

RESEARCH ARTICLE

Ruang Sehati: Innovating Portable Lactation Pods for Wellness Tourism Using Design Thinking Method in Yogyakarta

Giyawati Yulilania Okinarum,¹ Venny Vidayanti,^{2,3} Sri Hasta Mulyani⁴

¹Midwifery Profession Study Program, Faculty of Midwifery, Universitas Respati Yogyakarta, Sleman, Indonesia,

²Nursing Study Program, Faculty of Midwifery, Universitas Respati Yogyakarta, Sleman, Indonesia,

³Department of Midwifery and Social Science, University of Manchester, Manchester, United Kingdom,

⁴Informatic Engineering Program, Faculty of Science and Technology, Universitas Respati Yogyakarta, Sleman, Indonesia

Abstract

Yogyakarta, a renowned tourist city in Indonesia, currently needs more lactation rooms and public facilities within tourist areas. To address this, inventors propose a portable lactation pod. This study utilized the design thinking method, emphasizing user needs. Interviews were conducted with thirty breastfeeding mothers on Malioboro Street in Yogyakarta to assess the necessity of lactation rooms in this popular tourist spot. From February to June 2022, the stages of "empathize," "define," "ideate," "prototype," and "test" were completed. The findings indicate that the "SEHATI" portable lactation room innovation meets user requirements, with feature satisfaction scores ranging from 4.2 to 4.9 out of 5.0. However, improvements are needed in the ventilation, exhaust fan, and fan sections, which received lower satisfaction scores during the "testing" stage. This innovation could serve as a pilot project, showcasing wellness tourism in Yogyakarta nationally.

Keywords: Design thinking method, portable lactation pod, wellness tourism

Introduction

Breastfeeding is a child's human right that must be fulfilled and protected by law, as stated in articles 128, 129, and 200 of Health Law No. 36 of 2009. Despite intensive breastfeeding campaigns around the world, the scope of exclusive breastfeeding still needs to be expanded, particularly in developing countries.¹ Based on data from the Central Statistics Agency, exclusive breastfeeding for infants under six months in Yogyakarta is 77.16% in 2022. Despite being above 50%, it is still less than the national target of 80%.²

Cultural norms in Indonesia show that breastfeeding in public is currently an issue of privacy. Other countries also declare that there is low awareness of breastfeeding in public places due to stigmatization, discomfort, and feelings of shame. Therefore, providing a lactation room that fulfills the requirements of breastfeeding mothers is essential to maintain their privacy.³⁻⁵

However, access to lactation rooms currently

needs to be improved. For example, one tourist building on Jalan Malioboro has only benches in a 1.5×2.5-meter room. Other lactation rooms need more proper facilities and comfort, as researchers observed during initial observations in Yogyakarta City's tourist area. Some have even been converted to warehouses or storage areas. Regulations such as the Minister of Health of the Republic of Indonesia Number 15 of 2013 and Yogyakarta City Regional Regulation No. 1 of 2014 set standards for lactation rooms, but these often must be met.

Yogyakarta is an attractive destination with various popular sites that expand annually. This is evidenced by the many visitors contributing IDR 177 billion in local revenue. The tourism sector remains a vital component of Yogyakarta's economy, contributing approximately 17.46% to the city's GDP in 2019, compared to the national tourism sector's contribution of about 4.8%.⁶ Given the importance of the tourism sector and the significant role of breastfeeding in infant health and regional welfare, the concept of

Copyright ©2024 by authors. This is an open access article under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (<https://creativecommons.org/licenses/by-nc-sa/4.0>).

Received: 19 September 2023; Revised: 30 April 2024; Accepted: 30 April 2024; Published: 30 April 2024

Correspondence: Giyawati Yulilania Okinarum, S.S.T., M.Keb. Midwifery Profession Study Program, Faculty of Health Sciences, Universitas Respati Yogyakarta. Jln. Raya Tajem km 1.5, Sleman 55282, Special Region of Yogyakarta, Indonesia. E-mail: gitaokinarum@respati.ac.id

wellness tourism should be further explored in Yogyakarta. The *Ruang Sehat* portable lactation pod innovation could support this concept. This aligns with the city of Yogyakarta, which provides particular benefits to its people and tourists who are breastfeeding mothers.

