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ORIGINAL RESEARCH

Effectiveness of DOAP for training interns for appropriate application of crepe bandage in orthopaedics

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ABSTRACT

Background: The art of bandaging can be mastered only by constant practice. A carelessly or improperly applied bandage can cause discomfort to the patient and may imperil his life. DOAP (Demonstration -Observation - Assistance - Performance): A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently. Limited opportunities for practical training, inadequate feedback, and inconsistent instruction methods may further hinder the learning process and proficiency development in bandaging. The reason CBME programme is drafted is to fill up deficiencies like these in imparting effective training to structure every Indian Medical Graduate competent. **Objectives:** 1. To train MBBS interns to effectively apply crepe bandage by DOAP method. 2. To know the perception of MBBS interns about crepe bandage application by DOAP method. 3. To evaluate the number of attempts required to apply crepe bandage appropriately. **Materials and methods: Setting:** Study done from April 2024 to October 2024 at OPD, wards, in Bhaskar medical college. Institute ethical clearance taken, informed consent taken from the participants. **Target population:** Simulated Patients, among the MBBS interns.Sample size for quantitative studies / Sample selection for qualitative studiesAll the hundred MBBS intern students will individually perform and will be assessed by orthopaedic faculty as assessors in the study. **Study design / Methods used for qualitative studies:** DOAP (Demonstration -Observation - Assistance - Performance) **Statistical analysis or thematic analysis:** Likert scale. Paired t-test. **Results:** Improved accuracy and proficiency in crepe bandage application observed. **Conclusions:** DOAP is an effective method for enhancing interns' skills in orthopaedics bandaging.

INTRODUCTION

The art of bandaging can be mastered only by constant practice. Incorrectly applied bandages may lead to pressure necrosis and limb amputation.

Context

Bandaging is a basic procedure but if carried out incorrectly it has the potential to cause considerable harm, for example by restricting movement or blood flow. Bandages may be used for: Retaining primary dressings; Support; Compression and administering medication. It is a linchpin in compression therapy and plays a crucial role in selecting and applying the correct type and level of compression bandaging. Overall, bandaging plays a significant role in wound care, promoting healing, preventing complications, and ensuring proper management of various medical conditions. Bandages must be applied correctly by trained staff to ensure effective treatment. Without regular practice and guidance, learners may struggle to grasp the nuances of bandaging, leading to errors in application, ineffective wound management, and potential patient discomfort or complications.

Challenging educational situation

Limited opportunities for practical training, inadequate feedback, and inconsistent instruction methods may further hinder the learning process and proficiency development in bandaging. The reason CBME programme is drafted is to fill up deficiencies like these in imparting effective training to structure every Indian Medical Graduate competent.

MATERIALS AND METHODS

Setting:

Study done between April 2024 to September 2024 at OPD, wards, in Bhaskar medical college.

Target population:

Simulated Patients, among the MBBS interns.

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Sample size for quantitative studies / Sample selection for qualitative studies
All the hundred MBBS intern students will individually perform and will be assessed by orthopaedic faculty as assessors using skill assessment check list in the study.

Study design / Methods used for qualitative studies
DOAP (Demonstration -Observation - Assistance - Performance)
This study was taken as project in Advanced Course Medical Education 2024A Batch at Nodal centre Bhaskar Medical College with sample size of 30 interns, at the end of course poster and power point presentation was done at the nodal centre. As the DOAP method was very much appreciated and successful study done on sample size of 100 MBBS interns.

To evaluate the quality of the crepe bandage application, faculty as assessors evaluated them based on the checklists involved.
Cotton crepe bandages of sizes 5cm,10cm and 15 cm were used.
A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently.
To know the perception of MBBS interns about crepe bandage application by DOAP method.

Groups for quantitative studies- To evaluate the number of attempts required to apply crepe bandage appropriately.
Reflections of the MBBS interns taken.

Statistical analysis or thematic analysis- Likert scale. Paired t-test.

