

Article

A Study to Assess the Effectiveness of Moulages Aided Teaching on Knowledge Regarding Burns among Nursing Students at Selected Colleges, Puducherry

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Abstract: BACKGROUND OF THE STUDY: Moulage in the traditional sense, is the art of replicating illnesses and wounds through casting wax moulds. Origins are traced to Ancient Egypt and forbidden practices of 17th century Europe. The practice of moulage spread throughout Europe, serving as a teaching modality for dermatologic and venereal disease recognition. Its application should work in a manner that contributes to realism, accuracy and authenticity are important facets to consider when using this technique

AIMS OF THE STUDY: The main aim of the study is to evaluate effectiveness of moulages aided teaching programme on knowledge regarding burns among nursing students in the study group.

METHODOLOGY: The research approach selected for the study was quantitative approach with True experimental pre-test and post-test design. The 100 samples were selected through a simple random sampling technique with computer generated random numbers. In that 50 samples for study group and 50 samples for control group. Pre-test done with the structured knowledge questionnaire. The moulages aided teaching was provided to the study group and control group received routine teaching regarding burns. Post-test-I was done to both the groups immediately after the intervention and Post-test-II was done after the 7th day with the same data collection instruments. The collected data were analyzed based on the above mentioned objectives using descriptive and inferential statistics.

RESULT: In study group, for pre-test, 36(72%) had inadequate knowledge, 14(28%) had moderately adequate knowledge. Where as in post-test- I and II 50(100%) had Adequate knowledge. Among the control group in pre-test, 33(66%) had Inadequate knowledge, 17(34%) had Moderately adequate knowledge. where as in post-test-I, 6(12%) had Inadequate knowledge, 34(68%) had Moderately adequate knowledge, 10(20%) had Adequate knowledge. In Post-test-II for the control group, 15(30%) had Inadequate knowledge, 30(60%) had moderately adequate knowledge, 5(10%) had Adequate knowledge.

CONCLUSION: The result of the study concluded that the moulages aided teaching was more effective in enhancing the knowledge regarding Burns among nursing students.

Keywords: Moulages aided teaching, Knowledge, Burns, Nursing students

INTRODUCTION

Burn trauma is considered one of the most devastating and critical of injuries, due to its pathophysiology, and its physical and psychosocial consequences. Given the complexity of this trauma, which has been established in the literature, the initial care of the burn victim should follow systematic steps to identify potential life-threatening risks and minimize the damage caused by these injuries.^{1,2} After initial care, hospital treatment and outpatient follow-up are essential to restore physical health and reintegrate the individual into society. The World Health Organization estimates that in the United States alone there are 180,000 deaths per year caused by burns, with a financial impact of 211 million dollars.³

The availability of burn units (BU) is not uniform throughout the world, and therefore many victims are treated in non-specialized centers and/or monitored in the outpatient sector. Because the management of the burned patient depends on the health team, it is important that all professionals are prepared to deal with these victims and their relatives.⁴ Within the multiprofessional team, nurses play an important role in assessment and establishment of priorities for care of the burn patient. Due to the specialization required, it is imperative that nurses have scientific knowledge and mastery of the physiological and functional changes of burn injuries. They must preventively identify the damaged tissue and potential systemic complications, to determine the best treatment plan for these patients. Nursing interventions are aimed at reducing the risk of complications and/or sequelae, and at contributing to healing and rehabilitation of the individual.⁵

However, studies in the literature show that nursing students present unsatisfactory knowledge and inadequate education regarding the initial treatment of burn patients.⁶ To fill these gaps, nursing education should focus on the development of practical and interpersonal skills aimed at better decision-making and problem solving in all health and disease situations.⁷ Several teaching methods are used to improve care for the burn patient, so that the student experiences scenarios closest to reality.^{8,9}

In this way, the integration of innovative methodologies and different methods within courses can favor student learning. Different strategies which consider those learning styles, and the need for nurses to gain knowledge and develop skills to care for burn patients, must be used to stimulate the acquisition of knowledge. Within pedagogical approaches can be used case studies, problem solving, small workshops, laboratories, reflection by pairs, simulation, lectures and article readings. For diverse students, answering questions, encouraging brainstorming and discussions, and providing visual material, such as videos and professional journals are used.^{10,11}

Thus, the objective of the study;

- To assess the pre-test and post-test knowledge regarding burns among nursing students in the study and control group.
- To evaluate effectiveness of moulages aided teaching program on knowledge regarding burns among nursing students in the study group.
- To associate the pre-test level of knowledge regarding burns among nursing students with the selected demographic variable in the study and control group.

