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Impact of One Day Fundoscopy Workshop on Pediatrician's Fundus Examination Skills

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Abstract

Background:

As physician's workloads increase, routine ophthalmoscopy may be dropped. And its number of frequency and competency in performing it are unknown**.**

Objective:

To assess the effectiveness of a daylong fundoscopy workshop and interactive lecture based education in improving pediatrician's fundus examination knowledge & skills.

Methods:

Pediatric doctors enrolled in Libyan board fellowship training program at Albayda Medical Center participated in this study. Pre and post-test comprising a pictorial quiz on the topic of presentation on which presentations & training workshop about fundus examination by direct ophthalmoscope were later delivered by 3 ophthalmology specialists were distributed to (n=32) participants in a one-day oriented workshop within a stipulated time period and their feedback was collected and statistically analyzed after the workshop was over.

Results:

A total 17 participants completed the quiz, varying between senior and junior pediatricians. All participants were included in the Libyan board fellowship training program. All 17 participants could not answer the pre-test pictorial quiz (0%), and after the tutorial 15(88.24%) participants were able to answer the quiz, this difference was statically significant (p = 0.000). A total of 29 participants completed the feedback questionnaire at the end of the workshop, the overall mean evaluation score by the participants was ≥ 4.1 out of 5. Participants satisfaction was (62.1 %) and non-satisfaction was (37.9%) (p =0.000).

Conclusions:

This study highlights the effectiveness of engaging teaching methods and fundoscopy hand on workshop to enhance fundoscopy examination and diagnostic skills in pediatrician. Also, it demonstrates the need for continuous professional development among healthcare professionals.

Key-words**:** Pediatrician, Fundoscopy, Interactive Lecture, Skills, Workshop

INTRODUCTION

Pediatricians have traditionally considered the ocular fundus an important part of the child's physical examination [1].Fundoscopy provides a noninvasive picture of neurovascular tissues related to many clinical conditions, however in every day clinical practice it is neglected .[2]

A lot of patients with neurologic symptoms such as: ocular pain, headache, or blurred vision need ophthalmoscopy to evaluate for fundus pathologies. [3]

Ophthalmoscopy may reveal life-threatening conditions such as raised intracranial pressure and cytomegalovirus (CMV) infection, as well as other conditions such as glaucoma, diabetes, shaken baby syndrome, and retinal detachment, which can be diagnosed by fundus examination.[4]

As physician's workloads increase, routine ophthalmoscopy may be dropped. And its number of frequency and competency in performing it are unknown. [5]

Despite introduce of modern technologies and fundus examination education tools, the frequency of fundoscopy use continue to be low. Existing reasons for the decrease of fundoscopy have been proposed based on expert opinion. However, there is still a shortage of qualitative ophthalmology research in general. [6]

Why ophthalmoscopy is so infrequently performed, and how this may be improved. Further research is needed to motivate effective ophthalmoscopy training, and to ensure that hospital physicians become more competence in detecting eye fundus abnormalities, and patients receive the highest clinical care & outcomes, further research is required to support more effective fundoscopy education. [7]

Aims of the study

The aim of this study was to assess the effectiveness of a daylong fundoscopy workshop & interactive lecture based education in improving hospital pediatrician's fundus examination knowledge & skills.

The idea of the pre-test/post-test evaluation model is to measure the baseline knowledge of participants at the beginning of a tutorial and to compare it with the knowledge gained after that. Comparing participants' post-test scores to their pre-test scores enables us to see whether the activity was successful in increasing participants' knowledge & skills of the taught content.

Methods and Materials

This was a cross sectional, randomized study. Participants were 29 pediatric doctors involved in the Libyan board postgraduate training program (all the trainees), their experience ranged from 2-25yrs, 8 participants completed the Libyan board training program, 12 only had 1st part, 3 just passed the entry

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exam, and 3 participants still not included in this program. 1 participant has a diploma in pediatrics. Inclusion criteria were: pediatric Residents\ pediatricians, informed consent, no exposure to formal postgraduate teaching in ophthalmoscopy, attendance of an introductory tutorial and a small group practical hands-on workshop which participants received about direct fundoscopy. The exclusion criteria were participants who refused to participate in this study, who were not willing to answer the quiz or teaching evaluation form.

A 5 minutes pretest containing one fundus image was given for the participants showing a fundus photo of early optic disc edema (grade 1) to test their base line knowledge. Declaration of self-identity was made optional on the quiz. After completing the quiz, a tutorial of 40 min on fundus examination taught an important topic needed for pediatrician knowledge starting with routine normal fundus appearance, preparation for fundoscopy, and how to use direct ophthalmoscope and how to diagnose common serious findings such as papilledema and its grading, optic atrophy, and shaken baby syndrome. The pretest fundus photo wasn't shown during the lecture. At the end of the tutorial, the participants were asked again to answer the same pretest fundus photo.

Subsequent one day-oriented hands-on training workshop on how to use direct ophthalmoscopy to identify a various fundus structures and abnormalities by dividing the participants randomly into 3 small groups on 3 real pediatric patients with dilated pupils after obtaining permission from their parents was conducted on 28

February 2023 at the Department of Pediatrics at Tertiary Care Teaching Hospital (Albayda Medical Center in the east of Libya).

