A Collaborative Clinical Case Conference Model for Teaching Social and Behavioral Science in Medicine: An Action Research Study

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Research Article

Keywords: social and behavioral sciences, anthropology, integration, clinical case conference, faculty development

Posted Date: February 1st, 2021

DOI: https://doi.org/10.21203/rs.3.rs-138564/v1

Version of Record: A version of this preprint was published at BMC Medical Education on November 12th, 2021. See the published version at https://doi.org/10.1186/s12909-021-03009-8.

Abstract

Background: Effective social and behavioral sciences teaching in medical education requires integration with clinical experience, as well as collaboration with social and behavioral sciences experts and clinical faculties. However, teaching models for achieving this integration have not been adequately established, nor has the collaboration process been described. This study aims to propose a collaborative clinical case conference model to integrate social and behavioral sciences and clinical experience. Additionally, we describe how social and behavioral science experts and clinical faculties collaborate during the development of the teaching method.

Methods: A team of clinical teachers and medical anthropologists planned for the development of a case conference based on action research methodology. The initial model planned for a 3-hour session, similar to the Clinicopathological Conference structure. We evaluated each session based on fieldnotes taken by medical anthropologists, and post-session questionnaires that surveyed participants' reactions and points of improvements. Based on the evaluation, a reflective meeting was held to discuss revisions for the next trial. We incorporated the development process into undergraduate medical curricula in clinical years and in a postgraduate and continuous professional development session for residents and certified family physicians in Japan. We repeated the plan-act-observe-reflection process more than 15 times between 2015 and 2018.

Results: The development of the collaborative clinical case conference model is summarized in three phases: Quasi-CPC, Interactive, and Co-constructive with unique structures and underlying paradigms. The model successfully contributed to promoting the participants' recognition of the clinical significance of social and behavioral sciences. The case preparation entailed a unique, significant learning of how social and behavioral sciences inform clinical practice. The model development process promoted the mutual understanding between clinical faculties and anthropologists, which might function as faculty development for teachers involved in social and behavioral sciences teaching in medical education.

Conclusions: The application of fitting conference models and awareness of their underlying paradigm according to educational situations could promote the integration of social and behavioral sciences with clinical medicine education. Faculty development in social and behavioral sciences in medical education should focus on collaboration with scholars with different paradigmatic orientations.

Background

It has been widely suggested that teaching social and behavioral sciences (SBS) in medical education is necessary, since clinicians have to learn how to understand and address the social factors that are inextricably connected to health and disease.[1,2] However, teaching SBS in medical education has been encountering difficulties for a long time.[3] One such difficulty pointed out in a recent systematic review is the lack of the perceived clinical relevance of SBS for both medical students and clinical teachers.[4] For students, this is particularly notable when courses begin with conventional teachings, such as learning

fundamental SBS theories with classical readings.[5] Thus, teaching strategies that integrate SBS and clinical medicine are imperative in demonstrating their clinical relevance. This integration is also relevant in postgraduate and continuing medical education. For example, a recent study has suggested that learners experience time-bounded learning of the integration of clinical and social sciences as a "struggle" and calls for an integration across time-bounded phases of training.[6] The lack of the perceived relevance of SBS for clinical teachers is also deleterious to its effective teaching. First, such perceptions lead them to discredit the value of learning SBS, which causes their students to regard it as a peripheral subject compared to biomedicine.[7] Second, clinical teachers cannot demonstrate the integration of SBS into their clinical practice, which leads to a lack of SBS role modeling for medical students during their clinical rotations.[8] Thus, the comprehensive integration of SBS across undergraduate, postgraduate, and continuing medical education is advisable to promote student's effective learning of the subject, and the clinician's deeper understanding of it.[9,10]

The use of either fictional or authentic clinical cases is a common strategy for enhancing the integration of non-clinical sciences (including SBS) and clinical practice by contextualizing non-clinical science learning into clinical cases,[11] or promoting reflection.[12] While previous articles have reported on curricula that apply this approach in teaching SBS,[13,14] they were mainly in the context of the preclinical years of undergraduate medical education, which deals with fictional cases (e.g., Problem-Based Learning[15]). Although there were a few studies that focused on clinical years in both the undergraduate and postgraduate settings,[14,16] they neither explored how to specifically proceed with the integration of clinical experiences with SBS, nor described how the collaboration between clinical faculties and SBS experts progressed.

In the context of continuous professional development (CPD), a recent iconic attempt that seems to contribute to the demonstration of the clinical relevance of SBS is the "Case Studies in Social Medicine" series, wherein clinical cases are presented with a range of topics in SBS.[17] Such case studies should be attempted not only in academic journals, but also based on individual clinicians' experiences in the CPD setting to maximize its impact. Thus, the development of a case conference model that facilitates the integration of clinical experiences and SBS knowledge is imperative. In summary, there is scarce research describing a teaching strategy that integrates SBS contents with authentic clinical experiences and informing clinical practice.

The integration of SBS into clinical practice requires effective collaboration between clinical faculties and SBS scholars which is another significant barrier for SBS experts and clinical faculties.[4] For SBS experts, it is difficult to contextualize SBS contents and theories in clinical practice. On the other hand, while clinical faculties can potentially integrate clinical practice into SBS, they do not have adequate knowledge of the latter. Accordingly, collaboration in the context of medical education has been highlighted as a necessity for clinicians and SBS experts.[4] However, previous literature has not explored how such collaboration can develop during the development of SBS teaching methods.

To address these gaps, we have developed a new case conference model for teaching SBS. Among the broad disciplines in SBS, this study focuses on anthropology in the context of teaching SBS in medical education. The research methodology in anthropology is expected to be potentially congruent with case-based teaching. Ethnography, the conventional and foremost (or even sole) research methodology in anthropology, involves participant observation, which usually starts with an authentic, particular activity of a group of people.[18] Thus, most anthropologists are expected to be familiar with the discussion through a description of a particular patient. The exclusiveness of ethnography and its potential familiarity with case-based teaching makes anthropology the initial counterpart among the broad SBS disciplines in this research. Although the main goal of the study is the development of a teaching model, delineating the process of collaboration between clinical faculties and anthropologists can be beneficial because of the scarcity in the existing literature despite it being a significant source of difficulties in integrating SBS into clinical practice.

