# COLLABORATION FOR THE PRESERVATION OF SUNDANESE DANCE CULTURE IN THE DEVELOPMENT OF DANCE ART CURRICULUM AT LKP BINA LESTARI SUMEDANG

Heri Heryono\*, Ida Zuraida, Atri Nadia Astarina, Hendar, Meita Lukitawati Sujatna

Universitas Widyatama

Jl. Cikutra No. 204 A, Sukapada, Cibeunying Kidul, Kota Bandung

Email: heri.heryono@widyatama.ac.id

### **Abstract**

The Community Service Program (PkM) aims to preserve Sundanese dance culture through the development of a dance arts curriculum at LKP Bina Lestari Sumedang. The background of this activity is the declining interest of the younger generation in traditional dance due to the influence of popular culture and the lack of relevance of the existing curriculum. The methods used include needs analysis, the development of digital-based learning modules, intensive training for educators, cultural campaigns through social media, and strengthening learning infrastructure. The results of the activity show the achievement of the new vision and mission of LKP Bina Lestari, the preparation of a structured curriculum for three levels (beginner, proficient, expert), and the creation of innovative modules that integrate cultural values and digital technology. This program also expands social impact through collaboration with art communities, cultural figures, and the surrounding community. With a collaborative approach and the utilization of science and technology, this activity has succeeded in increasing the awareness, skills, and interest of the young generation in Sundanese dance, while also strengthening local cultural identity amidst the tide of globalization.

**Keywords:** Dance Arts Curriculum, Culture Reservation, Community Service Program

# **INTRODUCTION**

Culture is the identity that reflects the values, history, and uniqueness of a society. In the midst of the increasingly strong waves of modernization, the preservation of traditional culture becomes ever more important to maintain the nation's identity. Sundanese dance, as one of Indonesia's cultural heritage rich in philosophical and aesthetic values, plays a significant role in shaping character and enriching the national cultural treasury. However, over time, the interest of younger generations in traditional dance tends to decline, eroded by the influence of popular culture and increasingly dominant digital technology. Sundanese dance has various types and styles, ranging from classic dances full of philosophical meaning, such as the Peacock Dance and Jaipongan Dance, to folk dances that depict the daily life of the Sundanese people. Each movement, costume, and accompanying music has deep stories and meanings that reflect local wisdom that deserves to be preserved and passed

on to the next generation. However, without serious efforts to introduce and preserve this dance art, this cultural wealth is at risk of extinction.

The Bina Lestari Course and Training Institute (LKP) in Sumedang is one of the institutions committed to preserving and developing Sundanese dance culture through arts education. This institution has great potential to become a center for Sundanese cultural learning, but to achieve this goal, a curriculum is needed that can integrate traditional and modern aspects. A good curriculum not only focuses on dance techniques but also on understanding the cultural values, history, and philosophy contained in each dance movement (Dwi et al., 2025).

Through this community service program, we strive to create a close collaboration between trainers, young dancers, art activists, and the surrounding community to strengthen the existence of Sundanese dance. This collaboration is expected to produce a more creative, interactive, and relevant learning method in line with the development of the times. Thus, Sundanese dance not only survives as a cultural heritage but also continues to evolve in accordance with the dynamics of the era, capable of competing at both national and international levels.

This program will include various activities such as intensive training, development of learning modules, creativity workshops, and art performances involving various community elements. In addition, this activity will also involve cultural figures, local artists, and young generations to create a holistic and sustainable learning ecosystem. With this collaborative approach, it is hoped that LKP Bina Lestari Sumedang can become a sustainable and highly competitive center for Sundanese dance learning, while also actively strengthening the cultural identity of the nation (Salma et al., 2023).

The development of this curriculum is also expected to encourage the interest of the younger generation to know, learn, and love Sundanese dance, so that this traditional art continues to live and develop amidst modernity. With the establishment of this program, LKP Bina Lestari not only serves as a dance learning center but also as a guardian of the noble values of Sundanese culture that continues to inspire and enrich Indonesian culture.

The Bina Lestari Course and Training Institution (LKP) in Sumedang is one of the institutions committed to preserving and developing Sundanese dance culture through dance education. This institution has great potential to become a center for Sundanese cultural learning, but to achieve this goal, a curriculum that can integrate traditional and modern aspects is needed. A good curriculum not only focuses on dance techniques but also on understanding the cultural values, history, and philosophy embedded in every dance movement.

