

ORIGINAL ARTICLE

One Minute Preceptor Model – place or to replace

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ABSTRACT

Introduction: Neher's 1992 One Minute Preceptor Model (OMP) offers a concise teaching approach based on five micro skills. Its acceptance led to research on efficacy, with a critical factor being the teacher's skill. In medical education, where small group teaching prevails, understanding factors influencing teaching effectiveness is crucial. **Methods:** Conducted at Dr. D Y Patil Medical College, the mixed-methods interventional study involved 32 Postgraduate Students and 4 Professors. A randomized controlled trial and qualitative interviews assessed the impact of OMP on teaching efficacy and gathered teachers' experiences. **Results:** Quantitative analysis revealed varied preferences among teachers for OMP and traditional methods, emphasizing the importance of teacher choice. Thematic analysis of qualitative interviews highlighted perceptions favouring OMP for efficiency and traditional methods for foundational teaching. **Conclusion:** An approach, to accommodate different teaching preferences, can enhance overall educational outcomes.

KEYWORDS

One Minute Preceptor, Teachers' Perspective, Educational Outcomes, Effectiveness

INTRODUCTION

In order to diagnose the patient, control the learners' concurrent mode of thought, and boost their self-esteem and contentment, Neher developed the One Minute Preceptor Model in 1992(1). It is not feasible to conduct a lengthy teaching session at that time due to time limits, but the learner can benefit much

from one or two remarks that provide a relevant and helpful teaching point. First of all many scholars embraced this approach in the beginning and devised research projects to examine its efficacy (2). But the effectiveness of a teaching approach depends on the person using it(3). So, the duty of the teacher in effectively delivering the content to the

student is of paramount importance, especially in small-group teaching.

Teachers' responsibilities include a significant amount of small group teaching (SGT), which is a frequent practice among physicians working in medical education. Most of them conduct these sessions based on prior teaching experience; less than one-third have had formal training in SGT (4). According to a study, a student's grades in several topics can vary greatly based on the efficiency and caliber of their instruction (5,6). More significantly, since these studies were conducted abroad, it's critical to determine whether Indian students might benefit from the same findings. In one of the study by Chingos and Peterson presented a surprising finding that observable teacher traits like credentials and qualifications have no bearing on how effective a teacher is in the classroom (7) though done in the school students this point definitely needs some pondering. As a result, evaluating the elements that have a substantial impact on teaching effectiveness yet go beyond teaching credentials is crucial. This emphasizes the necessity of doing a qualitative study on study participants about teaching quality as well as on the teachers or preceptors about their experience in using these new techniques becomes important as this area needs further research.

Our study's aim is to ascertain whether the efficacy and caliber of the preceptor's instruction affects OMP, a student-centric teaching approach. Also to study the overall experience of the teachers in using this technique.

MATERIAL & METHODS

The study was done in the Department of Pediatrics Dr D Y Patil Medical College Pune. The study was intended only for Post graduate students in Pediatrics.

Inclusion criteria: All post graduates students of the department of Pediatrics of Dr DY Patil Medical College Students who had consented to be a part of the study

Exclusion Criteria: Last year exam going students were excluded from the study.

Study Design: The study was done by mixed methodology with the quantitative study being

a two group experimental randomized controlled study and the qualitative method is a questionnaire based study and in depth interviews being taken.

Sample size and Study population

A sample size was of 32 post graduate residents.

The residents of Dr. D Y Patil Medical College, Department of Pediatrics were selected for the study. The students came from different parts of the country and had a diverse socio-cultural background. They did their undergraduate education at different institutions in different parts of India and all had cleared their NEET examinations. This additionally helped in establishing external validity.

Informed Consent: Their informed consent was taken at the beginning of the study.

Randomization: The students were divided into 2 groups by a random allocation process done by code-generated randomization. Randomization was done so as to eliminate selection bias.

Topics for preception: Seven topics of clinical relevance were chosen for preception. These topics were chosen according to their importance in different clinical settings. These were also the topics where formal lectures for the study participants were never taken so that a topic-related selection bias was avoided.