Skill Assessment Checklist

Skill Assesment Checklist **Name** **Date**

	Strongly Disagree-1, Disagree-2, Neutral-3, Agree-4, Strongly Agree-5.	**1 Strongly Disagree**	**2 Disagree**	**3 Neutral**	**4 Agree**	**5 Strongly Agree**
1	**Knowledge of Anatomy and Injury Assessment**					
2	**Proper Technique for Crepe Bandage Application**					
	Prepare the Patient					
	Assess the Injury					
	Apply the Crepe Bandage					
	Check Circulation					
3	**Understanding Tension and Overlapping**					
4	**Monitoring and adjusting**					
5	**Communication and Patient Education**					
	Clearly describe the procedure to the patient					
	Address any questions or concerns					
	Educate the patient on self-care and bandage maintenance					
6	**Attempts needed to effectively apply.** **ONE** **TWO** **THREE** **FOUR** **FIVE**					
7	**Efficiency/Effective/Good**					

EXAMINER FACULTY

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LITERATURE REVIEW

Inappropriate selection or application of a bandage could lead to lack of efficacy and to adverse effects including amputation[1]. A more recently developed compression system is the four-layer compression system (4LB), initially proposed by Blair *et al.*[2]. This system involves the application of a layer of orthopaedic padding to absorb wound exudate and protect bony prominences, followed by a light con formable bandage. A light elastic compression bandage is then applied as the third layer followed by an elastic co hesive bandage to apply additional compression and to hold the other bandages in place. This system has since been evaluated comprehensively in a 'community clinics' set ting and excellent efficacy results have been reported[8]. *Lee et al.*[3]. observed the importance of different application techniques on the interface pressure variations for different bandages. Wrapping of bandage over wounded limb by different practitioners could also influence interface pressure variation. Dale *et al.*[4] observed different pressure gradients obtained by the same bandaging system when applied by different experienced technicians under the same application technique. To cater to these problems and to provide a scientific approach to wrap a bandage at a particular level of stretch for each layer, a geometrical model is proposed. The model is developed for two commonly used tech- niques of bandaging i.e. spiral bandaging and ascending spica or figure of eight bandaging[5].

The degree of compression produced by any bandage system over a period of time is determined by complex interactions between four principle factors—the physical structure and elastomeric properties of the bandage, the size and shape of the limb to which it is applied, the skill and technique of the bandager and the nature of any physical activity undertaken by the patient[6].

Knowing how to use a crepe bandage is essential if you want to make use of its many benefits. For adequate support and coverage, choosing the correct width of crepe bandage is critical—usually, the wider your choice, the better, relative to the area you're wrapping. Using a narrow crepe bandage on a large area could lead you to wrap too many layers around the injury or dressing, decreasing breathability and mobility[1].

Bandaging is both a science and an art. The proper bandage, properly applied, can aid materially in the recovery of the patient. A carelessly or improperly applied bandage can cause discomfort to the patient and may imperil his life[2].

The bandage is any material that is used to hold a dressing or compress in place, to prevent infection of a wound, to apply pressure to control bleeding or to support broken bones when used as a sling[3].

The application of any compression bandaging system should only be carried out by competent practitioners who have undergone appropriate training (Todd, 2009). Compression bandaging is a specialist skill and should only be applied by those who are cognizant with the theory underpinning the practice and who are skilled in its application[4].

Where did all the bandaging techniques described in the 1937 textbook originate? Because physicians wrote the book and (until 1927) taught all the courses, they trained students to use the same techniques that they used themselves in their medical practices, with bandages of cotton muslin, shaped into triangles or strips, and gauze roller bandages. Because the gauze at that time was not stretchy, students had to learn techniques for making it conform to the limb as they wrapped. As medical bandages and dressings became more sophisticated, however, first-aid courses continued to train students in traditional bandaging techniques, because lay people were unlikely to have hospital quality equipment and might have to improvise from whatever cloth was available[5].

