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## Low Baseline Score Shows Significant Improvement With Research Methodology Workshop

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### ABSTRACT

**Background:** A good research project may run the risk of rejection simply because the proposal is poorly written. With the current challenges in funding, it appears essential for senior investigators to impart their grant proposal writing expertise to junior investigators.

**Objective:** To determine if the perceived gain in research proposal writing skills is more in those with lower baseline skill than in those with higher baseline skill.

**Methods:** A one day workshop on "How to Write a Research Grant Proposal" was organized in All India Institute of Medical Sciences (AIIMS). A total of 55 participants participated in the workshop. We received 36 completed evaluation forms out of 55 participants. All the participants were newly joined faculties of All India Institute of Medical Sciences, New Delhi, India. At the end of the workshop, pre-tested evaluation forms were distributed among the workshop participants consisting of eight questions. Statistical analysis of perceived improvement of research proposal writing skills as per participant response using paired t-test between before and after the workshop.

**Results:** The study revealed that the workshop learning method produced a significant perceived gain of skills for writing a research proposal. Statistically significant improvement of writing research proposal skill was obtained as perceived by the participant. The results suggest that there is significant improvement in skills with lower baseline score (mean difference=-1.455, SD=0.596, p-value=0.045) but not in those with higher baseline score (mean difference= -0.786, SD= 0.579, p-value =0.19).

**Conclusion:** The participants whose writing research proposal writing skills was low at baseline score show more chance of perceived writing skills (after workshop) as compared to those whose baseline score was high.

**Key words:** Research Proposal, Research Grant, Workshop, Evaluation, Writing Skills

## INTRODUCTION

In the intensively competitive world of research grants, reviewers have only limited amount of time to determine whether the proposal should be funded. Most beginning researchers and students don't fully understand what a research proposal means, nor do they understand its importance. The quality of research proposal depends not only on the quality of proposed project, but also on the quality of proposal writing.<sup>1-3</sup> Although grant proposal development is an integral part of many academic careers, often academicians receive no formal course training in grant proposal writing during graduate school. A good research project may run the risk of rejection simply because the proposal is poorly written.<sup>4</sup> With current challenges in funding, it appears essential for senior investigators to impart their grant proposal writing expertise to junior investigators.<sup>5-6</sup> Therefore, it pays if your writing is coherent, clear and compelling.

One day workshop on "How to write a Research Grant Proposal" was organized by Clinical Epidemiology Unit (CEU) with collaborative assistance from Academic and Research Sections of AIIMS. The participants were newly appointed faculty of various departments of All India Institute of Medical Sciences (AIIMS). During the workshop, issues related to research proposal were explored. The workshop was participatory in nature as the participants working in various departments explored their issues. Discussion sessions after each talk allowed time for further discussions of points raised and sharing of ideas

amongst participants and faculties. The main aim of the workshop was to engage participants in actively thinking about how to frame their research questions, discuss the significance of their work for society and their own fields, and distill the proposal into an effective abstract. The workshop was supported by lectures, demonstration and discussion. It was designed to train newly appointed faculty of AIIMS to incorporate planning into their writing and to help draft viable proposals capable of being carried out. Often, success in obtaining grant funding has been an essential career skill for faculty in research and academic institutions.

There is a clear need for the research methodology workshops to improve the research proposal writing skills to introduce the key issues in writing good research proposal for the grant and to perform good research to develop innovative ways to solve several clinical issues related to health. Most of the newly joined faculties have limited amount to exposure in research methodology, but some had some exposure for the same. Therefore, most of them face problem in writing a research proposal. The Aim to this paper is to determine whether one day workshop can improve the writing skill in newly joined faculties by asking the question by feedback questionnaire at the end of workshop compared to those who have certain amount of exposure of research methodology.

