

# Effect of Evidence Based Medicine Training in the Quality of Journal Clubs: A Road to Evidence Based Journal Clubs

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## ABSTRACT

**Introduction:** Journal clubs play an important role in teaching Evidence Based Medicine (EBM). Evidence based journal clubs focus on real problems of the group, and set a minimum level of evidence for articles to be presented, and in the end a clinical bottom line is set to be used in the daily clinical practice. In this article, we have explained our experience in running evidence based journal clubs in the previous year and the challenges in the path of this goal are discussed.

**Methods:** Before starting the evidence based journal clubs, we set up several lectures on EBM for the teachers of the research center as well as the residents. From September 2010 to November 2010, we ran the journal clubs of our research center by a two-session plan: first identifying an important clinical question, second presenting the best available evidence. The assigned levels of evidence for evidence based journal clubs as well as previous traditional one were compared.

**Results:** Twelve journal clubs were presented in the study period: Five systematic reviews, 2 guidelines, 3 narrative review articles, and 2 individual articles. Ten out of 12 traditional journal club articles were narrative review articles and 2 were clinical guidelines. 41.6% of the evidence based journal clubs were assigned level 1 of evidence. In contrast 83.3% of traditional journal clubs were in the 4<sup>th</sup> level of evidence.

**Conclusion:** Evidence based journal clubs can be very useful in improving the quality of presented articles in the journal clubs and are invaluable for teaching EBM.

**Keywords:** Evidence based medicine, Journal club, Nuclear medicine, Critical appraisal

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## INTRODUCTION

Evidence Based Medicine (EBM) is a growing approach to providing health care which is incorporating into the curriculum of medical students (1-3) despite presence of several barriers in this field (4). However, incorporating this knowledge into the medical practice has not been successful (2, 5). Several methods are currently in use for teaching EBM. In-patient rounds, follow up rounds, out-patients rounds, group sessions, grand rounds, lectures, and journal clubs are among these methods (6).

As mentioned by Sackett et al these methods can be (and are better to be) “patient-centered, learner-centered, active and interactive. The teacher should be a model for students to become an expert clinician who is able to match and take advantage of the clinical setting and circumstances, to ask and to answer appropriate questions” (6-9). Journal clubs play an important role in teaching EBM (10-14).

Evidence based journal clubs are different in several aspects compared to the traditional ones. In traditional journal clubs a schedule is set for the members to summarize the latest issue of important journals of their discipline without any consideration of the real needs or levels of evidence. This kind of journal club is “dying” as Sackett et al put it in their publication. Evidence based journal clubs focus on real problems of the group, and set a minimum level of evidence for articles to be presented, and in the end a clinical bottom line is set to be used in the daily clinical practice (6, 15-17).

In this article, we have explained our experience in running evidence based journal clubs and possible obstacles which might be necessary to dealt with are discussed.

## METHODS

The traditional journal clubs of our research center were being run by the following plan:

1- Choosing an article by a predefined member of the research center. The other members of the journal club were not notified regarding this article beforehand. No quality assessment was used for the article selection. No restriction regarding the study method was imposed.

2- The chosen articles were presented on the next week.

Before starting the evidence based journal clubs, we set up several lectures for the teachers of the research center as well as the residents. The lectures focused on the different aspects of EBM in nuclear medicine practice with especial attention to the diagnostic studies. We have had extensive experience in the field of teaching EBM in our university with several publications (18-21). EBM resources were extensively explained and available online resources were identified. Critical appraisal of various types of literature was stressed in the lectures and several articles were reviewed and appraised by the residents to ensure their competency in this field.

From September 2010 to November 2010, we ran the journal clubs of our research center by the following plan which was loosely based on the recommendations of Sackett et al (6).

1- A schedule was set in which each member of the research center was periodically responsible for finding the article to be presented in the journal clubs weekly.

2- In each session the member responsible for presenting the article in the next week journal club would notify the other member regarding the article he/she had found with the assigned level of evidence. For determining the level of evidence, Oxford Center for Evidence Based Medicine guide published on March 2009 was used (22). Meta-analyses and systematic reviews were especially encouraged and the narrative review articles were discouraged. If the selected study had significant

methodological defects it would have been replaced with another one with higher level of evidence. For clinical guidelines appraisal we used the AGREE (Appraisal of Guidelines Research & Evaluation) instrument, which is a quantitative checklist for appraising guidelines (23, 24).

We also appraised the articles presented in our traditional journal clubs before setting up evidence based journal clubs for the same period of time for comparison.

## RESULTS

Table 1 shows the appraisal results for the articles presented in the evidence based journal clubs. Twelve journal clubs were presented in the study period. The presented studies could be classified as original non-review articles, review articles (narrative as well as systematic) and clinical practice guidelines.

Five systematic reviews (4 also included meta-analysis), 2 guidelines, 3 narrative review articles, and 2 original non-review articles were presented in the study period. The topic of the journal clubs can be divided into diagnostic, prognostic, and therapy types. Most of the journal clubs were about diagnostic (6 out of 12) and prognostic (3 out of 12) studies. 41.6% of the presented articles were in level 1 of evidence. Levels 2, 3, and 4 constituted 8.3%, 8.3%, and 25% of the journal clubs respectively.

Table 2 shows the appraisal results for the articles presented in the journal clubs before setting up the evidence based journal clubs during the same period of time.