This study employs the design thinking method, particularly suited for addressing complex, user-centered problems. Design thinking is an approach to generating human-centered innovation using a toolkit commonly used by designers that integrates three things, including user needs, the possibility of using technology, and the need to produce benefits so that the resulting innovation is valuable. The design thinking process involves five stages: empathize, define, ideate, prototype, and test.^{7,8} This method is used to profoundly understand breastfeeding mothers' needs and develop practical and innovative solutions. By interviewing thirty breastfeeding mothers on Malioboro street, the study aimed to gather insights and design a portable lactation pod that meets their needs, ensuring privacy and comfort. This user-centered approach is critical for creating compelling and acceptable solutions for public lactation rooms, ultimately contributing to the wellness of both mothers and babies.

Methods

This study employed the design thinking method in developing the *Ruang Sehat* portable lactation pod. Thirty breastfeeding mothers traveling on Jalan Malioboro in Yogyakarta city were recruited as participants, and the research period lasted from February to June 2022. The aim was to meet user demands by prioritizing user-centered

design, ensuring the innovations developed were beneficial. The design thinking stages were empathized, defined, ideated, prototyped, and tested.

Participants were recruited through convenience sampling. Breastfeeding mothers visiting Malioboro street were approached and invited to participate. Inclusion criteria included being a breastfeeding mother and willing to share their experiences and needs regarding lactation rooms. Participants were recruited on various days and times to ensure a diverse sample.

Researchers conducted in-depth interviews with 30 breastfeeding mother tourist participants during the empathize stage, each lasting 60 minutes. An interview guide was used to ensure consistency across interviews, focusing on the needs and challenges faced by breastfeeding mothers in tourist areas. The interview guide included questions about the frequency of visits to tourist areas, experiences with existing lactation facilities, specific needs for a lactation room, and any discomfort or challenges faced while breastfeeding in public. While throughout the testing phase, data was collected by applying a validated lactation room facility questionnaire.⁹

During the empathize stage, the interviews explored variables such as privacy needs, comfort, accessibility, safety, and additional features that mothers would find helpful in a lactation room. Researchers framed themselves as breastfeeding mothers to understand better and validate the target users' needs.

Data from the empathize stage were analyzed in the define stage to identify common themes and specific user needs. This information was then used to create a use-case diagram illustrating the users of portable lactation rooms and their

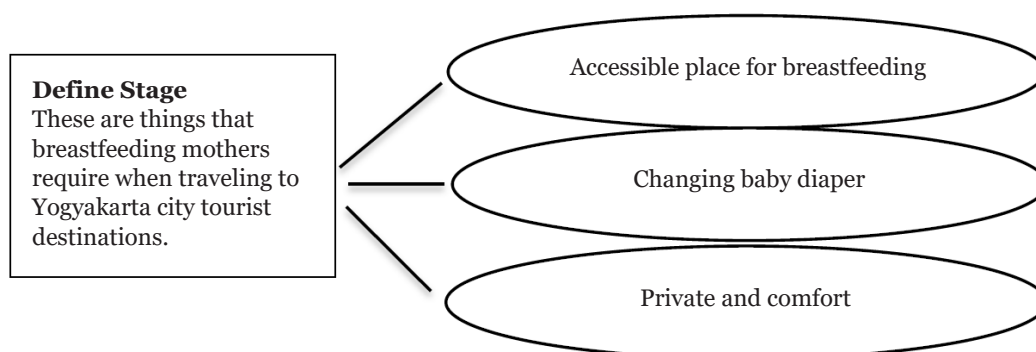


Figure 1 Use a Case Diagram of *Ruang Sehat* Portable Lactation Pod based on the Defined Stage

potential interactions with the pod (see Figure 1). The ideate stage involved brainstorming and sketching mock-ups of the lactation pod. Visual media or flat design concepts were created to provide a tangible preview of the proposed solution. In the prototype stage, the researchers and development team constructed the *Ruang Sehati* portable lactation pod based on the ideas and sketches from the previous stages. Finally, the testing stage involved field testing the prototype with the participants to gather feedback and identify areas for improvement. This iterative process helped refine the prototype, ensuring it effectively met users' needs.

This study used univariate analysis to describe the frequency distribution of participant characteristics and user satisfaction with the *Ruang Sehati* lactation pod. The study was approved in 2022 by the Health Research Ethics Committee, Faculty of Health Sciences, Universitas Respati Yogyakarta, Indonesia.