The trainees were randomized dived into three small groups of 9-10 trainees. Every group was taught by an ophthalmologist.

At the end of workshop all participants were asked to complete an optional self-identity 9 items teaching activity evaluation form which was prepared by a medical educationist to evaluate their experience through the following 9 items:

Lecture was useful and relevant to my needs, lecture materials were well-organized and presented in sufficient depth, topic coverage was comprehensive? Learning objectives were covered, the day and the time of the lecture were satisfactory, and the speaker demonstrated a comprehensive knowledge of the subject, speaker speaks clearly; he is able to hold my interest? Speaker's lecture delivery is clear in terms of explaining the concepts and giving real-life examples? the speaker encouraged questions and interacted with the audience to facilitate learning? And would you recommend this lecture to others?

, where 9 items were included rating (1 to 5) and one (last one) item yes or no.

Statistical analysis was done by using Statistical Package for Social Sciences (SPSS) Version 20 (IBM

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Corp., Armonk, NY), Statistical Analysis Software (T test for parametric data and McNamara test for pre & post single picture quiz.

Results

Of a total of 32 participants only 17 participants completed the quiz, varying between senior and junior pediatricians. All participant was included in the Libyan board training program and graduated from Omar Al-mukhtar University. All 17 participants could not answer the pre-test pictorial quiz (0%), and after the tutorial the mean grad increase significantly 88.24% (p=0.000). After completing our program, a feedback questionnaire including 9 items rated from 1-5(1=strongly disagree) (2=disagree) (3=Neutral) (4=agree) (5=strongly agree) and one question answered by yes or no. A total of 29 (90.7 %) participants responded to the teaching evaluation questionnaire from a total of 32.

Table 1: questionnaire response among participant(n=29)

Question	Response to each					Score	Mean for each Q
No.	1 Strongly disagree	2 disagree	3 Neutral	4 Agree	5 Strongly Agree	Total	Mean
Q1	0	3.4	10.3	37.9	48.3	100	4.3
Q2	0	3.4	24.1	51.7	20.7	100	3.9
Q3	0	3.4	13.8	44.8	37.9	100	4.2
Q4	0	0	34.5	37.9	27.6	100	3.9
Q5	0	3.4	20.7	34.5	41.4	100	4.1
Q6	0	0	10.3	44.8	44.8	100	4.3
Q7	0	3.4	17.2	34.5	44.8	100	4.2
Q8	0	0	20.7	48.3	31.3	100	4.1
Q9	0	0	6.9	41.4	51.7	100	4.4

Results are expressed as percentile and mean of each question,

Q1. Lecture was useful and relevant to my need? Q2. Lecture materials were well-organized and presented in sufficient depth? Q3. Topic coverage was comprehensive? Q4. Learning objectives were covered? Q5. The day and the time of the lecture were satisfactory? Q6. Speaker demonstrated a comprehensive knowledge of the subject? Q7. Speaker speaks clearly; he is able to hold my interest? Q8. Speaker's lecture delivery is clear in terms of explaining the concepts and giving real-life examples? Q9. Speaker encouraged questions and interacted with the audience to facilitate learning?

In this study (table1) present evaluation of participants s' perception towards the effectiveness of teaching activity; 86.2 % of the participants agreed that Lecture was useful and relevant to my needs. Large number of these participants agreed that lecture materials were well-organized and presented in sufficient depth,

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topic coverage was comprehensive? Learning objectives were covered (72.4%, 82.7 % and 65.6% respectively). 75.9% of the participants agreed that the day and the time of the lecture were satisfactory and also 69.6 % of the participants declared that the speaker demonstrated a comprehensive knowledge of the subject, 79.3 % of the participants agreed that speaker speaks clearly; he is able to hold my interest, 79.6 % of the participants agreed that Speaker's lecture delivery is clear in terms of explaining the concepts and giving real-life examples and about 90.1% of participants agreed that the speaker encouraged questions and interacted with the audience to facilitate learning. Mean-while 100 % of the participants would recommend these sessions for their colleagues. The mean average was (4.1) (See table 2).

Table 2 : rating score for participant(n=29)

Participant	Mean	Std	Participant	Mean	Std
P1	3.8	0.67	**P17**	3.4	0.73
P2	4.3	0.50	**P18**	3.1	0.93
P3	4.7	0.50	**P19**	3.9	0.33
P4	4.3	0.50	**P20**	4.2	0.67
P5	4.4	0.53	**P21**	5.0	0.00
P6	4.7	0.50	**P22**	3.6	0.53
P7	5.0	0.00	**P23**	4.6	0.53
P8	3.9	0.93	**P24**	4.7	0.71
P9	4.1	0.78	**P25**	4.0	0.50
P10	4.9	0.33	**P26**	4.7	0.50
P11	4.3	0.71	**P27**	4.8	0.44
P12	3.4	0.53	**P28**	3.2	0.97
P13	4.3	0.71	**P29**	3.7	0.50
P14	4.9	0.33	Total	4.2	0.55
P15	3.7	0.50			
P16	4.4	0.73			
*P: participant; results are expressed as percentile and mean of each question					

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Our targeted mean rating for participants satisfaction was 4 that corresponding to agree on this a 5 points Likert scale, according to this 61.1% of the participants were satisfied with the teaching activity (mean 4.5) and 37.9%(mean 3.6) were not and this difference was statistically significant (p=0.000) by t-test (Table 3).

