

Outcome Evaluation of Web Based Learning and Continuing Education Program for Maternal and Child Health Nursing and Other Professionals in Mongolia

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Objectives: Our aim was to develop a sustainable continuing education model for nurses in maternal and child health through examining the outcomes of a distance education intervention. **Methods:** An online anonymous survey was conducted to evaluate a web-based continuing education program used by nurses in Mongolia. **Results:** 356 people out of 699 (50.9%) of the people responded. Over 80% were nurses with average clinical experience 13.9 ± 9.9 years. The major reasons for participation were to broaden knowledge and skills (50.3%). Participants' pride in being a nurse, and job satisfaction after the program increased (4.3/ 5.0) and they enjoyed interacting with foreign lecturers and participants by using IT technology (4.2/ 5.0). From analysis of their free text descriptions, the nurses who used the continuing education program hope to that the topics expand to include nursing ethics, nursing theories, and international standards, among others. The needs for hands-on skill training and improving teaching and technical skills were noted. **Conclusion:** Results revealed that the web-based continuing education program was well received. New knowledge and skills were widely shared and adapted into local contexts, including developing new clinical guidelines and manuals, enhanced revision of undergraduate curricular content and improved teaching methods. Job satisfaction amongst participants was increased after the intervention.

Keywords: Education, Continuing, Distance, Nursing, Mongolia, Knowledge, Job Satisfaction

Introduction

With the rapidly changing health care needs of people today, the knowledge explosion and the impact of technology upon health care, many nurses and midwives are increasingly called upon to work in expanded, specialist and/or advanced practice roles¹. The Institute of Medicine (IOM) report in 2011 suggested the need for "profound change in the education of nurses both before and after they receive their licenses²." Nursing education should serve as a platform for continued lifelong learning and include opportunities for seamless transition to higher degree programs.

Accrediting, licensing, and certifying organizations need to mandate demonstrated mastery of core skills and competencies to complement the completion of degree programs and written board examinations. "Creating an expectation and culture of lifelong learning for nurses is therefore essential (IOM, 2011)." And there is a body of evidence that increased availability of skilled health workers is directly linked to improved maternal, newborn and child (MNC) health outcomes³.

However, nurses suffer from the lack of opportunities to participate in continuing education (CE) programs in developing countries, where resources are often scarce. There are disparities in medical human resources and accessibility to education between urban and remote areas as well as between developed and developing countries. Maintenance and further development of continuing education system is essential to the ongoing provision of high-quality nursing and midwifery care⁴.

Mongolia's nursing workforce fell from 11,000 to 8,000 in early 1990 when country shifted towards a market economy⁵. However, MCH remains one of the highest priorities of the Government of Mongolia as reflected in the four years Government Action Plans, Millennium Development based National Development Strategy and the National Health Sector Strategic Master Plan 2006-2015 (WPRO, 2018). Strong political commitment and support from several international and national partners has led to a steady decline in the maternal mortality ratio (MMR) over the past two decades. The MMR was 49 per 100,000 live births in 2008. Some of the achievements are due to high coverage of antenatal care (87.7%), delivery by skilled birth attendants (99.8%) and provision for referral care through establishment of maternal waiting homes at rural and remote soum (village) health facilities. Despite the successes, several

challenges remain to fully achieve the targets of the Millennium Development Goals (MDGs). A big challenge is the wide gap that still exists in maternal and newborn mortality between urban and rural areas. In some remote aimags (provinces) the MMR is as high as 213 to 365 per 100,000 live births compared to the national average of around 60 per 100,000 live births⁶. Nurses and midwives are required to renew their nursing license every 5 years, by obtaining 30 CE credits during the renewal cycle⁶.

To bridge the gap and support a CE program for nurses and midwives in Mongolia, one of the authors (YY) launched web-based learning (WBL) in Mongolia in 2008, which delivers accurate MCH knowledge based on scientific evidence, through a collaboration with the Mongolian Nurses Association (MNA), four Mongolian National Universities of Medical Science, Ministry of Health of Mongolia, World Bank Tokyo Development Learning Center (TDLC), Department of Making Pregnancy Safer (MPS) at World Health Organization (WHO) Head Quarter Office in Geneva, and Kitasato University School of Nursing in Japan. The program lasted for 5 years.

