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Research Article

The Experiences of Blended Training Implementation from Nutrition Goes to School (NGTS) Program in Indonesia

Judhiastuty Februhartanty[1,2*], Indriya Laras Pramesthi[1], Sari Kusuma[1], Dewi Shinta[1], Aisyah Nurcita Dewi[1], Evi Ermayani[1,3], Ahmad Thohir Hidayat[4], A A Sagung Indriani Oka[1], Izzati Hayu Andari[5], Luh Ade Ari Wiradnyani[1,2]

[1]Southeast Asian Ministers of Education Organization Regional Centre for Food and Nutrition (SEAMEO RECFON) – *Pusat Kajian Gizi Regional* Universitas Indonesia, East Jakarta 13120, Indonesia
[2]Department of Nutrition, Faculty of Medicine, Universitas Indonesia–Dr. Cipto Mangunkusumo General Hospital, Central Jakarta 10430, Indonesia
[3]Department of Nutrition, Faculty of Health Sciences, Bina Bangsa University, Banten 42124, Indonesia
[4]Department of Public Helath, Faculty of Medicine and Health Sceinces, Universitas Jambi, Jambi 36361, Indonesia
[5]Nutrition Department, Health Polytechnic of Ministry of Health, Semarang 50192, Indonesia

ABSTRACT

This study aimed to evaluate the implementation of a blended training for school teachers on adolescent health and nutrition. The training objective was to improve teachers' knowledge, as well as their capacity to develop and implement action plans on school-based health and nutrition programs. Adolescents continue to face nutrition problems closely linked with poor eating behaviours and lack of physical activity. School has been identified as an effective venue for improving these problems. Many teachers' training programs were reported on increasing the teachers' roles in school health and nutrition program, but studies utilizing a blended training is lacking. This study used pre-post intervention with mixed methods design. The participants of this blended training were secondary school teachers who enrolled in a five-phase Nutrition Goes to School (NGTS) training on school-based nutrition promotion program, comprising in-service learning and on-the-job training for ten months. The participants decreased throughout the training to 114 participants completed the whole training. Out of 114 participants, 25 (22%) passed this NGTS blended training. Participants' knowledge on health and nutrition improved as shown in pre-test median score of 60 and post-test median score of 80 ($p<0.001$). The final assignment on developing action plans showed a relatively good quality of engagement based on the participants' understanding on the NGTS program, their resources, and their ability to manage challenges. Blended training with long duration but accompanied with technical assistance can provide added value in understanding the process of the NGTS program implementation and school-based health and nutrition program in general. However, the high attrition rate should be improved by facilitating more varied and engaging activities as part of the technical assistance in the future training program.

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***Corresponding Author:**
tel: +628129260634
email: jfebruhartanty@seameo-recfon.org

INTRODUCTION

With stunting and other nutritional disorders persist, we search for solutions to the problems. Recently, adolescents have received a great attention as the point to break the vicious cycle of nutritional problems (Development Initiatives 2020). Not only because this group faces significant nutrition-related ailments, but also because they serve the role to bear the future generation. In Indonesia, anaemia among pregnant women increased from 37.1% in 2013 to 48.9% in 2018, contributed by anaemia rate among young pregnant women (MoH RI 2018).

This is alarming as anaemic pregnant women increase the likelihood to give birth stunted children (Black *et al.* 2013; Nadhiroh *et al.* 2023). In addition, overnutrition (overweight and obesity) was between 13.5%–20% across all school-going age groups (MoH RI 2018). Among other determinants for malnutrition, poor diet practices are emerging among today's population (Februhartanty & Khusun 2018). A nation-wide data show a diet practice of daily consumption of foods and drinks high in added sugar, salt, and fat/oil among 34.3% of Indonesian children aged 13–18 years old (Atmarita *et al.* 2016) and 97% of them consumed not enough fruits/vegetables (MoH RI 2018).

