

Social Media- Assisted In-Services Training Instructional Guidelines on Nurse's Performance regarding Bone Marrow Transplant Recipients

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Abstract

Background: A number of malignant and nonmalignant medical problems, frequently in severely ill patients, demand for the advanced therapeutic technique known as a bone marrow transplant. To offer patients with high-quality care following bone marrow transplants, the nurses required knowledge and practice. **Aim:** This study aimed to determine the effect of social media-assisted in-services training instructional guidelines on nurses' performance regarding bone marrow transplant recipients. **Research design:** A quasi-experimental design was utilized to achieve the aim of this study. **Setting:** The study was conducted at an outpatient clinic Oncology Institute affiliated with Sohag City, Egypt. **Subject:** A convenient sample of (50)nurses were included. **Tools:** a structured interview Questionnaire tool that included **Tool I:** Structured interviewing questionnaire which consisted of two parts; Part I: Personal data, part II: Nurses' knowledge, and **tool II:** Nurses' reported practices (pre and post). **Results:** This study found those nurses' reported practices, and knowledge had all improved statistically respectively pre and post-social media-assisted in-services training instructional guidelines. **Conclusion:** The current study concluded that social media-assisted in-service training instructional guidelines regarding bone marrow transplant recipients have a positive effect on improving nurses' knowledge and reported practices. **Recommendation: Provide** continuous in-service training instructional guidelines regarding bone marrow transplant recipients to nurses in different healthcare settings.

Keywords: social media- In-services training, Instructional guidelines, Bone marrow transplant

Introduction:

The life-saving procedure known as bone marrow transplantation (BMT) is now available for many fatal conditions. BMT has experienced quick growth and ongoing technological progress during the past 20 years (Daikeler and Hirano, 2019). Felfy, et al. (2014) defined hematopoietic stem cell transplantation as the transplantation of multipotent hematopoietic stem cells, which are often taken from bone marrow, peripheral blood, or umbilical cord blood.

The two main types of hematopoietic stem cell transplantation (HSCT) are allogeneic (Park, 2015), which is a more complicated process in which a patient receives the stem cell graft from a healthy person, and autologous (Felfy, 2014), in which a patient contributes his or her own bone marrow stem cells. Only patients with illnesses that are life-threatening undergo hematopoietic stem cell transplantation because it is still a dangerous procedure with multiple possible side effects.

With the procedure's success rate rising, it has been used to treat autoimmune diseases and inherited skeletal dysplasia, most notably malignant infantile osteoporosis, in addition to cancer (Hashemi, 2015). Patients who are near the end of their life or have chronic illnesses can live longer thanks to stem cell transplantation. Since the country's first stem cell transplant in 1968, which was made possible by scientific research and medical technology, this technique has improved significantly (Mendes, 2019).

Social media, whose definition is expanding and always changing, is used by billions of people worldwide. On a professional level, healthcare providers use social media to advance professionalism, raise individual awareness, provoke patients, argue healthcare rules and practice issues, encourage healthy behaviors, and disseminate health information to the community. The term typically refers to Internet-based tools that enable people and societies to share

information, ideas, images, and other content (Ventola, 2014).

Nursing is a constantly evolving profession, making it necessary to participate in in-service training for nurses. Instructional guidelines for in-service training are defined as learning activities that are formal or informal and work-related and provided for employed professionals, paraprofessionals, and other practitioners through opportunities or is a successful staff development effort, where experts are trained in their work with others to obtain new knowledge, enhanced skills, more effective, efficient, and competent service in various fields and to differ. The best nursing care can only be provided in a setting where nurses are kept up to date on new advancements through in-service training, which should be viewed as an essential component of the work (Fauer et al, 2019).

Life-sustaining care, specialized technical care, and extensive pre-discharge education for patients and their families on subjects like medications, chemotherapy, bone marrow transplant restrictions, lab results, catheter care, and the importance of follow-up are all basic nursing responsibilities for these patients. They also support and counsel other nurses who work in the medical field (Diezn, et al., 2017).