The topics chosen were :-

A) For emergency and critical care- 3 topics

Pediatric life support

Shock in Pediatrics

Status epilepticus

B) For newborn care- NRP {Neonatal Resuscitation Programme }

C) For OPD care

Immunization practices

Breastfeeding and newborn care

D). For regular inpatient care

Growth & Development

The study design was a 2-group interventional randomised study design

The validity of the present study was improved by taking the following points into consideration

Randomization was done so that equivalent groups were established in the study and a selection bias was negated

Maturation is a frequent and important *confounder* in all educational research and nature-nurture studies. It is a process where the results would vary due to the passage of time. Like the respondents growing old, getting inputs from various sources. This was eliminated in the present study by planning the pretest intervention and post-test on the same day in a few hours.

Testing This means that the students taking the test repeatedly or on more than one occasion performed better than those taking it for the first time. This was largely eliminated by giving the pre and post-test only once before and after the preception, rather than on multiple occasions, as a recall was never studied.

Instrumentation: instrument decay is the independent changes in the measuring instrument that may cause a difference to be observed in the two groups. This was eliminated by using a fixed valid pre and post-test and the history and conditions during both sessions were maintained similar in nature. The validity of the tool was established in 2 ways, one by the validation by a group of 5 subject experts above the rank of associate professor, and additionally, a pilot study was done on a population of 15 students for validity.

The students were divided into 2 groups by random allocation. (O1 and O2 groups). The randomization was done at the start of each new topic to prevent the initial equivalent group from becoming non-equivalent over a period of time. It was ensured that each student gets sufficient exposure to the intervention.

Choice of Preceptor: The preceptors chosen were of the designation of Associate professor and above with a teaching experience of more than 7 years. The preceptors chosen were subject experts with the special experience in the topic covered. They consented to participate in the study and received revised basic medical education technology training. In addition to this 4 sessions were taken for the preceptors to deliver the OMP model.

One preceptor delivered one topic to both groups by 2 different methods. One group was taught the topic by a lecture or a case

presentation of 1-hour duration The second group was taught the same topic by the same preceptor in the afternoon by the one-minute preceptor method. Both the groups were taught on the same day so as to avoid confounders due to the mingling and interaction of the study population.

The preceptors were given a topic of their expertise and 4 training sessions was conducted to use One minute preceptor as a teaching method to ensure uniformity of content delivery and assessment. The students were also taught another topic with one minute preceptor during the daily ward rounds so that they were aware of the process of One-minute preceptor model prior to the start of the study.

Operational definition: Traditional teaching methods included classroom teaching and tutorials of one-hour duration One-minute preceptor model meant - one-minute preceptor sessions of 5 micro skills incorporated for one hour duration.

Before the start of the topic, a validated pretest was administered. O1 group received traditional teaching, which was done either in the form of a lecture or tutorial The O2 received the intervention and the OMP model was delivered to the group. The post-test was given at the end of the session. The groups were re-formed for every topic and it was ensured that each student was exposed to both the teaching methods. The students' qualitative data was generated using a satisfaction questionnaire and 10 in-depth interviews to get their perspectives and opinions about the two methods. In depth interview of all preceptors were taken for qualitative data analysis.

Statistical analysis: For the statistical analysis SPSS software version 2.0 was used. The continuous variables were in the form of mean, median, and standard deviation whereas the dependent variables were frequencies and distribution. Non-parametric tests were used for data analysis as the data was skewed. The Whitney-Mann U test was used for the comparison of dependent variables. The Preceptors' qualitative data about One minute

preceptor vs Traditional teaching was taken by a likert scale and indepth interviews of all four preceptors. Two proficient experts independently transcribed the responses, ensuring reliability through consensus resolution of any discrepancies. Verbatim transcription was captured using the transcription software Transkriptor version 1.0.17 to enrich the dataset. Thematic analysis employed open and axial coding to identify and relate themes, establishing a coding framework. The qualitative data generated was broken down data into meaningful parts, and then axial coding was performed i.e. the relationships and connections between these parts were identified to derive predominant themes. Inter-coder reliability was assured through independent coding of a subset of transcripts, reinforcing consistency. Triangulation was achieved by incorporating

multiple data sources, such as writing down the responses and recording the interviews to enhance the study’s robustness. The reliability of this process was maintained by adhering to a consistent methodology, supported by an audit trail documenting decisions and reflections throughout the research process.

