

# Effectiveness and impact of journal clubs in medicine



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## Abstract

**Background:** Journal clubs` emerging goals are now considered to be teaching critical appraisal skills and learning how to use evidence based medicine in practice. Although journal clubs are well accredited, designing the right format to keep members stimulated and educated remains a great challenge.

**Methods:** We conducted journal club structure modifications in internal medicine residency program of a university affiliated hospital. Initially group-based sessions identified feasible changes and baseline data concerning residents` knowledge of evidence based medicine (EBM) was collected by a questionnaire. Modifications implemented and a second set of group discussions and data collection took place after 12 months.

**Results:** Total number of 78 residents participated. The most important identified changes were schedule adjustments and setting new goals regarding EBM, medical statistics and critical appraisal teaching. Group discussion showed increased satisfaction and questionnaire assessments showed significant improvement in residents` knowledge of EBM.

**Conclusions:** Redesigning journal clubs with emphasis on regularity and setting new horizons basically improves their effectiveness. Assigning entire sessions to augment participants` skills in new areas of knowledge is a unique way to fit journal clubs as a novel and innovative teaching practice.

## Practice Points

- Journal clubs are connecting bridges between knowledge and practice.

- Journal clubs have gradually evolved to be a teaching tool in modern medicine.
- Considering growing popularity of evidence based medicine, journal clubs can be a way to introduce this discipline into educational programs.
- Redesigning old journal club structure is somehow necessary to better keep up with growing knowledge of medicine.
- Furnishing journal clubs with innovative methods might be a reasonable way of reform.

## Introduction

The earliest reference to the origin of the phrase ‘journal club’ is in memoirs and letters of Sir James Paget, describing a small room near St.

Bartholomew’s Hospital in London in the period 1835-1854 in which pupils met and read journals (Paget 1901). More than a century has passed since Sir William Osler started the first recorded journal club in North America in 1875 as a way of sharing periodicals he could not afford individually and later established a club at Johns Hopkins University to review the latest medical research (Alguire 1998; Sleeman 1990). Today’s journal clubs have evolved a great deal and are found in nearly every medical school and residency training program in almost all fields of medicine (Valentini & Daniels 1997; Sidorov 1995; Green 1999).

Traditionally journal clubs are educational meetings in which a group of individuals meet to discuss and critically evaluate the current articles in the scientific literature (Mcleod et al. 2010; SVN Research Committee 2009). The major aim of journal clubs was to keep their attendees up to date with the <https://assignbuster.com/effectiveness-impact-of-journal-clubs-in-medicine/>

latest medical literature (Valentini & Daniels 1997; Forsen 2003; Goodfellow 2004). Gradually they have become a means for teaching critical appraisal skills, improving biostatistical knowledge, getting familiar with epidemiologic methods and most recently promoting the practice of Evidence Based Medicine (EBM) (Valentini & Daniels 1997; SVN Research Committee 2009; Woods & Winkel 1982).

Critical appraisal skills and basing clinical decisions on the best published evidence available (i. e. EBM) have become an important facet in clinical medicine and are part of core general competencies required by the Accreditation Council for Graduate Medical Education (ACGME) in all residency programs (ACGME 2009; Yew & Reid 2008; Carpenter et al. 2010). In the ensuing years, EBM has enjoyed widespread popularity. Today's journal clubs are effectively assisting practitioners translate knowledge into practice and serve as an excellent bridge between research and clinical work.

While journal club has been a mainstay in postgraduate medical education for many years, several authors have pointed out the diversity of its format (Alguire 1998; Sidorov 1995; Ebbert et al. 2001). The desirability of journal clubs in internal medicine has been reinforced by accreditation requirements that mandate residents' participation in journal clubs. Although the goals and purposes of journal clubs are well established, selecting the right format and setting to keep members stimulated and educated remains a great challenge (Kelly & Cronin 2010; Hartzell et al. 2009).

