Original Article | Vol. 6, No. 2 / May-Jun 2020 /p. 1-5/ PPCR Journal

Principles and Practice of Clinical Research
A Global Journal in Clinical Research

PPCR
ISSN: 2378-1890

Site-based online distance learning for clinical research in Japan: a preliminary study of four years' experience

Z. Narita[1] and K. Ueda[2*]

[1]Department of Psychiatry, National Center Hospital, Nation Center of Neurology and Psychiatry 4-1-1, Ogawahigashi, Kodaira, Tokyo, Japan.
*[2]*Corresponding authors: Keiko Ueda, MD, PhD, Clinical Research Support Center, The University of Tokyo Hospital 7-3-1, Hongo, Bunkyo, Tokyo, Japan, keikoueda-tky@umin.ac.jp*

Received June 20, 2017; accepted May 26, 2020; published June 8, 2020.

Abstract:

Introduction: *Clinical research is one of the essential components of evidence-based medicine. To apply new findings to clinical practice, it is necessary to acquire advanced knowledge of the methodologies used in clinical research. Clinicians and researchers should also be trained in developing critical thinking skills so that they can provide better treatments. Principles and Practice of Clinical Research (PPCR) is an online distance learning program conducted by Harvard T.H. Chan School of Public Health, Harvard Medical University. Over the past few years, several Japanese individuals have participated in the program to acquire basic knowledge and skills in clinical research. However, so far, no study has reported the demographics of these Japanese students and their prospects after finishing the program. In this study, we investigate which factors contributed to the success or failure of these Japanese students in the course and the impact of the program on their future prospects.*

Material and Methods: *All Japanese students enrolled in PPCR from 2013 to 2016 were evaluated. The baseline data was collected when the students applied to the course, and the follow-up data was collected in March 2017. The follow-up data include whether participants passed or failed the course, whether they were chosen to continue as a PPCR staff member the following year, and whether they received an opportunity to study or work abroad in the year following their completion of the course. Considering that the sample size of this study is small, we descriptively evaluated the data rather than running a specific statistical analysis.*

Results: *24 Japanese individuals have been enrolled in Harvard's PPCR program from 2013 to 2016,. Japanese men were more likely to apply to the course than women (13/11 students). Most of the alumni were medical doctors (20 participants), while four participants were from other professional backgrounds. Nineteen individuals passed the course, while five participants dropped out. One of the alumni was invited to serve as a teaching assistant (TA) and five individuals were chosen as site monitors for the next year of the program. Three students obtained the chance to study or work abroad after the course.*

Conclusions: *Japanese students, especially women, maintain active participation during and after the period of online distance learning.*

Keywords: *Education, Distance learning, E-learning, Clinical research*

DOI: http://dx.doi.org/10.21801/ppcrj.2020.62.1

Abbreviations
PPCR: Principle and Practice of Clinical Research
TA: Teaching assistant

INTRODUCTION

Clinical research is an essential component of evidence-based medicine (Whitley, 2011; Lu, 2013). To apply new findings from research into practice, it is necessary to acquire advanced knowledge of the methodology used in clinical research (Brunoni, 2010). Clinicians and researchers should also be trained in developing critical

thinking skills so that they provide better treatments based on scientific evidence (Kowalczyk, 2011). Online distance learning is a method of study that has grown rapidly with the development and widespread use of internet technologies (Sandars, 2007; Sanderson, 2002). Through web-based systems, people anywhere in the world can learn about clinical research. This allows distance learning programs to target individuals from a wide range of countries and backgrounds. At the same time, online distance learning is a new style of learning and its methodological approach is still being explored (Mitton C, 2007).

Principles and Practice of Clinical Research (PPCR) is a global web-based online learning program provided by Harvard T.H. Chan School of Public Health. The program began in 2008 with 42 students from five countries and by 2016 it has grown to include approximately 400 participants from at least 30 countries all over the world. The main course consists of live and recorded lectures and interactive Q&A(abbreviation) with alternating professors, supported by case studies, articles related to the theme of the weekly lecture, forums in which classmates discuss the weekly case, and assignments checked by teaching assistants (TAs) each week.

One of the most remarkable characteristics of this program is its hybrid style of education. Through the course, students acquire educational resources just like in a regular classroom, even if they live far from the campus of Harvard University, where the lectures are broadcasted. Students study by themselves, then meet at their designated site to attend the online live lectures provided by Harvard. Moreover, in the middle and at the end of the course, students are given the opportunity to attend on-site workshops to consolidate their skills. The course includes individuals from many different backgrounds and it allows them to interact and collaborate with each other, which affects the degree of learning achieved through the course (Blanchard, 2005; Macfadyen, 2003; McLoughlin, 2000;). Provided with a close interaction and adequate feedback, online distance learning is as effective as traditional learning styles in a classroom (Wiecha, 2002; Yom, 2004).