Most adolescents aged 13–18 years old in Indonesia can be approached through schools (Badan Pusat Statistik Indonesia 2024). Intervention at schools has been substantially encouraged in recent years to prevent nutritional problems (Februhartanty & Khusun 2018). Nutrition education in school-based setting is believed to help develop healthier food-related habits among students (Thow *et al.* 2020). Schools have teaching staff who are trusted by parents (Februhartanty & Khusun 2018). Teachers agreed on the introduction of nutrition education for students (Jones & Zidenberg-Cherr 2015; Octaria *et al.* 2021; Wiradnyani *et al.* 2021), however they still perceive some obstacles, discouraging them from including it in their lessons. Teachers need a proper training to familiarise themselves with nutrition topics and gain confidence in delivering them (Habib-Mourad *et al.* 2020; Rachman *et al.* 2020). However, teachers acknowledged the time constraint to attend a training (Octaria *et al.* 2021). In 2021 an online training was conducted to mitigate this constraint among secondary school teachers who managed the operation of the school canteens in seven Southeast Asian countries. The training was successful as it achieved 73% completion and 24% increased knowledge (Februhartanty *et al.* 2022). A concern emerged on how the online training is able to guide the implementation of nutrition education at the school level. This concern introduces the opportunity to offer blended training, including in-service learning and on-the-job training, within the training period (Merriam & Bierema 2014; Zagouras *et al.* 2022). A similar training for school teachers was recently conducted among secondary school teachers in Indonesia, as encouraged by the Ministry of Education, Culture, Research and Technology (MoECRT) Republic of Indonesia. Therefore, the objective of this paper is to evaluate the implementation of the blended training on adolescent health and nutrition for secondary school teachers in Indonesia.

METHODS

Design, location, and time

The study design incorporated pre-post intervention of a five-phase training program comprised of in-service learning and on-the-job training. In-service learning referred to series of synchronous sessions with resource persons (MoEC RI 2017a). While on-the-job training referred to workshops covering discussion and consultation with facilitators as a practical way to apply the knowledge obtained from in-service learning (MoEC RI 2017b).

A mixed methods design was used for assessing the improvement on health and nutrition knowledge after the training (quantitative) and for assessing the quality of the action plans using content analysis (qualitative). The blended training was initiated with an online training attended by teachers from Indonesia. It was consecutively carried out among teachers from Jakarta, Malang, and Sambas. The training was carried out in ten months, from August 2020 until June 2021. This study obtained an ethical clearance from Research Ethics Committee of Faculty of Medicine Universitas Indonesia number KET-10/UN2.F1/ETIK/PPM.00.02/2022.

This blended training was part of a program named Nutrition Goes to School (NGTS). The NGTS program is a school-based initiative launched in 2016 to promote healthier behaviours among students by empowering teachers to create and implement nutrition-related activities at school. Key components of the program include nutrition education, school gardens, healthy school canteens, and nutrition entrepreneurship, tailored to each school's priorities (Fernandez 2020; SEAMEO RECFON 2022).

Sampling

The training participants were secondary school teachers and school principals from particularly the 50 stunting prioritized districts in Indonesia recruited through official invitation from the MoECRT and Ministry of Religious Affairs (MoRA) Republic of Indonesia to the local

government (i.e. Provincial/District Education Office and Provincial/District Religious Affairs Office). At the initial phase, 1,230 teachers were enrolled. In the succeeding training phases, the participants were purposefully selected from the schools in Jakarta city (urban); Malang district of East Java Province (rural); and Sambas district of West Kalimantan Province (least developed). Eligible schools were partner schools previously participated in any program conducted by the NGTS program initiator. Eligibility criteria for the training participants included: 1) teacher or school principal affiliated with a junior high school or senior high school or Islamic school; 2) had previously participated in nutrition training courses by the program initiator.

Data collection

Training phase. The NGTS Blended Training consisted of five phases comprising three sessions of In-service Learning (coded IN) and two sessions of On-the-Job Training (coded ON) within a ten-month period. The purpose of In-service Learning (IN) with synchronous sessions given by resource persons was to provide knowledge, whereas On-the-Job Training (ON) through workshops and discussions with facilitators was to provide opportunities for applying the knowledge to ensure skills strengthening in implementing action plans through assistance in various forms to the participants.

Training delivery methods. The training sessions were delivered using synchronous (real-time interaction between participants and trainers) and asynchronous (self-paced learning) methods. At start, the IN-1 phase utilized a Massive Online Open Course (MOOC) platform, offering learning materials like videos, quizzes, and webinars, coupled with synchronous group discussions and assignments. Following this, the subsequent phases are explained in Table 1. IN-3 concluded the program where schools presented their achievements and received feedback from various stakeholders, culminated in a ceremony to appreciate participants' commitment (Table 1).