With the growing appreciation of evidence based medicine (EBM) and its widespread application in clinical decision making, we thought of revising and implementing possible modifications in our journal club structure to improve quality of sessions and weigh their effects on our journal club program.

## Methods

We conducted revision program into our journal club structure involving internal medicine residents attending the internal medicine residency program in a teaching university affiliated hospital.

The modification process consisted of several steps. First we conducted group-based discussion sessions with participation of two clinical experts, two research experts, the program manager and chief resident. Group discussion primarily consisted of brain storming, reviewing similar works and their outcomes and sharing experiences. Five such meetings were held with main purpose of gauging current program features and identifying possible essential changes required to improve the program. Findings of these sessions then were shared with residents` delegates, 2 residents from each year, through three separate sessions. Identified feasible modifications were finally determined out of group-based discussions and implemented to make a new journal club structure.

The group-based discussion took place for the second time, 12 months after executing alterations. Group participants were the same. This time the group assessed different aspects of changes made including residents` attendance, residents` satisfaction and the content of new sessions.

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Furthermore we measured the residents` existing knowledge of EBM by a self-reported questionnaire, designed and internally validated by the discussion group. The questionnaire consisted of three questions to assess three fields: residents` knowledge of statistical significance, their acquaintance with evidence rating and their familiarity with study design. Possible answers were as “ No familiarity”, “ Fair familiarity”, “ Good familiarity” and “ Excellent familiarity”.

In order to facilitate further comparison, the first two answers were classified as cluster 1 (limited knowledge) and the two remaining answers as cluster 2 (acceptable knowledge); therefore making comparison between two clusters. Each resident was given the questionnaire before applying changes and again 12 months after running the new program. Residents` responses were also discussed in the second set of group discussion.

The results were collected anonymously and data was then imported to Excel software (2010, Microsoft) for examination. We specified the distribution of answers in each cluster before and after modifications and calculated the absolute difference between them using descriptive statistics.

## Results

Seventy-eight internal medicine residents (43 Female, 35 Male) were included into the survey. An almost even participation was observed among residents from all years of internal medicine training. Results of this study can be divided into two phases; before applying changes and after implementing modifications.

## Phase I

Founded on the primary group-based discussions, the acknowledged key points for developing our new journal club structure encompassed program and schedule modification, adding motives, defining new goals, content revision and implementing feedback mechanisms from which, content revision was considered the most critical one. The main aspects of modifications made are explained in details.

Our new schedule was designed as weekly sessions on Thursdays (the day before weekend in our country). We planned the sessions to be held from 7 to 8 in the morning (Breakfast time) and on the day with minimal educational and clinical workload to assure maximal attendance. To ensure the regularity and predictability of our program, we already scheduled the sessions for the next entire year. Holidays, exam days and residents` rotations were carefully noticed in planning the journal club calendar and the presenter for each session was specified at the beginning of the educational year.

Furthermore we changed the place to a bigger room with better facilities. Also we decided to provide a mini breakfast meal during all sessions as a potential incentive that can increase participants` interest.

Defining new objectives was also emphasized by group members. Therefore, we set our new goals not only to keep updated with medical literature and review the current literature, but also to introduce medical statistics to residents, encourage arguments and develop critical appraisal skills and understanding EBM. We changed the composition of our journal club participants to include relevant attending physicians, medical statisticians

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and experts in EBM and critical thinking as well as internal medicine residents from all levels.

In order to achieve the broad goal spectrum, our reformed program consisted of two different types of sessions. Three sessions of each month were dedicated to presenting review articles and discussion about the main topic (analogous with former program). The last week of the month was devoted to evidence based journal clubs in which an original article was presented to the audience and 2 to 3 relevant articles or guidelines were also considered. The main focus of these sessions was to discuss the methodology and to point out statistical points through which critical appraisal skills were practiced and evaluation of the quality and validity of the results taught.

