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Original Article

Effectiveness of Multimodal Obstetric Training for Intern Doctors

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Abstract

Background: Medical students in Bangladesh must enroll in a one-year log book-based rotatory internship training program as a prerequisite for Bangladesh Medical and Dental Council registration. However, there is no assessment to determine whether the interns have actually acquired these skills upon completion of their training period.

Aim: This study aimed to evaluate the effectiveness of multimodal Obstetric training for competency enhancement of the intern doctors in the Obs & Gynae Department of a tertiary-level teaching hospital in Bangladesh.

Methods: Sixty fresh medical interns were included in this study during their 12-week placement in Obstetrics-Gynecology and allied subjects in Chittagong Medical College Hospital from January to June 2024 and randomly allocated into two equal groups: experimental and control. The experimental group received 3-days intensive preparatory training consisting of lectures, simulations, e-modules, and demonstrations on the conduction of expected vaginal delivery, episiotomy, counselling on breastfeeding, and catheterization. Interns in the control group completed their 12-week training without any preparatory training. A pretest and post-test evaluated participants before and after 8-week training.

Results: The groups' baseline demographic and academic characteristics and pretest knowledge scores were comparable. Overall, there was a 56.78% increase in total test scores in the experimental group compared to 21.52% in the control group ($p<0.001$). The interns were satisfied with the multimodal training, and most felt confident about performing the task independently. The majority of the participants in the experimental group agreed or strongly agreed that the pre-placement multimodal training course was a highly effective learning tool and would recommend the course to other interns.

Conclusion: Preparatory courses for Obs-Gynea interns can increase confidence and preparedness for internship training. Departments can take steps for organizing such course to assist their interns in providing skills they can practice before entering professional life.

Keywords: Internship, MBBS, Multimodal Training.

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Introduction:

An internship is a period of training for medical graduates where they get practical experience and develop their skills under supervision, with the goal of being capable of working independently. It is expected that, at the end of the training an intern will be able to perceive the nature of the problems presented to them by the patients and make appropriate decisions, communicate effectively with the patients, their relatives, with doctors and other health care providers at their working places, and behave appropriately (attitude) with the patients and with their relatives considering Ethical and legal issues.[1,2]

Generally, internship should be accomplished in tertiary level medical institutions having sufficient resources in terms of personnel, skills and training opportunities so that the interns can develop their medical know how.[2,3] Worldwide the structure of internship varies, but mostly all include minimum a year of practice and training.[4] In Bangladesh, after passing the Final Professional Bachelor of Medicine and Bachelor of Surgery (MBBS) Examination, medical students must enroll for One-year log book based rotatory internship program; specifically, 11 months and 15 days at medical college hospital and 15 days at Upazila Health Complex. To avail permanent registration for practicing independently, completion of internship as designed by Bangladesh Medical and Dental Council (BM&DC) is a mandatory prerequisite.[1]

Usually, the internship program began with an orientation class that covered aspects of medical ethics, techniques of sample collection for investigations, rational drug prescription, operation theatre protocol, medico-legal aspects, health research methodology, etc. A logbook is given to the interns, and their progress is monitored through a logbook.[5] In Bangladesh, interns are placed for

a 12-weeks schedule in Obstetrics-Gynecology and allied subjects. Within this 12-weeks period, interns have to observe some activities, perform those activities under supervision, and finally able to perform independently some important activities mentioned in the logbook. However, there are concerns in terms of training duration, skills, assessment etc. on the preparedness of medical graduates in Bangladesh.[3,6,7]

Presently, newly graduated medical students receive no specific bedside procedure training before starting their internship except what they have learned as undergraduate students. Instead of following the traditional curriculum, it has been observed that pre-internship training in bedside procedures helps to increase the self-efficacy and performance skills of interns, helps in improving the quality of care received by hospitalized patients, and would help in developing a better-equipped primary care physician after completion of the internship.[8-10]

We observed that ongoing 12-week Obs and Gynae placement could be more effective in developing competence among the interns. There are gaps in the knowledge and practices regarding some important topics in Gynae and Obs. More than traditional log book guided placement assessment is needed to develop the desired level of competence in the interns. In this context, we developed a pre-placement three days Obs and Gynae training program for the incoming interns. The training includes four important tasks in Obstetrics - conduction of normal vaginal delivery, performing episiotomy, introduction of urinary catheter, and counselling on breast feeding. Improve skill on these topics are critical for improving maternal and neonatal health in Bangladesh. We hypothesized that intern doctors assigned to a three-days multimodal Obstetric training in addition to the traditional training schedule would be associated with enhanced competency in some important Obs and Gynae tasks.