## MATERIAL AND METHODS

A one day workshop on "How to Write a Research Grant Proposal" was organized at All

India Institute of Medical Sciences (AIIMS). The topics covered during the workshop are enlisted in Table 1. At the end of the workshop, Evaluation

forms were distributed among the workshop participants consisting of following eight (8) questionnaires. (Table 2)

**Table 2:** List of Questionnaires asked during the workshop

| Q. No. | Question  | Number of respondent in each response option |    |    |    |    |
|--------|---|--|----|----|----|----|
|        |   | 1  | 2  | 3  | 4  | 5  |
| 1      | My expectations of this workshop were   | 0  | 0  | 8  | 24 | 4  |
| 2      | The organization of the workshop was  | 0  | 0  | 3  | 20 | 13 |
| 3      | The learning activities were  | 0  | 0  | 10 | 14 | 12 |
| 4      | The presentations were  | 0  | 0  | 6  | 17 | 13 |
| 5      | My attendance at this workshop should prove   | 0  | 0  | 6  | 12 | 16 |
| 6      | Would you like to attend a higher level of workshop in future?                          | 0  | 0  | 1  | 2  | 33 |
| 7      | Would you recommend this workshop to your colleagues?                                   | 0  | 0  | 4  | 8  | 24 |
| 8 a    | How would you rate your research proposal writing skills?<br><i>Before the workshop</i> | 8  | 14 | 9  | 5  | 0  |
| 8 b    | How would you rate your research proposal writing skills?<br><i>After the workshop</i>  | 0  | 2  | 18 | 12 | 4  |

## DATA ANALYSIS

The data collected were analyzed and figures were generated by using the SPSS 17.0 statistical software package and Microsoft Office Excel 2007. Statistically significant improvement of perceived writing research proposal skills as per participant response was tested using paired t test between before and after the workshop.

## RESULTS

### Participant Characteristics

There was diversity among 55 participants in relation to age, gender and educational

background. Participants were aged between 30 and 50 years. Most participants were male (81.8%, n = 45) with a mixed educational background. Details of the participants are given in Table 3.

A total of 55 participants participated in the workshop. We received 36 filled evaluation forms out of 55 participants. Baseline writing research proposal knowledge of most of the participants was low. Post-workshop writing research proposal knowledge was significantly higher than a pre-workshop, irrespective of past writing status.

| Criteria               | Number of participants | Mean                |                    | Mean Difference | P value* |
|------------------------|------------------------|---------------------|--------------------|-----------------|----------|
|                        |                        | Before the Workshop | After The workshop |                 |          |
| Lower Baseline Skills  | 22                     | 1.64                | 3.09               | -1.455          | 0.045    |
| Higher Baseline Skills | 14                     | 3.36                | 4.14               | -.786           | 0.19     |

\*Paired t-test

**Table 3:** Numbers of participants were from the following department

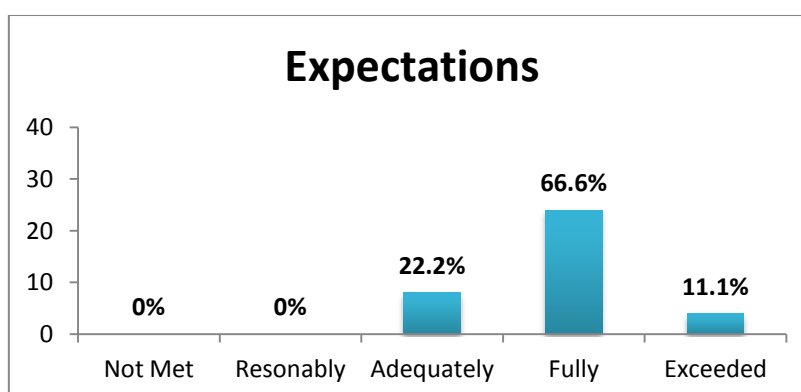
| Department                 | Number of Participants | Department                 | Number of Participants |
|----------------------------|------------------------|----------------------------|------------------------|
| Neurology                  | 01                     | Radiology                  | 01                     |
| Neurosurgery               | 01                     | Physiology                 | 01                     |
| Neuro-Anaesthesia          | 02                     | Cardiology                 | 03                     |
| Neuro-Radiology            | 01                     | Obstetrics & Gynaecology   | 03                     |
| Urology                    | 02                     | Cardiac Anaesthesia        | 01                     |
| Critical & Intensive care  | 03                     | College of Nursing         | 03                     |
| Nuclear medicine           | 01                     | Radiodiagnosis (IRCH)      | 01                     |
| Orthopaedics               | 01                     | Nephrology                 | 01                     |
| Medicine                   | 02                     | ENT                        | 01                     |
| Hospital administration    | 04                     | Endocrinology & Metabolism | 01                     |
| Ocular Biochemistry        | 01                     | Surgical Oncology          | 02                     |
| Anaesthesiology            | 03                     | Ophthalmology              | 01                     |
| Nuclear Magnetic Resonance | 02                     | Emergency Medicine         | 01                     |
| Laboratory Oncology (IRCH) | 04                     | Biostatistics              | 02                     |