Training structure and syllabus. The core structure of this training referred to Health and Nutrition for Adolescent module (Februhartanty *et al.* 2019) and the book of Best Practices in the Nutrition Goes to School Program (Wiradnyani *et al.* 2022) established by SEAMEO RECFON. A blended training syllabus was designed by elaborating the relevant content from these modules, resulting in 231 training hours that equals to four credit points.

Training topics. NGTS blended training provided enrichment to improve knowledge particularly in IN phases. IN-1 had enrichment topics on best practice in balanced nutrition, strengthening healthy school canteen, and cross-sectoral collaboration for school-based nutrition promotion. Detailed training topics per phase is presented in Table 1.

Training approach. This blended training accommodated two styles of learning, whether or not a facilitator is needed (i.e. self-paced and facilitator-led methods). The self-paced utilized MOOC to allow participants accessing the learning materials at their convenience. Prior to the training, facilitator recruitment was done in collaboration with the local academic partners where the current training program took places. Seventeen facilitators met the criteria required by the program initiator, including: 1) Nutrition or public health or health-related major graduate; 2) Having sufficient knowledge on health and nutrition; 3) Experienced in nutrition training program. They were trained to assist the participants throughout the training in the discussion sessions in both MOOC and the group chat.

Training assignments and appreciation. In IN-1, three assignments were given 1) Stakeholder-mapping for optimizing adolescent nutrition; 2) Designing a lesson plan for nutrition education; 3) Designing a program plan in strengthening healthy school canteen. Since then, participants had one final assignment throughout the training, which was to perform microteaching as a simulation on delivering nutrition education at school and to develop action plans incorporating the four main components of the NGTS program. The microteaching activity was documented in videos and submitted to the program initiator. These documents were evaluated by the facilitators. The participants were expected to be able to act as program implementors at school level and gain leverage to utilize the resources.

Participant were assessed both individually and as a group of school teams. During IN-1, participants must be registered on the MOOC platform, submit the pre- and post-tests, submit four of six quizzes, and attend at least once in synchronous sessions to obtain a certificate of attendance. To receive certificate of accomplishment, participants must fulfil

criteria of attendance, submit at least two of three main assignments, submit the final assignment, and obtain a total score of at least 70. Thus, participants of IN-1 may obtain two types of certificated. From ON-1 until IN-3, participants who attended at least once in synchronous session would obtain certificate of attendance. While to obtain a certificate of accomplishment, participants must attend at least five synchronous sessions. The completion rate was determined by participation during the final phase of the blended training, i.e., IN-3 training.

Group assessment as a school team was based on performance and achievement in NGTS program implementation at the school level. Table 2 presents the four categories and criteria based on the level of NGTS implementation at school.

Training reaction evaluation. Upon the training's conclusion, participants were asked to complete an evaluation, which included Likert-scale items and open-ended questions, to reflect on their training experiences. Participants provided consent for the use of information from the pre-/post-tests and the training evaluation.

Data analysis

The quantitative data acquired from the training assessment and evaluation of IN-1were analysed descriptively, presented as proportions and medians (with interquartile ranges from the 25th to the 75th percentiles). Average scores for the pre- and post-tests were calculated, and a nonparametric test for two related samples with a significance level of $p<0.05$ was conducted to determine significant differences. All quantitative analyses were carried out using SPSS version 20.0. The qualitative data from three sources, i.e., 1) The progress of the participation rate throughout the training (findings in Table 4); 2) The evolvement of the assignment on action plans as reported by the facilitators (findings in Table 4 and 5); and 3) The training reaction evaluation were analyzed involving thematic content analysis.

RESULTS AND DISCUSSION

At the initial phase, 1,230 teachers from 34 provinces were registered in IN-1 training. Pre- and post-test were only conducted during this phase. Among those who registered and submitted the pre-test, 57.2% were women, the median age was 40 years old, 73.6% graduated bachelor degree, 94.8% were from senior high schools, 74% were teachers and 21.8% were school principals. Only 17.6% of the participants served as the School Health Unit team. Majority (81.4%) had not received any health or nutrition training. Improvement in nutrition knowledge and NGTS action plans was indicated by the increased median score pre- and post-test, from 60 to 80 (Table 3). A decrease in the number of participants submitting the pre-test (n=1,067) and post-test (n=910) was observed. Overall, the number of participants in IN-1 was noticeably declining until the end of the training resulting only 818 participants (66%) obtained the accomplishment certificates