Both types of sessions were moderated by an attending physician with experience in medical research and education background. Review article journal clubs were presented by a second year internal medicine resident employing slideshows; hence each resident was provided the opportunity to benefit from this chance at least twice a year. Evidence based journal clubs were presented by senior residents familiar with medical research and statistics and with acceptable teaching skills. These sessions were supervised by a team (at least 2 persons) of expert physicians in EBM and critical thinking skill.

A support committee consisting of two senior internal medicine residents, journal club moderator and an EBM expert was formed for evaluating and choosing articles for presentation. The responsible resident had to provide



up to 5 papers to the committee, who would then return one or two of them for presentation. The major selection criteria were relevancy and novelty of the topic and being in accordance with the interests of the participants. The other thing considered especially for articles to be presented in EBM sessions was being somehow controversial regarding the methodology or conclusion.

At the end of each session a brief explanation was provided including critical points and a conclusion. For EBM sessions the strength and limitations of the article were also emphasized, inspiring the participants to involve in this process valuable in didactic endeavors. The conclusion of each session was then uploaded in the departmental forum of residents and interns for more discussion. Sometimes, a practical question was also provided in order to ascertain that residents have got the point correctly.

## Phase II

Second phase results are described after 12 months of running the new program. Group-based discussion findings for new schedule clearly showed increased attendance and residents were more satisfied with the fixed and pre-defined sessions. Nonetheless we noticed that providing food was not of residents' concerns.

Definition of new objectives for journal club sessions persuaded residents to participate more. Experts in the group-based discussions were also satisfied with the new content of sessions and monthly devoting an entire session to EBM and teaching statistical points and critical thinking.

Regarding questionnaire assessment, final results showed that in the field of “evidence rating knowledge”, the number of residents in cluster 1 reduced from 51 to 17 and accordingly the number of residents in cluster 2 increased from 27 to 61 (43.6% absolute change regarding the total number of participants;  $P < 0.001$ ). In other words, evidence rating knowledge was significantly improved in 34 residents.

Similarly, before-after comparison for the field of “statistical significance acquaintance” revealed the absolute change to be 23.1%; i. e. the residents’ acquaintance with concept of statistical significance was noticeably augmented, changing from limited knowledge to acceptable knowledge, in 18 residents ( $P < 0.001$ ). The absolute change for “study design familiarity” field was reported as 39.7% (from 51 to 20 in cluster 1 and from 27 to 58 in cluster 2;  $P < 0.001$ ). Table 1 shows the overall result of answers and their comparison before and after journal club structural alterations. Final results comparing residents’ knowledge before and after changes are illustrated in table 2.

## Discussion

Our conventional journal club structure first started in internal medicine department of Shariati hospital, Tehran University of Medical Sciences in year 2007. Since then it was running in a small room and on a weekly basis with focus on review article presentation only. Participants were mainly residents, internal medicine interns and medical students and presenters of sessions were selected from first year residents.

There are considerable studies describing journal clubs conducted in different settings and for different health providers; yet there appear to be no 'Gold Standard' approach for conducting a journal club or assessing its effectiveness. It is therefore an ongoing challenge in designing effective journal club format that assists the participants to translate journal club activities into evidence based practice (Deenadayalan et al. 2008). As residency programs deal with work hour restrictions and implement competency educations (Hatala et al. 2006; Goroll et al. 2004), they need to undergo intense reassessment and possible remodeling to determine if they are meeting their goals.

Our questionnaire survey showed that our reformed program made significant change in residents' knowledge and the number of residents significantly shifted from low knowledge to acceptable knowledge.

We postulated that holding journal clubs on a regular basis is necessary to achieve continuous educational progress and gradually obtain the desired improvement in residents' competency which is in accordance to most previous studies (Deenadayalan et al. 2008 ). Regularity of sessions basically show the importance of this type of learning, as a new method of education is being introduced to the learners (residents). On the other hand, disorderliness might suggest that the program is not so useful and coordinators are not sure of its value, which in turn will dissuade participants from joining and following the schedule.

