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Exploring the Nutritional Ecology of Stunting in a Village-Based Tourism: Towards Stunting-Free Tourism Industry in Lombok

Siti Ruqayyah[1], Baiq Santi Rengganis[2], Akhmad Azmiardi[3]

[1]Faculty of Medicine, Universitas Islam Al-Azhar, Mataram, Indonesia
[2]Faculty of Agriculture, Universitas Islam Al-Azhar, Mataram, Indonesia
[3]Faculty of Public Health, Universitas Veteran Bangun Nusantara, Sukoharjo, Indonesia
Corresponding author: Siti Ruqayyah, e-mail: sitiruqayyah@yahoo.co.uk
Co-author: Baiq Santi Rengganis, e-mail: santirengganis@gmail.com
Co-author: Akhmad Azmiardi, e-mail: aazmiardi@gmail.com
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Abstract

Stunting has still been a primary target of the worldwide health agenda—external determinants such as economic, demographic, and environmental factors are the major causes. From now on, both external and internal factors are referred to as "nutritional ecologies". This research aims to examine the nutritional ecologies of stunting in a village-based tourist destination, namely Sigerongan Village of West Lombok, through several steps – (1) identifying factors leading to stunting in the village, (2) formulating the primary drive of the prevalence of stunting, (3) developing a model of free-stunting village-based tourism, and (4) proposing social and cultural interventions to tackle the stunting issue. This longitudinal study employs several methods, especially prototypical research and reflective analysis. The data analyses were chi-square and fisher test exact test to examine the relationships among variables. The intervention model is generated and named "Dewi Santi," which is the acronym for "Desa Wisata Tahan Stunting" or "Stunting-Free Village-based Tourism" model. The complex nature of stunting requires an ecological approach that includes nutritional ecologies so that it is translatable into practice and can be rooted in a particular culture whereby the prevalence is high. However, this study's limitation lies in its design, which was only tried to examine the nutritional problem, and research design can be broadened and varied for future studies.

Keywords: Local Custom; Sigerongan Village; Stunting; Sustainable Tourism; Village-Based Tourism Model

Introduction

The global health and nutrition agenda has been put into place to support the international community's efforts to tackle the specific aspects of the plan. The attempt to solve stunting issues, for example, is exemplified in the Global Nutrition Targets for 2025 by the World Health Organization (WHO) and the United Nations Sustainable Development Goals (WHO, 2020; United Nations, 2015; Kørnøv et al., 2020). The postulation is that stunting mainly results from under-nutrition. Is it? If it is the case, which exact aspect of nutrition?

Nutrition is inextricably included in human development and growth (Heywood, 2011). The manifestation of undernutrition has been indeed described for years. Among many prominent descriptions, stunting impacts growth and body composition. Below are definitions for three main types of under-nutrition according to UNICEF categorization:

Table 1. UNICEF Categories of Undernutrition in Children

Underweight: Moderate – below minus two standard deviations from median weight for age of reference population; and severe – below minus three standard deviations from the median age reference population.
Wasting: Moderate and severe – below minus two standard deviations from median weight for height of reference population.
Stunting: Moderate and severe – below minus two standard deviations from median height for age of reference population.
https://www.unicef.org/infobycountry/stats_popup2.html

The current potential causes of stunting are still diverse, ranging from poor hygiene, inadequate food, and repeated infections (de Onis & Branca, 2016). Stunting may reflect many etiologies, as it is a complex entity, specifically a poor and unbalanced diet, and micronutrient intake. More importantly, stunting can involve factors surrounding the family's resources and configuration. In the bigger picture, it

can also affect the broader political and economic conditions where the children live (Dewey & Adu-Afarwuah, 2008; Fiorella et al., 2016). In the case of stunting prevalence in Indonesia, the 2019 data from UNICEF states that 3 out of 10 children under five years are categorized as stunting, and 1 in 10 children is under-nutrition compared to their typically-developing peers (UNICEF Indonesia, 2019). This specific issue leads to a mortality increase, and in the long run, it will affect the country's human resource development and productivity.

This study was conducted to respond to a relatively high prevalence of stunting in West Nusa Tenggara Province, especially those cases found in many village-based tourist destinations (*Desa Wisata*) led by a lack of synergy in the modality socio-economy in the society. As the provincial government has launched its 'master piece' tourism-specific program, namely 99 DEWI (the acronym for 99 *Desa Wisata*), it is then necessary for the government to provide free social and health system issues such as stunting. The long-term goal of this research is to generate a proposed model of the program to eradicate stunting in a tourism village through several approaches, especially the local-based approaches. Specifically, this research aims to: (1) identify factors leading to stunting in the village, (2) formulate the primary drive for the prevalence of stunting, (3) develop a model of free-stunting village-based tourism, and (4) propose social and cultural interventions to tackle the stunting issue.