From ON-1 until IN-3, a total of 36 schools from purposively selected locations in Jakarta, Malang, and Sambas were enrolled. Throughout the training, a fluctuation in the numbers of participants and schools were observed (Table 4). Throughout the whole cycle of the training, the program initiator and the academic partners encouraged participation of teachers. During ON sessions, more schools were observed to join. In addition, since IN training mostly had sessions with resource persons and participants were provided enrichment for program implementation, it was anticipated that participants were more enthusiastic. Especially when IN-3 was held face-to-face with ceremonial event as the last phase of the training, and participants could see the fellow participants from other locations virtually through screens, almost all participating schools were present and attended the event in person. On the other hand, the assistance through ON training was carried out online due to Covid-19 pandemic and it seemed less appealing. Nonetheless, the engagement between schools and the partners as the facilitators was observed in the improvement of the assignments that schools had been working on since the very beginning.

Table 4 exhibits the outcomes from each phase of NGTS Blended Training starting from IN-1 until IN-3. In the final phase, the total of 36 participating schools received their appreciation. There were 20 schools categorized as Utama and 16 schools as Madya. A total of 114 participants also completed all phases of this training, yet only 25 participants (22%) passed the NGTS blended training and received certification of accomplishment.

Activities in the action plans

Table 5 shows the variety of action plans produced by the participating schools which

were successfully implemented. Most activities were under the component of nutrition/health education targeting not only students, but also all stakeholders in school. The activities related to the school garden, school canteen, and entrepreneurship involved the interaction between students, teachers, and even the canteen organization. For example, the market day was to practice entrepreneurship for students, yet it also engaged coordination with the canteen. Some schools also promoted the harvest from their garden at their canteen, demonstrating the interlink of NGTS components.

Compared to the component of nutrition/ health education, the other components seemed to lack activities. All participating schools reported struggles to implement activities for the component of school garden, school canteen, and entrepreneurship especially during the Covid-19 pandemic. Some activities had not been feasible to run, such as reviewing regulation for school canteen, food screening at school canteen, nutrition education using the poster at school canteen, culinary education, gardening skill education, and nutritional status assessment. Nonetheless, a difference in varieties of the activities implemented among the three selected areas was observed. While participants from Jakarta and Malang had mentioned about their action plans on school canteen and garden, participants from Sambas had yet only focused on nutrition/health education.

Table 1. The NGTS blended training phases and details of each phase

Phase (Code)	Period (Traning hours)	Learning objective	Covered topics	Delivery methods	Evaluation measures
In-Service Learning (IN-1)	August–October 2020 (124)	To increase health and nutrition knowledge and improve the skill of teachers in delivering health and nutrition education for students	Introduction to NGTS program; The importance of health and nutrition for adolescent; Characteristics of adolescent; Dietary requirement of adolescent; Health and nutrition problems among adolescent; Balanced nutrition for adolescent; Stakeholder identification for optimizing adolescent nutrition; Introduction to lesson plan; Developing lesson plan for health and nutrition education	Self-paced learning through MOOC; Webinar enrichment through video conference; Online facilitator-led discussion via group chat	Evaluation measures Pre-test before the training and post-test after the training
On The Job Training (ON-1)	October–December 2020 (31)	To provide assistance for schools in NGTS program planning and implementation according to the action plans	Introduction to NGTS program; The concept of blended training	Group chat; Online FGD facilitated by local academic partners	Action plans; Comparison between proposed Action Plans with the actual implementation of the Action Plans;Training reaction evaluation (survey) after finishing all phases of ON-1 until IN-3
In-Service Learning (IN-2)	19–21 January 2021 (14)	To strengthen the NGTS program management, particularly on the teaching plan during school from home	School-based management; Creating feasible action plans; Creating lesson plan for a school-from-home scheme	Online training and webinar	
On The Job Training (ON-2)	February–May 2021 (58)	To monitor the milestone, achievement, and challenges of NGTS program planning and implementation according to the action plans	The importance of orientation and documentation in NGTS implementation	Group chat; Online FGD facilitated by local academic partners	
In-Service Learning (IN-3)	15–16 June 2021 (4)	To evaluate the achievement, challenges, and lessons learned during NGTS program implementation	Opportunities for program sustainability and synergizing all stakeholders in school-based program	Face -to- face seminar in three locations with virtual plenary session (hybrid)	

NGTS: Nutrition Goes to School; MOOC: Massive Online Open Course; FGD: Focus Group Discussion

Table 2. NGTS program categorization for school performance

Category	Criteria
Pratama (Socialization)	School had been exposed to NGTS program through seminar, workshop, or other activities held by the program initiator.
Madya (Orientation)	School had participated in NGTS training and developed appropriate action plans, or had received NGTS-related intervention.
Utama (Strengthening)	School had implemented their NGTS action plan, been provided technical assistance by the program initiator and/or the partners, documented the NGTS activities, and conducted monitoring and evaluation.
Paripurna (Institutionalization)	School had fulfilled the following criteria i.e., having written commitment to sovereignly implement NGTS activities, conducting regular monitoring and evaluation involving relevant stakeholders, and exhibiting school policy that promoted the integration of NGTS program into existing school activities.