WBL is often called "Online learning" or "e-Learning" because it includes online course content. Discussion forums via email, video conferencing, and live lectures (video streaming) are all possible through the web⁷. It has been replacing traditional face-to-face approaches due to the shortage of teaching human resources, and also enabled the access and convenience for learners and reduced their time and financial burden^{7,8}.

The objectives of our CE program were, first, to ensure a broader and deeper understanding of current MCH nursing issues globally and locally. Second, to strengthen observation and risk assessment skills for health promotion, and risk prevention, and also to strengthen emergency management skills for mother and babies. Third, to close the knowledge and information gap between nursing professions in urban and remote areas where disparity of access has been prominent. Fourth, to introduce health education methods and tools for risk prevention and self-care for mothers and families. Our CE program credits have been officially certified by the Ministry of Health as a part of the requirement for the national nurse license renewal every 5 years. This attracted many participants. Connecting three remote cities in addition to the capital Ulaanbaatar contributed towards expanding outreach, due to poor local transportation and the burden of cost and time of traveling from remote areas to the seminar venue in the big cities.

It has been the first international experience for most Mongolian participants, especially for those who live in remote areas. 58% of participants came from remote areas where very few CE opportunities were available over decades. It has been coordinated and planned for years with Mongolian counterparts, who were engaged in nursing management in major hospitals, and undergraduate and postgraduate nursing and midwifery education in National Universities. We shared information and analyzed the realities in Mongolia, considering limited resources – human, time and financial – local priorities and demands, including listening to the voices of nurses and midwives, and cultural contexts in the process of program development. We intentionally focused on the MCH skill components, such as observation and assessment and nursing skills, especially for risk prevention and early detection, and emergency management of both mothers and babies, which do not require the use of modern and expensive medical equipment.

All translated lecture notes have been uploaded on the Moodle. Moodle is a learning platform or course management system - a free open source software package designed to help educators create effective online courses based on sound pedagogical principles (<https://moodle.org/>). All the previous seminars, including the lecture note and videos, references, and WHO and other international standard and guidelines were saved there. Participants can download lecture note and all the materials free of charge at any time, before and after the programs. A chat room was also opened on Moodle, which contributed to the exchange of ideas and lessons learned among the participants.

Distance CE program connected between Japan (TDLC), and seven other venues in Mongolia (World Bank Global Learning Center in Ulaanbaatar, national universities in four provinces (Ulaanbaatar, Darkhan-Uul, Dornogobi, and Gobi-Altai, and two national referral hospitals). It has been also webcasted for those who have access to the internet at home or work or elsewhere. During the implementation period, over 3,700 nurses, comprising 40% of all nurses in Mongolia, participated our seminars at least once. The purpose of this paper was to determine the challenges associated with participation in our program, the reasons why attendees participated, the self-reported changes and satisfaction after attending and the needs for further course content. We hypothesized that self-reported changes in clinical practice and higher job satisfaction after

attending our WBL course. We also sought to clarify how we can develop a sustainable MCH Continuing Education (CE) Model for nurses and midwives in the countries where there are scarce resources, like Mongolia.

Materials and Methods

A cross sectional study was conducted in Mongolia in August 2015. The anonymous questionnaire was distributed and collected online, which was designed to be accessed via digital devices on the day of the Web based International Maternal and Child Health Symposium in Mongolia. The symposium was connected to 17 out of 21 provinces, in Mongolia via “in-country network” which belongs to the Ministry of Health and was being used for nurses for the first time. It enabled us to attempt to connect with all these provinces at one time. Unfortunately, in 4 out of 21 provinces the connections failed, due to network problems.

Study participants

The study targets were all of the nurses, midwives, teachers and students in Mongolia who had participated in the Maternal and Child Health distance education program between 2008 and 2013. The participants were recruited through Mongolian Nurses Association (MNA) branches offices in 21 provinces across the country, and participants from 17 provinces participated.

Study process

A standardized questionnaire was used to ask the participants about access to the program, opportunities for CE other than through our program, satisfaction with the program, and changes in clinical practice triggered by the program. It was organized through collaboration with the Ministry of Health, MNA, four national universities, and national and provincial referral hospitals.