DOAP (Demonstration -Observation - Assistance - Performance): A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently[6].

Logic model

Research Question	Input	Activities	Output	Outcome	Impact
Is DOAP session an effective training method for interns during application of crepe bandage.	Simulated patients Among MBBS intern, faculty.	Conducting of crepe bandage application training by DOAP method.	100 MBBS interns	Short- term. Mid-term. Long-term. Demonstration of the clinical skill of effective crepe bandage application.	Demonstration of the clinical skill of effective crepe bandage application. Sharing of knowledge/clinical skill ability to train fellow colleagues and juniors. Will have long term impact.
Facilitatory factors 1-Trained faculty. 2-Enough space OPD & wards. 3-Simulated patients, among interns. 4-Crepe bandage available Facilitating Factors			**Barriers** NIL		

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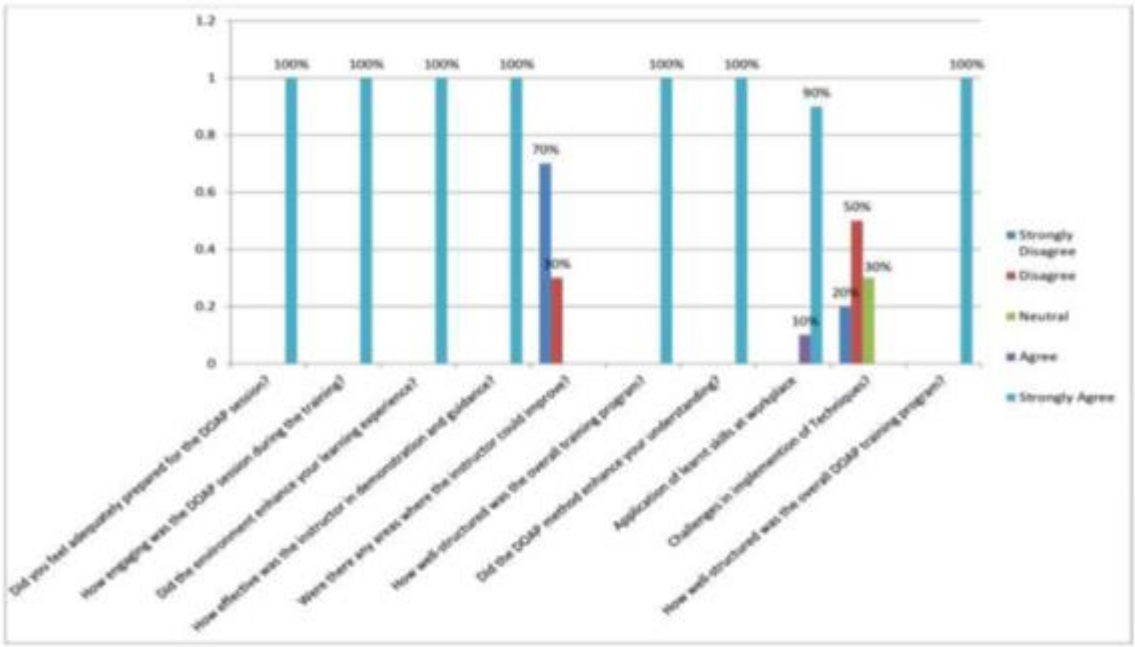
RESULTS

Training MBBS Interns:

- The DOAP method was successfully used to train MBBS interns in the effective application of crepe bandages.
- Perception Assessment Interns' perceptions about crepe bandage application using the DOAP method were explored
- Application Attempts The study evaluated the number of attempts required by interns to apply crepe bandages appropriately.
- After the training sessions using the DOAP method, the MBBS interns demonstrated significant improvement in their ability to properly apply crepe bandages.
- The interns reported high levels of satisfaction and confidence in using the DOAP method to learn crepe bandage application.
- Most interns were able to apply the crepe bandage appropriately within 2-3 attempts after the training.

