

Learning and Health Impacts of COVID-19 Prevention and Control Measures among the Hill Tribe Schoolchildren of Northern Thailand: A Teacher's Perspective

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic impacts all populations across different dimensions. Schoolchildren have been one of the most affected groups by the prevention and control measures that were implemented. This study aimed to understand the impact of the prevention and control measures against COVID-19 on hill tribe schoolchildren. **Method:** The study included school directors and teachers working in schools and daycare centers (DCCs) in the hill tribe villages. A qualitative method was used to elicit information about the impacts of COVID-19 prevention and control measures in teaching, learning, and health among hill tribe schoolchildren. The participants were asked several questions. Thematic analysis was used to extract information and study the patterns of the findings. **Results:** A total of 22 participants, seven school directors, and 15 teachers from four schools and three DCCs were selected to participate in the study. Among them, 72.7% were female, 63.6% had a bachelor's degree, and the mean age was 44.1 years. Educational and health impacts were found with the implementation of prevention and control measures for COVID-19, and two major forms were detected: educational and health impacts. Regarding the impact on education, the students were found to have difficulties in online learning platforms. In addition, poor parental support and the inability to buy educational tools and equipment for online learning platforms made it more challenging. In terms of health, the students lost the opportunity to be cared for by professionals, lacked practice of interpersonal skills, and lacked access to healthy food. **Conclusion:** With no better option, hill tribe students were forced to modify their learning styles without any learning materials or equipment available. The children were not able to consume the recommended quantity and quality of food provided by the government at school and DCCs. All government offices including school directors should emphasize on improvement the approaches to ensure that students are able to learn on their maximized capacity in learning inducing the method to provide lunch with quality and quantity food for all students.

Keywords: *Impacts, COVID-19, Prevention and control measures, Hill tribe, Schoolchildren*

Introduction

Coronavirus disease 2019 (COVID-19) was first officially recognized by the World Health Organization in early 2020 [1, 2]. After the first report emerged, the disease was defined as the major global threat [3, 4], killing a large number of people worldwide [5, 6]. Till August 4, 2021, more than 200 million people were infected and more than 4.2 million had died globally [7]. Almost all people of all ages have been impacted by the pandemic, including schoolchildren [8-10]. The transmission of the virus could be airborne or through respiratory droplets (close contact); thus, the infectivity

rate is more than what is expected and could be widely spread even in remote areas of a country. Its effect was clear among students who were attending class-based traditional teaching, and could be exponential in those from poor families, such as the hill tribe in Thailand.

The hill tribe children in Thailand lived with poor families and parents with low educational attainment [11-13]. Low family socioeconomic status (SES) could affect the parents' ability to support their children in maximizing their ability to learn in school [14-16]. Parents supporting their children could positively impact their learning [17, 18]. With the shift of the

learning platform to the online system during the pandemic, the parents' support was the key to the success of learning among children in this era [19, 20]. However, this would not be widely possible among some individuals with limited resources such as the hill tribe population.

In Thailand, schoolchildren have health benefits because the government provides healthy food at lunch time, and milk for all children at the elementary level. Many schoolchildren have the opportunity to eat good food, including milk, which has much more nutrients than the food from their household [21-24]. The growth of few children aged < 7 years who were attending DCCs was properly stimulated with the help of the professional staff working at the DCC [25-27]. Therefore, the lack of opportunity to attend DCC could have a negative impact on children's growth [28].

This qualitative study aimed to understand the impacts of the implementation of prevention and control measures against COVID-19 on hill tribe schoolchildren through the perspective of the teachers working in the hill tribe community.

Methods

A qualitative method was used to elicit information from the participants. The participants included teachers and school directors working in schools and DCCs in the hill tribe villages. After reviewing the literature and discussing with the researchers, the questions for the interviews were developed and validated by one educational expert and two public health professionals using the item-objective congruence method. A pilot testing was conducted among three interviewees who were working in a school to ensure that the questions adequately covered the context of the study. Finally, the following seven questions were selected as the question guide for the study: (a) How did COVID-19 impact students' learning? b) How do prevention and control measures impact students' learning? c) How did you address these problems? d) How do parents support their children's learning? e) Can you explain the impact of the measures on your students' health? f) Did the students or their parents request anything from school? and g) How will you maintain education and health in your students if the pandemic lasts a long time?

