

# Perceived Role of the Journal Clubs in Teaching Critical Appraisal Skills: A Survey of Surgical Trainees in Nigeria

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## ABSTRACT

**Background:** Critical appraisal skills allow surgeons to evaluate the literature in an objective and structured manner, with emphasis on the validity of the evidence. The development of skills in critical acquisition and appraisal of the literature is crucial to delivering quality surgical care. It is also widely accepted that journal clubs are a time-honored educational paradigm for teaching and development of critical appraisal skills. The aim of this study is to determine the perceived role of journal clubs in teaching critical appraisal skills amongst the surgical trainees in Nigeria. **Materials and Methods:** The West African College of Surgeons and the National Postgraduate College of Nigeria have mandated that all residency programs teach and assess the ability to develop critical appraisal skills when reviewing the scientific literature. Residents at the revision course of the West African College of Surgeons in September 2012 evaluated the role of journal clubs in teaching critical appraisal skills using a 17-item questionnaire. The questionnaire addressed four areas: Format, teaching and development of critical appraisal skills, and evaluation. **Results:** Most of the journal clubs meet weekly [39 (59%)] or monthly [25 (38%)]. Thirty-nine residents (59%) perceived the teaching model employed in the development of critical appraisal skills in their institutions was best characterized by “discussion/summary by consultants” and “emphasis on formal suggestion for improvement in research.” Rating the importance of development of critical appraisal skills to the objectives of the residency program and practice of evidence-based medicine, majority of the residents [65 (98%)] felt it was “very important.” The commonest form of feedback was verbal from the consultants and residents [50 (76%)]. **Conclusion:** The perceived importance of journal clubs to the development of critical appraisal skills was rated as very important by the residents. However, residents indicated a need for a formal evaluation of the journal clubs. It is our hope that the results of this survey will encourage postgraduate coordinators to evaluate the quality of their journal clubs in the development of skills in critical appraisal of the literature.

**KEYWORDS:** Critical appraisal skills, evaluation, journal club, literature, research, surgical trainees

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on current skills and knowledge.<sup>[1-3]</sup> This is achieved by daily discussion with colleagues, attending meetings and conferences, and regular review of the literature.<sup>[1]</sup> Critical appraisal skills allow surgeons to evaluate the literature in an objective and structured manner, with emphasis on the validity of the evidence.<sup>[4]</sup> The development of skills in critical acquisition and appraisal of the literature is crucial to delivery of quality surgical care.<sup>[5-7]</sup>

The volume of published literature that surgeons need to review has increased exponentially. It is estimated that it would take an incredible and impossible 627.5 h per month for the surgeon to keep up-to-date with the expanding literature in surgery.<sup>[6,8]</sup> A reliable method to improve the efficiency and timeliness of reviewing the literature is the traditional journal club.<sup>[6,9,10]</sup> The journal club is a structured meeting to discuss the strengths, weaknesses, and clinical applications of selected articles from the medical literature.<sup>[6,7,11]</sup> It is a platform for interpreting study design and methodology, understanding biostatistics, defining the levels of evidence and the strength of evidence-based recommendations, and applying the results of systematic reviews.<sup>[9]</sup> A successful journal club facilitates the development of critical appraisal skills and competency in evaluating the scientific literature for evidence-based answers that can be applied to clinical questions.<sup>[7,11]</sup> Journal club tends to be less successful when no goals or objectives are set, and it merely becomes the summary of random articles, without attention to their level of evidence or application to clinical scenarios.<sup>[4,7]</sup>

## INTRODUCTION

An important component of surgical practice is the ability to review recommendations for clinical care and stay updated

Surgery residency programs in Nigeria have a journal club in various formats. The West African College of Surgeons and the National Postgraduate College of Nigeria have mandated that all residency programs teach and assess the ability to evaluate scientific literature pertinent to the resident's specialty, develop critical appraisal skills when reviewing the scientific literature, and apply evidence found in the literature to clinical decisions.<sup>[12]</sup> Despite their broad appeal and importance, there is a paucity of literature about the status of surgical journal clubs and their role in teaching critical appraisal skills in Nigeria. The purpose of this study is thus twofold: (1) To determine the perceived role of the current structure of journal clubs in teaching critical appraisal skills and (2) To identify areas that may need improvement or can be changed in order to enhance the journal club experience as an educational tool for residents.