Statistical analysis

Numeric answers were analyzed by using descriptive statistics. To analyze associations between the self-reported changes after attending WBL and age, travel time were tested using Spearman rank correlation. Associations between the self-reported changes after attending WBL, profession, and the connection venue were tested using the Kruskal-Wallis test using the Bonferroni

procedure to correct for multiple comparisons. All analyses were performed using Statistical Package for the Social Sciences (SPSS) version 24.

Ethical statements

Ethical approval for conducting this research was granted by the Research Ethical committee at Kitasato University School of Nursing, Japan, with reference number 27-6, on July 24, 2015. It was also been approved by Mongolian Nurses Association.

Results

Sample size was 699 people, and 356 people completed the questionnaire, with a response rate of 50.9%. The professional categories were 89% nurses (n=317), 4.8% midwives (n=17), and 2.5 % Feldsher (n= 9). Feldshers in Mongolia work in remote areas providing primary health care, who have a scope of practice similar to the advanced nurse practitioner (ANP) in western countries. Doctors, including university teachers, were 3.7% (n=13) of the participants. The mean age was 37.2 ± 9.4 years old with a range from 20 years of age to 56 years old. Nearly all of of the participants were women (98.0%, n=394). The average clinical experience of participants was 13.9 ± 9.9 years. Overall, 57.6% participants came from remote areas. 42.7 % (n=152) were from Ulaanbaatar (capital city), 18.0% (n=64) were in Darkhan-Uul province, 400 km from the capital, located near the Russian border, 4.5% of the participants were from the Gobi -Altai province 1200 km from capital, in the mountain area of the south, and 3.1% (n= 11) were from Dorno Gobi province, which is 600 km away from the capital, near Gobi desert and the China border. Thirty-two percent of participants (n=113) came from remote area in provinces not listed above.

The sample population was chosen from participants at the International MCH Symposium that we organized in Mongolia in August 2015. For logistical reasons, we were unable to reach all the previous participants (approximately 3,700 people). Six hundred ninety-nine people (18.9%) who had participated at least once on our CE program completed the questionnaire.

The median travel time to four sites was one hour and the interquartile range (IQR), representing the middle 50% of participants had a travel time of 1.27 hours. Though the travel time varied from 10 minutes to 35 hours to get to the venues, the median hours were one hour or less in every site (Table 1).

Table 1. Travel hours by web conference connection venue (n=345)

Site	N	Median	IQR	Min.	Max.
Ulaanbaatar	142	1.00	0.53	0.16	24
Dorno-Gobi	10	1.00	5.25	0.20	20
Darkhan-Uul	64	0.50	0.50	0.16	35
Govi-Altai	16	0.50	0.50	0.30	8
Other Provinces	113	1.00	23.25	0.20	24
TTL	345	1.00	1.27	0.16	35

The series of CE programs were given to participants for free of charge, but the related costs, including transportation, accommodation expenses were paid by the participants themselves. Two-thirds (n=237) of the participants had their related costs covered by their employers, and 3.9% (n=14) received partial support from the employers.

Mean number of CE opportunities over the last year, other than through our program were 2.4±1.2, with a range from 0 times to 6 times. There were no significant differences in the access to CE venues comparing rural to remote areas.

The reasons for participating in CE program are shown in Table 2. The participants desire to broaden their clinical knowledge and skills to learn about nursing practices in Japan were identified in half of the participants. This was followed by desire to learn global standards of nursing and midwifery (40.7%), and to obtain certified credits (39.6%).

Table 2. Reason for participation (n=345, multiple choices)

Reason for participation	n	%
Broaden clinical knowledge and skills	179	50.3
Learn nursing practices in Japan	178	50.0
Learn global standard of nursing/midwifery	145	40.7
Obtain credits for nursing license renewal	141	39.6
Develop new training programs and/or materials	27	7.6
Develop new undergraduate MCH curriculum	13	3.7

The results of self-reported changes and satisfaction after attending WBL are shown in Table 3. Participants' pride in their work and job satisfaction after participating our CE program saw the highest increase, which scored 5.0 out of 5.0. They also enjoyed the use of new IT technology to have interactive instructions and communication with foreign lecturers and other participants (4.2/5.0). Seminar topics and contents were accurate and interesting (4.1/5.0). The past seminar programs, including materials, handouts, references and video were effective to improve individual MCH competencies (4.1/5.0).

organizers also need to keep better track of the time the session starts and break times. And lastly, participants have received their first textbook made out of this CE program, edited by the local leaders, the participants also had a strong desire to have the second textbook published, with additional materials and seminars, and increasing continuity and frequency of the CE program.