Methods

A quasi-experimental study was conducted among intern doctors at the Department of Obs and Gynae, Chittagong Medical College Hospital, Chattogram, from January 2024 to June 2024. The Ethical Review Committee of Chittagong Medical College approved the study protocol. All the intern doctors placed in 12-week Obs and Gynae placement were invited to participate in the study by completing a consent form containing an information sheet explaining the detailed study intervention and study procedure. They were informed that they would be randomly assigned to a pre-placement 3-day training group or a control group if they chose to participate. If assigned to a 3-day training group, interns were also told that they would be required to attend three-hour sessions for three days in addition to their regular ward duty. Those who refused voluntary participation were excluded. Within the study period, it was possible to include 60 interns (30 in each group) in this study. The consented participants were randomly allocated into two groups (intervention and control) by simple random sampling. Data were collected using a structured case record form containing all the variable interests. Self-reported confidence scores in performing various skilled activities by trained interns were evaluated by a five-point Likert scale (No-1, Not really-2, Undecided-3, Somewhat confident -4, and very much confident-5). The interns' view of the pre-placement training in the intervention group was evaluated by responses on a five-point Likert Scale (Strongly disagree=1, disagree=2, neutral=3, agree=4, strongly agree=5).

The interested interns provided baseline data regarding age, sex, and final professional exam marks using a structured case record form. A pretest evaluated the interns' baseline knowledge and skills. Afterwards, the principal investigator randomly assigned participants to the experimental or control group using an online random number generator.

A three-day training on selected topics was provided through PowerPoint presentations, video presentations, simulations, and e-modules. The investigators developed the training materials (Supplementary files). Participants in the intervention group attended the training sessions with their regular ward duty for three days. After 8 weeks of placement in the Obs and Gynae ward, study participants were scheduled to assess knowledge, skill and confidence on the topics included in the training programs.

Quantitative data were expressed as mean (±standard

deviation) or median (interquartile range), and categorical data were expressed as count and percentage. Descriptive statistics and the independent sample t-test were used to characterize the groups and assess the demographic comparability of the randomized groups. The pre-intervention scores were compared to identify possible baseline differences between the randomly assigned groups. An Independent t-test was used to compare scores between the two groups. The percentage increase in the total knowledge score was compared between two groups using the Mann-Whitney U test. P value <0.5 was considered statistically significant. All analyses were performed using IBM SPSS 26.0 for Windows (IBM, New York).

Results

The age ranged between 24 and 26 years, with the mean age being around 25 years in the study. There was male predominance in both groups. Table I shows that the experimental and control groups were similar in terms of their mean age and gender distribution (p>0.05).

Table I: Age and gender of the participants stratified by study group

Characteristics	Experimental group (n=30)	Control group (n=30)	P value
Age, years			
Mean ±SD	24.6 ± 0.5	24.6 ± 0.6	**0.794***
Gender			
Male	13 (43.3)	14 (46.7)	**0.795†**
Female	17 (56.7)	16 (53.3)	

Data were expressed as mean ±SD or frequency (per cent). P value was obtained from *Independent sample t test and †Chi-square test.

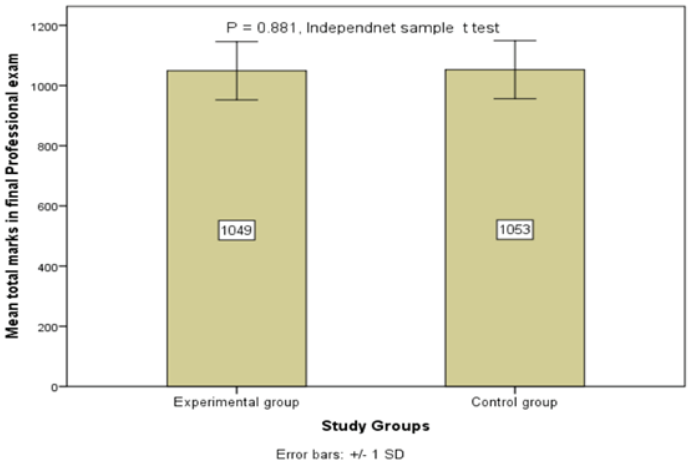

Figure1: Bar diagram with error bar comparing mean total marks obtained in the final professional exam by the participants in experimental and control group