This program not only aligns with the mission of cultural preservation but also supports the achievement of several Key Performance Indicators (KPI) of higher education institutions, such as:

- a. KPI 3 (Lecturers Engaging Outside the Campus) Encouraging lecturers and educators to actively engage with the community through training, coaching, and assistance in the development of dance curriculum.
- b. KPI 5 (Work Outcomes of Lecturers Used by the Community) Producing tangible curriculum development products that can be directly applied at LKP Bina Lestari,

- expanding the impact of research on the community.
- c. KPI 7 (Collaborative and Participative Classes) Involving students, lecturers, artists, and the community in the creative and innovative process to produce contextual and sustainable learning materials.

In addition, this program also contributes to the achievement of several Sustainable Development Goals (SDGs), including:

- a. SDG 4: Quality Education Providing access to quality arts education that is inclusive and continuous, strengthening the cultural skills of the young generation.
- b. SDG 11: Sustainable Cities and Communities Supporting the preservation of local culture as part of efforts to maintain the identity of local communities in urban development.
- c. SDG 17: Partnerships for the Goals Building collaboration between academics, the arts community, government, and society to strengthen the preservation of local culture.

Through this community service program, we strive to create a close collaboration between trainers, young dancers, art activists, and the surrounding community to strengthen the existence of Sundanese dance. This collaboration is expected to produce more creative, interactive, and relevant learning methods in line with the times. Thus, Sundanese dance will not only survive as a cultural heritage but also continue to evolve according to the dynamics of the era, able to compete on both national and international stages (Nikita & Sari, 2024).

This program will include various activities such as intensive training, development of learning modules, creativity workshops, and art performances that involve various community elements. In addition, this activity will also involve cultural figures, local artists, and young generations to create a holistic and sustainable learning ecosystem. With this collaborative approach, it is hoped that LKP Bina Lestari Sumedang can become a sustainable and highly competitive center for learning Sundanese dance, while also actively strengthening the cultural identity of the nation (Noorsetya et al., 2024).

The development of this curriculum is also expected to encourage the interest of the younger generation to recognize, learn, and love Sundanese dance, so that this traditional art continues to live and develop amidst modernity. With the establishment of this program, LKP Bina Lestari not only serves as a dance learning center but also as a guardian of the noble values of Sundanese culture that continues to inspire and enrich Indonesian culture. This activity aims to:

- 1. Preserve Sundanese Dance Culture Strengthen the existence and role of Sundanese dance as one of the nation's cultural heritage through the development of a sustainable dance art curriculum.
- 2. Improve the Quality of Dance Art Education Develop a structured, creative, and innovative curriculum to enhance the quality of dance art education at LKP Bina Lestari, to attract the interest of younger generations to learn about local culture.
- 3. Enhance the Competence of Teachers and Students Provide intensive training for teachers to improve their capacity in teaching Sundanese dance, as well as

- strengthen the technical and artistic skills of students.
- 4. Expanding the Reach and Social Impact Building collaborative networks among academics, artists, communities, and society to expand the influence of Sundanese dance, including through performances, festivals, and digital media.
- 5. Supporting the Achievement of IKU and SDGs Contributing to the achievement of Key Performance Indicators (IKU) in higher education and Sustainable Development Goals (SDGs), particularly in quality education, cultural preservation, and sustainable community development.
- 6. Developing Love and Concern for Local Culture Fostering a sense of love and pride in local culture among the younger generation, so that they become active and creative cultural preservation agents.
- 7. Producing Innovative Learning Modules Creating comprehensive, engaging, and relevant teaching materials that align with technological advancements and societal needs, including digital-based modules to expand learning access.
- 8. Strengthening Local Identity Amidst the Waves of Globalization Maintaining local cultural identity amidst global influences by strengthening the Sundanese cultural narrative as an important part of national cultural diversity.

This partner in this community service activity (PKM) is LKP Bina Lestari Sumedang. This partner is a community group engaged in the arts, particularly Sundanese dance. The collaboration partner in this community service (PKM) activity is LKP Bina Lestari, a training institution (Arts) located in Perum Bukit Raya Puskopad, Gunungmanik Village, Tanjungsari District, Sumedang Regency, West Java Province. LKP Bina Lestari has a fairly large number of members, namely 110 members, who are the main targets and direct beneficiaries of this PKM activity. As an institution engaged in the arts, LKP Bina Lestari is a strategic partner to collaborate in the preservation and development of the Sundanese dance curriculum, in line with the focus of the PKM activities.

