



A COMPARISON BETWEEN SHOW ONE, DO ONE AND TEACH ONE (SODOTO) AND MODIFIED PEYTONS AS BASIC SURGICAL SKILLS TEACHING METHODS FOR UNDERGRADUATE MEDICAL STUDENTS.

Education

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ABSTRACT

Background: Teaching psychomotor skills to healthcare professionals is an ongoing challenge even today. These skills are utmost important to deliver competent patient care. Traditionally show one, do one and teach one method (SODOTO) is followed in Indian context, which is poorly structured. Thus knowledge is usually gained but skill acquisition is seldom assured. So introduction of modified PEYTONS as basic surgical teaching method may prove to be vital for enhancing competency of the candidate.

II. Aim and Objectives:

- To assess efficacy of modified PEYTONS 4 step approach as a teaching tool for third year phase 2 MBBS students.
- To compare Show one, Do One and Teach One (SODOTO) and modified PEYTONS as basic surgical skill teaching method for undergraduate medical students.
- To compare post test scores of SODOTO Vs PEYTONS in simulated environment.

III. Methodology:

Study was conducted in the simulation laboratory of GMC, Surat. Third phase 2 undergraduate students posted in orthopaedics were divided in group A and B. Group A will be taught by the traditional method of SODOTO in which they will be observing the procedure first, then assist followed by doing it themselves under guidance, in a week's time. Group B by modified PEYTONS 4 steps approach in which step 1 and 2 will be video assisted self-directed learning that will be sent to them via whatsapp, followed by step 3 and 4 in standard manner for a particular clinical skillset. Post intervention of 7 days assessment will be done by direct observation as per standard checklist. Flip over will be done for another basic surgical skill set for 7 days. Total of 2 surgical basic skill set of skin suturing in a simulated environment and placing an intravenous catheter will be assessed. **IV. Findings:** No statistical difference was found in the scores obtained by students of conventional Vs PEYTONS method, with the p value of 0.325 suturing skills and 0.22 in IV cannulation. But the feedback was very positive for PEYTONS group. **V. Conclusions:** PEYTONS four step approach is an interesting and innovative method of learning for students and may have a better memory retention in future and different ways of teaching avoids monotony and boredom.

KEYWORDS

INTRODUCTION/BACKGROUND:

For competent medical care knowledge alone is insufficient, knowledge needs to be translated into action (psychomotor skills). However dire these psychomotor skills are for clinical practice, teaching them to healthcare professionals is an ongoing challenge even today. These skills are utmost important to deliver competent patient care.

Competency in basic surgical skills demand a teaching method that prioritizes observation, practice, feedback and more practice. Association of American Medical Colleges (AAMC) defines a clinical skill as a discrete, observable task during the provision of care. (4)

Lack of basic surgical skill is commonly encountered especially in peripheral hospitals leading to increase in unnecessary referrals, transportation, blood requirement, lack of trust among people and increase violence against doctors, good primary surgical skill in INDIAN MEDICAL GRADUATE (IMG) can alleviate these problems to a large extent..

Postgraduate medical students enter the clinical arena (internship), where they are in direct care of patient. To be competent they need a judicious mix of knowledge, skill and attitude. Traditionally show one, do one and teach one method (SODOTO) is followed in Indian context, which is poorly structured. Thus knowledge is usually gained but skill acquisition is seldom assured. So introduction of modified PEYTONS as basic surgical teaching method may prove to be vital for enhancing competency of the candidate.

PEYTONS 4 steps approach(1) helps learners to transform from "consciously incompetent to consciously competent" of consist of:

- Demonstration-The trainer performs the task as usual – say an endotracheal intubation - demonstrating it to the learner without any comments while the learner observes the procedure.
- Deconstruction-The trainer repeats the procedure, but this time he

demonstrates the equipment and details each step of the procedure.

- Comprehension-The learner takes over at this stage, explaining each step of the procedure while the trainer performs it according to the instructions of the learner.
- Performance-The learner performs the complete procedure by himself.