The participants were selected using a purposive method and an appointment was made three days ahead. On the date of the interview, an informed consent was obtained, and the participants provided the necessary information for the study. The interviews lasted for approximately 40 minutes. All interviews were recorded after obtaining the approval of the participants.

All records were transcribed into text and checked for errors. Before further analysis, the transcripts were sent back to the information owner to check for

accuracy. A thematic analysis was used to study the patterns from the transcripts using the experience of the researchers with different backgrounds (two educators, one public health professional) and the NVivo program (NVivo, qualitative data analysis software; QSR International Pty Ltd., version 11, 2015). The final patterns extracted were sent back to the information owner again to ensure that the interpretation was accurate.

All study procedures and research tools were approved by the Chiang Rai Public Health Human Research Ethics Committee (IRB No. CRPPHO 73-2563).

Results

A total of 22 participants (seven school directors and 15 teachers) from four schools and three DCCs were selected to provide information in the study. Among them, 72.7% were female, 63.6% had a bachelor's degree, the mean age was 44.1 years (range, 27-59 years), 50.0% had 3-4 years teaching experience. According to the in-depth interviews of the participants, three education and three health impacts were discovered.

A. Educational impacts

Three major impacts of the COVID-19 pandemic on the education of the hill tribe schoolchildren were detected, including unfamiliar online learning, poor parental support, and lack of educational materials and equipment.

Teaching and learning

During the pandemic, all class-based teachings were modified into online teaching and learning platforms, or a combination of both. Before the pandemic, all teaching and learning activities were executed based on the interaction between students and teachers. This was the common and normal teaching and learning approach in the Thai educational system over the past few years. The modification of teaching and learning into online systems has emerged immediately due to the COVID-19 pandemic. The impacts were greatly experienced by both the teachers and students, especially by those who had poor information technology skills.

A 27-year-old female teacher said [P#8],

"It was very difficult to become familiar with the online teaching platform. I do know that we have to modify ourselves to serve our students best; however, I am facing a lot of problems in my life at this time."

A 34-year-old male teacher said [P#10],

"I have worked as a teacher in this school for more than 10 years, and this pandemic has had the most negative impact on my professional life. I am very worried about teaching my students. I wish everything would come to pass in the next few days, but... I think

we have to adapt ourselves to the new situation. I have tried to use an online platform for teaching for a while but still need to improve my skill. Many of my friends also worry about the same thing. We are sharing ideas to help our students maximize their learning from the classes.”

Among the students, they had a great impact on online class learning. Having familiarity with the internet and accessing information online platforms among hill tribe students was very challenging. Moreover, under the condition of several waves of the pandemic, running in class and being teaching in online platform switches daily required a strong guideline or policy for the implementation.

A 44-year-old male school director said [P#15],
“It is very difficult to prepare for and respond to the situation because sometimes no cases are reported in this area; therefore, both teachers and students go back to school. A few weeks later, the new epidemic is reported, so we have to move all teaching and learning into the online platform. In this area, the use of the internet is very limited and it impacts our students’ access to their online classes. Moreover, the hill tribe people are living in a very poor economy, so anything that is required for additional expenses will be a burden to them.”

A 37-year-old female school teacher said [P#20],
“Online learning is not good for my students because in villages, the network signal required to access the internet is not available and online teaching does not motivate students to follow the content.”

Both teachers and students were suffering from the online teaching and learning platform brought about by the requirement of social distancing during the pandemic. This was due to the unfamiliarity with the use of new teaching technology and the lack of support from the government. Moreover, the students were unmotivated and had internet connection problems.

Poor parental support

A large proportion of the families living in hill tribe in Thailand come from a low SES and have a low educational attainment. Individuals aged 45 years and above were very limited to the use of Thai. Due to the low SES and educational attainment of the parents of the hill tribe students, supporting their children in learning was impossible. Moreover, their jobs, such as farming, were not enough to help and support their children’s education according to their class schedules.

A 44-year-old male school director said [P#15],
“We know that the parents are using most of their day time in their farm; therefore, attention to help their children or support their children is not possible.”

A 51-year-old female school director said [P#9],
“I have been working in this school for more than 6 years, I do know how my students’ parents are suffering in their life. Most parents did not attend school, and it was impossible to help their children learn the teaching through the online platform provided.”

