

INVESTIGATIVE REPORT

Videoconferencing Journal Club for Dermatology Residency Training: An Attitude Study

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The use of videoconferencing as a teaching modality in dermatology is not widespread. The objectives of this study were to introduce the videoconferencing format to dermatology journal clubs and to determine its effects on the training and satisfaction of house officers (residents). Ten dermatology house officers participated in this study. They were being trained at three university hospitals in rotation. A videoconferencing facility maintained by the hospitals for remote conferencing was used. After completing a 1-year journal club programme, house officers were asked about their satisfaction levels on a 5-point Likert scale using a questionnaire. Videoconferencing meant that the house officers and attending physicians from sister hospitals remained at their own hospitals, thus saving much time. Using videoconferencing the journal club could be held more frequently and more articles could be studied. In general the participants' satisfaction with the videoconferencing journal club was high. The adoption of videoconferencing produced promising results, increasing the efficiency of house officer training. *Key words: journal club; learning; training; telecommunications.*

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The rapid development of the medical use of information and communication technologies is changing the landscape of healthcare practice (1). New information technologies, such as videoconferencing and digital imaging, have been introduced into the medical environment to increase medical care and education. The live, interactive features of videoconferencing have popularized the technology, which is now established for the education of various medical specialties (2–6). Because store and forward type telemedicine and teledermatology using digital skin imaging are more affordable and accessible to many dermatologists than expensive and facility-demanding live videoconferencing, the use of videoconferencing in dermatology is less extensive. However, the

interactivity of videoconferencing would be appropriate for educational purposes in dermatology. Telelearning technologies, such as videoconferencing, may provide a way of improving house officer (resident) training through the better use of limited resources, including medical specialists or attending physicians (4, 7).

A journal club is defined as any group of interested individuals that meets regularly to discuss the strengths, weaknesses and clinical applications of selected articles from the medical literature (8). Journal club is an essential part of house officer training and continuing medical education. The medical literature has expanded greatly over recent years and now, even in a limited specialty area, one cannot read the overwhelming number of articles published. Thus, journal clubs are useful educational tools that increase an individual's knowledge base by reviewing and discussing pertinent medical literature.

The Korea University Medical Center is composed of three hospitals: Anam, Guro, and Ansan Hospitals, situated in Seoul or in nearby urban areas. Anam Hospital is the main hospital and plays a leading role in education and patient care; it is located in north-eastern Seoul. Seoul is a metropolitan city renowned for its heavy traffic, and thus it takes much time to travel to Anam Hospital from sister hospitals. The distance between Anam and Guro Hospital is 25 km, and between Anam and Ansan Hospital 51.5 km. Moreover, one must pass through the most congested central part of Seoul to travel from one hospital to another. Traditionally, the journal club members met together to study dermatology articles for educational purposes. However, the growth of the city and worsening traffic congestion made travel between hospitals more and more difficult. Thus, we examined the possibility of using videoconferencing for journal club meetings and sought to identify its effects on house officer training.

The objectives of this study were to introduce a videoconferenced form of journal club, to determine whether it has any effect on house officer training and house officer satisfaction levels, and to find a way of improving house officer training or journal club by using videoconferencing. To our knowledge, this is the first report in the dermatology literature to evaluate and discuss the roles of videoconferencing with respect to journal clubs.

MATERIALS AND METHODS

Ten dermatology house officers at Korea University Medical Center participated in the study. Five house officers were working in the mother hospital and five in sister hospitals. They were being trained in mother and sister hospitals in rotation by eight attending dermatology physicians.

The three hospitals already maintained a videoconferencing facility for remote conferencing between sites. Any hospital department could use the facility free of charge. The videoconferencing facility comprised a set-top box like videoconferencing system (PCS-1, Sony Corp, Tokyo, Japan) with a video camera and microphone connected to a 45 inch projection television, and a PC-based videoconferencing system (Bizmate Pro, MC Global Inc., Seoul, Korea), which in turn was connected to a beam projector and a 90 inch wide screen. The former system was mainly for live interactive video and voice transmission, and the latter for whiteboard presentations. Both sets of equipment operated and interacted with other remote conference rooms via inter- or intra-net networks. Four conference rooms could join a meeting at a time. The three hospitals were connected to each other with an internet backbone capable of transmitting at 100 megabits/second (Mbps).

Journal clubs were held as before, except that all participants joined the meeting at their own hospitals, and sessions were held more frequently. Trainees were not allowed to be absent from any sessions. A list of selected articles from major dermatology journals was sent to house officers one week before meetings, and they read and prepared brief presentations of the articles (not exceeding 10 min per article). Presented articles were subsequently discussed by attending physicians and house officers. The headings and number of articles were recorded and compared with those of articles treated in the conventional manner one year previously.