Thus, the research questions are as follows:

(1) What is the optimum structure of a clinical case conference model for teaching SBS contents in a clinically relevant manner?

(2) How is this model different from the conventional medical case conference?

(3) How do SBS scholars and clinical faculties collaborate in teaching SBS during the development of a teaching model?

Methods

Initial structure of the conference model and its development methodology

The research team consists of two clinicians (JM, a family physician and medical education researcher; and HN, a general internist and medical education researcher) and two medical anthropologists (JI and YS). Neither anthropologist had worked in the medical school prior to the project.

Ethical approval was given by the Kyoto University Research Ethics Committee. We applied an action research methodology since the primary research aim is to explore solutions (e.g. a new case conference model) to practical problems (e.g. difficulties in integrating SBS and clinical experiences) in the real world. It consists of four iterative phases: planning, action, observation, and reflection.[19] The iterative process enables researchers to describe the development process of an intervention. This feature aligns with our research aim, which is to clarify the differences between the new case conference model and the conventional one as well as the process of collaboration between clinical faculties and SBS experts.

For the planning phase, we initially planned the case conference as a 3-hour session with a presentation of two clinical cases by clinicians or students, followed by comments based on anthropological theories

and perspectives made by the anthropologists on the cases. The structure of the case conference was almost identical to that of the Clinicopathological Conference (CPC), which consists of a clinician's case presentation, discussion by the participants, and a definite diagnosis with some relevant commentary by pathologists. This is because the structure of the CPC is intended to integrate clinical medicine and pathology. It is expected to also be partly useful in integrating clinical medicine and the social sciences. Moreover, the structure of the CPC is a typical clinical conference that many clinicians are familiar with.

We incorporated the project into undergraduate medical curricula in clinical years, as well as in a postgraduate and CPD sessions for residents and family physicians. For the undergraduate level, we introduced the case conference as a reflective component of clinical clerkship, where students reflect on and discuss their clinical experiences. In the postgraduate or CPD session, we held a workshop as part of the academic conference or seminar in which residents and certified family physicians voluntarily participate. In both settings, we recruited participants who were interested in the project using convenience sampling. Informed consent was obtained from all participants..

We applied two methods for observing our sessions. First, the medical anthropologists from our team took field notes describing the process of the participants' discussion. Second, we administered an open-response evaluative questionnaire in which we surveyed participants' reactions to and perceived learning from the session, and gathered their suggestions regarding the model. After each trial, the team members held a reflective meeting where they shared their observations and experiences, elaborated on lessons from the trials, and discussed points for revision for the next trial. Based on these meetings, we also discussed the features of participation and the roles of clinical faculties and anthropologists.

In what follows, we will first describe the latest version of our case conference model. Then, we will illustrate its developmental process to clarify its difference from the conventional medical case conference. Finally, we will summarize how the collaboration progressed from the perspective of the role of clinical faculties and anthropologists.

Results

Final structure of the collaborative clinical case conference (CCCC) model

From 2015 to 2018, we held 7 sessions at the undergraduate level, and 10 trials in postgraduate and CPD settings for family physicians. Summaries are shown in Tables 1 and 2, respectively.

The final procedures of the conference model, what we call the collaborative clinical case conference (CCCC) model, and the role of clinical faculties, anthropologists, and case presenters are summarized in Figure 1, which is divided into two phases: preparation and implementation. An illustrative example of how the case conference proceeded is shown in Appendix 1.

In the preparation phase of the CCCC, clinical faculties first recruited a prospective presenter, and anthropologists recruited anthropologists who wished to participate in the conference. The clinical

faculties, prospective case presenter, and anthropologists formed a team to hold the conference. Next, the prospective presenter was asked to list several patient cases. To retrieve a wide range of suitable cases for analysis with an anthropological perspective, several topics were used by the case presenters (Figure 1). They were also asked to consider including “probing questions” that they would like to discuss at the conference. Based on the request, the prospective presenters gave summaries of their patients’ cases.

Second, the anthropologists assessed and selected one or two cases. The criteria used to select potentially suitable cases for the conference are shown in Figure 1.

Third, after choosing the cases for inclusion in the conference, the medical anthropologists and case presenters collaboratively constructed and elaborated the case presentation. This co-constructive interaction is a unique feature in the case conference model. Here, the anthropologists analyzed the preliminary written case and requested that the presenter retrieve additional contextual information deemed necessary for discussion and anthropological understanding. In some instances, the anthropologists suggested modifying or changing the “probing questions” formulated by the case presenters when they found that the questions might not promote an understanding of the case. Based on these comments, the case presenters rewrote and elaborated on the case. During this phase, the case presenters reviewed the chart, reflected on the cases and their performance, and sometimes conducted an additional interview of the healthcare professionals involved.

Finally, the anthropologists prepared their comments based on the elaborated cases. The anthropologists described several lessons that they learned after reflecting on the project. First, the comments are informative when they provide a theory that helps participants make sense of the conundrum, or form a question which can potentially reframe the clinicians’ perspectives on the case. In other words, the comments do not always have to answer the “probing question.” Second, the comments help clinicians follow the analysis of the anthropologists when they are explicit about the way they connect anthropological theories with the cases. For example, it is effective to quote particular phrases in the written cases since clinicians tend to regard the written case as authentic. Similarly, clinicians can better understand the case when anthropologists clarify the kind of phenomena they elicit from the quoted data before providing theoretical accounts. While introducing the technical terms or concepts from SBS, it is often imperative to identify which are technical to avoid confusing the clinicians, since some technical SBS terms mimic lay terms (e.g., symbol, culture, exchange). Finally, preparing distinct comments from two or more anthropologists is preferred, if possible. This is because having a variety of perspectives on the cases exemplifies the multifaceted way in which social scientists analyze daily phenomena.