Reflections of Interns



Figure

DISCUSSION

Key insights-

- The DOAP technique emphasises practical, hands-on learning above merely theoretical education, which highlights the importance of hands-on training. This method may be more successful in assisting medical interns in gaining the abilities and self-assurance needed to carry out routine clinical tasks like applying bandages. Targeted skill development: The training session probably assisted interns in becoming more proficient in this essential clinical procedure by concentrating on the particular skill of applying crepe bandages. For junior medical professionals looking to establish a solid foundation of practical skills, this can be very beneficial. Standardisation of practices: It is possible to make sure that interns get the proper and standardised methods for applying crepe bandages by employing an organised DOAP approach throughout training. This may encourage uniformity in patient care and clinical procedures.
- Building confidence: Practical experience under the direction of knowledgeable teachers might help interns feel more confident in their capacity to carry out this technique on their own in a clinical situation.
- Importance of lifelong learning and skill development: The training emphasises how important it is for medical professionals, especially interns, to have continual skill development and refresher courses in order to preserve and improve their clinical competence.
- Generally, the most important takeaways from this research or training session will probably centre on the advantages of applied, skills-based learning and the significance of mastering foundational clinical procedures, both of which can eventually lead to better patient outcomes and care.

Future applications of the study results

- Curriculum development: The DOAP training approach's successful implementation could guide the creation of other practical training

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modules in medical education curricula that concentrate on other essential clinical skills.

- This could guarantee a uniform degree of practical competency among MBBS graduates and help standardise the teaching of fundamental clinical procedures across medical institutions.
- Certification and skill evaluation: The study's findings may help develop uniform certification procedures and evaluation standards for particular clinical abilities, such applying crepe bandages.
- This could ensure that before being permitted to carry out these treatments independently in clinical settings, interns and junior doctors must show that they have reached a minimum degree of skill.
- Continuous professional development: Practicing physicians could improve and refresh their knowledge of applying crepe bandages and other basic clinical procedures by utilising an adaptation of the DOAP training approach in CME programmes.
- Physicians who do not regularly have the opportunity to undertake specific treatments in their day-to-day practice might find this to be very helpful.
- Interprofessional collaboration: Other medical professions, including nurses and paramedics, who also require competence in fundamental clinical skills like bandage administration, might be included in the training paradigm.
- In clinical contexts, collaborative training sessions may enhance teamwork and foster interprofessional learning.
- Research and innovation: The results of this study may stimulate additional investigation into the DOAP method's efficacy as well as its potential applications to other clinical competencies.
- This could result in the creation of cutting-edge teaching strategies, online resources, or simulation-based training activities to improve the learning and evaluation of practical medical skills.
- In conclusion, the study's findings may be applied in the future to interprofessional collaboration, skill certification and evaluation, curriculum changes, ongoing professional development, and innovative research into medical education and clinical skills training.

CONCLUSIONS

- Training MBBS Interns:
- Interns learned through a step-by-step process involving demonstration, observation, application, and practice.
- Perception Assessment:
- Understanding their feedback and experiences is valuable for improving the training process.
- Application Attempts:
- Fewer attempts may indicate better skill acquisition, while more attempts may highlight areas for improvement.
- The DOAP teaching method was effective in training MBBS interns to competently apply crepe bandages.
- The interns found the DOAP method to be a useful and engaging way to learn this practical skill.
- The structured, stepwise DOAP approach allowed most interns to master crepebandage application within a small number of attempts.
- The DOAP training method was successful in equipping the MBBS interns with the knowledge and practical skills to effectively apply crepe bandages. The interns found the structured, hands-on approach beneficial and were able to achieve competence within a few supervised attempts.
- Overall, the study shows that the DOAP method is a successful strategy for teaching practical clinical skills like crepe bandage application to medical interns. The combination of demonstration, observation, assistance, and performance practice helps develop proficiency efficiently. Incorporating this method into medical education can contribute to producing competent healthcare professionals.

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