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All of these implemented activities were documented, which further examined by the facilitators and the program initiator in accordance with each school's initial action plans. Thus, the action plans developed by the participants throughout the phases of ON-1 until IN-3, were used as the evaluation measures for each school performance in the training. This manner of evaluation highlighted that comparison between schools may be less informative, since the action plans from one school were not the same as another school.

Challenges and adaptation for NGTS implementation

Various challenges while implementing their action plans were reported by the participants. Numerous attempts to overcome the challenges were discussed with the local academic partners. There were several aspects to classify these challenges: 1) Participation rate of school stakeholders; 2) Human resources and school facilities; and 3) School from home scheme and activities.

According to the ON reports, school stakeholders' participation rate in NGTS activities designed by teachers was not satisfactory. This might be contributed by the students' lack of interest in the program, fellow teachers who lacked motivation, and parents who lacked awareness. Overall, the school NGTS team had attempted to keep organizing orientation sessions for all school stakeholders in every possible event.

Table 3. Pre-post test score of participants from IN-1

Evaluation tests	n	Median score	25^{th}–75^{th} Percentile	*p*
Pre-test	1,067	60.0	50.0–70.0	<0.001*
Post-test	910	80.0	60.0–90.0	

IN: In-Service Learning-1; *Nonparametric Tests for 2 Related Samples (Wilcoxon)

Human resources, especially the teachers who could provide sufficient health and nutrition education, were limited. Moreover, teachers' high workload made NGTS activities become an additional responsibility while juggling other priorities. In addition the education materials for health and nutrition education were inadequate. Collaborating with local Public Health Centres and local academic partners to provide education materials and manage resource person to deliver the education were the solutions for some schools. Particularly during school from home, the facility was also an issue since not all schools could provide virtual meetings due to limited hardware. Therefore, the school NGTS team attempted to organize activities suitable for small areas (e.g. hydroponic garden) and adjust face-to-face activities by creating smaller groups.

The scheme of school-from-home was a new experience for many. The facilities were not ready for both students and teachers. As a result, NGTS orientation was not optimally delivered, and some components were not able to run (e.g. healthy school canteen and school garden). Therefore, managing the more feasible steps prior to implementing the main activities became crucial (e.g. releasing a taskforce for the school canteen). One of the main problems was the insufficient gadget capacity and network bandwidth to follow virtual meetings. The class group chat and a learning management system were also utilized to distribute educational material. In general, the school NGTS team would always try to have intense coordination with the school principal and homeroom teachers in order to tackle these challenges while implementing the action plans.

An interesting pattern was observed between the urban, rural, and the least developed areas when discussing the challenges they faced.