Discussion

The participants' main motives to engage our CE program were similar to previous studies that identified to increase competence in their present job, to deepen knowledge as primary reasons^{9,10}. These are similar to our finding of "to broaden clinical knowledge and skills (50.3%)" and is directed to primarily towards their current job. While motives such as "to learn nursing practices in Japan (50.0%)", or "to learn global standard of nursing/midwifery (40.7%)" are focus on their future, they want to improve by adopting practices from global sources like Japan. These motives have a professional nature¹⁰. While "to obtain credits for nursing license renewal (39.6%)" was a rather obligatory stance, as it is required for ongoing national licensure in Mongolia and other countries, yet previous studies argue that complying with requirements was never the sole reason to engage learning activity. The nurses perceived these mandatory activities as a means to improve their competence or had integrated these external regulations into their own values¹⁰⁻¹³.

Our findings revealed overall participant satisfaction in the CE program was relatively high. Participants felt prouder and had higher job satisfaction working as a nurse/midwife (median score 5.0/5.0) after participation. They found that seminar topics and contents were relevant to their reality, interesting, and effective to improve their MCH skills. They felt professionally empowered by having gained informed evidence-based knowledge. Evidence-based nursing practice can help nurses by facilitating informed decision making, helping them to keep up to date with current technologies¹⁴. Clinical competency is defined as the knowledge, skills and ability to perform successful clinical interventions¹⁵. The improvement of individual clinical competencies and performance may have contributed to the increase of pride and job satisfaction. Changes in professional confidence and job satisfaction would be related to improvement of their practice¹⁶. Participants were keen to implement what they have

learned, and have launched antenatal classes, developed clinical protocols, emergency care manuals and guidelines to share in the real-world context of caregiving after our CE program. There was relatively high satisfaction with the topics, contents and opinions of our program in Gobi-Altai. Gobi-Altai is located in the most remote area in the country, approximately 1200 km from the capital with very little transportation available, and is surrounded by mountains, which prevent most nurses and midwives from attending the CE programs. On the other hand, satisfaction was rather low in Darkhan-Uul. Further research is needed to clarify the reason for this.

Some may argue that there are disadvantages of WBL, with its problems of social isolation, de-individualized instruction, cost, technical problems and poor instructional designs¹⁷. However, the advantages of WBL are greater in the case of countries like Mongolia, and countries in which the climate is harsh, and the resources is low, and because accessing high-quality face-to-face teaching is not available.

Our WBL CE program was part of a collaboration with World Bank Tokyo Development Learning Center (TDLC) and allowed us to use World Bank Global Satellite Network System both in Japan and Mongolia, making it possible to have webinars that provided easy access without financial burden to the participants. It enabled them to receive the course contents in text, video and audio formats, which aroused interest and helped participants understand complex information¹⁸. Web-based distance learning is considered a promising approach to replace or supplement conventional nursing instructions¹⁹. WBL encompasses all educational interventions that make use of the internet¹⁷. In our WBL CE program, we adopted participatory learning methods. We have encouraged delegates from each venue to bring their daily MCH practices, and problems via Power Point presentations to audiences from across the country. It enabled them to share their similar experiences, but also understand the disparities between rural and remote areas and discuss solutions with the resources they currently have. It also helped Japanese and foreign lecturers to understand the real MCH situation in Mongolia, which is not found in academic literature in English, and also to match the course contents to their needs. Each WBL CE venue in Mongolia had facilitators who were chosen by the local leaders to lead the discussion throughout the CE program. These people were either nurses or nursing educators.