One disadvantage of PEYTONS approach is that it is meant for a one-on-one teacher student interaction; unfortunately, such an ideal teacher-student ratio is not the norm and this technique may not be applicable to small group teaching.

Educators have attempted to overcome this disadvantage by sharing videos of steps 1 and 2 with large groups and having small batches perform steps 3 and 4(6). Alternatively, the teacher can demonstrate steps 1 and 2 to the entire class. This is followed by step 3 with a single learner (learner 1) while the other learners are observing the skill. Learner 1 then takes the place of the teacher and performs step 3 under the instructions of learner 2 and so on until every learner has completed step 3 and moved on to step 4 - all the while getting feedback from a peer as well as from the teacher(7). This comprises of modified PEYTONS approach.

AIM & OBJECTIVES:

Aim:

To assess efficacy of modified PEYTONS 4 step approach as a teaching tool for in third year phase 2 MBBS students.

To compare Show one, Do One and Teach One (SODOTO) and modified PEYTONS as basic surgical skill teaching methods for undergraduate medical students.

Specific Objectives:

- 1.to analyse the post test score by SODOTO.
- 2.To analyse the post test score by modified PEYTONS.
- 3.To compare the post test score by the above two methods.

METHOD AND MATERIAL:

Study Design:

Cross over interventional study with quasi experimental design.

Sample size:

30 third year phase two MBBS students will be assessed in 15 days for two skill set.

Detailed Method of data collection :

An official written permission to conduct the study was obtained from the college dean and written informed consents were obtained from all enrolled students after explanation of the study aim. Students were reassured that the obtained data will be confidential and they have a right to withdraw from the study at any time without giving any reason. The study was completed over a period of one month along with the regular curriculum of our faculty.

Sampling technique-

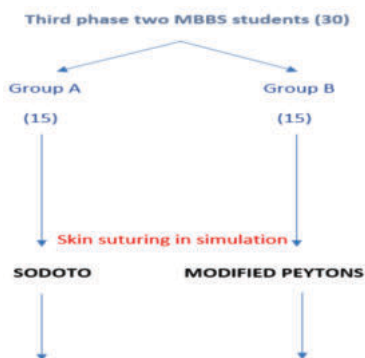
purposive sampling by roll numbers.(even & odd).

Data collection:

Third phase 2 undergraduate students will be divided in group A and B. Group A will be taught by the traditional method of SODOTO in which they will be observing the procedure first, then assist followed by doing it themselves under guidance, in a week time.

Group B by modified PEYTONS 4 steps approach in which step 1 and 2 will be video assisted self-directed learning that will be sent to them via whatsapp, followed by step 3 and 4 in standard manner for a particular clinical skillset. Post intervention of 7 days assessment will be done by direct observation as per standard checklist.

Flip over will be done for another basic surgical skill set for 7 days. Total of 2 surgical basic skill set of skin suturing in a simulated environment and placing an intravenous catheter will be assessed.



Assessment by Direct observation as per standard checklist.

Flip over such that Group A will be taught by modified PEYTONS & Group B by SODOTO for splintage application in OPD patients and again assessment by direct observation by standard checklist. Two independent faculties did the assessment of the students.

Inclusion criteria-

Third phase 2 MBBS students posted in Orthopedics Dept, NCHS who give consent to participate in this study.

Exclusion criteria-

Those not giving consent to participate in study.

Status of Ethical permission from the institute:

obtained scientific review committee clearance.

Statistical analysis (Plan):

Comparison of post-test score will be done by T test.

Kindly specify if any changes or modifications were done?

Yes as suggested by scientific review committee and human research ethics committee.