Table 4. Outcomes from each phase of NGTS blended training

Code	Participants	Outcome
IN-1	230 teachers from 460 schools from 34 provinces in Indonesia enrolled. However, 1,067 continued taking the pre-test at the beginning of IN-1 and eventually 910 did the post-test at the end of IN-1.	-884 of 1,230 teachers (72%) actively participated and received certification of attendance; -818 of 1,230 teachers (67%) passed the MOOC and received certification of accomplishment; -Improvement in knowledge of adolescent nutrition and development of NGTS action plans, indicated by the score of pre-test (median: 60) and post-test (median: 80).
ON-1	45 teachers from 29 schools from Jakarta, Malang, and Sambas.	-Teacher's understanding in creating action plans with feasible activities according to existing resources available in school (e.g. integrating NGTS program with existing activities, such as in-class or extracurricular); -NGTS orientation given gradually to all school stakeholders through meetings/ hearings to teachers, school administrators, parents, and students; -School principal's decree on NGTS program (including specific taskforce) released to facilitate resources.
IN-2	36 teachers from 19 schools from Jakarta, Malang, and Sambas.	-Gaining knowledge from a webinar on how to improve the action plans; -Development and presentation of the revised action plans with feasible activities from representative schools.
ON-2	42 teachers from 22 schools from Jakarta, Malang, and Sambas.	-NGTS Action Plans implemented through a more concrete NGTS orientation via morning ceremony, before class, through School Health Unit and Red Cross, and group chat for parents; -Most ongoing activities included nutrition education, eating together at school or virtually, and physical activity. -Challenges discussed included: low rate of participation from students; lack of response from fellow teachers due to other responsibilities; lack of budget and school facilities; lack of response from parents.
IN-3	114 teachers from 36 schools from Jakarta, Malang, and Sambas	-Well-documented NGTS program implementation from participating schools through presentation videos; - Positive feedback and support from the local government to prioritize health and nutrition issues in school; -83 (73%) teachers actively participated in the NGTS blended training and received certification of attendance; -25 (22%) teachers passed the NGTS blended training and received certification of accomplishment; -20 schools were categorized as Utama; 16 schools were categorized as Madya; -School presentation on the achievement, challenges, and lessons learned during NGTS program implementation; -Discussion between stakeholders on the opportunities for program sustainability.

NGTS: Nutrition Goes to School; MOOC: Massive Online Open Course; IN-1: In-Service Learning-1; ON-2: On The Job Training-2; IN-2: In-Service Learning-2; ON-2: On The Job Training-2 ; IN-3: In-Service Learning-3

Being in more developed regions, the concern of the participants from Jakarta and Malang area was more on the participation, response, and engagement within the internal school stakeholder (i.e. teachers and students). Whereas participants from Sambas, found that having limited facilities (e.g. gadget, internet connection) significantly hindered them from implementing their action plans accordingly.

Acceptance of the NGTS blended training

At the end of the blended training, based on the IN-3 report and the training reaction evaluation, participants were overall appreciative that the topics on health and nutrition given were essential and relevant. Diverse material delivery methods, including the use of videos and study case (problem-based learning) was mentioned to have enhanced understanding to deliver in school. Most sessions were carried out online, hence face-to-face training equipped with intensive assistance from partners and stakeholders was preferred. Positive feedback from parents was reported to teachers as well since the NGTS program was considered beneficial to improve dietary practices of the students.

Barriers and enablers for achieving training outcomes

This blended training took approximately ten months to complete. Because the implementation of the training was during the COVID-19 pandemic, all phases were conducted online. The combination of long training hours

Table 5. List of implemented action plans according to the NGTS components

NGTS component	Activities
Nutrition/health education	**Activities for students:** - Healthy breakfast together (face-to-face or virtual) - Seminar/webinar for students - Health and nutrition session before class starts - Iron tablet distribution for female students - Nutrition content in relevant extracurricular - School magazine - Nutrition education poster competition (virtual) - Nutritious breakfast video competition (virtual) - Healthy breakfast menu competition (virtual) - Cooking competition (virtual) - Exercise together (face-to-face or virtual) - Hand washing with soap **Activities for parents and/or teachers:** - Nutrition parenting - Talk show and dialogue between students, parents, and teachers (face-to-face or virtual)
School garden for nutrition literacy	- Development of hydroponic plants at school garden - School garden harvest day - Home gardening
Healthy school canteen	Strengthening the canteen management
Nutrition entrepreneurship	Student-led food market day at canteen

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and most sessions being in online mode were considered challenging. Another study found similar situation that created boredom among the participants and thus contributed to less engagement and eventually caused a relatively high attrition rate at the end of the training period (Jordan 2015; Februhartanty *et al.* 2022). The present blended training successfully achieved 22% completion rate, while in contrast, a facilitator-led online training conducted within two months' period was able to achieve 73% completion rate (Februhartanty *et al.* 2022). It is important to note that the participant enrolment was different between the phase of IN-1 and the phases of ON-1 up to IN-3.

During the current training program, an anticipated measure to minimize the lack of engagement due to the long training period was addressed by involving a local academic partner who could perform some visits to the schools. However, the visits were not able to be regularly made due to the COVID-19 pandemic.