The implementation phase is approximately a 2-3-hour session during which one case is discussed. First, the goal of the conference, which is to experience the clinical relevance of SBS through a discussion of real clinical cases, is explained. Next, a brief introduction of social and medical anthropology (e.g., ethnography and participant observation) is given, before the case presenter describes the elaborated case with “probing questions.” This is followed by a small group discussion by the participants and comments on the cases by medical anthropologists. If time permits, a floor discussion is again

encouraged, based on the anthropologists' comments. Finally, the case presenter reflects on the entire process to conclude the conference.

Development of the collaborative clinical case conference

The process of developing the CCCC can be summarized in three phases: quasi-CPC, interactive, and constructive phase. Each phase represents a distinct model and its features. The differences between the three phases, and the processes by which we developed them are summarized in Figure 2. Here, we simplified the gradual process of the development into three distinct phases to clarify the differences.

Quasi-CPC phase

We initiated the conference with a structure almost identical to that of the conventional CPC. One significant modification to the structure was assigning two anthropologists as commentators, a decision aimed at demonstrating a variety of perspectives to understand the case, whereas medical diagnosis is usually a process to find one definitive answer.

From the evaluation of the "quasi-CPC" phase, the questionnaire found that most participants acknowledged the significance of learning SBS from their clinical cases. They generally perceived the anthropologists' comments as valuable as they comprehensibly described the implicit aspects of the practice or patients' situation. Notably, some participants appreciated the legitimate opportunity to discuss sociocultural issues that rarely become central in their workplace. However, some areas for improvement were suggested. First, the anthropologists pointed out that the case presentation was not always enough to promote a sociocultural understanding of the case. This is not only because participants did not have the information required for the analysis, but also because their limited understanding of the sociocultural aspect made it difficult to judge and contextualize information that was significant. Second, some participants found it difficult to start the case discussion without any suggested discussion points. This would be because clinicians are used to conventional biomedical conferences in which questions such as, "What is the diagnosis?" or "What is your management?" are apparent. Thus, we posit the following two points: 1) the interaction between anthropologists and clinicians while preparing cases is necessary to ensure that appropriate information is included in the presentation; and 2) some "probing questions" might be useful to initiate the case discussion.

Interactive phase

To ensure interaction before the conference, we modified the case preparation from an isolated process by the case presenters to a collaborative one with anthropologists. First, we changed the method of asking prospective presenters to list the cases for the conference after initially suggesting that they select cases with perceived "sociocultural" difficulties. We added three topics based on the reflection that their understanding of "sociocultural" would be limited and lead to a narrow selection of cases being brought

into the conference (Figure 2). We also asked them to add “probing questions” that they wanted to discuss to the case summary. Second, after the case was presented to the anthropologists, they requested additional information, such as contextual aspects and perception of other health professions, to ensure that adequate contextual information is included in the case presentation.

The modifications done to ensure interaction before the conference had several effects. The anthropologists’ requests urged the clinicians to review their chart or talk to their colleagues about the case. This led them to become more cognizant of the difference between their perspectives and that of others’, and rewrite the case presentation. Second, comments from anthropologists did not always provide a straightforward answer to the “probing questions” from the case presenters. Instead, anthropologists sometimes pointed out certain characteristics of the medical perspective by analyzing the way that the “probing questions” were formed, and proposed an alternative question through their anthropological analysis. For example, regarding a case involving a depressive elderly woman who “refused” care from physicians and other professionals such as, pharmaceutical therapy and home visits to her husband with dementia, the participating health professionals discussed how to overcome her rejection, whereas an anthropologist posed the question: “What was the lady protecting from the healthcare professionals?” Participants and clinicians in our team were impressed by the reformed questions of the anthropologists, since it led participants to shift their perspectives on the case, and the case presenters to remember otherwise forgotten information. A participant described the physicians' perspectives as “interventionist,” which makes it challenging to understand patients’ worldviews. During the discussion, some participants noticed that physicians tend to assume that they are being neutral and exclude themselves from the case presentation and discussion. In the evaluative questionnaire after the trial of the interactive structure, one participant noted that, “since medical professionals cannot be objective no matter how they strive to be, they should be sensitive to their own filter.” This recognition of the unattainable nature of objectivity and the significance of being cognizant of the uniqueness of physicians' perspectives shows an awareness of epistemology. This seems to be partly inspired by the explanation of participatory observation in the introductory lecture, but mainly by anthropologists' attitudes towards discussing the positionality and perspective of case presenters during the conference.

Two points were drawn based on the observation. First, anthropologists’ comments do not always have to be conclusive. Instead, their essential role in the conference is to reframe the questions. We hypothesized that the conference is focused not only on the process of looking for an answer to the predefined problem, but also on that of posing a useful question which leads to a subsequent exploration of appropriate management. Second, allowing the case presenter to respond to the anthropologists’ comments might be useful, since it would highlight how the anthropologists’ reframing could influence the clinicians understanding of the case and possibly lead to alternative actions within the case. To achieve this, we attempted to focus more on posing questions and exploring methods to secure the iterative process as much as possible between the case presenters and anthropologists in the preparation phase.

Co-constructive phase

Given the reflection, we modified the structure in three ways. First, in the preparation phase, anthropologists guide the case presenter on what additional information to gather, and how to frame questions. Second, clinicians asked the anthropologists to clarify how they reframe the clinician's questions when they comment on the case in the implementation phase. This is achieved by one anthropologist directly commenting on the case, and another explaining the premise and underlying perspective of the comment. Finally, we gave case presenters a chance to reflect on the discussion process after the anthropologists' comments, to share the impact of the conference on their understanding.