On the other hand, there are still disadvantages to online distance learning. No matter the quality of the video broadcast, it is not face-to-face instruction and some students may feel uncomfortable compared to on-site local students (Hannon, 2007). Also, cognitive overload causes dropouts especially in the early phases of the course (Tyler-Smith, 2006) In addition, many participants are nonnative English speakers and they require more time and effort to pass the course (Zhang, 2010). These factors occasionally compromise student motivation levels and increase the dropout rate. Since Japanese pronunciation differs greatly from that of English, one of the concerns is that some Japanese students might have difficult communication in English and their dropout rate might be higher than that of participants from other countries.

The Tokyo site started in 2013 as one of the PPCR international sites. Most students gather at the site in downtown Tokyo to attend the lecture each week. To deal with the time difference between Boston and Tokyo, a modified live lecture has been provided. Before joining the lecture, students learn from online resources such as weekly case studies, related journal articles, forum discussion, and assignments. Throughout the course, Japanese individuals communicate and help each other, enhancing the effectiveness of the learning. To construct a better methodology for online distance learning, it is essential to reveal the background of these individuals and how it affects their motivation and dropout rates.

However, no study has reported the Japanese student characteristics in online distance learning and how it affects their success with the program. It is therefore important to explore the influence of the hybrid educational system on Japanese students. The aim of this study is to provide preliminary data of Japanese students who participated in PPCR from 2010 through 2016 and to review their backgrounds and future prospects.

MATERIAL AND METHODS

The present study is an observational study using mixed methods consisting of quantitative analysis on data records and qualitative data accumulation by a survey for study population. The data of all students in Japan who participated in PPCR from 2013 to 2016 were analyzed. All participants attended lectures as members of Tokyo site. Students who joined PPCR were selected according to the PPCR policy through registration process investigating their Curriculum Vitae and at least one recommendation letter. Tokyo site students are recruited basically from all Japanese students who can access the site and have strong motivation for learning regardless their educational/occupational backgrounds or English skill.

Data were extracted from the site director records and/or direct email contact with those who agreed to provide their information with de-identification. The demographic data from the beginning of the course and the follow-up data from March 2017 were obtained. Japanese students who took the course abroad or outside of the site setting were excluded because their study conditions were different from those at the Tokyo site. The demographic data included years from graduation,

Copyright: © 2020 PPCR. The Principles and Practice of Clinical Research

sex, publication (first author), experience of living abroad, degree, and professional background. The follow-up data included whether students passed or failed the course, whether they were selected as a PPCR staff member the next year, and whether they received an opportunity to study or work abroad after the course. In order to pass the course, participants are required to obtain 70% of the course points which consist of a maximum of 300 points for forum participation, 300 points for exams, 150 points for a group project, 100 points for assignments, 50 points for a 5-day final immersion course, 50 points for the faculty and TA grade, 25 points for the pre and post course assignments, and 25 points for class participation. The PPCR staff members consist of TAs and site monitors. TAs assist students' personal learning and their group project in real-time online, answer questions during office hours, and evaluate weekly forum postings and assignments. Site monitors help participants by making a suitable environment for online distance learning every week, which increases interactions during lectures and creative participation (Bower, 2011). Since we believe that PPCR gives students a rewarding experience to collaborate with classmates from different countries and provides them with broader possibilities in the future, we checked whether alumni obtained the opportunity to study or work abroad in the years following completion of the program.

While performance bias or detection bias seldom affect the results of this study, staffs including site directors and alumni who has been participated in the site activity from the very beginning of Tokyo site and knew details of each students' performance were not involved in the analysis. Because the sample size was small, we investigated the data descriptively and summarize it accordingly to the type of variables, using means and standard deviation for continuous variables and proportions for categorial variables rather than running a specific statistical analysis such as logistic regression.