State the type of modification and reason for doing so-

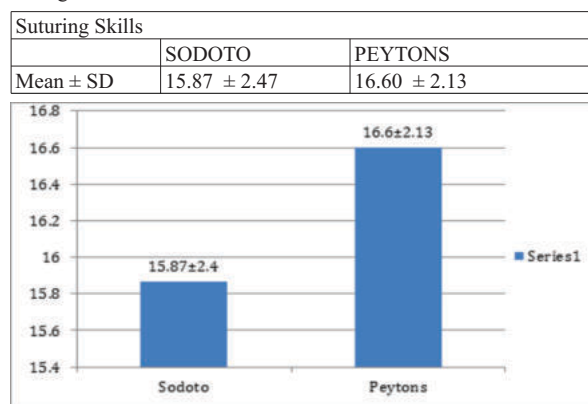
Randomised sampling was changed to purposive sampling, and original plan was to study four basic surgical skill set but due to covid, it was cut down to two skill set.

Learning Outcome:

RESULTS:

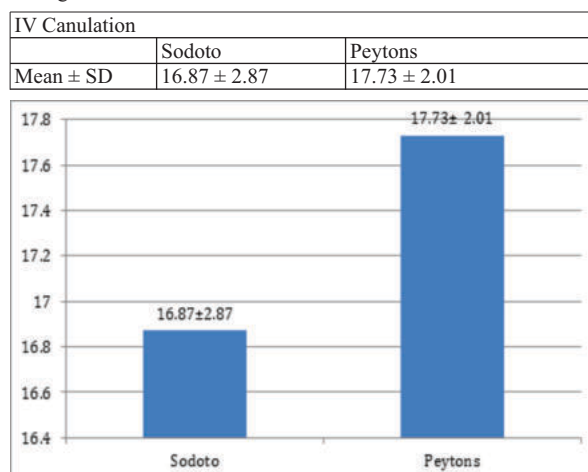
- The mean score of students for the conventional method i.e SODOTO for suturing skill was 15.87 ± 2.47 with the range of 12-19 while the mean score of students for the experimental method i.e PEYTON'S for suturing skill was 16.66 ± 2.13 with the range of 12-20. After applying the independent T test between both groups test values were insignificant with a T-statistic value of 1.002 and p value of 0.325
- The mean score of students for the conventional method i.e SODOTO for IV cannulation skill was 16.87 ± 2.87 with the range of 11-20 while the mean score of students for the experimental method i.e PEYTON'S for IV cannulation skill was 17.73 ± 2.01 with the range of 14-20. After applying the independent T test between both groups test values were insignificant with a T-statistic value of 1.539 and p value of 0.22

TABLE 1: Mean and standard deviation of conventional SODOTO Vs Peytons approach in teaching surgical suturing skills to undergraduates in simulated environment.



Graph 1: presentation of mean with standard deviation of SODOTO Vs PEYTONS in surgical suturing skill teaching to undergraduates in simulated environment.

Table 2: Mean and standard deviation of conventional SODOTO Vs Peytons approach in teaching intravenous cannulation to undergraduates in simulated environment.



Graph2: presentation of mean with standard deviation of SODOTO Vs PEYTONS in Intravenous cannulation teaching to undergraduates in simulated environment.

DISCUSSION:

This study investigated the learning outcomes of the Peyton's four-step

approach on undergraduates students' performance and their acceptance of the training sessions. It was found that the mean age of the students was 21 ± 1.5 years. With regards to gender, the majority of the sample was females. No significant difference was found between the intervention and control groups related to age and gender.

Previous studies have found a clear benefit of Peyton's '4-step approach' for complex motor skills, such as laparoscopic suturing and knot tying and in simulation based training¹⁴⁻¹⁸. However, for relatively easy to learn motor skills like performing external chest compressions or the insertion of a laryngeal mask, no significant are simple skills and the students might have exposed to them before thus results are good and very much comparable in both groups.^{19,20}

The results obtained by Dhivya et al and others were superior in PEYTONS group as more complex skills were taught and assessed as well as the sample size was very large 9.

The approach was very much acknowledged via students as seen on feedback and was evaluated as simple to learn resulting in attracting trainees' attention when observed by the teachers.