HYPOTHESES

H1: There is a significant difference between the pre-test and post-test level of knowledge regarding burns among nursing students in the study and control group.

H2: There is a significant association between the level of knowledge regarding burns among nursing students with the selected demographic variables in the study and control group.

METHODOLOGY

The research approach selected for the study was quantitative approach with True experimental pre-test and post-test design. The 100 samples were selected through a simple random sampling technique with computer generated random numbers. In that 50 samples for study group and 50 samples for control group was chosen. Pre-test was done with the structured knowledge questionnaire. The moulages aided teaching was provided to the study group and control group received routine teaching regarding burns. Post-test-I was done to both the groups immediately after the intervention and Post-test-II was done after the 7th day with the same data collection instruments. The collected data were analyzed based on the above mentioned objectives using descriptive and inferential statistics.

INTERVENTION PROTOCOL

The researcher obtained permission from the Institutional Review Committee (IRC) ICON IRC – 2021 – 2022 – 003 Dated: 25.01.2023, and head of the institutions namely (Indirani College of Nursing and Raak Nursing & Paramedical College, Puducherry). Confidentiality was assured to the subjects to get their co-operation throughout the study. The data collection done from 24.7.2023 to 31.08.2023. The researcher first collected the total number of students from B.Sc. (N)-III-year students at Indirani College of Nursing and RAAK Nursing & Paramedical College, Puducherry.

- A total of 100 samples were selected using Probability simple random sampling method using computer generated random numbers, 50 samples for study group and 50 samples for control group.
- Participants were explained about the purpose of study and written consent was obtained from the students.
- Structured questionnaire were administered to collect the demographic variables.

- Both the group, structured knowledge questionnaires was administered to collect pre-test knowledge regarding burns.
- Moulages were used for teaching the study group at Indirani college of nursing, Puducherry, which was prepared with the material such as POP, Bioplastic polyurethane, clay, depicted moulds. It covered the definition of burn injury, etiology, types of burn injury, degree of burn injury, clinical manifestation, diagnostic evaluation, Management of burns and complication of burns. The session lasted for 2 hours.
- Routine teaching with lecture method was used to teach regarding burns among control group at Raak nursing and paramedical college, Puducherry.
- The Post-test-I was conducted using the same data collection instruments on immediately after intervention and Post-test-II was conducted after 7th day for both the groups.

RESULTS

Table 1: Frequency and percentage distribution of demographic variables among study group and control group. (N=100)

S.NO	DEMOGRAPHIC VARIABLE	STUDY GROUP n=50		CONTROL GROUP n=50	
		(n)	(%)	(n)	(%)
1	Age in years				
	a)17-18	0	0	0	0
	b)19-20	35	70	29	58
	c)21-22	15	30	21	42
2	Gender				
	a)Male	16	32	13	26
	b)Female	34	68	37	74
3	Religion				
	a) Hindu	42	84	46	88
	b) Muslim	4	8	3	7
	c) Christian	4	8	1	5
	d) Others	0	0	0	0
4	Residence				
	a) Urban	24	48	27	54
	b) Rural	26	52	23	46
5	Reading hours per day				
	a) <1 hour	31	62	31	62
	b) 1-2 hour	15	30	10	20
	c) > 2hours	4	8	09	18

According to the frequency and percentage distribution of demographic variables within the study group, 15 (30%) were in the 21–22 age range, and 35 (70%) were in the 19–20 age range. There were roughly 16 (32%) men and 34 (68%) women. In terms of religion, 42 (84%) were Hindu, 4 (8%), and 4 (8%), Christians. About 26 (52%) of the residents lived in rural areas, while 24 (48%) did so in urban areas. 31 (62%) of the participants read for less than an hour each day, 15 (30%) for one to two hours, and just 4 (8%), for more than two hours.