To prevent exposing patients to bacterial pathogens, nursing staff who care for BMT patients should regularly practice good hand hygiene. Additionally, precautions for patients who have been exposed to certain contagious pathogens, such as MRSA and VRE, as well as instructions for visitors in situations when there is diarrhea or a respiratory illness (Oliansk et al., 2017).

To work safely and competently at all times, nurses should be held to professional and ethical obligations to maintain current knowledge and skills in the field of bone marrow transplantation (Royal College of Nursing, 2019). Thus, one of the primary goals of the infection control program was to educate people about infection prevention and control, especially in the healthcare system where nurses make up the majority of employees (WHO, 2022).

Significance of the study

In south Egypt's cancer institute, there were 15 documented cases of bone marrow transplant recipients between 2016 and 2018. Bone marrow (BM) has long been used for medicinal purposes, and according to McCann (2016), BM from hunted animals may have provided Homo sapiens with nutrient-rich nutrition during their evolution. The middle of the nineteenth century saw the first acknowledgment of it as the principal hematopoietic organ in adult life and the origin of the circulating blood cells (Schmajuk et al., 2019). To offer those patients with high-quality care and reduce post-transplant problems, the nurses needed training and practice.

Aim of the study:

The study aims to determine the effect of social media-assisted in-service training instructional guidelines on nurse's performance regarding bone marrow transplant recipients through the following objectives:

- 1- Evaluate nurse's knowledge and reported practices regarding bone marrow transplant recipients
- 2- Create and put into practice social media-assisted training instructional guidelines that are tailored to the requirements of nurses.
- 3- Evaluate the impact of the training instructions supported by social media.

Research hypothesis:

- In-service training instructional guidelines are expected to improve nurses' knowledge
- In-service training instructional guidelines expected to improve nurses' practice

Design:

A quasi-experimental design was utilized to achieve the aim of this study

Setting:

The study was conducted at an outpatient clinic Oncology Institute affiliated with Sohag City.

Subjects:

A convenient sample of (50) nurses were included.

Sample size:

According to the following equation, fifty nurses would make up the necessary sample size.

$$n = \frac{t^2 xp (1 - p)}{M^2}$$

n = necessary sample size, t = 95% confidence level, p = estimated population, and m = 5% error margin. In the previously chosen settings, a convenient sample of 50 nurses was included.

Tools of data collection:

Data were collected using the following tools: **interview questionnaires that cover the following parts:**

The tool I: -knowledge assessment tool: It was comprised of two parts:

Part (I): Personal data of the nurses which include such as Age, gender, education level, years of experience, job description, and prior training experience in the treatment of patients having bone marrow transplantation. Ten (10) point multiple-choice questions were present.

Part (II): Nurses' Knowledge Assessment Sheet: The purpose of this section, which was developed by the researchers after reviewing the pertinent literature (Lima, & Bernardino, 2014), is to evaluate nurses' knowledge of bone marrow transplantation before and after the implementation of instructional guidelines, including the following topics: definition, sources of stem cells, types of donors, indication, complication, drugs, precaution, and nursing care of the patient in the bone marrow transplantation unit, such as caring for catheters, caring for skin, and caring for mouth. There were the following items: Ten true or false, fourteen multiple-choice, and three open-ended questions were included in the general knowledge section related healthy diet.

Scoring system of nurses' knowledge: Two levels of scoring for questions were as the following:

One point was awarded for the correct response. Don't know or the wrong response received a score of 0. Nursing knowledge was scored out of a possible 34 points in two levels: 60% of the total score is satisfactory for

knowledge. 60% of the total score is unsatisfactory.

Tool II: Nurses' reported Practice: This tool was utilized both before and after the designed instructional guidelines were put into practice to assess the impact of the designed nursing care on nurses' practice. This measure, which will be created by the researcher after examining the literature to gauge the critical care nurses' proficiency with BMT, was inspired by Bhatia, & Bhatia (2011) and Goodwin (2015). It includes the following things.