The preservation of Sundanese dance culture at LKP Bina Lestari Sumedang is facing several priority issues that need to be addressed promptly to ensure the continuity and development of this art form. One of the main problems is the declining interest of the younger generation in traditional dance. In the midst of globalization and technological advancement, young people are more attracted to popular culture disseminated through digital media, making traditional dance often seen as outdated and less relevant. This situation is exacerbated by a lack of understanding of the philosophical and cultural values contained in Sundanese dance, which should be a source of pride and local cultural identity (Almaahi et al., 2022). Additionally, the limited resources and capacity of instructors also present a significant challenge. Many dance instructors possess high technical skills but lack proficiency in pedagogical aspects and creative classroom management. The lack of training and professional development makes it difficult for educators to inspire and ignite the interest of students in learning. In fact, educators play a crucial role in shaping a generation that understands and loves local culture.

The curriculum, which is not relevant to current developments, is also a problem that needs to be addressed. Many curricula focus too much on the technical aspects of dance

without considering the cultural context and the philosophical values that underlie it. This makes the learning of performing arts feel rigid and less appealing to the younger generation, who prefer interactive and creative approaches. In addition, existing curricula are often less adaptive to social and technological changes, making it hard to compete in the modern educational world.

In an effort to preserve Sundanese dance culture through curriculum development at LKP Bina Lestari Sumedang, there are several priority issues that need to be addressed to achieve the goals of this activity:

- 1. Decline in Interest Among the Younger Generation in Traditional Dance Together with technological developments and the influence of popular culture, interest among the younger generation in traditional performing arts, including Sundanese dance, tends to decline. This becomes a major challenge in preserving local culture due to a lack of understanding and appreciation of the cultural values contained in each dance movement.
- Limited Resources and Instructor Capacity
   Many dance instructors have high technical skills, but lack skills in pedagogical
   aspects and creative classroom management. Additionally, the lack of training and
   professional development for educators often becomes an obstacle to improving
   teaching quality.
- 3. Curriculum that Lacks Relevance to the Development of the Times
  The existing curriculum often focuses on the technical aspects of dance without
  considering the cultural context and the philosophical values underlying it. This
  curriculum is also often less adaptive to social and technological changes, making
  it less appealing to the younger generation.
- 4. Lack of Adequate Infrastructure and Learning Resources
  Some LKP, including Bina Lestari, often face limitations in terms of facilities,
  equipment, and modern interactive learning resources, including digital-based
  learning modules that are important to attract the interest of the younger
  generation.
- 5. Lack of Collaborative Support between Educational Institutions and the Community Cultural preservation cannot be done solely by educational institutions; it requires support from various parties, including communities, local governments, and artists. Unfortunately, this collaboration is often not well-established, limiting the
- 6. Lack of Awareness of the Importance of Preserving Local Culture Many people are unaware of the importance of preserving local culture as part of identity and local wisdom. This often results in preservation efforts receiving inadequate support from the surrounding community.

potential for cultural development.

7. Minimal Utilization of Technology in Dance Learning
In the digital era, the use of technology for dance learning is still very limited.
In fact, technology can be an effective tool for documenting, teaching, and disseminating dance art to a wider audience.

8. Lack of Funding for Cultural Preservation ProgramsCultural preservation programs are often hindered by the lack of financial support for training, production, and promotion of dance art. This impacts the sustainability of the programs and limits the development of curriculum innovations.

LKP, including Bina Lestari, often experience limitations in terms of facilities, equipment, and modern learning resources. The lack of digital-based learning modules also poses a challenge in attracting the interest of the younger generation who are already accustomed to technology. In fact, technology can be an effective tool for documenting, teaching, and disseminating dance art to a wider audience.

In addition, collaboration between educational institutions and the community is still not optimal. Cultural preservation cannot be done by educational institutions alone, but requires support from various parties, including the community, local government, and art activists. However, this collaboration is often not established well, thus hindering the potential for cultural development. The lack of public awareness about the importance of preserving local culture as part of identity and local wisdom also poses a significant obstacle in the efforts to preserve Sundanese dance.