Ten out of 12 journal clubs articles were narrative review articles and 2 were clinical guidelines. 83.3% of the presented articles were in level 4 of evidence

**Table 1.** The results of critical appraisal of evidence based journal clubs.

N	First author and reference number	Level of evidence	Article type	Type of study
1	Inaba et al. (30)	3a	Prognosis	Meta-analysis
2	Bodet-Milin et al (31)	1b	Prognosis	Original non-review article
3	van der Bruggen et al (32)	2a	Diagnosis	Systematic review
4	Aryana et al (33)	1c	Diagnosis	Original non-review article
5	Yin et al (34)	1a	Diagnosis	Meta-analysis
6	Liu et al (35)	1a	Diagnosis	Meta-analysis
7	Collection of articles regarding colon transit	4	Diagnosis	Original non-review article
8	Collection of articles regarding radiosynovectomy	4	Therapy	Original non-review article
9	van de Lande et al (36)	1a	Diagnosis	Meta-analysis
10	Hindie et al (37)	31% of total score*	N/A	Guideline
11	Stokkel et al (38)	34% of total score*	N/A	Guideline
12	Collection of articles regarding Hormesis	4	Prognosis	Original non-review article

\* according to AGREE instrument

**Table 2.** The results of critical appraisal of journal clubs before setting up evidence based journal clubs.

N	First author and reference number	Level of evidence	Article type	Type of study
1	Currie et al (39)	4	N/A	Narrative review article
2	Williams et al (40)	4	Diagnosis	Narrative review article
3	Barron et al (41)	4	N/A	Narrative review article
4	Howarth et al (42)	4	Diagnosis	Narrative review article
5	O'Connor MK (43)	4	Diagnosis	Narrative review article
6	Hung et al (44)	4	N/A	Narrative review article
7	Nadel HR (45)	4	Diagnosis	Narrative review article
8	Ackerman et al (46)	4	Diagnosis	Narrative review article
9	Shaw et al (47)	4	Diagnosis	Narrative review article
10	Hesse et al (48)	28% of total score	N/A	Guideline
11	Silberstein et al (49)	37% of total score	N/A	Guideline
12	Buckley et al (50)	4	Diagnosis	Narrative review article

\* according to AGREE instrument

## DISCUSSION

EBM is becoming an integral part of medical practice and teaching this approach to medical healthcare givers is stressed in many disciplines curricula (10). The main difference between traditional and EBM approach to healthcare is reproducibility of practice in EBM which ensures using the best available evidence in the minimum amount of time. This is done by formulating a structured question regarding clinical problem in hand, searching for the best evidence, critical appraisal of the found evidence and finally implementing the best evidence in the daily practice (20).

As we mentioned above, various methods can be used to teach EBM to medical students including several types of rounds, lectures, and journal clubs (6). To ensure the highest quality of evidence to be used in these methods, the students should be familiar with the concept of critical

appraisal and levels of evidence. Blind usage of these methods without consideration of levels of evidence can introduce anarchy to the medical practice and serious mistakes can be made while treating patients (25). Several resources have introduced methods to assign levels of evidence to any given article and most of them work well in this area. We used the Oxford Center for Evidence Based Medicine tools for this purpose.

Evidence based journal clubs can play a critical role in teaching EBM. It is shown that compared to the traditional ones, evidence based journal clubs can advance quality of care among health care professionals (26). To set up an evidence based journal club, the students should be familiar with the steps of EBM including searching the databases as well as critical appraisal. As we mentioned, we developed the course plan for teaching EBM to nuclear medicine and radiology residents of Imam

Reza Hospital of Mashhad University of Medical Sciences and the residents had completed the EBM training course. This is very important since running journal clubs without enough knowledge of EBM would be fruitless: it is of no use to explain levels of evidence for residents without any idea to grasp the concept and this can actually confuse the members of journal clubs (27). In our opinion, before setting up evidence based journal clubs, all residents should have passed an extensive course of EBM. Integrating EBM teaching into the residents' curricula seems to be mandatory to ensure the necessary training and understanding in this regard.

Evidence based journal clubs should focus on important clinical problems the members are facing in the daily clinical practice. This is only possible if the journal clubs setting is in two or three sessions for each clinical question. First an important clinical question should be identified and in the next session (which would be the presenting session) the best available evidence would be discussed and critically appraised (14). Sackett et al recommended another session in which the best evidence is selected according to the critical appraisal (6). We also used the two-session method for our evidence based journal clubs as we mentioned in the methods above.

In our experience, the difference between evidence based and traditional journal clubs regarding the levels of evidence was dramatic. 41.6% of the evidence based journal clubs were assigned level 1 of evidence. In contrast 83.3% of traditional journal clubs were in the 4<sup>th</sup> level of evidence. This is most likely due to predilection of the journal club members to narrative review articles before introduction of EBM in to our sessions. Five out of 12 evidence based journal clubs presented systematic reviews which shows that the concepts of EBM has been grasped well by the participants of our journal clubs.

Another aspect of our study which is worth mentioning is the importance of guidelines. Not all guidelines are of high quality. As we mentioned, we used the AGREE instrument to assess the quality of presented guidelines in our journal clubs. The low scores of these guidelines (which were all acquired from EANM (European Association of Nuclear Medicine) shows that we should be more careful regarding the guidelines to be presented in the journal clubs. We recommend using more valid guidelines such as NCCN (National Comprehensive Cancer Network) (28) or NICE (National Institute for Clinical Excellence) guidelines (29).

## CONCLUSION

Evidence based journal clubs can be very useful in improving the quality of presented articles in the journal clubs and are invaluable for teaching EBM. These journal clubs should be set up after teaching the principal of EBM to the member of journal club to ensure the most influence on medical practice.

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