The open-ended questions regarding course content

The program design, length, and contents of the seminar matched the realities of practice in Mongolia (4.1/5.0). And new knowledge and skills were well shared with colleagues and students (4.0/5.0). Web conference-based CE program reduced the burden of traveling time and distance, and finance (4.0/5.0). Participants found using the Moodle site easy (3.9/5.0). After attending the program, participants noticed the change in the quality of their work, therefore feedback from mothers and families and also colleagues improved (3.9/5.0). Participants feel it has established and strengthened domestic and international networks amongst nurses (3.8/5.0). Many participants also developed educational materials that were used for the program for colleagues, students and patients (3.8/ 5.0). Seventy-seven percent (n=274) answered that they had implemented new knowledge and have shared information shared widely their amongst colleagues, and their colleagues have integrated it into daily clinical practices.

There were some significant associations between self-reported changes and satisfaction after attending WBL (Table 4). People felt more proud and satisfied working as a nurse/midwife in Ulaanbaatar, Dorno-Gobi and Darkhan-Uul compared to those in Govi-Altai. Those in Ulaanbaatar and Darkhan-Uul were more satisfied with the program contents than those in Dorno-Gobi and Govi-Altai. People in Darkhan-Uul got more positive feedback from mother and children than those in other sites. Self-reported changes of establishing network were higher in Ulaanbaatar, Darkhan-Uul and Govi-Altai compared to those in Dorno-Gobi. There was no association between self-reported changes and satisfaction after attending WBL with age (Spearman $r < 0.12$),

travel time (Spearman $r < 0.15$), or based on profession (Kruskal-Wallis $p > 0.05$).

For open-ended questions regarding changes that occurred after the intervention, 59 people answered, and 41 mentioned that it was useful to strengthen the clinical competencies. After learning new knowledge, they were keen to implement new skills, such as launching parental education programs including antenatal classes, sharing information through the in-service CE programs for nurses and student nurses, implementing new system and services, developing clinical protocols and manuals for breastfeeding and guidelines to share international standards of care, especially on risk detection and emergency management.

The participants perception of further needs of the program are shown on Table 5. The most pertinent complaints were technical issues, such as usage of the IT equipment, accuracy of translation, and unclear audio materials during the video presentations. Regarding the CE program contents, participants hoped to expand the topics to nursing ethics, nursing theories, international standard, physical therapy and rehabilitation, stroke care etc. Participants desire hands-on skills training along with nursing theories and preferred to hold separate seminars for nursing and midwifery content. The audiences wanted to see the teachers' faces on the screen, while it was only possible to show two screens, one to show the lecture presentation and the other, to show the audiences at each seminar venues. Also, participants mentioned that the capacity needs to be improved for local facilitation and teaching skills. In terms of logistics, participants indicated that the the program date was announced with very little notice, that needs to be rectified, and that the

Table 3. Self-reported changes and satisfaction after attending WBL (n= 345)

Items	Mean	SD	Median
I feel more proud and satisfaction working as a nurse/ midwife	4.3	1.1	5
New IT technology facilitate interactive instruction and communication	4.2	0.9	4
The distance seminar topics and contents were accurate and interesting	4.1	1.1	4
The past distance seminars were effective to improve my MCH competencies	4.1	1.1	4
Program design, length and contents of seminars met reality in Mongolia	4.1	1.0	4
I have shared new knowledge and skills with my colleagues/students.	4.0	1.0	4
The distance seminar materials, handouts, reference and video were useful	4.0	1.0	4
It was easier to access (distance, time ,money) than ordinal on site seminars	4.0	1.3	4
The moodle site for the distance seminar program was easy to use	3.9	1.2	4
I get more positive feedback from mothers and families and/or colleagues	3.9	1.2	4
The program established domestic and international network amongst nurses	3.8	1.2	4
I newly developed educational materials for colleagues/students/patients.	3.8	1.2	4