The demographic variable's frequency and percentage distribution in the control group showed that 21 (42%) were in the 21–22 age range and 29 (58%) were in the 19–20 age range. There were roughly 13 (26%) men and 37 (74%) women. 46 people (88%) identified as Hindu, 3 as Muslim (7%), and 1 as Christian (5%). Concerning the Residence 23 people (46%) lived in cities, while 27 people (54%) lived in rural areas. Regarding the number of hours spent reading each day, 31 (62%) read for less than an hour, 10 (20%) for one to two hours, and 9 (18%) for more than two hours.

Table 2: Frequency and percentage distribution of pre-test and post-test level of knowledge regarding burns among study group and control group (N=100)

Levels of knowledge	Study group						Control group					
	Pre -Test		Post-test -I		Post-test-II		Pre -Test		Post-test -I		Post-test-II	
	N	%	n	%	n	%	n	%	n	%	n	%
Inadequate knowledge	36	72	0	0	0	0	33	66	6	12	15	30
Moderately adequate knowledge	14	28	0	0	0	0	17	34	34	68	30	60
Adequate knowledge	0	0	50	100	50	100	0	0	10	20	5	10

According to the above table, 36 (72%) of the study group had inadequate knowledge on the pre-test, whereas 14 (28%) had fairly adequate knowledge. In contrast, 50 people (100%) had sufficient knowledge in Post-tests I and II. In the pre-test, 33 (66%) of the control group had inadequate knowledge, while 17 (34%) had somewhat adequate knowledge. In contrast, 6 out of 12 people had inadequate knowledge, 34 out of 68 had fairly adequate knowledge, and 10 out of 20 had adequate knowledge on Post-test I. Five (10%) had adequate knowledge, thirty (30%) had somewhat adequate knowledge, and fifteen (30%) had poor knowledge on Post-test-II for the control group.

(N=100)

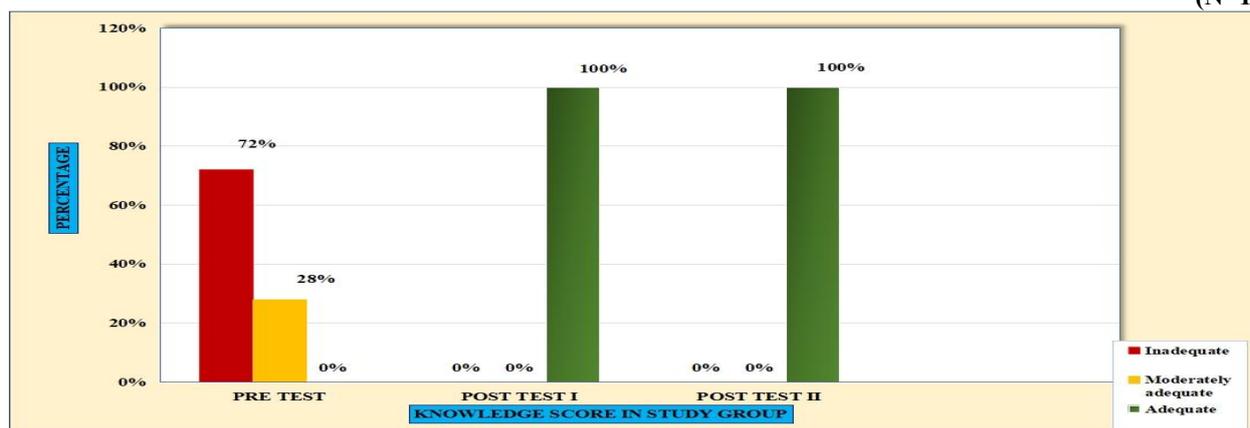


Fig.No:1: Frequency and percentage distribution of pre-test and post-test level of knowledge regarding burns among study group

(N=100)