Throughout the trials of the co-constructive structure, which is identical to the final structure of the CCCC, one notable finding was that the case preparation process provided a unique learning opportunity for the case presenters. Based on the influence of the anthropologists, case presenters were urged to review their charts, interview their colleagues with questions that clinicians rarely ask during work, and re-examine their perspectives on the clinical situation. Through this experience, some clinicians noticed that the understanding of particular clinical phenomena is not monolithic, but differs among the involved healthcare professions (as an example of a case presenter's learning, see Appendix 1). The anthropologists' expertise in ethnography helped facilitate this process, since they were able to notice which contextual information was missing and the kind of requests or questions that would be informative for the case writers to further their analysis. Therefore, the case preparation in this phase could be understood as a process of collaborative clinical case writing by case presenters and anthropologists, in which the former can perform a brief quasi-ethnographic exploration and experience a method of how social scientists explore "clinical" phenomena, and the latter can participate in the process of constructing the clinical reality. Here, anthropologists played the role of the collaborative explorer of clinical phenomena by (re)framing clinicians' questions and guiding the exploration.

The iterative structure of the implementation phase (Figure 2) enables a growing understanding of the clinical case through interactions among participants, case presenters, and anthropologists. Here, the case conference is not a deductive act for testing a hypothesis, but rather an explorative act to co-construct the understanding of the case. The co-constructive relationship between anthropologists and case presenters is a strength of this structure, and could lead to clinically relevant SBS learning experiences.

Role stratification and learning of faculty clinicians and anthropologists: The case conference model as faculty development

In addition to the gradual change in the anthropologists' role throughout the conference, the interaction of clinicians and anthropologists was gradually stratified during the model development, as schematically

illustrated in Figure 3. At the beginning of the project, clinicians described their clinical contexts to the anthropologists, and anthropologists explained the characteristics of their disciplines in the preparation and implementation of the conference. The conference became a place where a group of clinicians and anthropologists could gather and explicitly express their reasoning processes. As a result, some mutual understanding between faculty clinicians and anthropologists emerged. Participants' reactions to the anthropologists' comments allowed the latter to know which particular theories and findings were complementary to the physicians' perspectives and easy for them to understand. The anthropologists found it interesting that some scholarly "obsolete" theories were very relevant to the physicians, whereas other cutting-edge articles were not. This understanding of the academic-clinical gap was a significant lesson for the anthropologists who participated in our project.

In the latter phase of the project, some clinicians and anthropologists came to play a "translator" role (Figure 3). For example, experienced anthropologists in the conference guided more novice colleagues by giving tips such as, "take care of the academic-clinical gap." These translational attempts were particularly influential for "novice" anthropologists who were entirely alien to medical education, since such attempts functioned as the "scaffolding" to promote their participation in and learning of medical education.

The clinicians in the research team (JM and HN) learned how the stances of the anthropologists were different from those of the clinicians. While clinicians tend to assume the cases *are* patients and their diseases, anthropologists tend to recognize that they are sediments of the process between the presenting clinicians and their contexts. This gap led to different targets of analysis during the case conference. In particular, clinicians try to know the patients and their health problems, whereas anthropologists go beyond these and include the relationship between case presenters, patients, other stakeholders, and even the perspectives of the case presenters, as well as the conference participants. Thus, while the task for clinicians during the conference is an analysis *of* the case, the task for anthropologists is an analysis *through* the case. The presented cases function as an epistemology for anthropologists to understand the clinicians and their perspectives, and clinical practice. Such comparative understanding helped the clinicians explain how their perspectives differ from those of the anthropologists during the conference. This growing mutual understanding was an additional, but significant process accompanying our research project.

Discussion And Conclusions

The CCCC developed in the study successfully contributed to promoting participants' recognition of the clinical significance of SBS. The unique features of this model were the collaborative writing of clinical experience during the preparation phase, and the iterative structure during the implementation phase. In particular, the former seems to provide case presenters with a profound, unique learning opportunity. They can revisit their clinical experience through the way that social scientists explore clinical phenomena. Although case-based learning has frequently been reported as a teaching method to promote the integration of clinical medicine and non-clinical disciplines,[16] the involvement of scholars

from other disciplines in the writing of clinical experiences is scarcely reported on. In the CCCC, this involvement seems to promote the integration of clinical medicine with the contents and theories, and research method of SBS.

Reflecting on the whole process of model development, the transition from the conventional case conference to the final co-constructive model can be understood as one that is in the paradigm of the conference from the discipline behind the quasi-CPC phase to that of the co-constructive phase, that is, it is a transition from biomedicine to SBS.

The paradigm of the former is positivism, and the goal of the conference was to verify the clinicians' diagnostic hypothesis with a definite answer (diagnosis) and explore the clinicopathological correlation. Clinicians prepare the material to propose their diagnostic hypothesis and establish its validity through deductive reasoning. Pathologists approach the case with established, controlled experimental pathological methods. Although each part interacts before and during the conference, the basic premise is that the definitive, stable truth exists, despite the approach clinicians and pathologists take. The case is regarded as a separate entity from the presenters and participants.

In contrast, a dominant paradigm behind SBS is social constructionism,[19] in which knowledge production is based on the interactions between people.[20] The CCCC represents this paradigm, since the whole process of the conference, including case preparation, focuses on the exchange between each party (SBS scholars and clinicians) and how they view the case. This point is also reflected in the findings from the evaluative questionnaire, which show that some participants noticed the characteristics of clinicians' perspectives during the conference.