## MATERIALS AND METHODS

A cross-sectional survey regarding the role of journal clubs in teaching critical appraisal skills was conducted amongst residents at the revision course of the West African College of Surgeons in September 2012. The residents were from 21 accredited tertiary health institutions spread across the six geopolitical zones of Nigeria. A 17-item questionnaire was generated from similar studies found in the literature.<sup>[11,13,14]</sup> Consultants in the Department of Surgery critiqued the questionnaire before the final draft was created. Participation was completely voluntary, and in order to maintain confidentiality, questionnaires were made anonymous. Explanations for the objectives of the study were distributed to the residents responding to the survey. The questionnaire addressed four domains: Format, teaching and development of critical appraisal skills, and evaluation. An open-ended question design as well as closed questions with the answer options as true or false was used for questions pertaining to format, teaching of critical appraisal skills, and evaluation of the journal club. Perceived importance of the journal club to the development of critical appraisal skills was assessed on a 4-point Likert-type scale, from "not important," "somewhat important," "important," to "very important." Descriptive statistics and frequency distributions were used to compute all responses.

## RESULTS

The revision course was attended by 123 surgical trainees. The response rate was 53.6% (66/123). Sixty-three male (95.4%) and three female (4.5%) residents participated in the survey. Four (6%) residents were in their first year of surgical training, 56 (84.8%) were in their second and third year, and 6 (9%) were in their fourth year. The mean age was 34 years (range, 25-49 years).

All the residents in the survey reported the presence of a journal club at their institutions. Most of the journal clubs meet weekly [39 (59%)] or monthly [25 (38%)] [Table 1]. The meeting venue was the surgery seminar room [58 (88%)] or other sites in the hospital [8 (12%)]. The meeting times were divided between

morning [45 (68%)], afternoon [16 (24%)], and evening [5 (8%)]. Most journal clubs lasted between 1 and 2 h [62 (93%)] and only 4 (7%) were reported to last more than 2 h. Most reviewed one to two articles [64 (97%)], and 59 (89%) did not provide snacks/food. More than 80% of the trainees reported that attendance is required and monitored. Attendance by residents was greater than 75% in 34 (50%), and only 6 (10%) of the residents reported lower than 50% resident attendance. Attendees, besides consultants and residents, were evenly distributed between medical students [28 (42%)] and nurses [27 (41%)]. The conduct of the activities of the journal club was quite variable. Although a

**Table 1: Participants' responses to format of journal club**

Journal club format	Number	Percentage
<b>Meeting frequency</b>		
Weekly	39	59
Monthly	25	38
Biweekly	0	0
Bimonthly	2	3
<b>Venue</b>		
Surgery seminar room	58	88
Other sites	8	12
<b>Time of meetings</b>		
Morning	45	68
Afternoon	16	24
Evening	5	8
<b>Length of meetings</b>		
1-2 h	62	93
>2 h	4	7
<b>Food/snacks provided</b>		
Yes	7	11
No	59	89
<b>No. of articles presented</b>		
One	44	67
Two	20	30
More than two	2	3
<b>How far in advance are the articles assigned?</b>		
Days	21	32
Weeks	38	58
Months	7	10
<b>Attendance required</b>		
Yes	59	89
No	7	11
<b>Attendance monitored</b>		
Yes	54	82
No	12	18
<b>Attendees besides consultants and residents</b>		
Specialists	6	9
Statisticians	5	8
Medical students	28	42
Nurses	27	41
<b>Conduct of activities of the journal club</b>		
Senior registrar	9	14
Chief resident	34	52
Consultant	23	34

consultant conducted the activities of the journal club 34% of the time, a senior resident (14%) or chief resident (52%) conducted the activities most of the other times.

Thirty-nine residents (59%) perceived the teaching model employed in the development of critical appraisal skills in their institutions was best characterized by “discussion/summary by consultants” and “emphasis on formal suggestion for improvement in research.” “Formal teaching and discussion/summary by residents” was reported by 27 (41%) of the trainees [Table 2]. The focus of the journal club was most commonly original articles and review articles [51 (77%)]. Case reports [9 (14%)] and articles on surgical technique [6 (9%)] were occasionally presented. The basis for article selection was highly variable. It was from a list of contemporary or controversial issues in 19 (29%), illustrating methodology or statistics in 13 (29%), and based on curriculum being covered in 12 (18%).

Rating the importance of development of critical appraisal skills to the objectives of the residency program and the practice of evidence-based medicine, the majority of residents felt it was “important” [54 (81%)] and “very important” [65 (98%)] [Table 3]. Sixty-three residents (92.42%) felt that the development of skills in critical appraisal was either “important” or “very important” on training in the conduct of research education, whereas only 4 (6%) felt it was “somewhat important.” Thirty-two residents (48%) felt critical appraisal skills were “very important” in the ability to do a literature search, while only 1 (1.5%) felt they would make no impact on the ability to do a literature search.