The acceptance rating scale revealed that the trainees learned a lot during the training session, this result was in line with Moran et al. (2012) who stated that Peyton's four-step approach might be of critical importance for improving students practical performance.¹

This study assumed that the group of trainees who were instructed by Peyton's four-step approach was continuously alert throughout the training sessions. This was consistent with Shafizadeh et al. (2011), Kasper et al. (2012), and Jongbloed et al. (2012) who revealed that Peyton's four-step approach impacted motor skills attainment, including the focus of attention, visuospatial capabilities, execution perception, motor imagery and practical memory limits.²⁻⁴

Time and manpower needed for PEYTONS four step approach is high thus is difficult to be incorporated to teach variety of skill sets, on the other hand conventional method holds its value even today as there are large and variety of skill sets that needs to be taught and learnt at undergraduate level.

Limitations:

Some limitations of the present study must be declared. Sample number should be larger, due to covid crisis large number of students for study were difficult. More and varied skill set needs to be assessed for a definitive conclusion. long term study on same group of students or their feedback later would be beneficial to conclude the long term benefit of the study.

CONCLUSION:

Though the study does not show any statistical significance in study group and conventional group, we believe PEYTONS four step approach keeps students interested with larger attention span and may have a better retention in future, and different methods of teaching need to be attempted to avoid boredom and monotony. PEYTONS method also takes more time and manpower to teach skills then conventional methods.

Study also shows the value of conventional teaching, specially in learning simple skill set, conventional SODOTO is beneficial in a way as it needs less manpower and time.

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5. Mrs Indravati Rao and other faculty in the nursing college allowed me to use the simulation laboratory.

6. Students who enthusiastically enrolled in study.
7. My colleagues at the orthopaedic department who spared me off my duties during the project.

Annexures:

Standardised checklist for assessment of students, standardisation was done by senior three faculties of orthopaedic department of GMC, Surat.

1. Checklist For Suturing

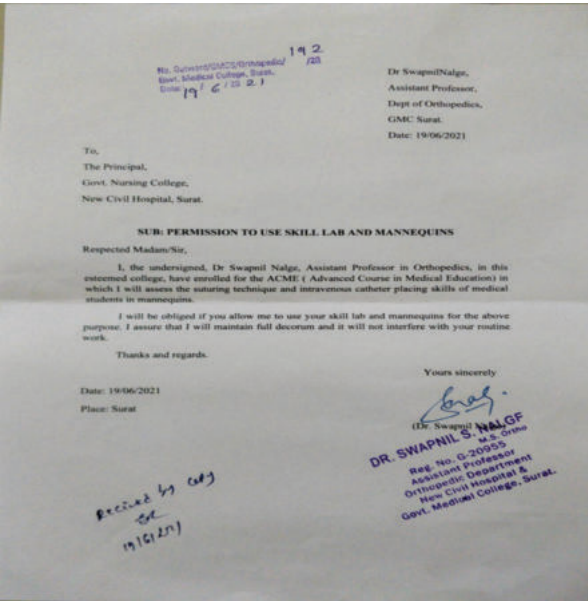
The student performance would be assessed according to this checklist and areas of strength and weakness can be indicated on the checklist. Each item scores one point of a total of 20.