It is apparent that the aim to achieve more workable post-training action plans through a blended training program was impeded with a considerable long training period. As shown in Table 5, the action plans developed through IN-1 session were more varied as all school stakeholders were eligible to be the target of nutrition education. Those action plans had undergone series of online consultations as well as trials at the school level during the ON-1 and ON-2 sessions, where participating schools were also able to share their experiences with each other. Previous other online training programs resulted some "ideal" action plans and sometimes "too hard to implement" as they were lack of opportunities to be tested for their feasibility to implement at the school level (Februhartanty *et al.* 2022). The advantages of a blended training include the flexible and personal learning approach and the quality of engagement (Woodcock *et al.* 2015; Pramesthi *et al.* 2021; Zagouras *et al.* 2022), as described by the assistance received in ON sessions.

The way forward and recommendations

The implication of long duration blended training requires support and commitment from school management. The participating teachers need to comprehend the procedures of the training for ensuring their engagement and participation. The ON sessions with facilitators in this blended training was crucial to guide the improvement of the action plans. These sessions should consider in-person meetings to take into account the real-time situations in the field. At the same time, participants are expected to gain more hands-on experience. Given the evident difference between the location of the schools in Jakarta, Malang, and Sambas, it is essential to have strong engagement between participants, facilitators, and other stakeholders to help the action plans implementation, especially to overcome

obstacles in less developed areas. Additionally, strengthening existing school-based programs coordinated by the central government, local government, and other relevant stakeholders is crucial since NGTS activities strengthen the nutrition component in the existing school-based program such as School Health Unit program.

CONCLUSION

Blended training on school-based nutrition promotion program which included opportunity to practice implementing what participants had learnt in class, could increase the knowledge on relevant topics and enhance their skills in program management. Although the completion rate was not high participants demonstrated a progressive engagement as shown in the improved, feasible action plans. As an evaluation measure, the implemented activities in each school were compared against their own action plans. However, the existing reports of this blended training did not provide detailed features and information from each school. Therefore, the number of schools implemented their action plans accordingly was unable to be concluded. The high attrition rate was expected due to the long duration of this training and should be considered to provide more engaging activities if a similar training is to be replicated. Future blended training should consider face-to-face sessions for discussion and technical assistance.

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DECLARATION OF CONFLICT OF INTEREST

We declare that there is a potential bias as the authors were involved as the implementers of the program described in the article. Nonetheless, this manuscript aims to convey the lessons learned from the implementation of this program.

REFERENCES

Atmarita, Jahari AB, Sudikno, Soekatri M. 2016. Asupan gula, garam, dan lemak di Indonesia: Analisis Survei Konsumsi Makanan Individu (SKMI) 2014. Gizi Indonesia 39(1):1–14. https://doi.org/10.36457/gizindo.v39i1.201

Badan Pusat Statistik Indonesia. 2024. Angka Partisipasi Sekolah (APS) menurut provinsi dan kelompok umur, 2021–2023. Badan Pusat Statistik Indonesia. https://www.bps.go.id/id/statistics-table/2/MjIxMSMy/angka-partisipasi-sekolah--aps--menurut-provinsi-dan-kelompok-umur.html [Accessed 30 March 2024].

Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, De Onis M, Ezzati M, Grantham-Mcgregor S, Katz J, Martorell R, *et al.* 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet 382(9890):427–451. https://doi.org/10.1016/S0140-6736(13)60937-X

Development Initiatives. 2020. 2020 Global Nutrition Report: Action on Equity to end Malnutrition. Bristol (UK): Development Initiatives Poverty Research Ltd.

Februhartanty J, Khusun H. 2018. Towards Healthy Eating: A Resource for Food and Nutrition Education Southeast Asian Context. Jakarta (ID): SEAMEO RECFON.

Februhartanty J, Rachman PH, Ermayani E, Dianawati H, Harsian H. 2019. Gizi dan Kesehatan Remaja: Buku Pedoman dan Kumpulan Rencana Ajar Untuk Guru Sekolah Menengah dan Yang Sederajat. 2nd Edition. Jakarta (ID): SEAMEO RECFON and Ministry of of Education, Culture, Research and Technology, Republic of Indonesia [MoECRT RI].

Februhartanty J, Dwipa RPU, Hidayat AT, Iswarawanti DN, Ermayani E, Sudibya ARP, Easaw PM, Kah NA, Sabrina H, Wiradnyani LAA. 2022. The online training on healthy school canteen in Southeast Asia: Lessons learned on the implementation processes. J Southeast Asian Educ 2(2022):108–121.

Fernandez JC. 2020. Securing a Nutrition-Conscious Young Generation Through A School Based Intervention: The SEAMEO RECFON Nutrition Goes to School Program Experiences in Proceedings of the International Joint Conference on Arts and Humanities (IJCAH 2020) (pages 4–7), 4th October. Surabaya (ID): UNS.