The mean total marks obtained in the final Professional exam by the participants were 1046.27±109.23 and 1047.60 ± 108.95 in the experimental and control groups, respectively. An independent sample t-test revealed that the difference was not statistically significant (p=0.881). The mean total pre-intervention score was 56.33 ± 9.14 and 56.18 ± 8.92in the experimental and control group, respectively. The average pre-intervention scores were similar between two groups (Table II).

Table II: Pre-test scores of the participants stratified by study group

Test	Mean ±SD score in		P value*
	Experimental group (n=30)	Control group (n=30)	
Pretest OSPE score	12.23 ± 1.75	12.15 ± 1.78	0.857
Pretest MCQ score	44.10 ± 7.52	44.03 ± 7.37	0.972
Pretest total score	56.33 ± 9.14	56.18 ± 8.92	0.949

*P values were obtained from Independent sample t test

The mean total post-intervention score was 90.08±5.49 and 70.05±4.13 in the experimental and control group, respectively. The average pre-intervention scores were significantly higher in the experimental group than the control group (p<0.001) (Table III).

Table III: Post-test scores of the participants stratified by study group

Test	Mean ±SD score in		P value*
	Experimental group (n=30)	Control group (n=30)	
Post-test OSPE score	33.65 ± 2.98	17.77 ± 2.12	<0.001
Post-test MCQ score	56.43 ± 3.04	52.73 ± 3.30	<0.001
Post-test total score	90.08 ± 5.49	70.50 ± 4.13	<0.001

*P values were obtained from Independent sample t test

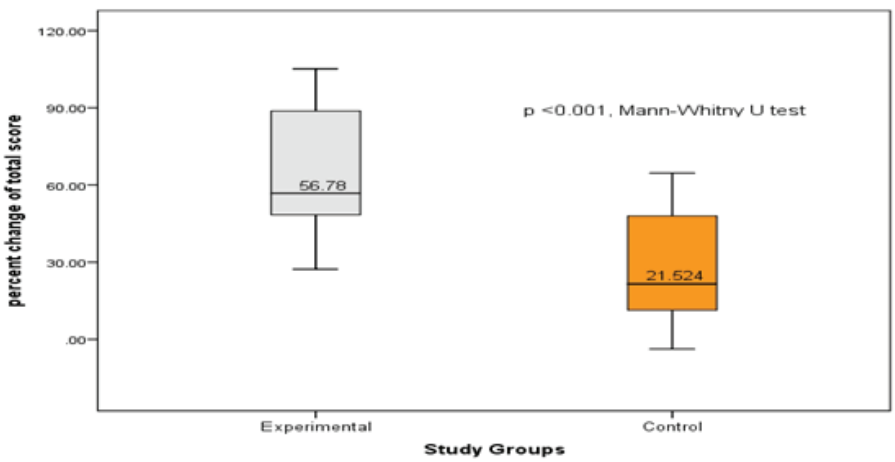

Figure 2: Comparison of percent change of total test score between experimental and control group

The median (interquartile range) percent change of total score from the pretest to the post-test was 56.78 (44.78-88.78) % and 21.52 (11.3-48.75) % in the experimental and control group, respectively. Independent sample Mann-Whitney U test revealed that the experimental group scored significantly higher than the control group (p<0.001).

Figure 3: Self-reported scores of confidences in performing various skilled activities by trained interns between two groups

Out of 30 interns in the experimental group, about half of the participants reported feeling very confident about the selected activities, and 13 participants reported feeling somewhat confident about performing the task independently. On the other hand, in the control group, only 4 participants felt confident, and 11 were somewhat confident. Majority of the participants in the experimental group agreed or strongly agreed that pre-placement multimodal training course was highly effective learning tool and recommend that training course for other students.