As a supplemental analysis, we delineated the process of the role stratification of clinical faculties and anthropologists, accompanied by their evolving mutual understanding. For medical anthropologists, this project offered a legitimate opportunity to participate in writing authentic clinical cases. They elaborated on the practical tips regarding the collaboration with clinicians, which functioned as the "scaffolding" for novice anthropologists. The clinicians in the project team discerned their particular strength and played a "translator" role in the conference. On this point, it is plausible to regard the research project as a community of practice providing "an important venue for faculty development (FD)" for both SBS scholars and clinicians who were not familiar with teaching SBS in medical education.[21] However, we expanded the discussion to articulate the facilitation of collaboration by applying the "landscape of practice (LoP)".[22]

The LoP emphasizes the dynamic process of how more than two communities of practice can interact. For a productive interaction, the role of "brokers" in negotiating the exchange of knowledge with the CoP is emphasized as a key; such "brokers" form complex relationships via knowledge specific to the LoP. In our project, the conference became a place where two CoPs (clinicians, including clinical faculties, and anthropologists) intersect. The "translator" role could be understood as the emergence of the "broker" role that productively influenced the collaboration. For instance, the series of lessons derived from our

collaboration, such as the “academic-clinical gap,” would be an LoP-specific knowledge, making novice anthropologists effective teachers. Another notable point was that the first “translators” (HN) in our team were medical education researchers who were familiar with various learning theories and qualitative research methodologies originating from different paradigms.[23] The prior experience of switching between different paradigms might make it easier to play a “broker” role in the early phase of a project.

This study has several potential limitations. First, we only retrieved data on the perceptions of the case presenters and conference participants. Further attempts with more data are necessary to describe outcomes such as, participants' behavioral change or its influence on patient care and health outcomes. Second, the CCCC was developed only through our teaching for family physicians and medical students. Further studies are required to verify its usefulness and effect in other medical contexts. Third, our study only worked collaboratively with one discipline of SBS, which is anthropology. While we expect that it also applies to sociology and psychology as there are many similarities among these fields, further exploration is required. Finally, the CCCC was mainly developed in the context of voluntary sessions for participants. Therefore, it is necessary to check whether this model works in the context of a compulsory curriculum.

Despite these limitations, several implications can be drawn from this study. We propose that medical teachers who aim to integrate other disciplines into clinical medicine education should attempt to more rigorously involve scholars from other disciplines into students’ writing of clinical experience. We focus not only on SBS education, but also other non-SBS disciplines—for example, basic medical sciences. Although our model was developed through experiences with anthropologists who are experts in writing authentic phenomena, we expect that an exploration of collaborative writing with scholars from other disciplines might be fruitful as well. By exploring the learning that occurred through the writing cases under the guidance of a range of scholars, including both SBS and basic sciences scholars, and the features of the process with which such learning is promoted, medical educators can develop better teaching strategies to provide integrative learning for medical students and physicians in clinical contexts.

Multiple paradigms can be applied to the role of clinical cases when designing teaching methods. The patients’ cases are not only finished materials for discussing and justifying diagnosis and management, but rather an unfinished activity subject to social construction. From this perspective, the act of writing and discussing a case under the guidance of anthropologists can be understood as a process of co-constructing what is clinically relevant. Thus, SBS scholars in medical education would have the significant role of more closely participating in the construction process and attempting to reconstruct the perspective on what is called “clinical relevance.” For clinical faculties, it is important to invite SBS scholars into the clinical conversation, including case conferences, to rigorously connect clinical practice and SBS contents.

We do not intend to suggest that one model fits all in teaching SBS, since each paradigm has its particular strength. Instead, we suggest that faculties who plan on teaching SBS via clinical cases should

be cognizant of which models they intend to apply, since the structure and role of SBS scholars should vary based on the model. For example, for students lacking in clinical experience and knowledge of SBS contents, it might be better to structure a conference similar to the quasi-CPC phase. However, clinicians or medical students with clinical experience would benefit more from the CCCC than a quasi-CPC structure, since the former is more relevant to their real experience and involves an awareness of their implicit perspective. Therefore, it is beneficial for both clinical faculties and SBS scholars to flexibly navigate between varying paradigms to tailor the conference structure according to the educational goal, and maximize the effectiveness of teaching SBS in medical education.

Our findings and analysis regarding the process of collaboration provide insight into future research on FD and SBS teaching. In the context of the integration of different disciplines, the LoP illuminates the significant characteristics of the collaboration and the role and competency of faculties. For example, we consider the “broker” role to be a potentially important feature of faculties for the successful integration of SBS in medical education. Another point which deserves attention is the potential of medical education researchers with experience of collaboration who can move flexibly across different paradigms and play the “translator” role. Regarding this point, research in medical education has also been shown to involve collaboration between researchers with different paradigmatic orientations, which can potentially contribute to the productivity and effectiveness of education. However, to maximize the generative aspect of the collaboration or “the multidisciplinary edge effect,” it is suggested that an understanding of one’s own paradigm and those of others is imperative.[24] We argue that the same issue is pertinent to teaching SBS in medical education. It requires collaboration between SBS scholars and clinicians, and opens up a space that potentially entails “the multidisciplinary edge effect.” Thus, the FD for SBS teaching in medical education should involve collaborating with others who have different paradigmatic orientations. This can be fueled by sharing lessons and experiences from multidisciplinary collaborations in medical education research. We believe that such contributions improve the potential productivity and effectiveness of teaching SBS in medical education.

In conclusion, when medical teachers integrate SBS into clinical medicine, they should be cognizant of the paradigmatic difference between biomedicine and SBS, and strive to iterate the difference. Strategies for teaching SBS, as well as future FD in SBS in medical education, should focus on the collaboration between faculties with different paradigmatic orientations.

Abbreviations

CCCC, collaborative clinical case conference model; CPC, Clinicopathological Conference; CPD, continuous professional development; FD, faculty development; LoP, landscape of practice; SBS, social and behavioral sciences

Declarations

Ethics approval and consent to participate: The study protocol was performed in accordance with the Declaration of Helsinki, reviewed and approved by the institutional research board of the Kyoto University Graduate School of Medicine (R0865, 11/4/2016). Informed consent was obtained from all participants.

Consent for publication: Not applicable

Availability of data and materials: The datasets supporting the conclusions of this article are included within the article and its additional file.

Competing interests: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Funding details: This work was supported by a Grant-in-Aid for Scientific Research under grant 18H00782.