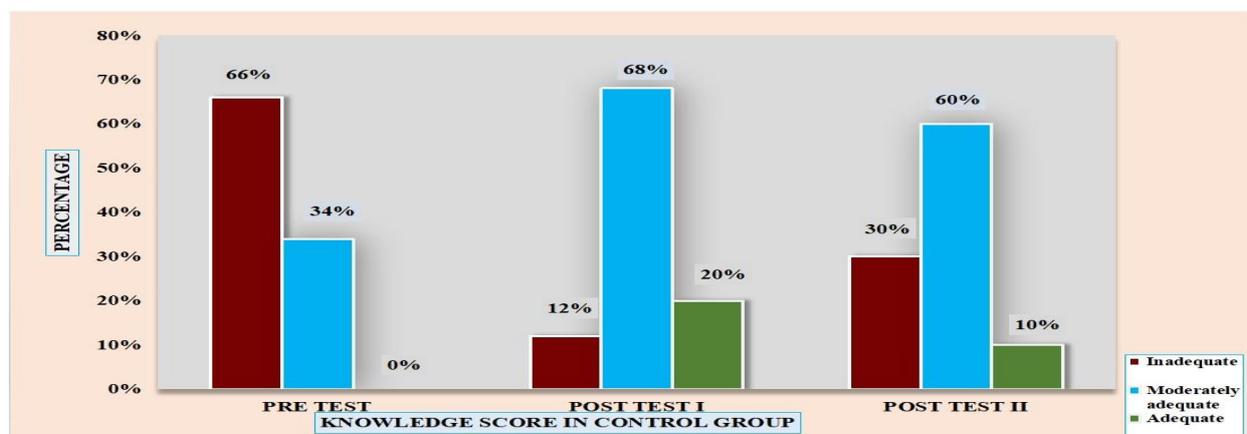


Fig. No: 2: Frequency and percentage distribution of pre-test and post-test level of knowledge regarding burns among control group

Table 3: Comparison of mean and standard deviation and ‘f’ value of knowledge regarding burns among

nursing students within the study and control group. (N=100)

Group	Level of assessment	Level of Knowledge			
		Mean	Standard deviation	'f' value	'p' value
Study group	Pre-Test	8.48	2.852	2.852	0.001** S
	Post-Test-I	18.42	1.162		
	Post-Test-II	18.42	1.162		
Control group	Pre-Test	9.54	1.775	1.162	0.063 NS
	Post-Test-I	12.76	2.191		
	Post-Test-II	11.54	2.092		

S-Significant, NS-Non Significant

The pre-test mean and SD score for the study group and control group are compared in the above table. The study group's mean and standard deviation scores were 8.48 ± 2.852 on the pre-test, 18.42 ± 1.16 on the post-test I, and 18.42 ± 1.16 on the post-test II. At a p value <0.005 , the computed "f" value of 2.852 and p value of 0.001 were significant.

The pre-test mean and SD scores for the control group were 9.54 ± 1.775 . The mean and standard deviation for Post-test-I and Post-test-II were 12.76 ± 2.191 and 11.54 ± 2.092 , respectively. With a p value >0.05 , the computed "f" value was 1.162 and the p value was 0.063, indicating non-significant results. Hence research hypothesis H1 was accepted. It was evident that moulages aided teaching was effective for enhancing the knowledge regarding burns among nursing students.

Table 4: Comparison of mean, standard deviation and 'p' value of knowledge score among nursing students between the study and control group (N=100)

Level of assessment	Study group		Control group		't' value	'p' value
	Mean	SD	Mean	SD		
Pre-test	8.48	2.852	9.54	1.775	3.122	0.321NS
Post-test I	18.42	1.162	12.76	2.191	16.14	0.03*S
Post-test II	18.42	1.162	11.54	2.092	20.3	0.001*S

S-significant, NS-Non significant

The above table represents the pre and post-test comparison of mean and standard deviation of knowledge score between the study and control group. The pre-test mean and SD for study group were 8.48 ± 2.852 , the post-test -I mean and SD for study group were 18.42 ± 1.162 and Post-test-II mean and SD for study group were 18.42 ± 1.162 respectively. The pre-test mean and SD for control group were 9.54 ± 1.775 , post-test -I mean and SD for control group were 12.76 ± 2.191 and Post-test-II mean and SD for control group were 11.54 ± 2.092 . The calculated 't' value for pre-test between the group was 3.122 and 't' value for post-test-I between the group was 16.14, 't' value for post-test-II between the group was 20.3 and 'p' value for pre-test was 0.321, post-test -I was 0.03 and Post-test -II was 0.001, which was significant at p value $p < 0.05$). Hence research hypothesis H1 was accepted. It was evident that moulages aided teaching was effective for enhancing the knowledge regarding burns among nursing students.