Habib-Mourad C, Ghandour LA, Maliha C, Awada N, Dagher M, Hwalla N. 2020. Impact of a one-year school-based teacher-implemented nutrition and physical activity intervention: Main findings and future recommendations. BMC Public Health 20(256):1–7. https://doi.org/10.1186/s12889-020-8351-3

Jones AM, Zidenberg-Cherr S. 2015. Exploring nutrition education resources and barriers, and nutrition knowledge in teachers in California. J Nutr Educ Behav 47(2):162–169. https://doi.org/10.1016/j.jneb.2014.06.011

Jordan K. 2015. Massive open online course completion rates revisited: Assessment, length and attrition. Int Rev Res Open Distrib Learn 16(3):341–358. https://doi.org/10.19173/irrodl.v16i3.2112

[MoEC RI] Ministry of Education and Culture Republic of Indonesia/Directorate General of Teachers and Education Personnel. 2017a. Petunjuk Teknis Pelaksanaan Diklat In-Service Learning 1. Jakarta (ID): MoEC RI.

[MoEC RI] Ministry of Education and Culture Republic of Indonesia/Directorate General of Teachers and Education Personnel. 2017b. Petunjuk Teknis Pelaksanaan Diklat Calon Kepala Sekolah/Madrasah On-the-Job Learning Tahun 2017. Jakarta (ID): MoEC RI.

[MoH RI] Ministry of Health Republic of Indonesia. 2018. Basic Health Research Survey 2018. Jakarta (ID): MoH RI.

Merriam SB, Bierema LL. 2014. Adult learning: Linking theory and practice. San Francisco (USA): Jossey-Bass.

Nadhiroh SR, Micheala F, Tung SEH, Kustiawan TC. 2023. Association between maternal anemia and stunting in infants and children aged 0–60 months: A systematic literature review. Nutrition 115(2023):112094. https://doi.org/10.1016/j.nut.2023.112094

Octaria Y, Apriningsih A, Dwiriani CM, Februhartanty J. 2021. School readiness to adopt a school-based adolescent nutrition intervention in urban Indonesia. Public Health Nutr 24(S2):S72–S83. https://doi.org/10.1017/S1368980020001299

Pramesthi IL, Kusuma S, Dewi AN, Kolopaking R, Gunawan I, Februhartanty J, Anggraini R, Herawati N, Nurlela R, Fahmida U. 2021. Investment in teachers toward early childhood development: Lessons from an online training targeting Indonesian early childhood education teachers. Southeast Asian J Trop Med Public Health 52(Supplement 1):19–31.

Rachman PH, Mauludyani AVR, Ekawidyani KR, Februhartanty J. 2020. Barriers of implementing a nutrition education program for adolescents in rural Indonesian schools. Malaysian J Med Heal Sci 16(6):34–45.

SEAMEO RECFON. 2022. Nutrition Goes To School (NGTS): Gizi untuk Prestasi. SEAMEO RECFON. http://www.seameo-recfon.org/for-teacher/nutrition-goes-to-school/ [Accessed 29 March 2024].

Thow AM, Farrell P, Helble M, Rachmi CN. 2020. Eating in Developing Asia: Trends, Consequences and Policies. Manila (PH): Asian Development Bank.

Wiradnyani LAA, Kekalih A, Anggraini R, Februhartanty J. 2021. Teachers' experiences with nutrition education activities and their perceived key factors to an effective nutrition education. Southeast Asian J Trop Med Public Health 52:141–156.

Wiradnyani LAA, Februhartanty J, Agustin CA, Dewi AN, Ermayani E. 2022. Praktik Baik Pelaksanaan Program Gizi untuk Prestasi (Nutrition Goes to School/NGTS) di Indonesia tingkat Sekolah Menengah Atas dan Sederajat. Jakarta (ID): SEAMEO RECFON.

Woodcock S, Sisco A, Eady M. 2015. The learning experience: Training teachers using online synchronous environments. J Educ Res Pract 5(1):21–34. https://doi.org/10.5590/JERAP.2015.05.1.02

Zagouras C, Egarchou D, Skiniotis P, Fountana M. 2022. Face to face or blended learning? A case study: Teacher training in the pedagogical use of ICT. Educ Inf Technol 27(9):12939–12967. https://doi.org/10.1007/s10639-022-11144-y