Table IV: Attitude of the participants of the experimental group towards the pre-placement training

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The course was organized in a manner that helped me understand the underlying concepts	0	0	0	0	100.0%
The course has increased my confidence in performing well on my advanced clerkship rotation(s) in Gynae & Obs	0	0	0	10.0%	90.0%
This course was helpful towards my progress in matching into Gynae & Obs	0	0	0	13.3%	86.7%
I would highly recommend this course to other students	0	0	0	0	100.0%

Discussion

A medical internship that entails training as a doctor and working in an accredited facility under supervision within the limits of a well-defined scope prepares the professional for independent, competent, ethical medical practice. With the conventional internship training program, gaps persisted in our interns' knowledge and practices regarding some essential maternal and neonatal health topics.

We developed a three-day pre-placement training on four important Gynae and Obs topics. The present study demonstrated that in addition to the traditional log book guided placement training and assessment, the pre-placement training enhances competency in some important Obs and Gynae tasks among interns.

Our multimodal training provided better results than the conventional internship training, which might be

attributed to the direct supervision, structured practical demonstration, and scope of hands-on practice in the multimodal training. Previous studies found that to achieve practical medical intern training, good quality supervisors, effective supervision, adequate opportunity for experiential learning, a conducive environment, a sound support system (hospital management, hospital staff, academic opportunities), personal attributes, and reasonable workload are essential factors.[15,16] This teaching hospital (and similar ones in Bangladesh) lacks some of the factors conducive to practical training and needs to implement steps to address this shortcoming urgently. We think that a short pre-placement multimodal training would help overcome the mentioned shortcomings and effectively guide the interns in self-directed learning.

Internship training is the backbone of undergraduate skill acquisition. Interns should be efficient enough to conduct normal vaginal delivery and perform episiotomy and catheterization through their internship training. Another critical aspect of a healthcare professional is good counseling and communication skills. Through counseling, healthcare professionals could bring desirable behavioral changes among their clients regarding good practice. In this regard, counseling on breastfeeding is essential for good maternal and child health. We found that the traditional log book-based training program was insufficient to develop desirable efficiency among the interns on the mentioned skills. Alarmingly, we found that only 13.3% of the interns felt very confident performing mentioned activities in the control group, which indicated the weakness of the traditional log book-based internship training. However, around 50% of the interns in the experimental group felt confident in performing the activities independently.

Our findings indicate that training given was very effective and had a significant improvement on the actual performance of the interns which would ultimately benefit the patients. Most studies have used post training questionnaire for assessment. One study from Australia compared the self-reported confidence to observed competence for common clinical procedures in first year residency and found that there was no co relation of self-reported confidence to observed skill which varied among the study group being inadequate in some.[17] Hence self-reported questionnaire assessment may not give a real picture regarding actual competence in skills. A skills training program, even with video presentation and demonstration with explanation can be useful in centers where skills lab is not available. Limitation of the present study was the small number of subjects and that only four skills were studied. But the evidence obtained was highly significant and can possibly be extrapolated to other skills as well. The introduction of a structured procedural skills training program with an orientation program including all clinical departments before the internship is therefore of help in motivating interns by increasing their self-efficacy and helping them to learn and do bedside procedures better, resulting in improved patient care.

Conclusion

A multimodal pre-placement training orientation substantially increased intern readiness for learning skills related to Gynae and Obs. Additionally, the interns were satisfied with the training and felt that it was helpful before starting the internship training. The present study findings affirmed the need for structured and systematic skills training for new medical graduates, as reported by others in the literature.

Recommendation

Based on the study findings, integrating the pre-internship program into the logbook to improve the competency and outcome of internship training could be recommended. The study could help policymakers, medical practitioners, and academicians review the current structure of the internship program in medical colleges of Bangladesh and enhance the internship program to a world-class level. Further studies using more procedures in a larger study group can be done.

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Conflict of interest:

There is no conflict of interest.

Contribution of Authors

1.Professor Dr. Shahena Akter: Conceptualization, Literature Review, Critical Review, Final approval
2.Dr. Fahmida Islam Chowdhury: Training of doctors, Supervision of data analysis, Final manuscript editing
3.Dr. Tanjila Karim: Training of doctors, Data collection, Manuscript writing

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