This issue is exacerbated by the lack of funding for cultural preservation programs. Many programs with great potential are hindered by budget constraints for training, production, and promotion of dance arts. This impacts the sustainability of the programs and limits the development of curriculum innovations. Without adequate financial support, it is difficult for institutions like LKP Bina Lestari to create significant changes in cultural preservation.

By understanding and identifying these issues, this community service program is expected to provide appropriate and sustainable solutions to ensure that Sundanese dance remains alive, develops, and becomes a pride of the Sumedang community and the younger generation in general.

## **IMPLEMENTATION METHOD**

The method of implementing this activity will use a participatory and collaborative approach to ensure sustainable and widespread impact. The first stage is needs analysis and curriculum planning, where the team will conduct surveys, interviews, and focus group discussions (FGDs) with teachers, students, and the local arts community. The goal of this stage is to understand the gaps between the existing curriculum and the needs of students and teachers, as well as to identify cultural values that need to be preserved in the teaching of Sundanese dance. The data collected will serve as a foundation for designing a more relevant, innovative, and sustainable curriculum.

After the needs analysis, the next step is the development of a digital learning module. This module will cover basic techniques, history, philosophy, and cultural values of Sundanese dance, and will be packaged in a digital format to facilitate access and distance learning. Technologies such as tutorial videos, motion animations, and e-learning platforms will be used to enhance the appeal and effectiveness of the learning process. With this

approach, it is hoped that learners will not only master the dance movements but also understand the cultural meanings behind each movement.

To improve the competence of instructors, intensive training and capacity building will be conducted. This training will include creative teaching techniques, the use of technology in learning, and more participative pedagogical approaches. In addition, a teacher community will be established to facilitate the exchange of experiences and knowledge, enabling continuous learning among instructors. This is important to ensure that instructors are not only able to teach dance techniques but also able to inspire and spark students' interest in local culture.

To support the learning process, improvements in infrastructure and learning resources are also needed. This includes providing adequate practice spaces, traditional musical instruments, dance costumes, and modern multimedia equipment. With complete and inspiring facilities, it is hoped that students will be more motivated to learn and develop their skills. In addition, a community of teachers will be formed to facilitate the exchange of experiences and knowledge, allowing for continuous learning among the teachers. This is important to ensure that the teachers are not only able to teach dance techniques, but also able to inspire and ignite the interest of students in local culture.

In order to increase the interest of the younger generation in Sundanese dance, a cultural campaign and promotion will be conducted through social media. Digital content such as dance videos, cultural stories, and short documentaries will be produced to raise public awareness about the importance of preserving Sundanese dance. In addition, art festivals, dance competitions, and cultural performances will be held to introduce Sundanese dance to a wider audience and align with the interests of today's youth.

Strategic partnerships are also an important element in the implementation of this activity. Collaboration with communities, government, and the creative industry will be strengthened to expand the reach and impact of this program. These partnerships include joint training, production of performances, and cultural promotion, which not only strengthen the local cultural ecosystem but also create economic opportunities for artists.

Lastly, to ensure the success of the program, continuous evaluation and monitoring will be carried out. This includes assessing the effectiveness of the curriculum, the competence of educators, and the level of student participation. Evaluation data will be used to improve and adjust the program to remain relevant to community needs and technological developments. In addition, a sustainable funding strategy will be developed to ensure the continuity of this program, including fundraising, partnerships with sponsors, and the creation of incomegenerating digital products. With this structured and comprehensive method, it is hoped that this program can create real change in the preservation of Sundanese dance, while also strengthening local cultural identity amid the currents of globalization.

The use of Science and Technology (IPTEK) in the preservation of Sunda dance culture at LKP Bina Lestari Sumedang focuses on utilizing digital technology to support learning, documentation, and promotion of dance art. In this context, IPTEK is used to address the challenges of modernization, expand the reach of learning, and enhance the effectiveness of managing traditional dance art education.

First, in the curriculum development, educational technology such as Learning

Management System (LMS) will be implemented to provide an online learning platform. This system allows instructors and learners to access dance materials, tutorial videos, and assessment tests flexibly and in a structured manner. LMS also facilitates monitoring student progress and managing learning data efficiently. Additionally, augmented reality (AR) and virtual reality (VR) technologies can also be used to provide a more interactive learning experience, such as simulating dance movements in a 3D space, which enables learners to understand movement techniques more deeply.