A 27-year-old female teacher said [P#8],
“I would say that currently my students are living in the stage of very non-effective learning in their classes. I have tried to help them understand how to use the platform and tried to use the simple platform, but...it is very limited.”

With the low SES of the parents, helping and supporting their children’s education was not effective because they never went school, and had no knowledge or skills in technology.

Lack of educational material and equipment

Almost all hill tribe students came from poor families, making it difficult to obtain technological materials and equipment for online learning. Their parents did not have the money to buy a computer or have access to the internet, which was required for the new platform for education.

A 27-year-old female teacher said [P#22],
“Last week while I told my students that we needed to run the class in online platform, they said that they do not have a computer and some responded that there was no internet signal in their village.”

A 44-year-old school director said following [P#15]
“Parents have shown concern that they have no money to buy equipment for online learning. Some people said that they have no money even for food. How they can pay for this very expensive equipment?”

The hill tribe people were not able to buy new education equipment for their children, such as computers and other equipment needed to access the class.

B. Health impacts

Health impacts caused by the modified platform of learning and teaching were detected. Following the COVID-19 prevention and control guidelines, all schools were not allowed to conduct face-to-face classes. With online learning, students faced several challenges in terms of health.

Lacking opportunity to be cared for by a childhood development professional

All children aged below 7 years were cared for in DCC during the daytime while their parents were farming. At the DCC, they were cared for by

professional staff to ensure that all children were supported and stimulated properly for their growth.

A 29-year-old woman working at a DCC said [P#16],
"I worry very much about all my younger students that they might not be cared for properly while they could not come to DCC. I think you know that children aged below 7 years are in a very important stage for development in both physical and mental skills, including interpersonal skills. Yes, we are losing the great time to support them."

A 33-year-old woman working at a DCC said [P#5],
"We have no other option during the implementation of the COVID-19 prevention and control measures as all DCCs are not allowed to open. Now, I have no idea what is going on with my younger students."

Lacking practice of interpersonal skills

By attending the DCCs, the children were trained to develop their interpersonal skills, including some essential social skills under the norms. Under the condition that many children were cared for in the same place (at DCC), they were automatically being trained for interpersonal skills. Moreover, children were prepared to enter the elementary level, such as understanding Thai alphabets and basic grammar.

A 33-year-old woman working at a DCC said [P#5],
"I think children are losing time to practice their interpersonal skills while the DCCs are not allowed to open. I hope that the government will have a better option to address this problem."

A 29-year-old woman working at a DCC said [P#16],
"One very worrying thing to me is how we make sure that the young children have been trained properly before entering an elementary school, especially their interpersonal skills which are totally missing if the DCC is not opened."

A 39-year-old man working at a school said [P#13],
"I am a sport teacher. I am very concern that my students would lack the opportunity to skill on playing sports including interpersonal skill development from the school close policy and implementation and it might impact their health as well"

Lacking access healthy food for children

All children attending a DCC were provided with healthy food that met both quality and quantity. The menu was designed and approved by a nutritionist. Therefore, all children ate healthy food for their health, which is very important for their development.

A 29-year-old woman working at a DCC said [P#16],
"At the DCC, we have good food and milk for all children every day. I am wondering how my students get food while our DCC is closed."

A 46-year-old female head of a DCC said [P#1],
"Basically, we make a schedule of the menu for students weekly. We consulted nutritionist experts to plan a diet for them. But today, I have no better idea of how the students get healthy food and milk at their home."

A 46-year-old woman working at a school said [P#19],
"During the school close days, my students lack opportunity to have healthy lunch, I so sad"

Discussion

Due to the implementation of COVID-19 prevention and control measures, the DCCs and elementary schools were closed. This resulted to the suffering of hill tribe children in the aspects of health and education. In terms of education, the hill tribe children had difficulties with the new online learning platform, which was influenced by the need for technology and internet access. Poor parental support in online learning may be due to the poor educational status of the parents and lack of financial support for buying computers needed for online learning. With regard to health, children lost their opportunity to be cared for by professionals, especially those who needed continuous support for their proper development, including interpersonal skill development. One very significant outcome of the online platform was the lack of access healthy food in terms of both quantity and quality, which is required for development.