Sigerongan Village of West Lombok is one of the West Nusa Tenggara Province destinations with different agricultural sectors that have increased domestic and international visitors. However, the success is overshadowed by a relatively high prevalence of stunting in the village. With the promise of bringing prosperity to the locals, one might ask why stunting still exists in a tourist spot like Sigerongan Village?

The case is also found in the other Desa Wisata on Lombok Island, looking at the bigger picture. It is a unique yet, poignant reality that people have to face. Statistically speaking, the prevalence of stunting among children has significantly increased in the province as it reached 29.9% in 2016 and 37.2% the following year (NTB Health Authority, 2018). Meanwhile, according to a computational survey through the WHO Child Growth Standards, the prevalence of stunting worldwide is 20.8% (141.3 million), and the condition is ameliorated compared to the 2019 prevalence (around 144 million) (Kartinah, 2020). In the case of Sigerongan Village, the clue is given if we look at the numbers of households categorized as "poor" (which are 369 households) out of the total number of 2009 households (Sigerongan Village Office, 2018).

Measurements have been applied to tackle the issue in the province, such as through food subsidies, fertilizer subsidies for farmers, and many other input factors to increase local food security, not to mention by constructing irrigational infrastructure. Meanwhile, federal government intervention has also been put into place to tackle the stunting case in West Nusa Tenggara. It is reflected through several movements conducted by – Human Development Worker (HDW), *Tim Nasional Percepatan Penanggulangan Kemiskinan* (The National Team for The Acceleration of Poverty Reduction), and the Ministry for Acceleration Development Backward Regions. However, the program has yet to reach the majority of the villages in Indonesia, as there have been only 100 villages all around the nation. From a different direction, one of the leading indicators of a successful village-based tourism program is increased community welfare and a stunting-free environment (Novelli & Hellwig, 2011; Giampicollo & Kalis, 2012).

The World Health Organization (WHO) has targeted to reduce the prevalence of stunting among children under five years by approximately 40% in 2025. UNICEF states that the most predominant factor that leads to stunting comes from external elements and could be regulated. As such, health service quality, the upbringing of children in their families, and food security. For the latter, the ample provision of food, both quality, and quantity, is the main element of eradicating stunting (Indonesian Ministry of Health, 2017). According to the 2018 Law Number 18 regarding food, food diversification aims to enhance people's awareness and help society accustom to diversified food consumption balanced in nutrition and the potential local concerns.

Current research in sustainable tourism indicates that the economic prosperity brought by this specific tourism concept is typically sporadic and temporary, especially when it comes to the concept proposing agricultural concepts (UNWTO, 2017). On the other hand, the partnership between national and sub-national governments with local tourism business actors and organizations has yet to be effective since the parties have different goals and visions on what concept of sustainable tourism is sustainable. While communities demand sustainable financial security through the so-called sustainable tourism at a household level, it is undeniable that, so far, the over-emphasis on collective income has hindered the successful implementation of the concept (Wheeler, 1991).

Beal and colleagues conducted a study on stunting determinants and their correlation with the nutritional ecology. Indonesia's low household economic status, premature birth, and education are key child stunting determinants. Meanwhile, through societal factors, poor access to health and living in rural areas are repeatedly associated with stunting prevalence (Beal et al., 2018). Consistent with that, Titaley and colleagues conducted a multilevel analysis of stunting prevalence, and the study found that the risk increases significantly with the reduction of the household wealth index (Titaley et al., 2019). Align with the previous studies, this current study hypothesizes that the study of nutritional ecology is significant in examining a particular setting where stunting is prevalent. Therefore, the researchers chose the Sigerongan Village of West Lombok to conduct the study considering its low household incomes and the mothers' educational background.

The model, DEWI SANTI (Desa Wisata Tahan Stunting), being named after a local mythical female figure, was proposed upon several research designs and evaluations, with a solid attachment to the local culture and environment in the approximate period of one year (2019-2020). The research paradigm employed is "prototypical study" and was combined with "reflective analysis" so that it has been projected to generate the most suitable model of eradicating stunting in a village-based tourism setting.