Authors' contributions: The four authors (JM, JI, YS, HN) planned the initial structure of the case conference model. All authors introduced the model in the postgraduate and CPD settings. JI and HN introduced the model in the undergraduate settings. The open-response evaluative questionnaire was edited and administered by JM and JI. The fieldnotes of each conference was taken by JI, YS, and her colleague anthropologists. The reflective meeting was mainly held by JM, JI and HN. JM analyzed the whole action research process and discussed the results with the other authors. All authors read and approved the final manuscript.

Acknowledgements: We would like to thank anthropologists Akinori Hamada, Hanio Oshima, Junko Teruyama, Makoto Nishi, Naofumi Yoshida, Sachiko Horiguchi, Sae Nakamura, Yusuke Hama, and Yasunobu Ito, and clinical faculty members Atsunori Kuwabara, Kazuoki Inoue, Makiko Nishigori, Mariko Morishita, Yoshinori Matsui, and Yuka Miyachi for their support in developing the conference model. We would like to thank Editage (www.editage.com) for English language editing.

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Tables

Table 1. Topics and comments in undergraduate conferences

Date	No.	Case summary topics	Comment summary	Number of teachers and participants		
				CT	MA	Students
January 8, 2015	1	Why is the perception of disease (ex. Cancer, AIDS) different across people and countries?	Impact of social, cultural, political, and economical situations on perceptions of sickness and life	2	1	10
	2	Decision-making on terminal care when conflict exists between opinions of stakeholders (doctor, patient, patients' families)	1. Importance of collaborative decision-making, rather than informed "consent" 2. The knowledge of physicians is not superior to, but different from that of patients' (cultural relativism)			
	3	Decision-making on the care of a patient with dementia who has no relatives	Non-kinship relationship involving a solitary person and its potential in decision-making			
October 30, 2015	4	Management of or communication with a lady with uterine cancer who wants a baby	Narrative	2	3	10
	5	How to manage an autistic child who tries to enter a highway because of his obsession with cars and his mother	Dominant story and alternative story			
	6	ABCs of communication with hospitalized patients for cancer treatment	1. Doctor-patient relationship 2. Transition of a framework in a dialog			
July 1, 2016	7	An experience where the student could not translate the patient's word "dizzy" into medical terms	Daily-life words and medical terms; Connotation and denotation; Illness narratives	3	2	10
	8	Discrepancy between self-image and objective impression in video review	ABCs of participatory observation, practice of observation, physical exam, and doctor-patient relationship			
October	9	Management of a patient with	Narrative	2	2	10

27, 2016		multi-organ cancer metastasis (The validity of informed consent and whether the patient is satisfied with the decision)				
	10	Management of an autistic patient who calls an ambulance very often	Cultural/medical Anthropology and its perspective			
October 17, 2017	11	Is a medical student a “health professional?” If so, to what extent?	Legitimate peripheral participation	2	2	30
	12	The validity of care for a patient with terminal lung cancer who wanted to return home, but healthcare professionals could not guarantee the possibility of allowing him to do so	Contrast between logic of choice and logic of care	2	2	30
July 28, 2018	13	How should we communicate with a patient who laments an adverse event (stroke) after a prospective surgical procedure for cranial aneurysm?	Disease vs illness, explanatory model, illness as a constriction of the lived world and its care	7	3	98
October 16, 2018	14	Concern about the decision-making of a patient was dependent on the emotions of the patient and his family members rather than on “rational scientific” evidence	Differences between practical knowledge in the clinical arena and scientific knowledge	2	2	30
	15	How can we know the influence of the disease on the life of a patient and his/her family members?	Understanding the illness experience as an unfinished story (subjunctivizing one’s illness narrative)	2	2	30

CT: Clinical Teacher, MA: Medical Anthropologist

Table 2. Topics and comments in postgraduate and CPD conferences

Date	No.	Case summary topics	Comment summary	Number of teachers and participants		
				CT	MA	Participants
Jun 12, 2015	1	Terminal care of a dying priest who is also worthy in the community	1. Friction and rivalry between social roles and personal life 2. Transition of death and dying among eras (Aries) in Japan and process of dying	4	6	30
	2	Management of a socially isolated family with a muscle and intelligence disorder who is totally separated from the world of modern medicine	1. Ethnographic description of the case 2. Recovery of patient autonomy			
November 8, 2015	3	A patient who became happy with a stoma and the presenter's surprise with it	1. Life history 2. Inconsistency between one's words and actions, asymmetry between doctors and patients 3. Pollution, taboo, and order	5	7	40
	4	A 100-year-old woman whose family members prioritize religious routines and rites over their mother's care	1. Cultural competence 2. Overview of newly risen religions, secularism, and “power of *imo* (female)” 3. Gap between a family's ideology and situation			
February 10, 2016	5	An elderly “garbage” house and her decent family	Relationship between the family and the local community; the house and history of the family	3	2	5
	6	An old man with dementia and his wife with depression who reject prescription and care	Female position and role in a Japanese family; system theory thinking			
Jun 10, 2016	7	How do we manage a problem with a patient who denies medical care? (Same case as no.16)	1. Family history and social relationship (role as a mother and role as a wife) 2. Rephrase the question to “What did this old man try to	4	6	33