Outcome as per individual questionnaire is revealed below:

**Question No. 1.** My expectations of this workshop were:

| Grading         | Not Met | Reasonably | Adequately | Fully | Exceeded |
|-----------------|---------|------------|------------|-------|----------|
| Score           | 1       | 2          | 3          | 4     | 5        |
| No. of Response | 0       | 0          | 8          | 24    | 4        |

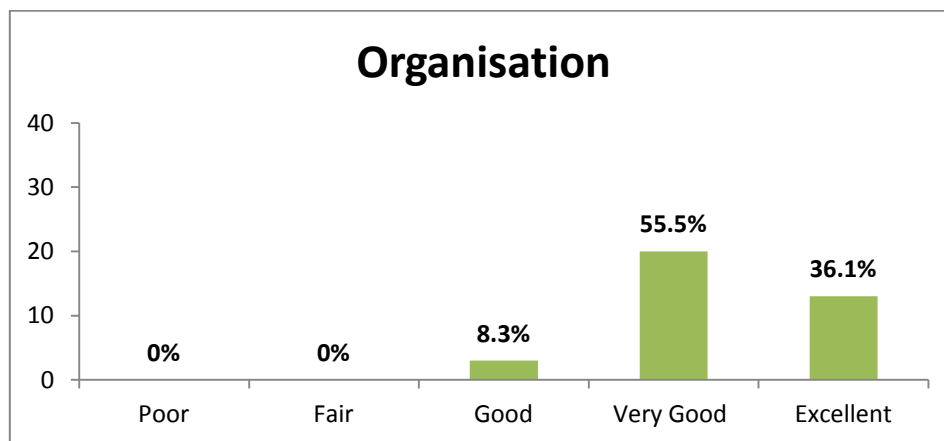
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**Question No 2.** The organization of the workshop was:

| Grading         | Poor | Fair | Good | Very Good | Excellent |
|-----------------|------|------|------|-----------|-----------|
| Score           | 1    | 2    | 3    | 4         | 5         |
| No. of Response | 0    | 0    | 3    | 20        | 13        |

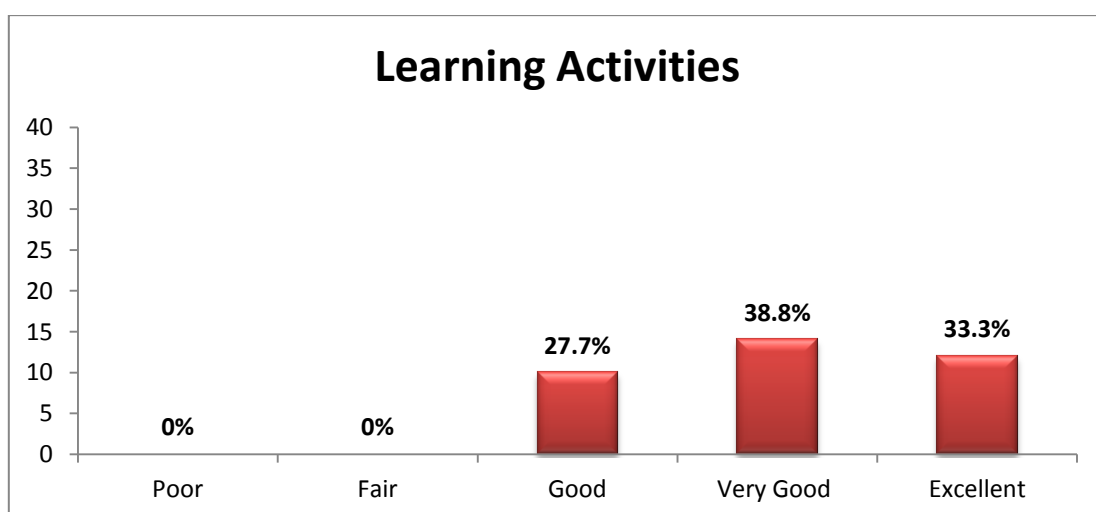
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**Question No 3.** The learning activities were:

| Grading         | Poor | Fair | Good | Very Good | Excellent |
|-----------------|------|------|------|-----------|-----------|
| Score           | 1    | 2    | 3    | 4         | 5         |
| No. of Response | 0    | 0    | 10   | 14        | 12        |

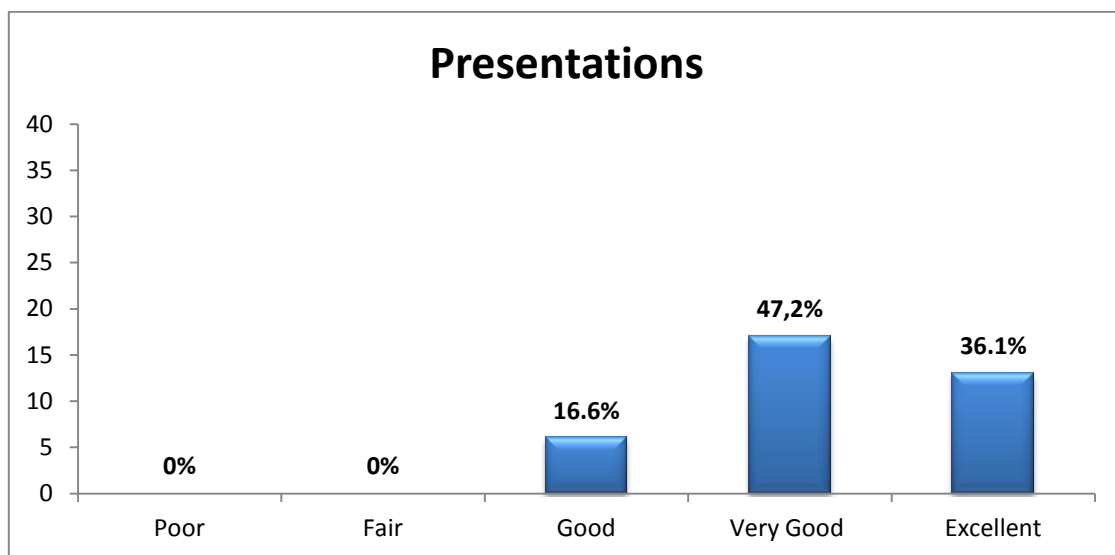
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**Question No 4.**The presentations were:

| Grading         | Poor | Fair | Good | Very Good | Excellent |
|-----------------|------|------|------|-----------|-----------|
| Score           | 1    | 2    | 3    | 4         | 5         |
| No. of Response | 0    | 0    | 6    | 17        | 13        |