Table 4. Self-reported changes and satisfaction after attending WBL

		A Ulaanbaatar	B Dorno-Gobi	C Darkhan-Uul	D Govi-Altai	Kruskal-Wallis Test
	N	150	11	64	16	Test
I feel more proud and satisfaction working as a nurse/ midwife	Mean	4.7	4.9	4.7	3.9	p<.0001
	SD	0.6	0.3	0.6	0.8	
	Bonferroni ⁱ⁾		A,B,C>D			
New IT technology facilitate interactive instruction and communication	Mean	4.4	4.6	4.5	4.2	p=.270
	SD	0.8	0.7	0.8	0.7	
	Bonferroni		-			
The distance seminar topics and contents were accurate and interesting	Mean	4.6	3.3	4.4	4.0	p=.001
	SD	0.6	1.8	0.8	0.5	
	Bonferroni		A,C>B,D			
The past distance seminars were effective to improve my MCH competencies	Mean	4.6	4.6	4.5	4.1	p=.043
	SD	0.6	0.8	0.7	0.6	
	Bonferroni		n.s.			
Program design, length and contents of seminars met reality in Mongolia	Mean	4.5	4.5	4.1	3.9	p=.003
	SD	0.7	0.7	0.9	0.8	
	Bonferroni		A>C,D			
I have shared new knowledge and skills with my colleagues/students.	Mean	4.1	4.4	4.5	3.8	p=.006
	SD	1.0	1.3	0.8	0.8	
	Bonferroni		n.s.			
The distance seminar materials, handouts, reference and video were useful	Mean	4.5	3.8	4.4	3.9	p=.008
	SD	0.7	0.6	0.9	0.6	
	Bonferroni		n.s.			
It was easier to access (distance, time ,money) than ordinal on site seminars	Mean	4.4	5.0	4.5	4.3	p=.023
	SD	0.7	0.0	0.8	0.8	
	Bonferroni		B>D			
The moodle site for the distance seminar program was easy to use	Mean	4.2	3.7	4.4	3.6	p=.007
	SD	0.9	0.8	0.8	1.0	
	Bonferroni		A, C>D			
I get more positive feedback from mothers and families and/or colleagues	Mean	4.1	3.7	4.6	3.8	p<.0001
	SD	1.2	1.5	0.7	0.7	
	Bonferroni		A<C			
The program established domestic and international network amongst nurses	Mean	4.4	2.3	4.0	3.8	p<.0001
	SD	0.9	1.8	1.2	0.9	
	Bonferroni		A, C, D>B			
I newly developed educational materials for colleagues/students/patients.	Mean	3.8	4.5	4.3	3.5	p<.0001
	SD	1.3	0.8	1.0	0.9	
	Bonferroni		A<C			

i) Bonferroni's method was used when the result of Kruskal-Wallis test was significant (p<0.05)

Table 5. Further needs from content analysis (n= 345)

Category	Subcategory	n	Total
Need to improve	(Not specified)		22
Technical things	More performing of IT equipment	30	37
	More clear translation is needed	4	
	Videos should be more clear	3	
Programs	More programs /topics(ethics, nursing theories, international standard, physical therapy, rehabilitation and so on)	27	32
	Theory and practice training should go together	3	
	nurses and midwives program should be separated	2	
Skill of teachers/staffs	Need to show teachers face	16	25
	To improve skills trainer in province	6	
	Teaching skills should be improved	3	
	more support staffs	1	
Schedule Management	Giving possibility to learn many things in short time	11	17
	Keeping time (start on time)	4	
	Break times makes messy	2	
Provide learning materials	To give materials/books before program	11	13
	More materials/hand books	2	
Continuing	Want to continue the project	8	8
More often	To make distance program often (ex. every 2 weeks)	6	6
Others	Less participants for each class would be better, Exchange program for Japanese and Mongolian nurses and so on	2	9

revealed the need to deliver content on more topics. It is interesting that not only knowledge about the clinical practice was requested by the participants, but also information on philosophical issues such as nursing ethics and nursing theories. Additional topics requested were rehabilitation and stroke care, which might reflect an increase of Non Communicable Diseases (NCDs) are a major cause of premature mortality and ill health in Mongolia by drastic life style change from nomads to city dwellers²⁰.

The curriculum for undergraduate nursing education in Mongolia was focused on practical nursing rather than theories when we launched collaboration more than decade ago. This is now changing as a growing number of nurses with higher degrees, both Masters (85) and PhD (6), are taking leaders' roles in practice and education in Mongolia²¹. In recent years there has been some adoption of nursing education and practice from USA²¹.