1. Washing your hands. There were eleven steps total.
2. Practicing oral hygiene. There were eleven steps total.
3. Putting on and taking off safety gloves. There were thirty steps total.
4. Donning and taking off the gown. There were ten of them.
- 5- There were ten steps involved in caring for a catheter.

The scoring system for nurses' practice was as follows: -Done practices correctly scored one point or done practices wrongly scored zero points. It was then classed into two levels: Satisfactory of the total score 60% and Unsatisfactory of the total score 60%.

Tools validity:

Three experts from faculty members in the fields of nursing and medicine tested and evaluated the instruments in this study to see if they met the standards for the reliability of data collection and content validity. There was representation from a variety of academic fields and nursing specialties, including community health nursing and medical and surgical nursing. Experts asked respondents whether they agreed or disagreed with the face validity of the instruments to determine their relevance, clarity, and completeness.

Tools reliability:

By using the Cronbach alpha test, the reliability of suggested tools was evaluated. The knowledge score was 0.84, while the reported practices score was 0.89.

Pilot study:

In order to determine how long it would take to complete the tools and to validate that they were clear and appropriate, the pilot study used 10% (5 nurses) of the overall sample.

Ethical Considerations:

Before data collection, the study's objective was disclosed to participants, and nurses were told of its aim. They were given the chance to decline, and they were made aware that they might leave the study at any time without providing a reason. They were also informed that it was a requirement of ethics that the data they contributed be kept private and used only for research.

Fieldwork:

Fieldwork began in December 2022 and continued through April 2023. To perform the pre- and post-test, the researchers made two visits per week for two weeks on Saturdays and Mondays from 10:00 a.m. to 12:00 p.m. The tools took an average of 35 to 40 minutes to complete. The remaining instructional guidelines were created using social media platforms including Facebook, Telegram, and WhatsApp.

Social media instructional guidelines construction:

It consisted of three phases, the preparatory phase, the implementation phase, and the evaluation phase.

Preparatory phase:

The following tasks were carried out during the phase of preparation that came before this study: An official letter seeking permission to conduct the study was submitted to the management of the previously chosen settings by the dean of the faculty of nursing. The researchers then met nurses who agreed to participate in the study and explained the aim and objective of the study; following this, oral approval consent was obtained from them prior to the application of the instructional guidelines method. This letter included the aim of the study and the data collection tools to get permission and cooperation in the collection of data.

Reviewing past and present research on the various facets of the subject in books, papers, publications, magazines, and studies associated with it was how assessment utilizing the pre-test tool was carried out.

Implementation phase:

The study sample primarily used Facebook, Telegram, and WhatsApp for social media, thus the researchers used those platforms to contact all participants. They then sent the data or information via those platforms. Text, video, and brochure implementation of the instructional guidelines. The information offered a general review of HSCT, including its definition, types, sources, contributing variables, and difficulties. It also included theoretical sections and films demonstrating techniques or measures that should be taken before to, during, and after the operation.

Evaluation phase:

In order to gauge the impact of the instructional guidelines using the same preprogram tools, a post-test was administered to nurses one month following the completion of the guidelines.

Statistical Design:

The statistical package for social sciences (SPSS), version 22, was used to examine the data. Numbers and percentages were used to present qualitative data. Each demographic data's mean and standard deviation, as well as the results of the t-test and Chi-square test, were recorded. Pre- and post-test comparison; $P < 0.05$ was considered statistically significant and p value < 0.01 considered highly significant.

Result:

Table 1 demonstrates that 88% of nurses were female, 72% of them were between the ages of 18 and 25 years old, and had a diploma education level. Around 28% of the nurses under study received training in bone marrow transplantation, while the majority (72%) did not.

Table 2: This table demonstrated that nurses' knowledge of scoring increased from 18.434.62 to 32.662.34, with a statistically significant difference between nurses'

knowledge levels before and after the application of instructional guidelines being found at P value <0.01.

Figure (1): This shows that the knowledge level of the studied nurses has improved after implementing instructional guidelines and shows also, that 30% of them had a satisfactory level of knowledge of pre-instructional guidelines that improved to 100% post-instructional guidelines implementation.