In this study, we discovered several forms of difficulties in the online learning platform brought about by the COVID-19 prevention and control measures. The hill tribe schoolchildren suffered from poor skills in technology, limited access to the internet, lack of support from their parents, and lack of access to online learning tools and equipment. This was supported by a study conducted in the Netherlands, which reported that students made little or no progress while learning from home [9]. Alsoud et al. [29] reported that students from remote and disadvantaged areas faced enormous challenges, such as technological accessibility and poor internet connectivity. Espino-Diaz et al. [30] demonstrated several disadvantages of online learning, such as the lack of social interaction, the lack of technological knowledge necessary to face online teaching and learning, and the quality of tools and equipment. The literature review research reported that more than 94% of students worldwide are now losing their life in a school, and several approaches and technological innovations were required to improve the educational system, especially for children living in disadvantaged stages who were having poor

access to educational equipment and the internet [31]. A small study in Thailand clearly reported that the online learning platform was a problem not only for children in remote areas like the hill tribe schoolchildren, but also for students living in urban areas [32]. The United Nations reported that schoolchildren were one of the groups of people in Thailand who were impacted by the COVID-19 pandemic, and the government had to urgently seek the solution because the pandemic might last for years [33]. Schoolchildren are facing great impact from the COVID-19 pandemic, especially in accessing education. This could potentially affect children living in poor families and remote areas such as the hill tribe schoolchildren in Thailand.

We found that not being able to go to school during the COVID-19 pandemic resulted in a loss of opportunities for the children to practice interpersonal skills with their peers. Furthermore, they also lost the opportunity to eat healthy food and receive professional care for their proper growth. A narrative review reported that during school closure, the mortality of children has been increasing in several countries, including Cameroon, Pakistan, and the United States [34]. Additionally, a rapid systematic review reported that during school closure, students faced several physical and mental health problems, including accidents, increased anxiety and loneliness, sadness, hyperactivity, and increased body mass index due to less physical activity [35]. The United Nations International Children's Emergency Fund reported that school closures impact both education and health, especially the nutrition of students, which is of great concern to all relevant agencies in a country [36]. Mayurasakorn et al. [37] reported that the closure of schools during the COVID-19 pandemic could cause children to have malnutrition due to the lack of access to healthy food from lunch programs provided by the government, especially in low- and middle-income countries, including Thailand. Therefore, school closure has not only limited its impact on students' learning, but also students' health in both physical and mental aspects.

This study had limitations. The interviews of some participants were conducted online, which might have caused the loss of some information that was presented in the form of body language. Since this study was based on the teachers' views, further studies should be conducted including the parents' and children's views to gain more perspective on the effects of COVID-19 on learning.

Conclusion

The hill tribe children are having difficulties in terms of health and education, which are due to the COVID-19 pandemic. Children are facing challenges in online learning platforms, with limited support from the government, schools, and their parents.

Additionally, children are losing their opportunity to be cared for by professionals to support them in proper development due to the closure of schools and DCCs. They are also losing the opportunity to practice their interpersonal skills and get healthy food in terms of quantity and quality. All relevant agencies should promptly respond to these problems to meet the basic needs of all children by supporting them with essential tools and equipment for their learning, giving access to good food, and providing the opportunity to be cared for and properly supported for development in childhood. All relevant agencies should revise their plan to support online learning and care for school children effectively especially providing lunch with quantity and quality food to all students.

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References

- [1] World Health Organization (WHO). WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. Available from: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- [2] World Health Organization (WHO). Coronavirus. Available from: <https://www.who.int/health-topics/coronavirus>.
- [3] Peeri NC, Shrestha N, Rahman MS, Zaki R, Tan Z, Bibi S, et al. The SARS, MERS and novel coronavirus (COVID-19) epidemics, the newest and biggest global health threats: what lessons have we learned? *International Journal of Epidemiology* 2020;49:717–26. <https://doi.org/10.1093/ije/dyaa033>.
- [4] Chakraborty I, Maity P. COVID-19 outbreak: Migration, effects on society, global environment and prevention. *Science of The Total Environment* 2020;728:138882. <https://doi.org/10.1016/j.scitotenv.2020.138882>.
- [5] Haleem A, Javaid M, Vaishya R. Effects of COVID-19 pandemic in daily life. *Current Medicine Research and Practice* 2020;10:78–9. <https://doi.org/10.1016/j.cmrp.2020.03.011>.
- [6] Mandal CC, Panwar MS. Can the summer temperatures reduce COVID-19 cases? *Public Health* 2020;185:72–9. <https://doi.org/10.1016/j.puhe.2020.05.065>.