With regards to evaluation of articles, majority of the residents [63 (95%)] did not use a checklist [Table 4]. The commonest form of feedback was verbal from the consultants and residents [50 (76%)]. Ten residents (15%) indicated there was no form of audit of the journal club.

## DISCUSSION

There is a consensus that surgical trainees need certain skills in order to practice life-long learning. These have been articulated by Guyatt<sup>[15]</sup> as the skills necessary to practice evidence-based medicine. They include being able to formulate a research question, perform systematic search of the literature, and critically appraise articles.<sup>[10,16]</sup> It is also widely accepted that journal clubs are a time-honored educational paradigm for teaching and development of critical appraisal skills.<sup>[8,17,18]</sup>

In this study, all the respondents indicated they had a journal club in their institutions. Majority of the journal clubs meet monthly and the commonest venue is the conference or seminar room in the hospital. The meeting time was usually in the morning; most journal clubs were reported to last between 1 and 2 h, reviewed one to three articles, and were attended by more than 60% of residents routinely. Several articles have explored the format

**Table 2: Participants' responses to the role of journal club in teaching critical appraisal skills**

Teaching of critical appraisal skills	Number	Percentage
Teaching model		
Formal teaching	13	20
Discussion/summary by consultant	18	27
Discussion/summary by resident	14	21
Formal suggestions for improvement of research	21	32
Type of article discussed		
Original research	27	41
Case reports	9	14
Review article	24	36
Surgical technique papers	6	9
Basis for article selection		
From a “classic” list	11	17
Represents contemporary or controversial issues	19	29
Illustrates methodology or statistical concepts	13	19
Based on curriculum being covered	12	18
Describes new surgical techniques	11	17

**Table 3: Responses to the importance of journal club in the development of critical appraisal skills**

Development of critical appraisal skills	Not important	Somewhat important	Important	Very important
Importance to the objectives of residency program	1	8	29	28
Importance in the practice of evidence-based medicine	2	2	25	37
Importance in conduct of research	1	4	23	38
Importance in the ability to do a literature search	1	5	28	32
Importance in the development of research protocols	6	11	31	18

**Table 4: Participants' responses to audit of the journal club**

Audit of journal club	Number	Percentage
Evaluation of articles		
Use of checklist	3	5
No checklist	63	95
Formal written evaluations	6	9
Verbal feedbacks from residents	25	38
Verbal feedback from consultants	25	38
None	10	15

of journal clubs in surgery.<sup>[1,8,11,13,14,19]</sup> However, it is interesting to note there is no consensus on the ideal format. The unique environment of each institution dictates the location, duration, and frequency of meetings, number and types of articles reviewed, and the attendance of residents and consultants. Spillane<sup>[1]</sup> and Shifflette<sup>[3]</sup> outlined the elements that have been shown to make the journal clubs successful. These include a regular schedule and location, a journal club independent of (but coordinated by) the consultants, and modest refreshments. Other elements are: Attendance should be mandatory and residents should be provided with protected time to attend, emphasis on a limited number of articles reviewed in depth, and formal teaching of critical appraisal skills.<sup>[1]</sup>

The format of the journal club in this survey reflects attention to adult learning principles.<sup>[6]</sup> The majority of the respondents indicated that the journal club was directed or co-directed by the residents and articles were assigned to a particular resident by a senior registrar or the chief resident. Selected articles often represent real clinical scenarios involving care of the surgical patient. The effectiveness of this approach has been confirmed in several studies.<sup>[18,20-23]</sup> Ebbert and colleagues<sup>[11,24]</sup> suggest how the principles of adult learning increase the effectiveness of critical appraisal skills in journal club settings: Application of the learning task to the contextual problems, active learner participation, and provision of timely and constructive feedback. Surgical trainees, having declared themselves to be self-motivated learners by subscribing to a surgical residency, are excellent candidates for education through adult learning theory.<sup>[25]</sup> As adult learners, residents must understand why they need to learn something, take responsibility for their learning, exploit their experience as a resource, and link their readiness to learn with the exigency of real-life situations.<sup>[19,23]</sup> Transfer of learning is not automatic and must be facilitated. Follow-up support is provided to enable transfer of learning into daily practice by encouraging open discussions and debates.<sup>[22]</sup>