			guard from health professionals?”			
November 6, 2016	8	Management of a woman with SLE who has a university second opinion outpatient service	1. Patient's logic and doctor's logic 2. Narrative, its structure, and the second opinion service as a place where patients explore their narratives	5	5	40
May 12, 2017	9	The goal and extent of medical home care for a deteriorating iNPH patient	1. Doctor-patient relationship from the perspective of gift theory. 2. Physical and social experience of “I cannot” and care to elicit novel “I can”	5	5	29
July 22, 2017	10	Terminally-ill patient with COPD who insisted on toileting alone. A dilemma between autonomy and care.	A transformation of a status around receiving an aid for toileting, medication and self-perception, multiplicity of living ways in terms of choices in managing their daily activities	3	5	18
November 12, 2017	11	A patient with adrenal insufficiency treated with corticosteroid, whose pharmacist daughter misunderstood the disease pledged to use supplements. How to manage a conflict of opinion?	Co-existence of knowledge of treatment from different medical sectors (professional and folk sectors); The (un)acceptance of the death of the daughter’s mother, subjunctivizing illness narrative	?	?	30
January 27, 2018	12	A patient with CKD who attributes a range of symptoms to medications and rejects dialysis because of his concern that dialysis will become a burden on his family	Relational autonomy, local biologies, social body, and a sense of having boundaries aggressed by transfusion, dialysis, and medication	2	4	21
February 24, 2018	13	A patient admitted with diabetic nephropathy exacerbation caused by interruption of medication who attempted to send a gift to a resident to thank her for her care	The conflation of adherence with intelligence, a classical theoretical concept of gift and exchange	7	5	60