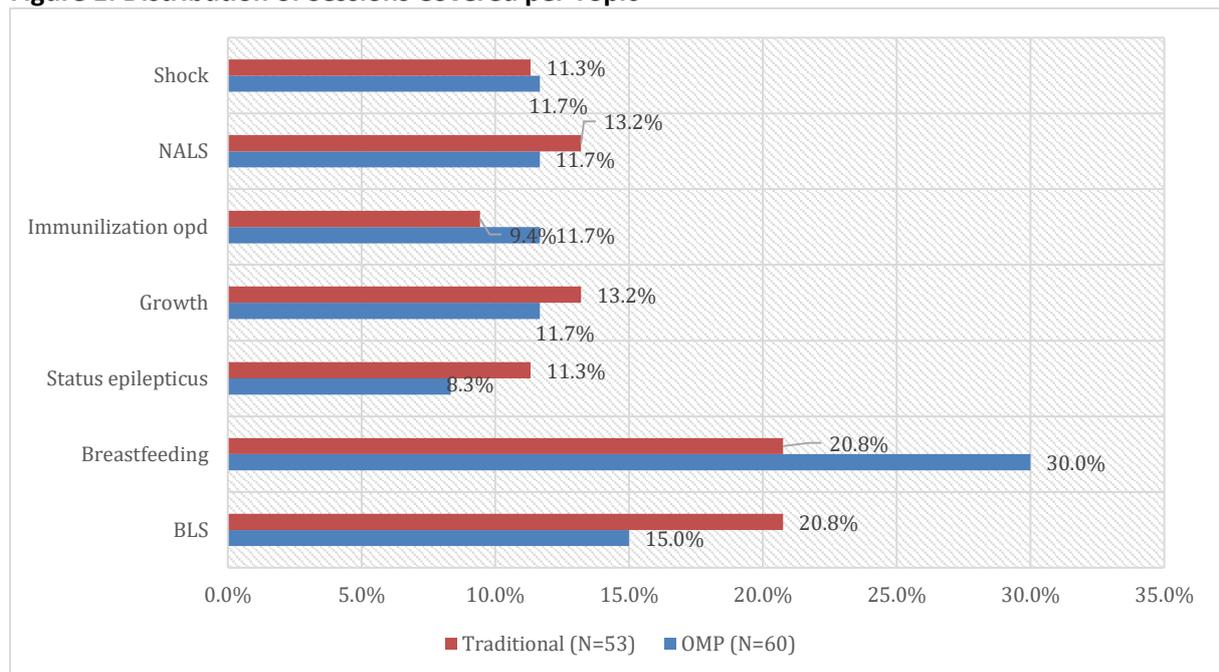
Ethical Considerations: The Institutional Ethics Committee gave the study its approval. At the start of the study, participants gave their informed consent.

RESULTS

In Figure 1, the study parameters of the experiment the total topics covered by both OMP and traditional teaching methods was 7 in number.

The topics covered in the skills lab were BLS and NRP.