RESULTS

From 2013 to 2016, 24 Japanese students have been enrolled in PPCR. Fig. 1 shows the number of participants. The demographic characteristics of all participants are depicted in Table 1. The mean years from graduation at admission was 11.3 ± 6.4. There was an unbalance in sex (15 men [62.5%] and nine women [37.5%]). More than half (13 individuals) of the students (54.2%) had published a medical article as a first author before applying to the course. Four individuals (16.7%) had experience living overseas. Six participants (25%) held some combination of MD, PhD, and MPH, while 18

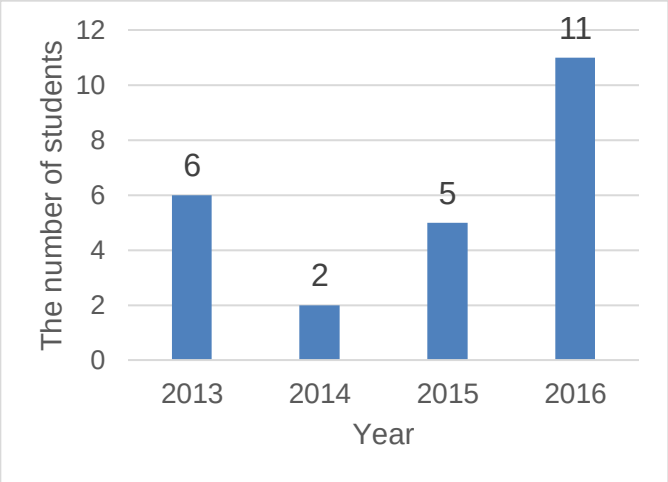

Figure 1. The number of participants at the Tokyo site from 2013 through 2016

students held a single degree or no degree. Most of the students were medical doctors (20 students, 83.3%) and 12 (50%) of them were engaged in fulltime clinical work. In contrast, four participants had other backgrounds, namely, in a pharmaceutical department in a university, a pharmaceutical company, a contract research organization, and a consulting firm.

The follow-up data are shown in Table 2. Over 75% of Japanese students (19 students) passed the course. Five participants failed, all as a result of dropout, not because of low scores. The reasons for drop out were "time management (3 students, 60%)", "migration to foreign country (1 student, 20%)" and unknown (1 student, 20%). One dropout student participated in the course twice. He passed this course in his first attempt but dropped out in the middle of the second year due to a personal reason (migration to foreign country). All enrolled women passed the course. Six students were selected as staff members for the next year. One of them was invited to become a TA while the other five were chosen as site monitors. Three alumni (12.5%) gained the chance to study abroad, for example, in a master of MPH program of a school of public health.

DISCUSSION

This is the first study to investigate the characteristics of the Japanese students who participated in Harvard PPCR program. We investigated the demographics and follow-up data of the students. One important observation is that no participant failed unless they dropped out of the course. Based on this finding, we can affirm that most Japanese individuals are expected to pass, when they can complete to the end of the course.

Copyright: © 2020 PPCR. The Principles and Practice of Clinical Research

According to Suemoto 2015, the dropout rate of all countries in PPCR was 30% on average (Suemoto, 2015). Considering this, so far Japanese individuals have shown low possibility to dropout although all were nonnative English speakers. This is probably because in Japan it was easy for students to contact Japanese TAs and site monitors. Japan has only one site in Tokyo and therefore, students can easily find the contact to acquire useful information to help them understand the material and complete their assignments, which likely improves their confidence and willingness to continue in the course. Furthermore, English lessons were provided by the Tokyo site to deal with the language disadvantage and many students utilized them. In addition, occasionally during the course, Japanese classmates held a study meeting to consolidate knowledge and skills acquired in the lectures. Group formation in response to difficult tasks is one of the cultural characteristics of Japanese people and the extrinsic motivation including friendly competition. Peer coaching may be positively related to their intrinsic motivation. Moreover, the difference in their professional backgrounds, although most of them were medical doctors, may have contributed to enhance collaborative and nonhierarchical relationships in an effective way (Muilenburg, 2005). These might be advantages of the hybrid educational system in which students interact with each other well, compared to a traditional e-learning system.

Six out of 24 students (25%) were selected as staff members for the next year, which is considerably high taking into account the small number of students in Tokyo site. It means that Japanese students tend to make further efforts and help incoming participants even after they finish the program.

In general, Japanese people are not keen to study and work overseas because there are already rewarding environments in Japan. Considering this, the fact that three alumni (12.5%) were offered the chance to study or work abroad in their professional field is encouraging for future learners. MPH, which is closely related to the concept of clinical research, seems to be a good option for them. In addition, since the follow-up data were collected within four or five months after the conclusion of the course, more students may have moved overseas to study or work beyond the reporting period.