Pre-defining the whole schedule would be a great way in achieving this goal. Although fixed schedule might seem impractical for many institutes but

authors assumed that accurately considering some fine points such as work hour's prerequisites before scheduling the program may be helpful. In addition, this would assist participants to adjust their time and for presenter to know their schedule and being prepared for that.

Regarding best frequency, according to most of studies reporting this, it seems that monthly period is endorsed (Letterie & Morgenstern 2000; Burstein et al. 1996). Our reformed structure had a weekly basis, though our new EBM sessions were held monthly, not to shrink residents` enthusiasm for participating in these educational gatherings.

Some studies have shown that timing of journal clubs might be of importance considering attendance, especially when they were coincided with meal times (Bazarian et al. 1999; Langkamp et al. 1992). While they advised provision of food as a way to increase attendance, our group-based discussions and residents feedbacks did not show such relation. This might be due to ???.

Authors believed that forward movement without adding new goals and/or lacking enough motivation would not be successful in improving participants` competency. Increasing knowledge of medical statistics and understanding EBM were the primary new objectives of our program which is demonstrated to be well achieved regarding our survey.

Participants of journal clubs must be in accordance to the aims and contents of the program. Similar to Hartzell (2009), authors think that inviting attending physicians and involving senior residents may contribute to fulfillment of journal club objectives. This composition would facilitate the

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arguments and give space for better discussion and reaching a practical point. Assigning an entire separate session to introduction of this new area would also be of great benefit, since innovative thinking and learning new skills necessitates more time.

New educational goals for residency programs now include conduction of problem oriented sessions, evidence based journal clubs and also experiencing critical appraisal. Considering that almost all of medical education programs have introduced journal clubs as a routine in their curricula, we thought of it as a useful tool to familiarize our residents with better interpreting medical literature, critical thinking and evidence based medicine. This approach has been supported by previous researches (Hatala et al. 2006; Ghali et al. 2000).

Although this survey showed promising results and improvement in residents` knowledge and participation, our results are far from perfect. Yet we must increase our efforts to recognize subtle obstacles and further improve effectiveness of journal club.

## Conclusion

In conclusion, journal clubs are of great value in today`s medical education addressing both clinical practice and evidence based learning improvement. Yet there is no gold standard to achieve the best result with this regard. We have enjoyed revolutionizing our traditional structure of journal clubs and furnishing it with novel objectives and construction and noticed significant improvement in attendance and competency of our internal medicine residents.

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Declaration of interest

The authors report no declarations of interest.

Table 1. Preliminary results of self-reported questionnaire and results after 12 months of modifications

Answers	No		Fair		Good		Excellent	
	pre	post	pre	post	pre	post	pre	post
Evidence rating knowledge	14 (18.8)	0 (0)	37 (47.4)	17 (21.8)	17 (21.8)	0 (0)	17 (21.8)	44 (56.8)
Statistical significance acquaintance	6 (7.7)	0 (0)	24 (30.8)	12 (15.4)	30 (38.4)	36 (46.1)	36 (46.1)	36 (46.1)
Study design familiarity	12 (15.4)	0 (0)	39 (50)	20 (25.6)	23 (29.5)	18 (23.1)	43 (55.4)	43 (55.4)

Table 2. Comparing results as cluster 1 &

cluster 2 before and after modifications \*

	Cluster	Cluster	Absolute	P	
	1, n	2, n	change, n (%)	value	
Before	After	Before	After		
Evidence rating knowledge	51	17	27	61	34 (43.6)
Statistical significance acquaintance	30	12	48	66	18 (23.1)
Study design familiarity	51	20	27	58	31 (39.7)

\*: Cluster 1: limited knowledge; Cluster 2: acceptable knowledge.