001*	<0.001*	<0.001*
Implementation of 5s technique for Supplies cupboard	r	0.474*	0.251*	0.263*	0.359*	0.274*	0.322*
	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*
Implementation of 5s technique for	r	0.485*	0.250*	0.256*	0.359*	0.284*	0.322*

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Medication cupboard	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*
Overall implementation of 5s kaizen technique	r	0.483*	0.253*	0.263*	0.363*	0.280*	0.325*
	p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*

r: Pearson coefficient   *: Statistically significant at p ≤ 0.05

Table (8): **Relationship between Socio-demographic & work related characteristics, attitudes of nurses' toward implementation of 5s and psychosocial safety climate scale (n = 197).**

Socio-demographic data	Attitudes of nurses' toward implementation of 5Stechnique	Psychosocial Safety Climate Scale
	Mean ± SD.	Mean ± SD.
Sex		
• male	78.00±9.07	44.13±9.57
• female	76.95±9.81	43.24±10.13
Test of sig.(p)	T=0.742(0.459)	T=0.602(0.548)
Age		
• 20-<30	77.14±9.53	43.38±9.90
• 30-<40	77.40±10.14	43.64±9.63
• 40-<50	80.67±8.24	45.83±12.37
• 50-<60	78.75±6.40	46.00±13.19
Test of sig.(p)	F=0.291(0.832)	F=0.200(0.896)
Marital status		
• Single	77.04±8.88	43.07±9.18
• Married	77.62±10.67	44.18±10.82
• Widowed	81.33±4.62	41.00±15.72
• Divorced	76.50±0.71	51.00±4.24
Test of sig.(p)	F=0.237(0.871)	F=0.632(0.595)
Qualifications		
• Three years high school diploma	79.81±9.13	50.63±6.41
• Two years after high school diploma	79.10±8.67	44.89±8.33
• Bachelor degree	75.30±10.09	41.20±10.98
• Masters	80.50±5.97	45.25±7.54
Test of sig.(p)	F=2.970(0.033)*	F=5.387(0.001)*
Years of experience in the current department		
• < 5 years	76.49±9.72	43.59±9.59
• 5- < 10 years	78.79±9.24	43.38±9.95
• 10- < 15 years	78.33±10.31	45.73±11.81
• 15- < 20 years	81.00± ——	24.00± ——
• ≥ 20 years	76.75±5.38	42.25±10.97
Test of sig.(p)	F=0.651(0.627)	F=1.180(0.321)
Years of experience in nursing		
• < 5 years	77.38±8.19	45.39±8.79
• 5- < 10 years	76.59±10.46	42.61±9.99
• 10- < 15 years	77.65±9.55	40.77±10.75
• 15- < 20 years	84.25±6.40	51.25±4.57
• ≥ 20 years	80.64±7.28	46.73±11.67
Test of sig.(p)	F=1.015(0.401)	F=2.155(0.076)

T: Independent Samples Test   F: One Way ANOVA   *: Statistically significant at p ≤ 0.05

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