Table (3): This table demonstrates a highly statistically significant difference between

nurses' reported practices before and after receiving bone marrow transplantation instruction with a p-value <0.001.

Figure (2): Shows that 86% of the studied nurses had unsatisfactory practice pre-instructional guidelines that improved and became satisfactory after implementing instructional guidelines among almost all (94 %) the studied nurses

Table (4): Delineates a positive significant correlation between nurses' knowledge and reported practices post instructional guidelines.

Table (1): Personal data of studied nurses (no=50)

ITEMS	No. (50)	%
Gender		
Male	6	12.0
Female	44	88.0
Age		
18 <25 year	36	72.0
25 <45 year	9	18.0
45 <65 year	5	10.0
Mean +SD	25.86+8.72	
Educational Level		
Diploma education	27	54.0
Technician institute	16	32.0
Bachelor of Nursing	7	14.0
Years of experience		
Less than one year	5	10.0
1year to <5 year	31	62.0
More than 5 year	17	34.0
Attendance of previous training courses about bone marrow transplantation		
Yes	14	28.0
No	36	72.0

Table (2): Mean scores of nurse's knowledge about bone marrow transplantation pre and post-instructional guidelines implementation

Instructi0nal guidelines items	pre instructi0nal guidelines	Post instructional guidelines	P.value
Bone marrow 'anatomy and physiology	2.7±1.14	5.83±0.34	<0.001**
Stem cells' importance and sources	3.08±0.86	3.80±0.39	<0.001**
Bone marrow transplantation's definition	1.54±1.02	2.96±0.17	<0.001**
Bone marrow transplantation's indication	1.52±0.69	2±0	<0.001**
bone marrow transplantation' types	1.56±1.17	4.91±0.23	<0.001**
Nursing Management for patients with bone marrow transplantation	7.22±1.87	11.32±1.41	<0.001**
Bone marrow transplantati0n' Complications	1.12±0.44	1.80±0.37	<0.001**
Knowledge Score	18.43±4.62	32.66±2.34	<0.001**

- independent t-test ** Significant difference at p. value<0.01

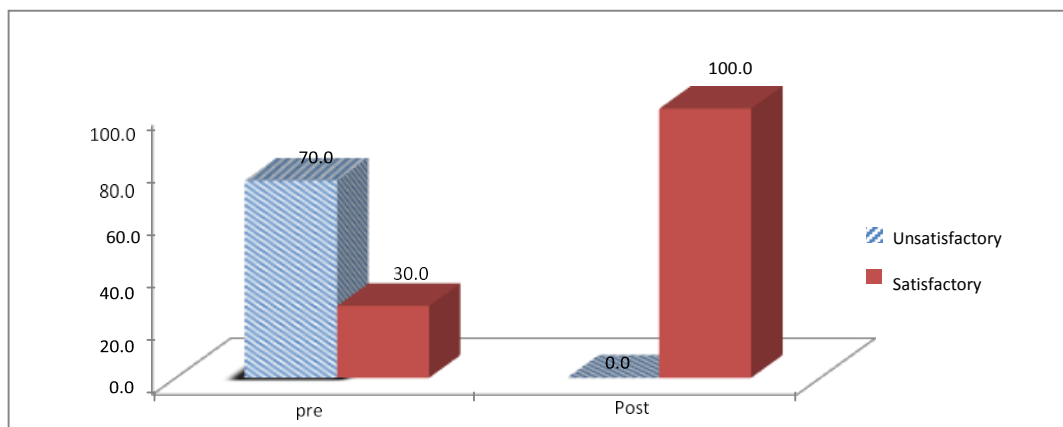


Figure (1): The studied nurses' knowledge pre and post-instructional guidelines implementation about bone marrow transplantation

Table (3): Mean scores of nurse's Practice pre and post-instructional guidelines implementation about bone marrow transplantation

Instructional guidelines Items	Pre	post	T	P. value
hand washing	8.3±1.14	17.77±0.55	-38.70	<0.001**
Gloving	18.12±3.08	32.22±2.34	-17.47	<0.001**
Gowning	9.82±0.33	16.41±0.45	-53.66	<0.001**
Oral Care	12.39±1.31	30.22±3.78	-25.19	<0.001**
Total practice score	48.44±3.32	96.6±4.9	-46.89	<0.001**

- Independent t-test ** Significant difference at p. value <0.01.