It is hoped that the results of this study can be adapted and considered as feedback and evaluators for health and tourism authorities, both in the context of West Nusa Tenggara and elsewhere. We acknowledge that there is no one-size-fits-all approach. We suggest that this DEWI SANTI model be adapted and modified by other village-based tourism activists and stakeholders to accelerate tourism promotion.

Methods

It is a descriptive study employing a cross-sectional design. The population of these respondents is mothers whose children are suspected of stunting in the Sigerongan Village of West Lombok in 2020. Twenty samples were selected by total sampling. The instruments used were questionnaires filled through a google form with a structured interview. All respondents filled out the informed consent before data were collected and were guaranteed confidentiality. The observed variables are the respondents' ages (both the mothers and children), mothers' educational records, household incomes, the under-nutrition status (stunting), and the mothers' knowledge of nutrition. The data analysis was univariate and bivariate Chi-Square Test and Fisher Exact Test to examine the relationships among variables, using Statistical Package for the Social Sciences (SPSS) for Windows version 23.

This study also uses "Critical Ethnography Research" in the paradigm of qualitative research so much focused on social research as the form of social and cultural critics (Anderson, 1989; Miles & Huberman, 1994). According to Duff, Ross, and Rogers (2016), critical ethnography is an investigative method and critical discourse that can encourage people to collaborate and create change. Building on this approach, the system relation emphasized analytical and synthetic strengths around actions, subjective experience, and social conditions. These are directly linked to this research problem. Namely, the high prevalence of stunting in a village-based tourism setting ought to be the leading food producer.

The research site was Sigerongan Village of West Lombok, with six socially and economically diverse sub-villages. The research site was selected mainly to emphasize the need to generate comprehensible data with the research focus so that the food security measurement can be reconstructed later. This DEWI SANTI model mirrors the social and ecological constructions of the community in Sigerongan village. According to the data types required in this study, the data collection embodies the principle that "researchers are the main part of the research instruments" (Schlenker, 1978; Brooks, Reed & Savage, 2016). However, researchers also employed other data collection methods, such as analyzing secondary data by analyzing those data reports and other related documents.

Results

This research on food security is descriptive research with a cross-sectional design.

Table 2. The Typical Frequency Distribution of The Respondents

Characteristics	N	Percentage
Mothers' Age		
< 31	9	45
≥ 31	11	55
Education		
Non-graduate	5	25
Elementary	6	30
Junior High	6	30
Senior High	3	15
Household Income		
< 750.000 (IDR)	8	40
≥ 750.000 (IDR)	12	60

Source: *Primary Data 2020*

Twenty mothers showed up as the primary respondents. During the research period, the youngest participants were 20 years old (10%), and the oldest were 42 years (5%), with an average age was 30.5 years old. In terms of their education, most of the respondents who were only exposed to elementary school were 55%, while 45% were middle school graduates. Meanwhile, the average household income was IDR725,000 with the minimum income IDR350,000, and the highest was IDR1,500,000. In general, 60% of the respondents earned about IDR750,000 or above. Specifically, the data is depicted in Table 2.

Table 3. The Respondents' Characteristics According to Their Ages

No	Respondent	Age (months)
1	A1	36
2	B2	6
3	C3	12
4	D4	18
5	E5	28
6	F6	5
7	G7	17
8	H8	55
9	I9	2
10	J10	8
11	K11	6.3
12	L12	8.2
13	M13	3.5
14	N14	3.3
15	O15	1.1
16	P16	1.4
17	Q17	2
18	R18	3
19	S19	4.7
20	T20	15

Source: *Primary data processing in 2020*

In Table 3 above, the mean age of the infants was 11.75 months, with the youngest at 1.1 months and the oldest at 55 months (toddler), each of which comprises 5% of the total samples. Through the lens of an under-nutrition perspective, 20% of the infants exhibited stunting while the rest of the 80% did not.