Figure 1: Distribution of Sessions Covered per Topic



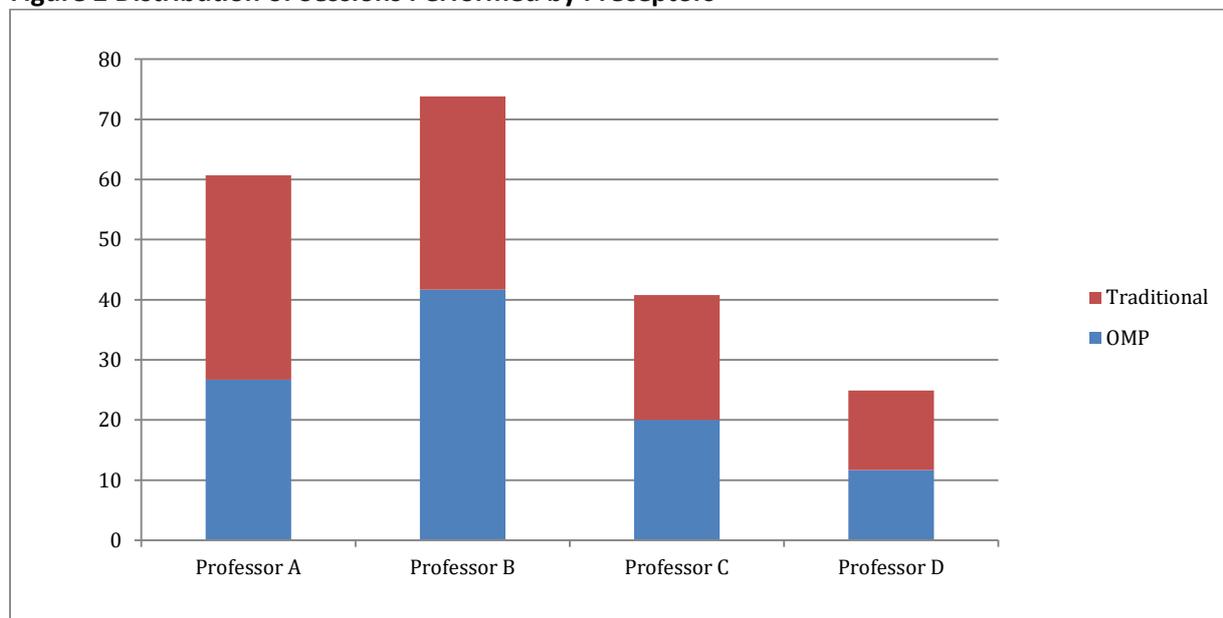
In The BLS teaching module OMP was delivered in 9(15%) students and traditional teaching was delivered in 11 students(20.8%).In the NRP group 7 students were enrolled in each of the two groups of OMP and traditional teaching .The percentage was 11.7% and 13.2% respectively .In the ICU settings , two topics covered were Status epilepticus and Shock in pediatrics.In the session on Status epilepticus,5 students (8.3

%)were enrolled in OMP and 6 students(11.3%) were enrolled in traditional teaching group.In the session on Shock,7 students were enrolled in OMP (11.7%) and 6 students were enrolled in traditional teaching group (11.3 %).In the OPD settings,the topic taken was immunization.7 students were enrolled in OMP group (11.7 %) and 5 students were enrolled in the traditional group (9.4%).In the post natal ward the topic chosen was

breast feeding. 18 (30%) students were enrolled in the OMP group and 11 (20.8 %) were enrolled in the traditional group. The inequitable distribution in this group was due to the labour Caesar calls and other emergency calls attended by the students.

In the Pediatric ward the topic chosen was Growth and Development. Here 7 students were enrolled in each of the groups. The percentage of OMP was 11.7% and traditional teaching percentage was 13.2%.

Figure 2 Distribution of Sessions Performed by Preceptors



The number of topics taken by the different preceptor by different methods is illustrated in Figure 2.

Professor A took 26.7% of the OMP topics and 34% of the traditional teaching topics.

Professor B took 41.7% of the OMP topics and 32.1% of the traditional teaching topics.

Professor C took 12% of the OMP topics and 11% of the traditional teaching topics

Professor D took 11.7% and 13.2% of OMP and traditional teaching topics respectively.

Table 1: Descriptive Statistics of pre-test and post-test Score in OMP group.

OMP	Statistic	
Pre-Test	Mean	5.20
	Median	5.00
	SD	1.63
	Minimum	2.00
	Maximum	9.00
	Range	7.00
	Interquartile Range	2.00
	Skewness	0.24
	Kurtosis	-0.32
	Post-Test	Mean
Median		7.00
SD		1.42
Minimum		4.00
Maximum		10.00
Range		6.00
Interquartile Range		2.00
Skewness		0.22
Kurtosis		-0.32

Table 2 Descriptive Statistics of pre-test and post-test Scores in traditional group.