After completing a 1-year programme of journal club, house officers were asked about their satisfaction and comprehension levels using a 5-point Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree, assigned scores of 2, 1, 0, -1, and -2, respectively) and a questionnaire containing 17 questions (Table I). House officers were asked open-ended questions concerning the problems of videoconferencing when applied to their training, and for their suggestions. Their answers were analysed according to house officer grades and training hospitals.

Statistical analysis

Results were analysed using a statistical package (SAS system for Windows V.9.13, SAS Institute Inc., Cary, NC, USA). Changes in degree of satisfaction were compared using the Wilcoxon signed-rank test. Differences in degrees of satisfaction between the two house officer groups, i.e. at the mother and sister hospitals, were compared using the Wilcoxon rank-sum test. The Mantel-Haenszel χ^2 test was used to identify trends according to house officer grades.

RESULTS

Eight attending dermatologists and 10 dermatology house officers participated in the journal club. Before the advent of videoconferencing it took the house officers or attending physicians at the three hospitals up to 2 h to travel to the journal club at the mother hospital, Anam Hospital, and as much time to return to their hospitals. Thus, videoconferencing saved considerable time.

During the year before the advent of videoconferencing, 10 journal club sessions were held and a total of 78 articles were presented. On average, 7.8 ± 2.04 articles were presented at a session of journal club. However, after the advent of videoconferencing, 21 sessions were held, and a total of 112 articles were presented at an average of 5.3 ± 1.06 articles per session.

The responses of house officers to the questionnaire in 5-point Likert scale (possible range of scores: -2 to +2) are compiled in Table I. They were all satisfied, i.e. they either agreed or strongly agreed with the videoconferenced journal club concept (median of 1, range 1-2). The house officers of the sister hospitals agreed a little more than those of the mother hospital (1.2 vs. 1.0), but there were no significant differences in degrees of satisfaction between the house officer groups of the mother and sister hospitals ($p=0.4237$). The house officers were

Table I. The 17 statements regarding the videoconferencing journal club and the combined results of the questionnaire ($n=10$)

Query	Queries using Likert scale	Results ^a Median (range)
1	I am satisfied with the videoconferencing journal club as a whole.	1 (1-2)
2	I am satisfied with the articles presented at the videoconferenced journal club.	1 (1-1)
3	I am satisfied with the article presented at the journal club before the advent of videoconference.	1 (0-1)
4	I feel that the number of articles is sufficiently large for a videoconferenced journal club.	1 (0-2)
5	I am satisfied with the length of time for a journal club session.	1 (0-2)
6	I saved my time through videoconference.	1.5 (1-2)
7	I prefer face-to-face journal club than videoconferenced journal club.	0 (-2-0)
8	I prefer face-to-face journal club even when I have to travel long distance.	-1 (-2-0)
9	I am satisfied with the communication through the videoconference facility as a whole.	1 (1-1)
10	I am satisfied with the video screen.	0.5 (-1-1)
11	I am satisfied with the text on electronic whiteboard.	1 (-1-1)
12	I am satisfied with the presenter's voice on the videoconference facility.	0.5 (-1-1)
13	There are sufficient interactions and discussions among the participants of the journal club.	0 (-1-1)
14	I understand well the articles presented at videoconferenced journal club.	0 (0-1)
15	I understand well the articles presented at videoconferenced journal club as much as those presented at face-to-face journal club.	1 (0-2)
16	Videoconferenced journal club had an effect on my patient care.	0 (-1-1)
17	I am eager to adopt the videoconference format to many other resident (house officer) training programmes.	1 (-1-2)

^aPossible range of scores: -2 to +2 (strongly disagree, disagree, neutral, agree, and strongly agree: -2, -1, 0, 1 and 2, respectively).

also satisfied with the content, the number of articles, and the time spent per session (medians of 1 for all three statements). Their satisfactions with content showed no significant changes before and after the advent of videoconferencing ($p=1.0000$). All of them agreed that videoconferencing saved time (median 1.5), and none preferred the face-to-face journal club to the videoconferenced journal club regardless of the travel time advantage. All were satisfied with communication through the videoconferencing facility (median 1) and with the video screen, the text on the electronic whiteboard and presenter voice clarity (medians of 0.5–1). Although it appeared that more house officers were satisfied with the whiteboard text than video screen presentations, this difference was not significant ($p=0.6250$). In terms of levels of individual engagement during discussions, they responded variously from agree to disagree (median 0). The house officers of sister hospitals were less satisfied with interactions via videoconferencing (means -0.2 vs. 0.6), though this was not significant ($p=0.1461$). They understood well the articles presented (mean 0.4 , median of 0) and none responded with “disagree”. They also understood the articles as well as those presented at face-to-face journal clubs (median 1), and 7 of 10 responded with “agree” or “strongly agree”. Although senior house officer scores were highest (1.3), no trends of their comprehension level were observed according to house officer grades ($p=0.0967$). Many agreed that the videoconference journal club influenced patient care (mean 0.3 , median 0), and most of the participants were eager to adopt videoconferencing for other house officer training programs (median 1).