Figure 1 presents a use case diagram for the *Ruang Sehati* portable lactation pod, developed during the define stage of the design thinking process. This diagram visually represents the lactation pod's key functionalities and user requirements.

Accessible place for breastfeeding: the pod needs to be located in easily accessible areas within tourist sites, ensuring that breastfeeding mothers can find and reach the pod without difficulty. It includes clear signage, proximity to other amenities, and barrier-free access for mothers with strollers or other needs.

Changing baby diaper: the pod has facilities for changing diapers, providing a clean and hygienic space for mothers to attend to their babies' needs. It includes a changing table, diaper disposal units, and easy access to sanitizing materials.

Private and comfort: privacy and comfort are paramount for breastfeeding mothers. The pod is designed to offer a private space where mothers can breastfeed without feeling exposed or uncomfortable. It includes comfortable seating, proper ventilation, adequate lighting, and soundproofing to ensure a quiet and peaceful environment. The pod should also maintain a pleasant temperature and have features like fans or air conditioning.

Results

This study involved thirty breastfeeding mothers

traveling on Malioboro street in Yogyakarta city. On average, breastfeeding mothers are 26 years old, have a six-month-old baby, have a monthly income of IDR 3.5 million, are working mothers, have a bachelor's degree, and have their first child (see Table).

Based on the ideate stage, we designed the exterior appearance of the *Ruang Sehati* portable lactation pod inspired by the symbol of the Yogyakarta City Government, specifically *Segoro Amarto (Semangat Gotong Royong Agawe Majune Ngayogyakarta)*, which in Indonesian means the acronym for the spirit of collaborative effort towards the advancement of Yogyakarta. *Ruang Sehati* portable lactation pod is a representation of a *Gunungan* (a symbol of wayang or puppet in Indonesia), and it contains five colors, including white, green, yellow, red, and orange (see Figure 2).

In this study, researchers and the development team focused on one of Yogyakarta's most popular tourist destinations, which does not have a long-term room, specifically Teras Malioboro 2. Therefore, there is an urgent demand for a lactation room that is designed to be portable and can be placed outdoors but with solid and comfortable materials for breastfeeding mothers. The components and specifications for the portable lactation room that have been developed are listed as follows: (1) composite

Table Characteristic of Participants

Characteristics	n=30
Mothers' age (years)	
Mean±SD	25.7±4.8
Min-max	19-36
Babys' age (months)	
Mean±SD	5.6±1.9
Min-max	3-12
Household income (IDR)	
Mean±SD	3,553,333±1,793,135
Min-max	1,500,000-8,000,000
Occupation	
Housewife	14
Working mom	16
Education	
Junior high school	1
Senior high school	14
College	15
Number of children	
1	18
>1	12



Figure 2 Mock-up Design of Ruang Sehat Portable Lactation Pod

aluminum body cover; (2) frame hollow galvanized 40×40 thickness 1.6; (3) laminated aluminum composite flooring; (4) sink sets; (5) a table for changing baby diapers along with a baby bath; (6) chairs for lactation mothers; (7) fan; (8) ventilation exhaust fans; (9) pipe from the water source to the sink reservoir; (10) water sewer pipe from the sink to the sewer; (11) trash can; (12) branding/educational posters; (13) outdoor branding sticker on the front; (14) mirror; (15) tissue holder; (16) light and electrical mechanics; and (17) live plants (see Figure 3).

The researcher used a checklist for the quality of the lactation room adapted from Dutch research and modified for Indonesian conditions⁹ to determine the average satisfaction of respondents with the *Ruang Sehat* portable lactation pod facility, the results of which are shown in Figure 4.

A majority of the participants stated that they were satisfied using the *Ruang Sehat* portable lactation pod facilities, based on the range of average scores between 4.20 and 4.90 for the following elements: conveniently located lactation pod, educational poster, tissues, air freshener, lamps, table, rubbish bin, mirror, living plant, sink, baby diaper changer, mother's stool, door with lock, lactation room sign, and wall color/room design.

Participants were highly dissatisfied with the ventilation component (2.73), which was thought to cause discomfort due to a lack of ventilation, causing it to feel heated up, mainly when used during the entire day in hot temperatures. Participants were also dissatisfied with the exhaust fan (3.47) and fan component (3.8), claiming that it has minimal impact on air circulation in the room when used throughout the day.