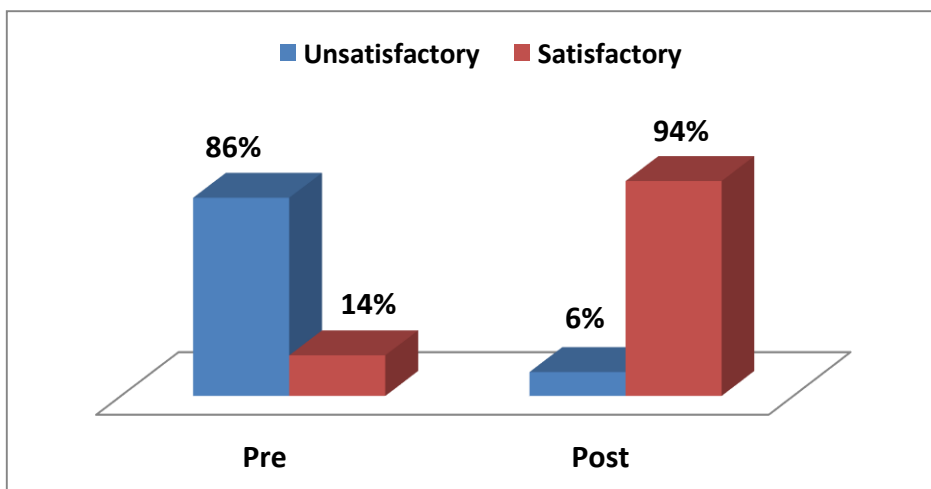


Figure (2): Nurses' practices pre and post-instructional guidelines regarding bone marrow transplantation

Table (4): Correlation between knowledge and reported practices regarding BMT post-instructional guidelines implementation (N= 50)

Items	Correlation between total knowledge and reported practices			
	Knowledge		Reported practice	
	R	p	r	p
Knowledge	1		0.322	0.02*
Reported practice	0.156	0.283	0.289	0.03*

***. Correlation is significant at the 0.01 level (2-tailed). r = person correlation coefficient*

Discussion:

In the medical operation known as a bone marrow transplant, Patients with both malignant and non-malignant illnesses receive healthy stem cells to replenish their patients' bone marrow (Niess & Duffy, 2019) The nurses are dedicated to enhancing patients' quality of life and providing them with the greatest amount of physical and psychological comfort (Diez, et al., 2017)

According to the study's findings, fewer than 75 percent of nurses were in the 18–25 age range. It might be because the nurses were chosen by the administrators. After all, they were young and could effectively handle the majority of the unit's work when the unit was first founded. This finding was consistent with that of Mohamed & Sayed (2015), who found that more than half of nurses had an awareness of stem cell therapy.

The majority of nurses had a diploma education level, according to the results of the educational level question. This finding is consistent with that of Mohamed & Sayed (2015), who stated that most nurses employed in the BMT unit had a diploma degree in nursing. The vast majority of nurses had not participated in any prior training program for BMT.

The study result revealed that less than three-quarters of the nurses hadn't training courses about bone marrow transplantation. This finding was confirmed by Tork et al., (2017), who noted that none of the study participants were nurses who had taken BMT training.

The current study's findings on nurses' knowledge regarding scoring revealed an improvement, with a statistically significant difference seen between nurses' knowledge

levels before to and after the implementation of instructional guidelines. According to the researchers, the fact that following instructional rules can assist in acquiring crucial knowledge may help to explain this discrepancy.

In terms of nurses' overall levels of knowledge concerning bone marrow transplantation, there was a noticeable improvement before and after the implementation of instructional guidelines. After putting instructional guidelines into practice, it was seen that the knowledge levels of the studied nurses increased, and all of them had a satisfactory level of understanding after applying instructional guidelines.