The perceived importance of journal club to the development of critical appraisal skills and the ability to do a literature search was rated as very important by 70-85% of the residents. These findings are similar to those previously reported in the literature. Dirschl *et al.*,<sup>[18]</sup> following a literature review, found that the three most common goals of journal clubs were to keep up with current literature, teach critical appraisal skills, and impact clinic practice.<sup>[3]</sup> In this context, there is a need to teach residents how to evaluate and present the pertinent information from a scientific article within the allotted time frame.<sup>[7]</sup> The presenter should discuss the type of article and the level of evidence that is being presented. The body of the presentation should include factual evidence or information that was discovered from the article. Under no circumstance is the article represented in a verbal format.<sup>[7]</sup> A resident should be able to differentiate between what is already known on a particular topic and what the study adds.<sup>[20]</sup> The presenter should discuss his or her critical appraisal of the article along with a statement about how it would affect his or her clinical decision-making process and, ultimately, patient

care.<sup>[7]</sup> When residents are taught the art of critical appraisal, they become well versed with the methodology, results and discussion of the published articles and begin to view them with a critical mind.<sup>[3,6,20]</sup>

The commonest characteristics of the journal club reported in this study were those incorporating a discussion/summary by the consultants and formal suggestions for improvement of research. Several studies have identified these attributes as essential in the development of the critical appraisal skills.<sup>[14,16]</sup> A similar study by Hartzell *et al.*,<sup>[4]</sup> also showed that residents felt having consultants at journal club enhanced learning. Consultants provide a clinical perspective on journal articles that is unobtainable by simply reading them. Furthermore, the interaction with consultants allows residents to observe their approach and use of the literature. It is unique to this process that with a diverse range of articles, residents have the opportunity to observe different consultants demonstrating critical appraisal skills.<sup>[4,7]</sup> This observation is important because trainees tend to model their practices based on knowledge imparted from their mentors.<sup>[3]</sup>

It is important to assess and document if learning or improvement in critical appraisal skills has occurred after the journal club session.<sup>[11]</sup> In this study, all the residents had a journal club and most indicated that their journal club was important. However, less than 50% reported the performance of any systematic or formal evaluation of their journal club.<sup>[6]</sup> As with all educational activities, the journal club needs periodic refinement to keep it stimulating and valuable to the participants. Several authors have suggested the need to periodically ask the participants whether they are satisfied with the educational value of the journal club.<sup>[1,18,26,27]</sup> This sort of evaluation can also get anonymous feedback from the residents about the strengths, weaknesses, and potential improvements of the journal club.<sup>[18]</sup> Some journal clubs have reported using a pre-test and post-test format to assess acquisition of critical appraisal skills.<sup>[18]</sup> For instance, at the beginning of each year, the initial journal club session can begin with the distribution of a pre-test of 15-20 questions on the appraisal of study design and statistical evaluation of results. This pre-test not only serves as a baseline against which to compare the knowledge gained, but also sets some expectations for the residents. The post-test, covering a similar topic, can be administered at a later date (6 months to 1 year) to assess achievement of the goals of the journal club.<sup>[26]</sup> Clearly, greater emphasis must be placed on developing valid and reliable assessment tools to measure the effectiveness of a surgical journal club.<sup>[11]</sup>

There are a few important limitations of this study. The sample size is relatively small and may be biased toward the viewpoints of only those residents with a positive journal club experience or those interested in seeing improvement of the journal club in their institutions. Although a higher response rate would have been preferred, an earlier review of the literature reported that the mean response rate to physician surveys is 54%, which is similar to the response rate in our survey.<sup>[28]</sup> The format of the journal club in various institutions is unknown because of the



anonymous nature of the responses. It is likely that institutional and departmental preferences, and the available time and resources will determine some of the details for the format of the journal club at a specific institution. Thus, we cannot make an analysis of our results based on the institutions in Nigeria and we recommend future studies in this regard. While journal clubs should provide a platform to review the latest literature, they should also have a clearly defined curriculum for teaching critical appraisal skills, including basic knowledge of epidemiology and biostatistics. This curriculum should include the various study designs used in medical research, rules of validity, and basic biostatistics. Further studies are necessary to demonstrate that the critical appraisal skills and evidence-based learning that occurs in the journal club translate into actual improvement in the care of the surgical patient.

## CONCLUSION

Our study indicates that journal clubs are widely used as a beneficial surgical educational resource. The perceived importance of journal clubs to the development of critical appraisal skills and the ability to do literature search was rated as very important by the residents. The commonest characteristics of the journal club, reported in this study, were those incorporating a discussion and summary by the consultants with formal suggestions for improvement. However, residents indicated a need for a formal evaluation of the journal club. It is our hope that the results of this survey will encourage postgraduate coordinators in surgery to evaluate the quality of their journal clubs in the development of skills in critical acquisition and appraisal of the literature.

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