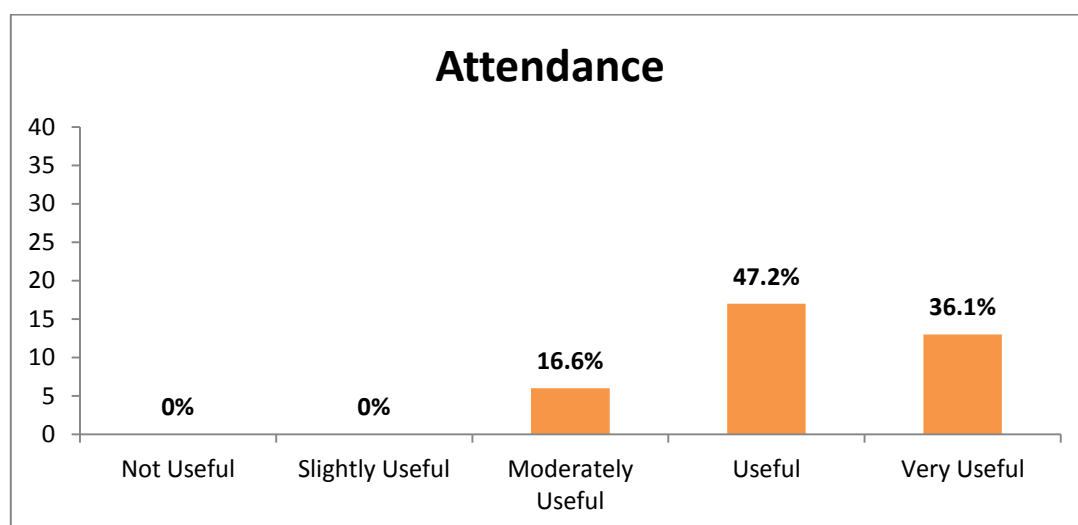
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**Question No 5.** My attendance at this workshop should prove:

| Grading         | Not useful | Slightly Useful | Moderately Useful | Useful | Very useful |
|-----------------|------------|-----------------|-------------------|--------|-------------|
| Score           | 1          | 2               | 3                 | 4      | 5           |
| No. of Response | 0          | 0               | 6                 | 12     | 16          |

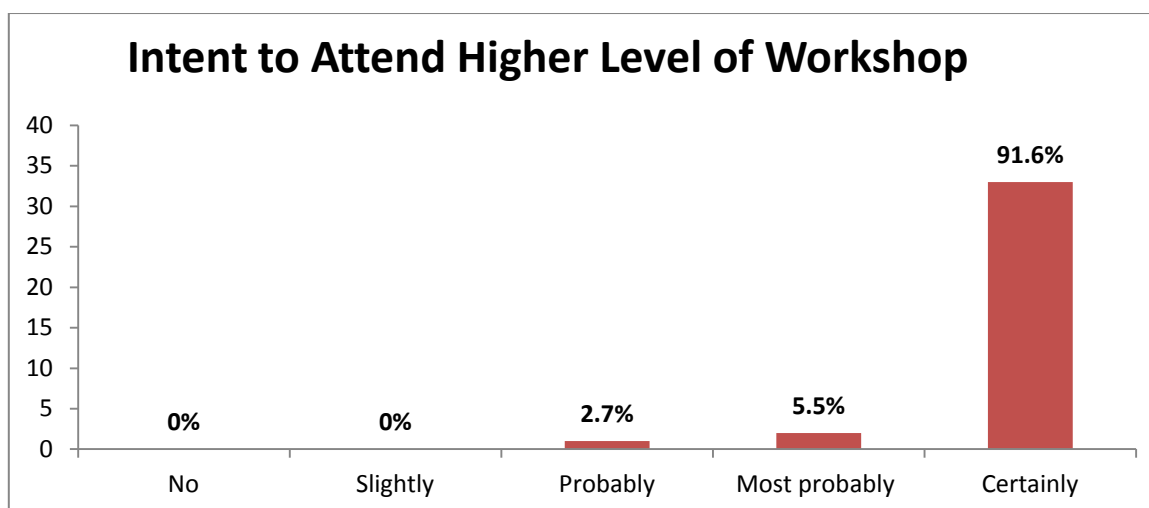
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**Question No 6.** Would you like to attend a higher level of workshop in future?

| Grading         | No | Slightly | Reasonably | Mostly | Certainly |
|-----------------|----|----------|------------|--------|-----------|
| Score           | 1  | 2        | 3          | 4      | 5         |
| No. of Response | 0  | 0        | 1          | 2      | 33        |