- [7] World Health Organization (WHO). Global situation: covid-19. Available from: <https://covid19.who.int>.
- [8] Tarkar P. Impact of covid-19 pandemic on education system. *International Journal of Advanced Science and Technology*. 2020; 29(9s): 3812-4.
- [9] Engzell P, Frey A, Verhagen MD. Learning loss due to school closures during the COVID-19 pandemic. *Proc Natl Acad Sci USA* 2021;118:e2022376118. <https://doi.org/10.1073/pnas.2022376118>.
- [10] Polydoros G, Alasona N. Teaching and learning during the covid-19 pandemic. *Journal of Research and Opinion*. 2021; 8(6): 2954-63.
- [11] Srichan P, Apidechkul T, Tamornpark R, Yeemard F, Khunthason S, Kitchanapaiboon S, et.al. Knowledge, attitudes and preparedness to respond to COVID-19 among the border population of northern Thailand in the early period of the pandemic: a cross-sectional study. *WHO South-East Asia Journal of Public Health*. 2020; 9(2): 118-125. <https://doi.org/10.4103/2224-3151.294305>.
- [12] Chomchoei C, Yeemard F, Tamornpark R, Apidechkul T, Upala P. Burden and factors associated with hypertension among the adult population of the Lisu hill tribe, northern Thailand. *Journal of Health Science and Alternative Medicine*. 2021; 3(1): 9-15. <https://doi.org/10.14456/jhsam.2021.3>
- [13] Suratana S, Tamornpark R, Apidechkul T, Srichan P, Mulikaburt T, Wongnuch P, et al. Impacts of and survival adaptations to the COVID-19 pandemic among the hill tribe population of northern Thailand: A qualitative study. *PLoS ONE* 2021;16:e0252326. <https://doi.org/10.1371/journal.pone.0252326>.
- [14] Chen Q, Kong Y, Gao W, Mo L. Effects of Socioeconomic Status, Parent–Child Relationship, and Learning Motivation on Reading Ability. *Front Psychol* 2018;9. <https://doi.org/10.3389/fpsyg.2018.01297>.
- [15] Tan CY, Lyu M, Peng B. Academic Benefits from Parental Involvement are Stratified by Parental Socioeconomic Status: A Meta-analysis. *Parenting* 2019;20:241–87. <https://doi.org/10.1080/15295192.2019.1694836>.
- [16] Li X, Yang H, Wang H, Jia J. Family socioeconomic status and home-based parental involvement: a mediation analysis of parental attitudes and expectations. *Children and Youth Services Review*. 2020; 116:105111.
- [17] Neece C, McIntyre LL, Fenning R. Examining the impact of COVID - 19 in ethnically diverse families with young children with intellectual and developmental disabilities. *Journal of Intellectual Disability Research* 2020. <https://doi.org/10.1111/jir.12769>.
- [18] Asbury K, Fox L, Deniz E, Code A, Toseeb U. How is COVID-19 Affecting the Mental Health of Children with Special Educational Needs and Disabilities and Their Families? *J Autism Dev Disord* 2020;51:1772–80. <https://doi.org/10.1007/s10803-020-04577-2>.
- [19] Rasmitadila R, Aliyyah RR, Rachmadtullah R, Samsudin A, Syaodih E, Nurtanto M, et al. The Perceptions of Primary School Teachers of Online Learning during the COVID-19 Pandemic Period: A Case Study in Indonesia. *J Ethn Cult Stud* 2020;7:90. <https://doi.org/10.29333/ejecs/388>.
- [20] Panaoura R. Parental involvement in children's mathematics learning before and during the period of the COVID-19. *Social Education Research*. 2021:65-74. <https://doi.org/10.37256/ser.212021547>
- [21] Cullen KW, Chen T-A. The contribution of the USDA school breakfast and lunch program meals to student daily dietary intake. *Preventive Medicine Reports* 2017;5:82–5. <https://doi.org/10.1016/j.pmedr.2016.11.016>.
- [22] Asakura K, Sasaki S. School lunches in Japan: their contribution to healthier nutrient intake among elementary-school and junior high-school children. *Public Health Nutr* 2017;20:1523–33. <https://doi.org/10.1017/s1368980017000374>.
- [23] Kinsey EW, Hecht AA, Dunn CG, Levi R, Read MA, Smith C, et al. School Closures During COVID-19: Opportunities for Innovation in Meal Service. *Am J Public Health* 2020;110:1635–43. <https://doi.org/10.2105/ajph.2020.305875>.
- [24] Cohen JFW, Hecht AA, McLoughlin GM, Turner L, Schwartz MB. Universal School Meals and Associations with Student Participation, Attendance, Academic Performance, Diet Quality, Food Security, and Body Mass Index: A Systematic Review. *Nutrients* 2021;13:911. <https://doi.org/10.3390/nu13030911>.
- [25] Myszkowska-Ryciak J, Harton A. Impact of Nutrition Education on the Compliance with Model Food Ration in 231 Preschools, Poland: Results of Eating Healthy, Growing Healthy Program. *Nutrients* 2018;10:1427. <https://doi.org/10.3390/nu10101427>.
- [26] Harton A, Myszkowska-Ryciak J. Types of Milk and/or Its Substitutes Are Given to Children (6–36 Months) in Nurseries in Poland: Data from the Research and Education Project “Eating Healthy, Growing Healthy.” *IJERPH* 2018;15:2789. <https://doi.org/10.3390/ijerph15122789>.