This could be explained by the fact that bone marrow transplantation is a current, cutting-edge trend. Also, nursing curriculum continue to be lacking in this area, which has an impact on the expertise of nurses. The current study also found a highly statistically significant difference between pre and post-implementation, which may indicate that instructional guidelines were successful in enhancing and modernizing nursing knowledge. Together with Khalil & Sharshor (2016), who evaluated the nurses' understanding of stem cells in Tanta, Egypt, they discovered that the majority of participants' knowledge of bone marrow and stem cells is insufficient, necessitating an educational program to increase it.

Elizebeth (2015) came to the conclusion that the vast majority of medical teams lacked appropriate knowledge of bone marrow. As a result, it's important to keep health professionals informed about the most recent advancements & trends in their field. Furthermore, Tintu (2017) found that during the pre-test, 25% of nurses demonstrated

insufficient understanding of bone marrow and stem cell therapy. The results of the intervention revealed that the majority ($p < 0.05$) learned something.

Relating to the reported actions of nurses before, during, and after bone marrow transplantation. The findings demonstrated that the nurses' reported practices related bone marrow transplantation had undergone highly substantial improvements. This, in the opinion of the researchers, illustrates the value and potency of instructional guidelines.

Also, after the implementation of the educational guidelines, there was a noticeable improvement in the nurses' reported practices after transplantation with regard to hand washing, gloving, gowning, dental care, and care for catheters while dealing with a patient. The absence of bone marrow transplantation practice among nurses may be caused by their delayed exposure to BMT technologies in the clinical setting. Also, after spending more time in the clinical setting, nurses lack the efficiency to update their practices.

This outcome was consistent with **Holmes' (1990)** statement that nurses play a crucial role in the multidisciplinary team that provides care for bone marrow transplant patients. Preparatory therapy delivery, early complication care, patient and family education, and support are all intensively handled during the pre-transplant period.

The study's findings showed that, following the implementation of the instructional guidelines, nurses' practices regarding the care of patients undergoing bone marrow transplantation significantly improved. This outcome was consistent with **Kirsch et al., (2014)** findings that educational interventions are thought to be most successful in training patients during their inpatient stay and offering patient/family teaching guidelines for stem cell transplantation nurses.

According to **Moustafa & Youness (2018)**, training program for nursing staff play a significant role. These program were hastily created to help staff nurses acquire and improve the abilities required to offer patients excellent standards of care. This was supported by the current study, which showed that the

implementation of the instructional guidelines increased nurses' knowledge and practice.

The results of the current study revealed a substantial positive association between nurses' knowledge and reported post-instructional practices. From the researchers' perspective, this demonstrates the value and potency of instructional guidelines that are frequently linked to enhancing knowledge and a better understanding among the researched nurses and practices to aid in their learning and acquisition of good information and application of it. When nurses had the necessary knowledge to benefit their practices, this link might be explained.

When knowledge is enhanced after instructional guidelines that caused a rise in nurses' practices as a result of sufficient understanding, this result may be confirmed. **Eskander et al., (2019)** study found a statistically significant positive correlation between knowledge and practice of universal precautions, which is consistent with **Ali (2017)** findings that there were highly significant differences through study phases regarding knowledge and practice of universal precaution among studied nurses. This finding demonstrates that universal precautions should be practiced by all nurses.

Askarian et al., (2017), on the other hand, discovered that there was no connection between knowledge and practice. Moreover, **Najeib & Taneepanichsakul (2018)** found a negative correlation between doctors' and nurses' knowledge and practice of infection control.

Conclusion

In light of the current study, it can be concluded that: social media-assisted in-service training instructional guidelines regarding bone marrow transplant recipients have a positive effect on improving nurses' knowledge, attitude, and reporting practices.

Recommendations

Based on the result of the present study, the following recommendations were made:

- Providing continuous in-service training instructional guidelines regarding bone marrow transplant recipients for nurses in

different health care settings.

- Nurses should be aware of the complications of bone marrow transplants and how to prevent them and how to deal with them when developing

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