Discussion

Participants in this study were, on average, 26 years old, with an age range of 19–36. Several similar studies have found that breastfeeding mothers over 25 and under 35 are more likely

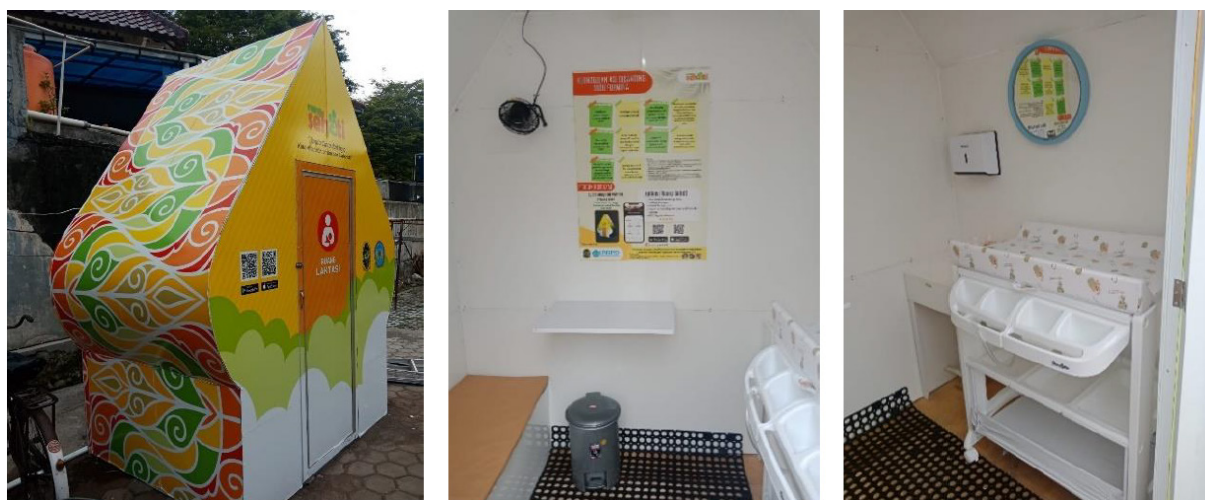


Figure 3 Ruang Sehat Portable Lactation Pod (Preview)

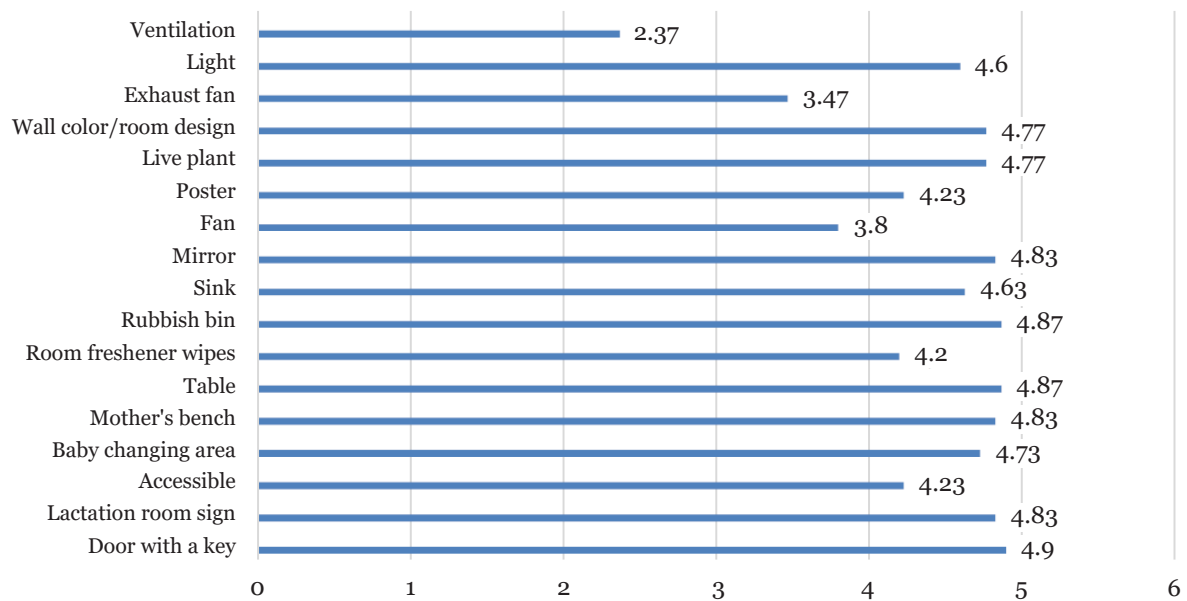


Figure 4 Graphic of Testing Stage: User Satisfaction of *Ruang Sehat* Portable Lactation Pod