Association between the pre-test levels of knowledge regarding burns among nursing students with the selected demographic variables among the study group and control group.

There was significant association found between the pre-test level of knowledge regarding burns among nursing students in demographic variable such as religion X^2 value 8.82 and p value 0.012(S) and reading hours per day X^2 value 6.612 and p value 0.037(S) among study and control group. Hence research hypothesis H2 was accepted.

DISCUSSION

The first objective was to assess the pretest and posttest knowledge regarding burns among nursing students at selected colleges in study and the control group.

In this study, the result revealed that among study group in the pre-test, 36(72%) had inadequate Knowledge, 14(28%) had moderately adequate knowledge. Where as in Post-test- I and II, 50(100%) had adequate knowledge respectively. In control group for pre-test, 33(66%) had inadequate knowledge, 17(34%) had moderately adequate knowledge. where as in Post-test-I, 6(12%) had inadequate knowledge, 34(68%) had moderately adequate knowledge, 10(20%) had adequate knowledge. Post-test-II 15(30%) had inadequate knowledge, 30(60%) had moderately adequate knowledge, 5(10%) had adequate knowledge.

The study result was supported by the similar study conducted by Hawraa Razzaq Kadhim et.al, (2020) stated that among the study group in pre-test 3(15%) had poor knowledge, 17(85%) had fair knowledge and pre-test score for control group revealed that 3(15%) had poor knowledge, 17(85%) had fair knowledge. In post-test among study group 20(100%) had good knowledge but in control group 19(95%) had fair knowledge, none of them had good knowledge.¹²

The second objective was to evaluate effectiveness of moulages aided teaching on knowledge regarding burns among nursing students at selected colleges in the study group.

In this study the result indicated that the pre-test and post-test comparison of mean and standard deviation of knowledge score between the study and control group. The pre-test mean and SD for study group were 8.48 ± 2.852 , the post-test -I mean and SD for study group were 18.42 ± 1.162 and Post-test-II mean and SD for study group were 18.42 ± 1.162 respectively. The pre-test mean and SD for control group were 9.54 ± 1.775 , post-test -I mean and SD for control group were 12.76 ± 2.191 and Post-test-II mean and SD for control group were 11.54 ± 2.092 . The calculated 't' value for pre-test between the group was 3.122 and 't' value for post-test-I between the group was 16.14, 't' value for post-test-II between the group was 20.3 and 'p' value for post-test -I was 0.03 and Post-test -II was 0.001 Which was significant at p value ($p < 0.05$). Hence research hypothesis H1 was accepted. It was evident that moulages aided teaching was effective for enhancing the knowledge regarding burns among nursing students.

The study result supported by a similar study conducted by Emine Sezgunsay *et al.* (2020) [proved that](#) simulation with moulage was effective in improving the skills of nursing students. study result showed that control group score (pre-test: 61% and post-test 70%, $t = -2.34$, $p = 0.02$), and the study group score were (pre-test: 66% and post-test 73%, $t = -4.27$, $p < 0.001$) respectively.¹³

The third objective was to associate the knowledge regarding burns among nursing students at selected colleges with the selected demographic variable in study and control group.

In the current study, the result indicated that there was significant association found between the pre-test level of knowledge regarding burns among nursing students in demographic variable such as religion X^2 value 8.82 and p value 0.012(S) and reading hours per day X^2 value 6.612 and p value 0.037(S) among study and control group. Hence research hypothesis H2 was accepted.

The study result was supported by a similar study conducted by Pooja Godiyal *et al.* (2022) stated that there was a significant association found between the obtained chi square values for Religion and source of knowledge regarding practice X^2 (48.49 and 31.15) respectively.¹⁴

CONCLUSION:

The true experimental study was used to assess the effectiveness of moulages aided teaching on knowledge regarding burns among nursing students at selected colleges, Puducherry. The calculated 't' value for pre-test between the group was 3.122, post-test-I between the group was 16.14 and the 't' value for post-test-II between the group was 20.3 and 'p' value for post-test-I was 0.03 and Post-test -II was 0.001, which was significant at p value ($p < 0.05$). The result of the study concluded that the moulages aided teaching was effective in enhancing the knowledge regarding burns among nursing students at selected colleges, Puducherry.