Traditional		Statistic
Pre-test	Mean	5.58
	Median	6.00
	SD	1.46
	Minimum	2.00
	Maximum	9.00
	Range	7.00
	Interquartile Range	1.00
	Skewness	-0.23
	Kurtosis	0.43
	Post-Test	Mean
Median		8.00
SD		1.23
Minimum		5.00
Maximum		9.00
Range		4.00
Interquartile Range		2.00
Skewness		-0.31
Kurtosis		-0.94

Tests of Normality						
Traditional	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test	.162	53	0.001**	.949	53	0.025*
Post Test	.169	53	0.001**	.889	53	0.0001**

* The inter quartile range for the pre test is 1 and the post test is 2. The data is very skewed as the tests of normality are significant. The p value less than 0.0001. Due to this skewed nature of the data non parametric tests were applied for interpretation. Significant p value indicates skewed distribution of data and need for non-parametric tests.

Table No 3: Comparison of average change in pre and post scores

Group	Mean	SD	P
Change in score	1.7	1.5	0.402
OMP	1.9	1.1	
Traditional			

Non-significant using non-parametric Kruskal Wallis test.

The comparison done showed no evidence that the change in scores after OMP was superior to traditional teaching as the statistical tests were not significant (p value of 0.402)

Table No 4: Topic-wise comparison of the average change in pre and post-scores

Topic	Change in score						P
	OMP			Traditional			
	Mean	SD	Median	Mean	SD	Median	
BLS	3.11	0.78	3.00	2.09	0.54	2.00	0.006**
Breastfeeding	0.22	0.81	0.01	1.00	1.00	1.00	0.025*
Epilepticus	2.60	1.52	2.00	3.17	0.41	3.00	0.194
Growth	0.86	0.69	1.00	0.71	0.95	1.00	0.887
Immunization	3.29	0.95	3.00	2.80	0.84	3.00	0.381
NALS	2.29	0.76	2.00	2.14	0.38	2.00	0.545
Shock	1.71	1.60	2.00	2.50	1.22	2.00	0.554

** Highly significant using non-parametric Kruskal Wallis test* Significant using non-parametric Kruskal Wallis test

The topics wise change in scores is documented in table number 4. In the OMP group, the maximum change in score was seen in the topics immunization and BLS with a

mean change in score of 3.29 and 3.11 respectively. The medians in both these groups were also 3 each. In the traditional group, the maximum change in scores were seen in the

immunization and status epilepticus group with the mean change of 3.17 and 2.8 respectively. The median for these two topics was 3 each. The results clearly demonstrated the inter-topic variability in both groups. In the comparison of the topics by both methods The change in scores after BLS was 3.11 (Median of 3) after OMP while it was 2.09 (median of 2)after traditional teaching. This difference is statistically significant,(p <0.006)

showing OMP as a better mode of teaching BLS than traditional teaching.

The change in scores in the topic of breast feeding, the mean change in score after OMP is 0.22 (median of 0.01)whereas the mean after traditional is 1.(median of 2). This difference is statistically significant (p <0.025) thereby showing that Traditional teaching is better suited for the topic of breast feeding.

Table 5: Preceptor wise comparison of average change in pre and post scores

Teachers	Change in score						P
	OMP			Traditional			
	Mean	SD	Median	Mean	SD	Median	
Professor A(N=16)	2.75	0.86	3.00	2.11	0.47	2.00	0.011*
Professor B (N=25)	0.64	1.25	0.00	1.53	1.28	1.00	0.023*
Professor C (N=12)	3.00	1.21	3.00	3.00	0.63	3.00	0.815
Professor D (N=7)	0.86	0.69	1.00	0.71	0.95	1.00	0.887

* Significant using non-parametric Mann U whitney test, as the data was skewed.