In addition, the utilization of video and multimedia technology will be a primary focus in documenting dance movements, costumes, and accompanying music. This technology allows for the production of high-quality videos that can be accessed through digital platforms such as YouTube, Instagram, and TikTok, thus enabling Sundanese dance to be introduced to a wider audience, including the younger generation that is more familiar with digital media. To support this effort, video editing software such as Adobe Premiere Pro or Da Vinci Resolve will be used to create engaging and professional content.

Digital technology will also be used to create interactive and engaging learning modules. This includes the use of animations, infographics, and visual elements that help learners understand the philosophy and meaning behind each dance movement. Additionally, motion capture technology can be used to accurately record and analyze dance movements, making it easier to create teaching materials that are more detailed and precise.

From the perspective of promotion and marketing, digital technology will be utilized to enhance the reach of this program through digital marketing strategies. Social media, official websites, and mobile applications will be developed to build an active digital community. This includes cultural campaigns, engaging social media account management, and the use of digital advertising to reach a wider audience. Additionally, data analysis will be used to understand audience trends and preferences, allowing promotional strategies to continuously adapt to market needs.

In terms of data management and program evaluation, analytic technology will be used to monitor the performance of teachers and the participation rate of learners. This data will be processed using statistical software such as SPSS or Microsoft Power BI to produce more accurate and in-depth reports. With this data-driven approach, the Sundanese dance preservation program is expected to continue to develop sustainably and adaptively to changes in technology and social conditions.

Overall, the use of science and technology in this program is expected to strengthen efforts in cultural preservation, expand the reach of Sundanese dance art influence, and enhance the quality of learning and experiences for students. By integrating modern technology and traditional cultural values, this program aims to produce a younger generation that is not only skilled in dancing but also understands and loves their cultural heritage.

## RESULTS AND DISCUSSION

The Community Service Program (PKM) titled "Collaboration for the Preservation of Sundanese Dance Culture in the Development of Dance Education Curriculum at LKP Bina Lestari Sumedang" has been successfully carried out with a series of concrete outcomes that have had a significant impact. As part of this collaborative effort, the implementing team and partners have together identified various challenges and found comprehensive solutions. The main issues identified are the limitations of an unstructured curriculum that is not relevant to the needs of the younger generation, as well as the lack of a clear vision and mission as a guide for the development of the institution. Therefore, the proposed solutions focus on curriculum development and strengthening institutional capacity.

One of the main outcomes of this activity is the realization of a new Vision and Mission for the LKP Bina Lestari that is more directed and relevant. The agreed upon vision is "To become a center of excellence for the preservation and development of innovative Sundanese dance arts that is globally competitive." To achieve this vision, a mission was formulated that includes (1) the organization of arts education based on Sundanese culture, (2) the development of an adaptive curriculum integrated with technology, (3) the enhancement of the competencies of educators and learners, and (4) active participation in the promotion of local culture at both national and international levels. The formulation of this vision and mission provides a strategic foundation for the LKP to move forward.

As an implementation of this vision and mission, the PKM team successfully developed a structured Semester Learning Plan (RPS) for three levels: beginner, skilled, and expert. This curriculum is systematically designed to ensure that learners receive sustainable and measurable education.

- 1. Beginner Level: Focused on introducing the basics of Sundanese dance movements, ethics, and philosophy. The material taught includes basic movements of the hands, feet, head, and expressions. The target outcome is for learners to have a strong foundation to progress to the next level.
- 2. Skilled Level: Material is more in-depth, including movement combinations, improvisation, and understanding of more complex Sundanese dances such as Jaipongan, Topeng, or Merak. Learners are expected to be able to perform dances completely and skillfully.
- 3. Advanced Level: Emphasis is placed on mastering choreography, dance interpretation, and the ability to create new works. This level also prepares students to perform on professional stages and to become teachers or choreographers.



Picture 1. The submission of the vision mission banner and curriculum of LKP Bina Lestari to the leader and administrators of LPK Bina Lestari



Picture 2. The team of community service program FIB, Universitas Widyatama with the leader, trainers, and students of LKP Bina Lestari

In addition to curriculum development, the team also provides other solutions that are summarized in the program outcomes, as shown in the table below.