REFERENCES

- [1] Porter C, Tompkins RG, Finnerty CC, Sidossis LS, Suman OE, Herndon DN, 2016, The metabolic stress response to burn trauma: current understanding and therapies. *Lancet* [Internet]. 388(10052):1417-26. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5753602/pdf/nihms927924.pdf>.
- [2] ISBI Practice Guidelines Committee; Steering Subcommittee; Advisory Subcommittee. ISBI Practice Guidelines for Burn Care. *Burns* [Internet]. 2016 Aug;42(5):953-1021. <https://doi.org/10.1016/j.burns.2016.05.013>
- [3] World Health Organization (WHO). Fact sheet on burns. 2017 <http://www.who.int/mediacentre/factsheets/fs365/en/>
- [4] Ana Railka de Souza Oliveira-Kumakura, Juliany Lino Gomes Silva, Natália Gonçalves, 2018, From theory to simulation to teach care for burn victims: case report, *Esc. Anna Nery* 22 (3), <https://doi.org/10.1590/2177-9465-EAN-2017-0391>

- [5] Oliveira TS, Moreira KFA, Gonçalves TA. Assistência de enfermagem com pacientes queimados. *Rev Bras Queimaduras* [Internet]. 2012; 11(1):31-7. » http://www.rbqueimaduras.com.br/detalhe_artigo.asp?id=97
- [6] Meschial WC, Oliveira MLF. Initial care to burn victims: nursing students' knowledge - a cross-sectional study. *Online Braz J Nurs* [Internet]. 2014, 13(4):518-28. <http://www.objnursing.uff.br/index.php/nursing/article/view/4744>
- [7] Adib-Hajbaghery M, Sharifi N. Effect of simulation training on the development of nurses and nursing students' critical thinking: A systematic literature review. *Nurse Educ Today* [Internet]. 2017 Mar; 50:17-24. <https://www.sciencedirect.com/science/article/pii/S0260691716303070?via%3Dihub>
- [8] Egro FM. Basic Burns Management E-Learning: A New Teaching Tool. *J Burn Care Res* [Internet]. 2017 Jul/Aug; 35(4):e715-21. <https://www.ncbi.nlm.nih.gov/pubmed/?term=Egro+FM.+Basic+Burns+Management+E-Learning%3A+A+New+Teaching+Tool>
- [9] Pywell MJ, Evgeniou E, Highway K, Pitt E, Estela CM. High fidelity. Low cost moulage as a valid simulation tool to improve burns education. *Burns* [Internet]. 2016 Jun;42(4):844-52. <https://doi.org/10.1016/j.burns.2015.12.013>
- [10] Kolb DA. *Experiential Learning: Experience as the source of learning and development*. Toronto: Prentice Hall; 1984.
- [11] Rassin M, Kurzweil Y, Maoz Y. Identification of the Learning Styles and "On-the-Job" Learning Methods Implemented by Nurses for Promoting Their Professional Knowledge and Skills. *Int J Nurs Educ Scholarsh* [Internet]. 2015 May;9;12. DOI:10.1515/ijnes-2015-0006.
- [12] Hawraa Razzaq Kadhim and Rajha Abdul Hassan Hamza, 2020, Effectiveness of an educational program on nurses knowledge toward burn management, *Medico-legal Update*, Vol. 20, No. 4, pp: 1909 -1914.
- [13] Emine Sezgunsay and Tulay Basak, 2020, Is Moulage effective in improving clinical skills of nursing students for the assessment of pressure injury. *Nurse Educ Today*, Nov:94:104572, doi: 10.1016/j.nedt.2020.104572. Epub 2020 Aug 28
- [14] Chitra.K, and Pooja Godiyal, 2022, A Study to Evaluate the Structured Teaching Programme on Knowledge regarding Neurological Examination among Nursing Students in Selected College of Nursing, Dehradun, Uttarakhand, *International Journal of Nursing Education*, April-June 2022, Vol.14, No. 2, pp: 112 – 117.