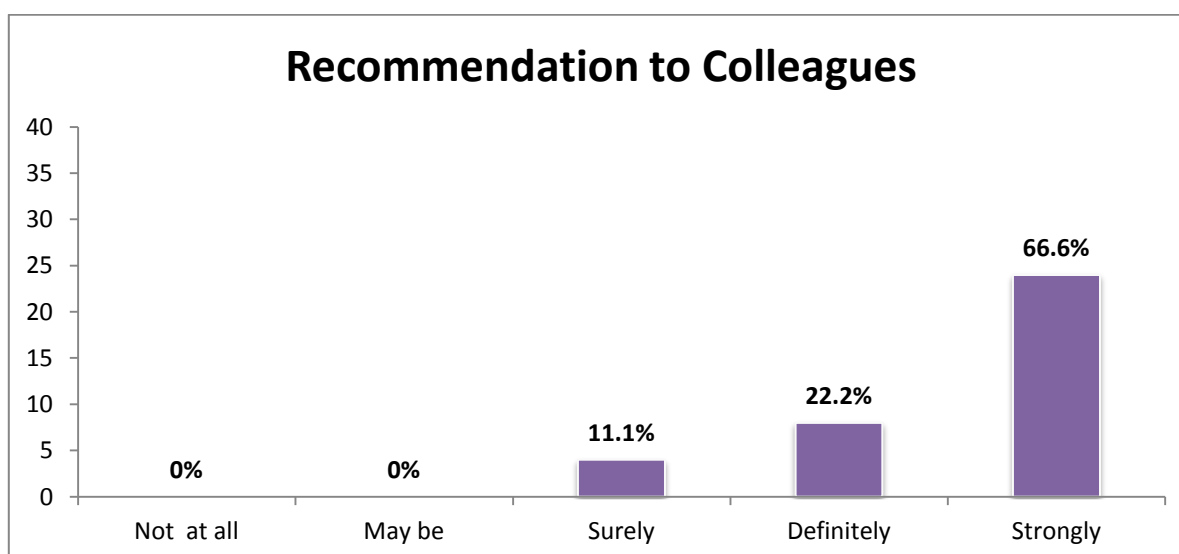
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**Question No 7.** Would you recommend this workshop to your colleagues?

| Grading         | Not at all | May be | Surely | Definitely | Strongly |
|-----------------|------------|--------|--------|------------|----------|
| Score           | 1          | 2      | 3      | 4          | 5        |
| No. of Response | 0          | 0      | 4      | 8          | 24       |