Figures

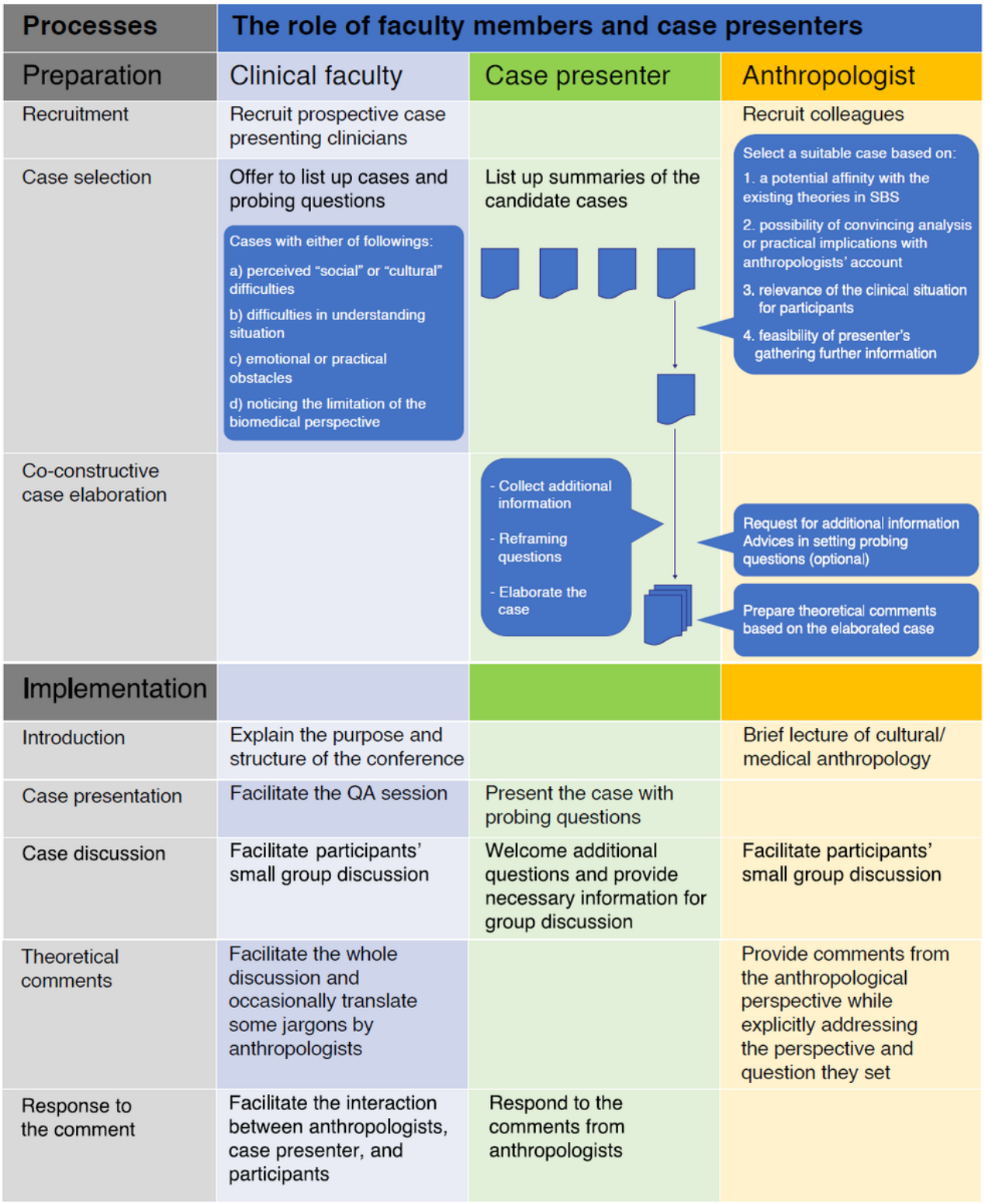


Figure 1

The final structure of the CCCC model

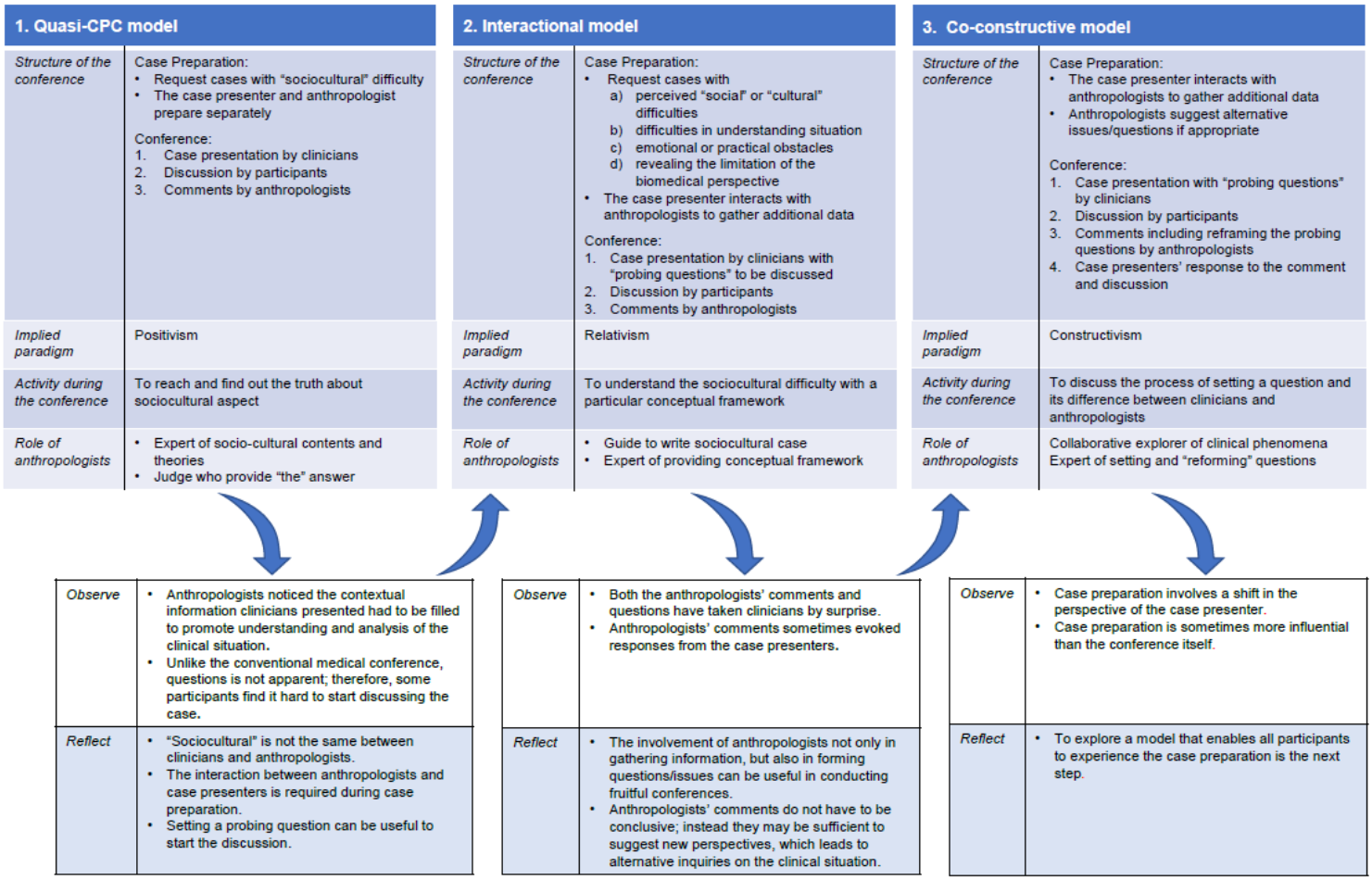


Figure 2

Evolution of the CCCC model and the concomitant action research process

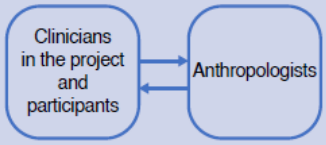
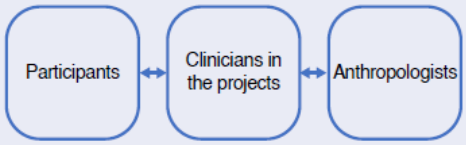
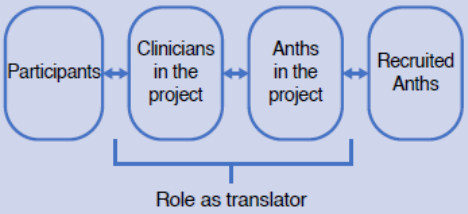
Stages	Schema	Explanation of the schema	Representative episodes or excerpts
Binary opposition and emerging mutual understanding		Clinicians tried to get to know anthropology and anthropologists through their comments. Anthropologists tried to get to know clinicians through the clinical case and conference participation.	JI felt that 'JM and HN behaviours during the conference were almost identical to that of the participating physicians'.Anthropologists directly observed the clinicians' goal-directed and linear cognitive process of analysing the cases and striving for a definitive conclusion. They also noticed that this process is not only learned, but also formed by contextual factors particular to the clinical situation, such as time limitations
Attempt to translate		Clinicians in the project (mainly JM and HN) tried to explain the clinicians' premise to the anthropologists.They also attempted to explain what anthropologists did and mentioned what can be perceived as peculiar to participating clinicians. This was usually done only by pointing out the difference.	The project team members likened the way HN facilitated the conference to the "sidestepping" between the anthropologist's side and the clinician's side. Clinicians explain the "roundabout" way anthropologists present their ideas or comments as "it is their way and different from our own".
Mutual translation		Clinicians and anthropologists in the project explain the other party's perspective and behavior to their own party members. This was usually done by mentioning the difference as well as the explanation of why the difference occurs.Clinicians in the project sometimes try to explain anthropologists' comments by quoting some relevant episodes that makes their jargon/theoretical comments more understandable and familiar to participants (e.g. using a metaphor with clinical phenomena or a patient episode that might be helpful for the participants to understand what the anthropologists meant). Clinicians and anthropologists in the project sometimes discuss whether their act of translation is appropriate.	An anthropologist points out that clinicians tend to classify and make a table when they give explanations, while clinicians notice that anthropologists do not do this or even strictly avoid this. The discussion reached one working hypothesis that the difference may come from their context where clinicians have to communicate in a time-pressing situation, while anthropologists aim to convey the dynamics and complexity of the situation in which the classifying attempt itself tends to be lacking or even essentialize.

Figure 3

The stratification of the roles of clinicians and anthropologists during the CCCC development

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryMaterial1AnexampleoftheentireCCCCprocess.pdf
- Supplementarymaterialrawdataquestionnanirev2.pdf