to successfully provide exclusive breastfeeding to their babies because their psychological state is already secure in breastfeeding their baby.^{10,11} In response to the findings of this study, breastfeeding mothers under the age of 25 continue to provide exclusive breastfeeding and even breastfeed until their child is 12 months old.

Other findings in this study reveal that mothers who provide exclusive breastfeeding generally have more significant financial resources, have a minimum college degree, and are working mothers. This baby is not their first child. This is consistent with several previous studies. Breastfeeding mothers with higher education understand the benefits of exclusive breastfeeding better, particularly since they have higher salaries. In this study, people who are breastfeeding mothers with high incomes prefer to buy the most nutritious vitamins and nutritional intake for themselves and their babies. Previous studies have reported that employing mothers with a working system that supports breastfeeding for infants might raise the awareness of working mothers to continue breastfeeding their babies.^{11–15}

At the "define stage" in this research study, 30 participants require a lactation room in the popular tourist destination of Yogyakarta city, which is conveniently located, has a place to change baby diapers, and maintains an

atmosphere of comfort and privacy. Responding to these user requirements, researchers and the development team generated an innovative *Ruang Sehat* portable lactation pod, which was evaluated at the testing stage. This portable lactation room is equipped with other features, including a fan, conveniently located lactation pod, educational poster, tissues, air freshener, lamps, table, rubbish bin, mirror, living plant, sink, baby diaper changer, mother's stool, door with lock, lactation room sign, and wall color/room design.

The elements that the researchers and the development team have invented refer to regulations in Indonesia stated in the Regulation of the Minister of Health of the Republic of Indonesia Number 15 of 2013 concerning procedures for providing special facilities for breastfeeding and expressing breast milk.¹⁶ Based on the materials and specifications used in the *Ruang Sehat* portable lactation room, the components provided by this room are adjusted, ensuring that several facilities are unavailable, including equipment for storing expressed breast milk and breastfeeding counseling kits. Furthermore, the researchers adjusted the checklist for the quality of lactation rooms in the Netherlands, which they modified to accommodate the requirements of portable lactation rooms in Indonesia.⁹

In this study, participants expressed

satisfaction with implementing the *Ruang Sehati* portable lactation pod suitable for their needs, particularly those active in popular tourist destinations. However, development still needs to be accomplished because users experience that the portable lactation room is uncomfortable since the building is not wide enough. The lack of ventilation makes it stuffy and steaming during daylight hours (see graphic in Figure 4). Therefore, a review based on existing government regulations is required.¹⁶

This innovation might solve the issue surrounding the need for lactation rooms in public facilities, particularly those in non-permanent tourist destinations. On the other hand, comfort in traveling is an essential point in the growth of wellness tourism that encourages positive psychology for mothers and children. Nowadays, the phenomenon suggests that more individuals travel to achieve better wellness in their daily lives. They want to maintain a healthy way of life, reduce stress, prevent disease, and improve their overall mental and physical well-being.¹⁷

Conclusions

This innovation might serve as a pilot to be shown nationally to present a portrait of wellness tourism in Jogja. The *Ruang Sehati* portable lactation pod innovation gained public acceptance based on user needs evaluated through the "testing stage." The "define stage" states the four needs of lactation room users in popular tourist destinations, including an easy-to-reach location, changing baby's diapers, privacy, and comfort. However, two aspects must be enhanced for further development: the convenience of breastfeeding mothers and their babies in this lactation room. It can be determined by the average satisfaction score in the ventilation, exhaust fan, and fan components at the "testing stage" which were considered unsatisfactory by the user. This portable lactation pod innovation was modified in 2023 based on the findings of the design thinking technique in this pilot project study.

Conflict of Interest

The authors declare no conflict of interest.