**Table 1. Offered Solution** 

No.	Offered Solution	Output Target	Achievement Indicator	Accomplishment
1.	The developmet of a	Innovative and structured	The availability of a	6 months
	digital-based dance	learning module	digital-based Sundanese	
	curriculum		dance curriculum that is	
			integrated	
2.	The cultural campaign and	Increasing awareness of	The increase in the number	6 months
	promotion of Sundanese	the young generation	of learners and followers of	
	dance through social media	towards Sundanese dance	the LKP social media	
			platform	
3.	The improvement of	More complete and	The availability of practice	6 months
	infrastructure and learning	modern learning facilities	space, musical instruments,	
	resources		dance costumes, and digital	
			learning media.	

The table above shows that the proposed solutions are not only limited to curriculum development but also include efforts to promote and enhance the capacity of LKP resources. Based on data and program implementation, curriculum development has successfully created innovative learning modules that integrate dance techniques with digital media. Although the target completion time is 6 months, this collaboration has resulted in a strong foundation for sustainability. In addition, cultural campaigns through social media have also shown positive results with increased interaction and interest from the audience, although the number of new learners needs to be monitored further.

Overall, this community service program has successfully addressed the main issues faced by LKP Bina Lestari. The development of a clear vision and mission, the systematic arrangement of the curriculum, and the implementation of integrated programs have equipped LKP with the necessary tools to preserve Sundanese dance more effectively and sustainably. Support from various parties, including local government, cultural communities, and creative industry players, is also essential to strengthen the cultural ecosystem in Sumedang. With a clear funding strategy, LKP is expected to continue to grow and become a highly competitive center for Sundanese dance art education.

## **CONCLUSION**

This Community Service Program (PkM) successfully developed a dance arts curriculum at LKP Bina Lestari Sumedang as an effort to preserve Sundanese dance culture. Through needs analysis, the preparation of digital-based learning modules, intensive training for instructors, cultural campaigns through social media, and infrastructure strengthening, this activity has been able to increase awareness, skills, and interest among the younger generation towards Sundanese dance.

The main results achieved are the formation of a new vision and mission for LKP Bina Lestari, the development of a structured curriculum for three levels (beginner, advanced, and expert), as well as the presence of innovative modules that integrate cultural values with digital technology. In addition, this program expands social impact through collaboration with the arts community, cultural figures, and local communities.

With a collaborative approach and the utilization of science and technology, this activity not only strengthens local cultural identity amidst the currents of globalization, but also makes LKP Bina Lestari a competitive and sustainable center for Sundanese dance learning, capable of contributing to the achievement of higher education performance indicators and the Sustainable Development Goals (SDGs).

## REFERENCES

- Almaahi, M. H., Myrna, R., & Karlina, N. (2022). Collaborative Governance Dalam Upaya Pelestarian Budaya Daerah Melalui Festival Langkisau Di Kabupaten Pesisir Selatan Provinsi Sumatera Barat. *JANE Jurnal Administrasi Negara*, *14*(1), 256. https://doi.org/10.24198/jane.v14i1.41312
- Dwi, A., Putri, A., Fitria, I. A., Delima, M., Girl, L., Ikhsan, S. W., & Dwi, Y. (2025). *Tari Jaipong di Sanggar Tari Surya Medal Putera Wirahma Sebagai Warisan Budaya Dalam Bingkai Pancasila*. 4, 1–12.
- Nikita, L. P. A., & Sari, A. M. (2024). Pembelajaran Kreatif Tari Jaipong Tingkat Anak Usia Dini: Tinjauan pada Sanggar Kartika Chandra Kirana Bekasi. *Tamumatra : Jurnal Seni Pertunjukan*, *6*(2), 83–94. https://doi.org/10.29408/tmmt.v6i2.25903
- Noorsetya, S. E., Zuhdi, Z. A., Narifti, F. R., & Trizahira, Y. (2024). Jurnal kultur. *Jurnal Kultur*, 3(2), 176–188.
- Yusi Salma, Y. S., Mangkuwibawa, H., & Rohmah, S. K. (2023). Program Literasi Budaya Sunda di MI Miftahul Ulum Kecamatan Cijulang Kabupaten Pangandaran. *Metodik Didaktik*, 18(2), 25–37. https://doi.org/10.17509/md.v18i2.51703