In table 5, In the preception of Professor A , the change in score after OMP was 2.75(median of 3) and After traditional teaching it was 2.11(median of 2). This change in score after OMP was statistically higher than traditional teaching (p value of 0.011). Thereby showing a better effectiveness after OMP.

In the case of Professor B , the mean change in score after OMP was 0.64(median of 0.00) whereas mean change in score after traditional was 1.53 (median of 1), this difference in scores was statistically significant (p value of 0.023). This also clearly underlines the effectiveness of OMP with respect to traditional teaching.

In the case of Professor C , the mean change in score after OMP as well as traditional teaching was 3(median of 3) this difference in scores was statistically not significant (p value of 0.83). This also clearly underlines the equal effectiveness of both OMP and traditional teaching.

In the case of Professor D , the mean change in score after OMP was 0.86(median of 1) whereas mean change in score after traditional was 0.95 (median of 1), this difference in scores was not statistically significant (p value of 0.887). This also demonstrates that there is no difference in the effectiveness of OMP with respect to traditional teaching.

With respect to the vertical comparison among all the preceptors. It was seen that the change in scores following both traditional and OMP were the best with Professor C. mean change in scores of 3, in both the groups . The lowest increase in scores is with Professor B mean change of 0.67 after OMP and Professor D mean change of 0.95 after traditional teaching. Thereby demonstrating variability among different teachers both in OMP and traditional teaching.

Qualitative Thematic Analysis:

In the in-depth interviews of the teachers, OMP

- 1) It was reported that OMP and traditional teaching were equally effective but junior residents benefit from traditional whereas senior residents benefit from OMP
"both OMP and traditional teaching methods were useful but I think traditional works more for the junior residents as they have very little prior knowledge so a little more hand holding is required "
"Senior residents were answering better especially in the skills laboratory and areas where demonstration was required."
"Traditional for basics and OMP for the daily rounds and OPD based teaching "
- 2) Prior training in OMP definitely results in better teaching

One of the teachers commented that the "training in OMP helped as I was doing teaching on the rounds anyways but OMP training made it structured".

"Practice makes man perfect, applies to all teaching, more so for OMP as it is a relatively new method".

- 3) Teaching time is considerably less in OMP, so more topics can be covered in a stipulated time

"This process is fast so on post emergency days almost all the admissions can be discussed in a short time".

"It's literally Pediatric teaching on the go"
"Being fairly quick, it keeps students interested".

"Fast and to the point"

- 4) Prior knowledge and reading required for OMP

"It will be better if students are told about the topic in advance and do their homework first".

"They understand better if they have read about it, doing OMP becomes easier."

"Prior knowledge activation is a must in OMP"

- 5) All the teachers were greatly satisfied with OMP.

They have given a grade 5 for OMP and 4 for traditional teaching methods on a scale from 1 to 5 of satisfaction scale.

DISCUSSION

The pretest and the post test scores of the students were compared, for each topic taken by all the teachers, using both traditional teaching and OMP technique. Also the in depth interviews and satisfaction scores of the teachers was taken.

Since both the methods were effective, the study comparing the two methods was necessary. It was seen that the change in scores after OMP was 1.7 and 1.9 after traditional teaching. The difference was not statistically significant. Thereby showing that both the groups were equally effective. Clearly not establishing the superiority of one method over the other.

Satisfaction Scores: The teachers who participated in both OMP and traditional teaching gave generally positive feedback. This

suggests that OMP has been accepted by faculty members and has the potential to be an effective teaching method. The scores of 4 and 5 out of 5 indicate a high level of satisfaction, which may encourage its adoption in medical education.

Out of the four teachers, one performed better in OMP had a median score of 3 (p value 0.02) and one performed better in traditional teaching methods had a median score of 2 (p value 0.05), according to the quantitative analysis. The other two were just as skilled in both approaches. This emphasized once more that teachers will have a preference for any method, even if they have received training in more recent approaches like OMP, and that teacher preference will determine the final results. This is consistent with Chan et al.'s findings(3). This is a significant finding given that, up until now, the topics in the traditional method had been assigned based on the faculty members' areas of expertise or interest. However, when creating the lesson plan, the teacher, the subject, and the perception technique should all be aligned.