Acknowledgment

The Yogyakarta City Government funded this research. We would like to express our gratitude to Universitas Respati Yogyakarta for supporting this project.

References

1. Jama A, Gebreyesus H, Wubayehu T, Gebregyorgis T, Teweldemedhin M, Berhe T, et al. Exclusive breastfeeding for the first six months of life and its associated factors among children aged 6–24 months in Burao district, Somaliland. *Int Breastfeed J*. 2020;15(1):5.
2. Badan Pusat Statistik. Persentase bayi usia kurang dari 6 bulan yang mendapatkan ASI eksklusif menurut provinsi (persen), 2021–2023 [Internet]. Jakarta: Biro Pusat Statistik; 2023 [cited 2023 Sep 13]. Available from: <https://www.bps.go.id/id/statistics-table/2/MTMoMCMY/persentase-bayi-usia-kurang-dari-6-bulan-yang-mendapatkan-asi-eksklusif-menurut-provinsi--persen-.html>.
3. Grant A, Pell B, Copeland L, Brown A, Ellis R, Morris D, et al. Views and experience of breastfeeding in public: a qualitative systematic review. *Matern Child Nutr*. 2022;18(4):e13407.
4. Coomson JB, Aryeetey R. Perception and practice of breastfeeding in public in an urban community in Accra, Ghana. *Int Breastfeed J*. 2018;13:18.
5. Lee JS, Ganzert A, Jackson C. The traveling mother: navigating, visualizing, and utilizing lactation spaces in U.S. airports. *Build Environ*. 2019;164:106323.
6. Wicaksono A. New normal pariwisata Yogyakarta. *Kepariwisata*. 2020;14(3):139–50.
7. Mueller-Roterberg C. *Handbook of design thinking: tips & tools for design thinking*. Seattle: Kindle Direct Publishing; 2018.
8. Shanks M. *An introduction to design thinking process guide* [Internet]. Stanford, CA: Institute of Design at Stanford; 2020 [cited 2023 Oct 10]. Available from: <https://web.stanford.edu/~mshanks/MichaelShanks/files/509554.pdf>.

9. Dellen SA van, Wisse B, Mobach MP, Albers CJ, Dijkstra A. A cross-sectional study of lactation room quality and Dutch working mothers' satisfaction, perceived ease of, and perceived support for breast milk expression at work. *Int Breastfeed J.* 2020;16(1):67.
10. Abekah-Nkrumah G, Antwi MY, Nkrumah J, Gbagbo FY. Examining working mothers' experience of exclusive breastfeeding in Ghana. *Int Breastfeed J.* 2020;15(1):56.
11. Hunegnaw MTLDG, Teferra AS. Exclusive breastfeeding and associated factors among mothers in Gozamin district, northwest Ethiopia: a community-based cross-sectional study. *Int Breastfeed J.* 2017;12:30.
12. Hendaus MA, Alhammadi AH, Khan S, Osman S, Hamad A. Breastfeeding rates and barriers: a report from the state of Qatar. *Int J Womens Health.* 2018;10:467-75.
13. Maonga AR, Mahande MJ, Damian DJ, Msuya SE. Factors affecting exclusive breastfeeding among women in Muheza district Tanga Northeastern Tanzania: a mixed method community-based study. *Matern Child Health J.* 2016;20(1):77-87.
14. Hadi SPI, Pramana C, Supinganto A, Ernawati K, Sirait LI, Staryo NA, et al. Prevention of transmission of SARS-COV-2 infection: a review. *Ann Rom Soc Cell Biol.* 2021;25(1):5302-15.
15. Putri AT, Ivone J, Hasianna ST. Working mothers and successful exclusive breast milk provision; an observational study in Hermina Bogor Public Hospital. *J Med Health.* 2020;2(6):166-76.
16. Peraturan Menteri Kesehatan Republik Indonesia Nomor 15 tahun 2013 tentang Tata Cara Penyediaan Fasilitas Khusus Menyusui dan/atau Memerah Air Susu Ibu.
17. Wayne S, Russell E. Analysis of the global and Asian wellness tourism sector [Internet]. Mandaluyong City, Philippines: Asian Development Bank; 2020 [cited 2023 Oct 15]. Available from: <https://www.adb.org/sites/default/files/institutional-document/633886/adou2020bp-global-asian-wellness-tourism.pdf>.