Total=36

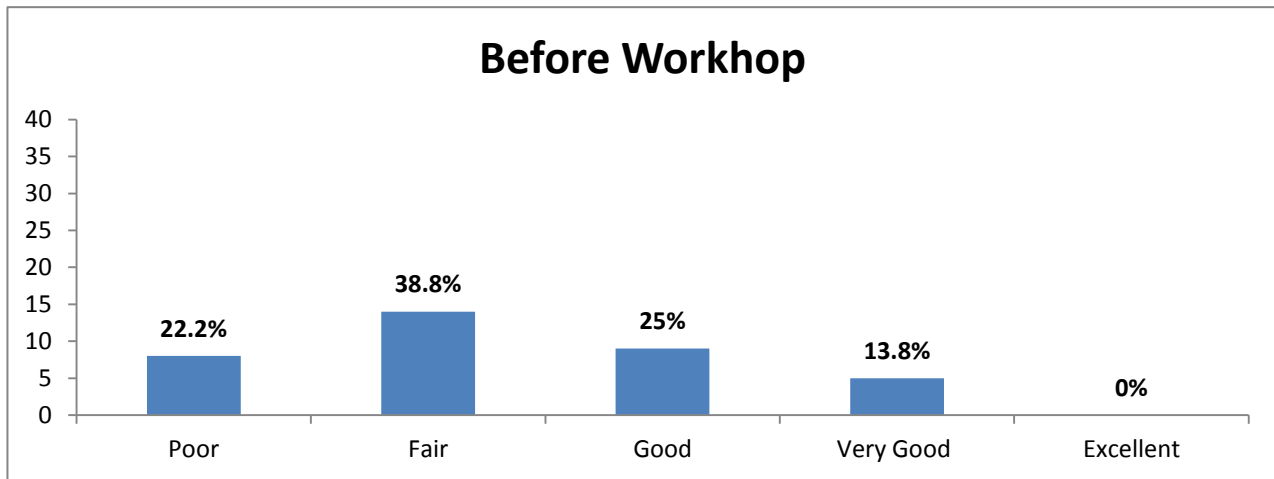


**Question No 8.** How would you rate your research proposal writing skills?

Before the workshop

| Grading         | Poor | Fair | Good | Very Good | Excellent |
|-----------------|------|------|------|-----------|-----------|
| Score           | 1    | 2    | 3    | 4         | 5         |
| No. of Response | 8    | 14   | 9    | 5         | 0         |

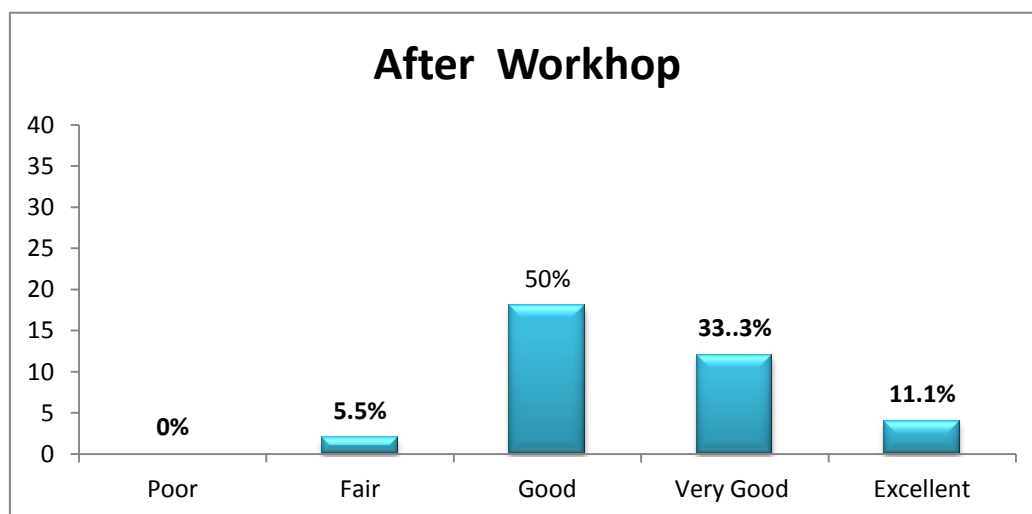
Total=36



After the workshop

| Grading         | Poor | Fair | Good | Very Good | Excellent |
|-----------------|------|------|------|-----------|-----------|
| Score           | 1    | 2    | 3    | 4         | 5         |
| No. of Response | 0    | 2    | 18   | 12        | 4         |

Total=36





## DISCUSSION

The results revealed that the workshop learning method produced significant gains of knowledge in writing research proposal. The correlation between the results obtained through evaluation form suggests that the workshop helped to increase participant's conceptual understanding, especially, those who actively participated in the workshop.

## LIMITATIONS

The sample size was the major limitations found in the study which was quite low that needed to produce an acceptably statistical power. Therefore, conclusions derived from the study must not be considered definitive, and further prospective workshop with a larger sample is needed to explore the effect of the competitive learning and conventional teaching methods on cognitive gains for knowledge retention. Result may be biased due to possible floor and ceiling effects.

## CONCLUSIONS AND FUTURE DIRECTION

The participants whose baseline score (before workshop) for writing research proposal was low have better chance of improvement of writing skills (after workshop) as compared to those whose baseline score was high. Feedback strategy to support workshop learning makes these results highly relevant to the participants in developing skills for writing good research proposal. Workshop provides some unquestionable educational benefits and has proved a high

capacity to generate motivation and enthusiasm among participants. More workshops are needed to train participants in writing research proposal in various other study designs including randomized controlled trials, case-control studies, cross sectional studies.

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