- [27] Almeida NB, Menezes RCE de, Sobral K dos S, Gomes JF, Longo-Silva G, Silveira JAC da. Pre- and perinatal factors associated with weight gain among preschool children enrolled at day care centers. *Rev Paul Pediatr* 2020;38. <https://doi.org/10.1590/1984-0462/2020/38/2019060>.
- [28] Schwabish J, Joo N, Waxman E, Spievack N. Strategies and challenges in feeding out-of-school students. Available from: <https://www.urban.org/sites/default/files/publication/102095/strategies-and-challenges-in-feeding-out-of-school-students.pdf>.
- [29] Alsoud AR, Harasis AA. The Impact of COVID-19 Pandemic on Student's E-Learning Experience in Jordan. *JTAER* 2021;16:1404–14. <https://doi.org/10.3390/jtaer16050079>.
- [30] Espino-Díaz L, Fernandez-Caminero G, Hernandez-Lloret C-M, Gonzalez-Gonzalez H, Alvarez-Castillo J-L. Analyzing the Impact of COVID-19 on Education Professionals. Toward a Paradigm Shift: ICT and Neuroeducation as a Binomial of Action. *Sustainability* 2020;12:5646. <https://doi.org/10.3390/su12145646>.
- [31] Pokhrel S, Chhetri R. A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. *Higher Education for the Future* 2021;8:133–41. <https://doi.org/10.1177/2347631120983481>.
- [32] Vanpetch Y, Sattayathamrongthian M. The challenge and opportunities of thailand education due to the covid-19 pandemic: case study of Nakhon Pathom, Thailand. *E3S Web Conf* 2020;210:18058. <https://doi.org/10.1051/e3sconf/202021018058>.
- [33] United Nations Thailand. Social impact assessment of covid-19 in Thailand. Available from: <https://www.unicef.org/thailand/media/5071/file/Social%20Impact%20Assessment%20of%20COVID-19%20in%20Thailand.pdf>
- [34] Rajmil L, Hjern A, Boran P, Gunlaugsson G, Kraus de Camargo O, Raman S. Impact of lockdown and school closure on children's health and well-being during the first wave of COVID-19: a narrative review. *Bmjpo* 2021;5:e001043. <https://doi.org/10.1136/bmjpo-2021-001043>.
- [35] Chaabane S, Doraiswamy S, Chaabna K, Mamtani R, Cheema S. The Impact of COVID-19 School Closure on Child and Adolescent Health: A Rapid Systematic Review. *Children* 2021;8:415. <https://doi.org/10.3390/children8050415>.
- [36] The United Nations International Children's Emergency Fund (UNICEF). The impact of school closures on children's nutrition. Available from: https://www.unicef-irc.org/publications/pdf/COVID-19_Missing_More_Than_a_Classroom_The_impact_of_school_closures_on_childrens_nutrition.pdf
- [37] Mayurasakorn K, Pinsawas B, Mongkolsucharitkul P, Sranacharoenpong K, Damapong S. School closure, COVID - 19 and lunch programme: Unprecedented undernutrition crisis in low - middle income countries. *J Paediatr Child Health* 2020;56:1013-7. <https://doi.org/10.1111/jpc.15018>.