Table 3 Participants' satisfaction

Satisfaction (% -mean)	Non satisfaction (%- mean)	P value
62.1% - 4.5	37.9 % - 3.6	0.000

Discussion

Our study results highlight many principal findings about the effectiveness of an one day fundoscopy workshop in improving the diagnostic skills of pediatricians and their perceptions of the teaching activity a similar finding was reported about effectiveness of such educational activities in improvement of pediatric residents' fundoscopy examination skills done by Kouzmitcheva, and colleagues [8],who evaluated the effectiveness self-study using an ophthalmoscopy simulator to enhance post graduate pediatric trainees fundoscopy skills.

The significant improvement in participants' knowledge & competency to diagnose fundus pathology after the activity is noteworthy. Initially, no one of the participants could diagnose the abnormality accurately, but after the tutorial, 88.24% were able to do so, with a statistically significant difference (p = 0.000). This suggests that even a one daylong hand on workshop & 40 min interactive tutorial can be highly effective in enhancing pediatrician's fundus examination & diagnosis skills. Same results reported by Gupta and colleagues who found that hand on practical based training combined with a lecture is more effective in improving funduscopy examination skills among neurology residents than lecture-based training alone. [9]

The pediatrician's evaluation of the teaching activity was excellent rating. A majority of participants (86.2%) said that the lecture was useful and relevant to their needs, which expressed a high level of satisfaction with the course material, its way of teaching, the content, depth, and comprehensiveness of the lecture materials were also highly praised, with 72.4%, 82.7%, and 65.6% of participants agreeing, respectively. Furthermore, 90.1% of participants appreciated the speaker's ability to engage and interact with the audience questions, which is crucial for encouraging and facilitating deep learning.

The pediatrician's rating of the workshop was very positive. A largest number of them (86.2%) rated the lecture's usefulness and its relevance to their, which expressed a high level of satisfaction with the course material and its way of teaching. The content, depth, and comprehensiveness of the lecture materials were

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also highly praised, with 72.4%, 82.7%, and 65.6% of participants agreeing, respectively. Furthermore, 90.1% of participants appreciated the speaker's ability to engage and interact with the audience's questions, which is crucial for encouraging and facilitating deep learning.

The overall mean scoring for pediatricians' satisfaction was 4.2 on a 5-point scale, with 61.1% of participants satisfied (mean rating of 4.5) and 37.9% not satisfied (mean rating of 3.6). This difference was statistically significant ($p \leq 0.000$), showing a clear variation in participants feedback about the effectiveness of the educational activity.

All the above findings of the present study about effectiveness of pre /posttest-based approach and interactive lecture-based approach are consisting with other study done by Shivaraju, P. T., Manu, G et al., that found significant improvement in the learner's knowledge retention after a post-lecture test in comparing to the pretest.[10]

This is also proved by Verma et al., that proved the efficiency of both quiz-based education and interactive lecture-based education for teaching a medical student.[11]

These results have important consequences for medical education, especially in fields like pediatrics. They suggest that one day hand on fundoscopy workshop and an interactive lecture-based approaches can significantly improve pediatrician's funduscopy examination skills and their retention of knowledge. These results are consistent with other study on Australia by Jackson et al. [12], it was about the need for continuous medical education and giving a course on how to perform a fundoscopy to general practitioners. Another study done by Alam. T proved that a Pre-test/post-test model was significantly more effective in students in achieving the learning outcomes in a lecture. [13]

Limitations: The current study has various limitations; the study group was small, short single-session training, and only one pictorial quiz which is not enough to evaluate them and all the participants were working at the same hospital. It is not known whether these results reflect the situation in our hospital alone or other hospitals in our country. Because of the small number of participants and not all participants participate in answering the quiz and questionnaire, in spite of its limitations, the study shows the fact that the participants strongly appreciated this teaching activity to enhance a fundoscopy examination competency which inspired the authors to recommend it as a part of routine didactic teaching of the pediatric fellowship training program. This consistent with a study on Iran by Alizadeh et al. Continuing training education courses for general practitioners can improve their skills to use ophthalmoscope in the diagnosis of eye and systemic diseases.[14]

Recommendations: Integration of such didactic courses into the formal curriculum of the Libyan pediatric fellowship training program will have a very optimistic impact on improving the fundoscopy skills of the trainees and it will help to save a lot of time for them and their patients.

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Conclusions

This study highlights the effectiveness of engaging teaching methods and fundoscopy hand on workshop to enhance fundoscopy examination and diagnostic skills. Also, it demonstrates the need for continuous professional development among healthcare professionals.

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