There are technical and equipment-based problems in

WBL in Mongolia. Most participants hoped for more systematic management of the program and requested punctual and efficient operation of the program. The quality of the translation of medical terms from Japanese to Mongolian is another big challenge. It is very important to have competent translators who are capable of translating medical terms precisely, yet very few people in Mongolia are capable of doing this. Participants also mentioned that they would like to see teachers' faces and learning materials on the screen simultaneously.

Improvement of the teacher and trainer's skill in provinces was also requested. To maintain and systematize the program into a solid framework to have larger impact, stronger financial and logistical support are crucial. Considering collecting a small fee for taking the course, and strategic fundraising to maintain a revenue stream of program will be the next steps.

In the clinical context, up to date knowledge is crucial, as is the ability to reflect it in practice. Without obtaining accurate knowledge and ability, patients' needs might go unrecognized,

and thus unmet²². Continuing professional education is designed to address the theory of adult education, or andragogy, in which professionals engage in a lifelong process of inquiry, or CE, to obtain more practical knowledge^{23,24}. Continuing professional education serves to sustain the effectiveness of healthcare professionals by ensuring clinical competence, thereby enhancing the quality of health care and reducing malpractice issues²⁴. It is important to measure if CE programs or self-directed learning have achieved their goal^{25,26}. The outcome and its effectiveness of CE program for nurses need to be more fully analyzed for better practice and patient outcomes²⁷. However, previous CE evaluation has been focused on subjects such as the participants' satisfaction rather than changes in attitudes of nurses' and midwives', and quality of clinical practices after the intervention²⁸.

Our study suggests there is a demand to develop a comprehensive CE programs to cover both theoretical and clinical components. Structured supervision and a feedback mechanism is necessary after each seminar to make sure the knowledge and skills were understood correctly, and to collaborate with local counterparts to check if the new knowledge is implemented smoothly in the real settings, and if not, how we could improve. It is important to develop a follow up mechanism to understand the knowledge gained and attitude change in practice amongst participants, as some studies have found that knowledge can be lost over short period of time^{29,30}. We, together with our Mongolian counterparts, need to develop a feedback evaluation framework to be used after the seminar by the local leaders to use evaluate each courses' strengths and weaknesses and use the information for further development.

As our course was a new intervention, we learned there are great needs to strengthen local leaders' facilitation skills to lead the discussion effectively after the lectures, and to keep the audiences focused during the course, keeping the course on schedule, and to evaluate the outcome for each seminars adjusting its contents to better meet the needs of participants. There were also notable demands from nursing educators for more information on pedagogy, teaching theories, methods, and practical skills around education itself.

The question remains whether we should ask for participants' fee for the seminar, or keep it free of charge in a country where nurses and midwives receive so little. We have so far run the CE program for free, partly for reasons of sustainability, but also

because we encountered some resistance from participants to pay for any aspect of the program.

The study has a number of limitations. First, we could have asked more precise questions about participants' satisfaction, to gain a more detailed understanding of which aspects of the program they appreciated. However, this was captured in more depth by a qualitative study that was conducted at the same time³¹. Second, we did not consider the participants' individual backgrounds, and whether levels of their satisfaction depended on their seniority, cadre or length of time working in the system. Third, the time lag between the event and the data collection may have caused recall bias. Fourth, we could not trace and include everyone who participated CE program from 2008-2013. The number of participants during the period was reported to be more than 3,700 people all across the country³².

In the future it would be interesting to consider the perspective of MCH patients, their perspective regarding the change of attitude, quality of care, and clinical competencies amongst nurses and midwives. We would need to develop measurements, for seminar evaluation for each topic, and a frame work to evaluate the details of changes, knowledge level, communication skills, attitude, competencies, before and after the intervention, with repeated measurements among the same group of people.

Conclusions

This study reveals that overall the distance education program has been well received and used by the local nurses and midwives, and knowledge and skills introduced have been adapted to the local situation, included developing new clinical guidelines and manuals, and revising undergraduate curriculum contents. Knowledge and skills were translated into the local context by nurses and midwives' leaders after 5 years of intervention. Numerous changes have been reported, and satisfaction amongst participants was high. Based on the analysis of the challenges of the CE program, we propose more comprehensive structure which includes clinical skills training, supervision and feedback system after each seminar programs.

Conflict of Interest

There are no conflicts of interest.

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