In terms of open-ended questions, house officers requested that the videoconferencing format be introduced to other house officer training programs (Table II). They also responded to questions regarding problems that might occur when videoconferencing technology is applied to house officer training (Table III). The thing that most worried them was less intense discussion via videoconferencing. Every house officer expressed one or more concerns regarding the introduction of videoconferencing to house officer training.

DISCUSSION

Journal clubs are of paramount importance during residency training (9), and have historically been used

to teach house officers about critically reading and reviewing the literature in order to improve patient care (8). A wide variety of formats for journal clubs has been presented in the medical literature (12). Various medical specialties, such as general surgery (10, 11), orthopaedic surgery (12, 13), neurosurgery (9), ophthalmology (8), otolaryngology (14, 15) and emergency medicine (16) use journal clubs for house officer training. The main goal of journal clubs is to teach by the acquisition of information. House officers in training must read the current literature, be familiar with evidence-based medicine, and use this evidence to improve practice and patient care (8). It is no wonder that many are trying to improve their journal clubs in various ways, i.e. by using check-lists (16), or internet-based formats (10, 14). The flexible nature of journal club gives it the potential to address educational needs (15), and periodic evaluation of the conferencing method and the institution of appropriate changes ensure that journal clubs are valuable and successful (12).

Most journal clubs meet monthly, but weekly and twice-weekly meeting are also common (9, 11, 13, 15). Considering the number of dermatology journals that must be covered, the weekly journal club was better in terms of limiting the number of articles, which is a recommended strategy for a successful journal club (8). A duration of 1 h is common for a journal club (15). Thus, the number of articles cannot exceed 5 or 6. Generally, 3–6 articles are reviewed (11). However, the ideal number of articles and frequency for journal clubs need to be determined by further study.

The major disadvantage of the traditional journal club is that it requires all participants to be present in one place (14). Videoconferencing has many advantages that enable the distance and, to some extent, time problems to be overcome. The time required for travel was the important barrier to attendance (17), and videoconferencing overcomes this problem and eliminates the associated travelling costs (2–5, 7, 17, 18). In addition, it improves the efficiency of training programs generally by enabling sessions to be held more frequently, and increases a sense of connection with colleagues and increases the range of specialties (6, 18). Reinforcement of critical information and active instructional feedback are important characteristics of a successful journal club (8).

Table II. Open-ended questions: other possible areas for videoconferencing according to dermatology house officers

Other possible areas	Responses (n)
Clinicopathological conference	4
Staff lecture	4
Case presentation	2
Textbook reading	1

Table III. General problems of house officer training by videoconferencing, according to dermatology house officers

Problems	Responses (n)
Videoconferencing can't provoke intense discussion	4
Less attention than face-to-face meeting	3
Malfunction of videoconference equipment	3
Mishandling of videoconference equipment	1
Discussions mainly by faculty members	1
Training without a human touch	1

Current videoconferencing systems have acceptable quality (7), and although technical video and sound problems might be encountered using old-fashioned integrated services digital network (ISDN) telephone lines (2), they are no longer a problem with high-quality equipment and modern broadband internet access (5).

The attitudes of all participants are important when deciding whether videoconferencing should be applied to residency training (1), and questionnaires are the most common method of assessment (6). In general, in the present study the majority of house officers were satisfied with the videoconferencing format, as has been reported by other studies (19) and the number of articles and the duration of meetings were satisfactory after the introduction of videoconferencing.

The videoconferencing format could be used for teaching and professional development in dermatology. This study showed that journal clubs based on a videoconferencing approach are as educational as face-to-face learning, which is in accord with previous reports (2, 17). However, other researchers have reported that it is not as effective as face-to-face instruction, but met their learning objectives (7). Thus, other group studies on, for example, clinicopathological conferencing might also benefit from videoconferencing.

The future applications of videoconferencing are likely to be those requested by house officers themselves, because they are the customers of the house officer training programme, and the most common request appears to be for clinicopathological conferencing and staff lectures. We are currently planning to adopt videoconferencing for additional house officer training programmes.

In conclusion, videoconferencing has the advantages that it saves the time and money spent on travel, whilst retaining the benefits of the traditional journal club. The adoption of videoconferencing technology by journal clubs can increase the efficiency of house officer training. It is hoped that our experiences will encourage readers to increase the effectiveness of their journal clubs.

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