Thematic Analysis: The thematic analysis of the interviews conducted with the teachers provides valuable insights into their perceptions. The consensus among the faculty that OMP should focus on core competencies, emergency triage, and OPD-based topics suggests that OMP is well-suited for certain aspects of clinical teaching. Meanwhile, the preference for traditional teaching in earlier stages of students' training and the use of OMP in grand rounds and as a revision tool reflects a strategic approach to integrating these methods.

As per Chan et al, The Fresh teachers accepted the OMP. After the OMP training sessions, the fresh teachers were found to involve more in getting commitments from the students and in reinforcing what the students have done right, two of the five OMP micro-skills. They considered the OMP to be very useful for their development as anatomy teachers.(8)

Workplace-Based Assessment: The teachers recognized OMP as a valuable means of workplace-based assessment. This aligns with the growing emphasis on competency-based medical education, where assessing and

demonstrating skills in clinical settings are crucial. The ability to precept and assess simultaneously is a significant advantage, as it allows for timely feedback and skill development.

According to Farrell et al, the OMP elaborates the teaching of higher level concepts, facilitates the assessment of students' knowledge, and includes the provision of feedback. Students indicate satisfaction with this method of clinical case-based discussion teaching.(9)

Teacher Expertise: The text emphasizes that more experienced teachers may prefer traditional teaching for concept building. This aligns with the idea that senior teachers may have a deeper understanding of complex medical concepts and are better equipped to convey these to students. In contrast, OMP may be well-suited for junior teachers and specific clinical scenarios where quick decision-making is essential.

This is similar to the study by Gatewood et al which found that OMP can be a useful tool for precepting, provided preceptors are formally trained in the method. This underlines the importance of proper training and support for teachers when adopting new teaching methods.(10)

According to Eckstrom et al It was found that, those Faculty who underwent OMP training ,felt that they increased their OMP as teaching method over the next 6 months.(11) Faculty perception of its usefulness is very important for continued performance of newly acquired skills.

In contrast according to Chan et al(2014) OMP use by experienced teachers of Anatomy did not help student learning in gross anatomy, as these teachers had established their own approaches, which were flexible and adaptive, unlike OMP which is structured.

Specific Clinical Applications: There are some specific scenarios where OMP could be particularly effective. This includes spot diagnosis, correlations of clinical signs with conditions, genetic conditions, metabolic conditions, general examination, and specific diagnostic criteria. OMP's ability to deliver concise, focused teaching in these areas is a

testament to its potential effectiveness in specific clinical contexts.

CONCLUSION

In conclusion, the feedback from teachers regarding One Minute Preceptorship (OMP) and Traditional teaching demonstrates that both methods are perceived as valuable in the context of medical education. Teachers acknowledged that OMP is particularly advantageous in situations where time constraints are a concern, such as OPD-based teaching and skills lab instruction.

Also OMP did not score over traditional teaching as far as the betterment of scores was considered across all the teachers. Clearly indicating that different teachers have a natural preference of different Teaching learning methods. Therefore highlighting that preception should also focus on the comfort and expertise of the teacher.

It is essential to note that OMP requires prior knowledge, and the activation of prior knowledge is more critical in this teaching method. Students' increased attentiveness during OMP sessions suggests that it may be a more engaging and efficient approach, particularly for senior students who have a solid foundation of medical knowledge.

Furthermore, OMP training is seen as a valuable tool for junior teachers to enhance their teaching skills and effectively implement this method. Additionally, OMP's ability to provide timely feedback is emphasized as a key advantage, making it a valuable tool for workplace-based assessment.

In light of these findings, the incorporation of OMP into medical education should be considered, especially for specific topics, senior students, and scenarios where efficient and timely feedback is crucial. This balanced approach, considering the strengths of both OMP and Traditional teaching, can enhance the overall educational experience for students and facilitate the development of competent healthcare professionals.

AUTHORS CONTRIBUTION

All authors have contributed equally.

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Nil

CONFLICT OF INTEREST

There are no conflicts of interest.

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