Components of suture placement

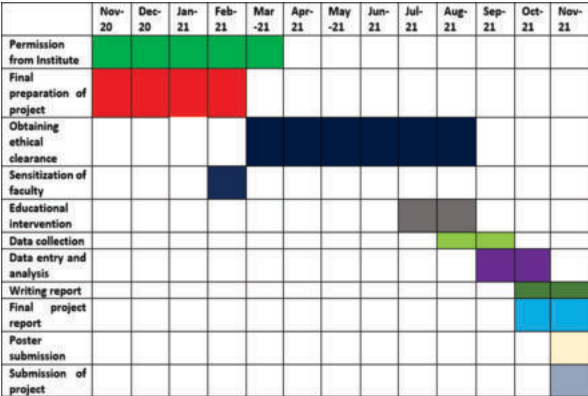
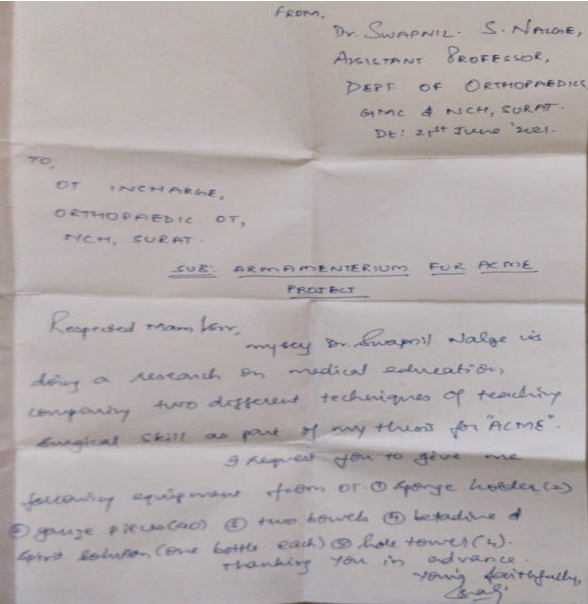
1. aseptic precautions taken.
2. Mount the needle at one-third length from the thread end in the needle holder
3. Correct hold of needle holder
4. Correct hold for tissue forceps
5. Needle at right angles to the wound edge and perpendicular to the tissue surface
6. Appropriate distance from the edge of the buccal flap
7. Atraumatic handling of the tissue with toothed forceps
8. Passing needle through the flap and retrieving it with an instrument
9. Remounting the needle correctly
10. Full bite of tissue on the second side and retrieve the needle with an Instrument
11. Demonstrate pronation and supination of wrist (movement occurs at wrist)
12. Needle secure during tying of knot
13. First throw – 2 turns; grasp free end of suture; slide the knot down; approximate wound edges
14. Second throw – one turn in opposite direction to first throw; grasp free end of suture; slide knot down and tighten
15. Cut suture tails to length suitable for wound site and material used
16. Place the knot to the side of the wound
17. Good final apposition of wound
18. Needle secure or disposed off when finished.
19. proper hand washing technique followed.
20. proper disposal of gloves.

2. Checklist For Iv Cannula Insertion

1. Wash hands and wear gloves.
2. Apply tourniquet proximal to proposed puncture site. Tie in a manner such that the tourniquet can be released by pulling on one end.
3. If the veins are not prominent, gently rub the vein along the longitudinal axis to make it more superficial.
4. Select appropriate vein puncture site and use the most distal branch of the vein selected
5. Release the tourniquet
6. Prepare the site with aseptic precautions and allow to dry
7. Reapply the tourniquet
8. Draw the skin just below the insertion site taut using the thumb of the non-dominant hand
9. Puncture the skin parallel to the path of the vein with the bevel up and the needle at a 30-to-45-degree angle
10. Advance the needle until resistance is met. Next, reduce the angle of the needle and slowly pierce the vein.
11. Observe for blood in the catheter hub or tubing of the winged infusion set. Continue to insert the needle approximately ¼ inch into the vein.
12. To confirm
13. Release the tourniquet
14. Advance the catheter device
15. Place a 2 X 2 gauze pad under the catheter hub and remove the stylet while holding the hub securely
16. Properly dispose of sharp
17. Connect primed IV administration or flushed saline lock tubing to catheter hub
18. Secure catheter with transparent semi permeable dressing and tape
19. Label dressing with date, time, catheter gauge and length, initials (dressing should be changed every 72 hrs if patient is admitted or IV staying in place)
20. Discard supplies in appropriate container and wash hands.



3.Permission to use the simulation labortatory and equipment:



Gantt chart:

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