One of the limitations in this preliminary study is the small sample size. So far, our results demonstrate that Japanese students show good prospects, but it should be confirmed with a larger sample. Since 24 subjects were not enough to run statistical analysis such as logistic regression, we could not statistically investigate which factor associated to passing or failing the course. Additional evaluations with a larger sample will be needed to clarify which covariates are important to student prospects. Furthermore, a comparison of students' outcomes between other international sites might highlight the characteristics of Japanese students more. By assimilating reliable data with multiple points of view, we believe that future students can more efficiently acquire the knowledge and skills of clinical research.

CONCLUSIONS

Japanese students, especially women, maintain active participation during and after the period of online distance learning.

Conflict of interest and financial disclosure

The authors followed the International Committee of Medical Journal Editors (ICMJE) form for disclosure of potential conflicts of interest. All listed authors made a substantial contribution, drafted the article, and approved the final version of the article. The authors declare no financial or personal conflict of interest.

REFERENCES

Blanchard E, Razaki R, Frasson C. (2005). Cross-cultural adaptation of e-learning contents: a methodology. In: Richards G, editor. Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2005. Chesapeake (VA): AACE,1895-1902.

Bower M. (2011). Redesigning a web-conferencing environment to scaffold computing students' creative design processes. Educ Technol Soc, 14(1), 27–42.

Brunoni AR, Tadini L, Fregni F. (2010). Changes in clinical trials methodology over time: a systematic review of six decades of research in psychopharmacology. PLoS One, 3, 5(3), e9479.

Hannon J, D'Netto B. (2007). Cultural diversity online: student engagement with learning technologies. Int J Educ Manag, 21(5), 418–32.

Kowalczyk N. (2011). Review of teaching methods and critical thinking skills. Radiol Technol, 83(2), 120-32.

Lu YC, Li YC. (2013). How doctors practice evidence-based medicine. J Eval Clin Pract, 19(1), 44-9.

Macfadyen LP, Chase MM, Reeder K, Roche J. (2003). Matches and mismatches in intercultural learning: designing and moderating an online intercultural course. Poster presented at: UNESCO Conference on Intercultural Education, 15–18, Jyväskylä, Finland.

McLoughlin C, Oliver R. (2000). Designing learning environments for cultural inclusivity: a case study of indigenous online learning at tertiary level. Aust J Educ Technol, 16(1), 58–72.

Mitton C, Adair CE, McKenzie E, Patten SB, Waye Perry B. (2007). Knowledge transfer and exchange: review and synthesis of the literature. Milbank Q, 85(4), 729-68.

Muilenburg LY, Berge ZL. (2005). Student barriers to online learning: a factor analytic study. Distance Educ, 26(1), 29–48.

Sandars J, Haythornthwaite C. (2007). New horizons for e-learning in medical education: ecological and Web 2.0 perspectives. Med Teach, 29(4), 307-10.

Sanderson PE , Review of " E-Learning: strategies for delivering knowledge in the digital age" edited by Marc J. Rosenberg (2001). E-Learning:

Copyright: © 2020 PPCR. The Principles and Practice of Clinical Research

strategies for delivering knowledge in the digital age. Internet High Educ, 5(2), 185–8.

Suemoto CK, Ismail S, Corrêa PC, Khawaja F, Jerves T, Pesantez L, Germani AC, Zaina F, Dos Santos AC Jr, de Oliveira Ferreira RJ, Singh P, Paulo JV, Matsubayashi SR, Vidor LP, Andretta G, Tomás R, Illigens BM, Fregni F. (2015). Five-year review of an international clinical research-training program. Adv Med Educ Pract, 1, 6, 249-57.

Tyler-Smith K. (2006). Early attrition among first time elearners: a review of factors that contribute to drop-out, withdrawal and non-completion rates of adult learners undertaking elearning programmes. J Online Learn Teach, 2(2), 73–85.

Whitley R, Rousseau C, Carpenter-Song E, Kirmayer LJ. (2011). Evidence-based medicine: opportunities and challenges in a diverse society. Can J Psychiatry, 56(9), 514-22.

Wiecha J, Barrie N. (2002). Collaborative online learning: a new approach to distance CME. Acad Med, 77(9), 928-9.

Yom YH. (2004). Integration of Internet-based learning and traditional face-to-face learning in an RN-BSN course in Korea. Comput Inform Nurs, 22(3), 145-52.

Zhang Z, Kenny R. (2010). Learning in an online distance education course: Experiences of three international students. Int Rev Res Open Distance Learn, 11(1), 17–36.

Copyright: © 2020 PPCR. The Principles and Practice of Clinical Research