Table 4. Crosstab Relation of Respondents' Characteristics and the Prevalence of Stunting among Infants in Sigerongan Village

Respondents' Characteristics	Infants' Status				*p*-value	OR	95% CI
	Stunting		Not Stunting				
	n	%	n	%			
Mothers' Age (year)							
< 31	2	22.22	7	77.78	0.822	0.778	(0.087-6.983)
≥ 31	2	18.18	9	81.82			
Mothers' Knowledge of Nutrition							
Low	3	50.00	3	50.00	0.028	0.077	(0.006-1.023)
High	1	7.14	13	92.86			
Education							
< Junior High	2	18.18	9	81.82	0.822	1.286	(0.143-11.543)
≥ Junior High	2	22.22	7	77.78			
Income (IDR)							
< 750,000	3	37.50	5	62.50	0.11	0.152	(0.012-1.842)
≥ 750,000	1	8.33	11	91.67			

Source: *Primary data processing in 2020*
With n = respondents; % = percentage value; p-value = significance value (0.05)

Table 4 shows the relationship between respondents' characteristics and the prevalence of stunting in infants in Sigerongan Village. Results from the bivariate test on the relationship between the mothers' demographic characteristics and the nutritional status of the infants indicate that no significance is found in all age groups (*p*-value > 0.05). A similar result has also been shown in the relationship between mothers' education status and monthly income. Each correlated with the nutrition status, whereby no significant link between the mothers' education attainment and the prevalence of stunting (*p*-value = 0.822).

The same conclusion is also proper for the relationship between monthly income and the under-nutritional status among the infants (*p*-value = 0.11). However, a significant value is found in the characteristics of mothers' knowledge of nutrition. The command includes the provision of balanced nutrition, food interlude, fruit consumption, and baby formula as complementary nutrition. There is also a significant link between the level of knowledge on nutrition and the prevalence of stunting in infants (*p*-

value < 0.05). Generally, the ability of nutritional balance in household daily intake influences the nutrition status of the infants (92.86%), which is the leading risk factor for stunting prevalence.

Discussion

Southeast Asian countries have experienced exponential growth in tourist arrivals – from 21.2 million in 1990 to 96.7 million in 2014. Tourism is no longer only regarded as a mere income generator, creator of jobs, and socio-cultural phenomenon. It is now seen as a tool to foster healthy and locally-driven development in all its dimensions (Scheyvens, 2002). However, the rise of such participatory tourism initiatives has also fostered through negative impacts – socioeconomically and ecologically – of mass tourism (Holden, 2013; Novelli, 2015). Example includes the uneven distribution of economic benefits from tourism or the overexploitation of natural resources such as Indonesia.

Tourism development has, thus, experienced criticisms, particularly when it comes to the term 'sustainable tourism'. According to Harrison (2015), the sustainable elements and forms of tourism are often vaguely defined, referring to anything, not mass tourism. As one of the most prominent destinations in Indonesia, Bali faces the issue of water equity (Cole, 2012). In a more general perspective towards the case of Indonesia's tourism, it has demonstrated as the environment is perceived as a resource to be exploited, at the expense of the kind of tourism understudy was aimed at sustainable development.

Stunting provides a problematic intersection between internal and external nutritional ecologies. As other research strongly emphasizes the former, this study is more weighted on the latter. Components of the external nutritional ecologies include food security systems, dietary exposure, and many other socially and culturally related factors. Economically and socially disadvantaged are examples, to name a few. The influence of the external environment, such as demography and cultural practices, has long been associated with stunting. The introduction implies that the chosen research site, namely Sigerongan Village, has agricultural advantages and culturally reaches the community. Therefore, community engagement and partnership are essential to reduce stunting – potentially culturally-rooted prevention. The proposed model paves the way for community empowerment by putting community leaders as key actors.

Meanwhile, through the model, the community representatives can work hand-in-hand with local health service providers, leading into the advocacy stage. The formed partnership is the gate for sustainable tourism, which is the end goal of this model. Hence, getting into strong community engagement mostly suits the Sigerongan Village. The proposed DEWI SANTI model focuses on health promotion and behavioral changes. The model is as follows:

Figure 1. DEWI SANTI village-based tourism model

Community Empowerment

It aims to proactively help the community become more independent through the "Organising and Developing Community" program. This is the form of social intervention at the community level, envisaged to enhance or positively change locally-based civic organizations. The long-term goal is to increase community welfare by providing a learning experience. Hence, all of the approaches are participatory.

Advocacy

This is a strategic and structured process to get the needed support from the related stakeholders in preventing stunting. The policy advocacy, in this case, includes national legalization and local policies to ensure the provision of quality access to the very people who are at risk of stunting.

Partnership

Strengthening partnerships with the related stakeholders, civic organizations, professional organizations, media, and business actors is a key to reducing the prevalence of stunting. The association is needed to support the two processes – community engagement and advocacy – to maintain the effectiveness of the programs.

Sustainable tourism

The rationale behind this sub-model is that communities are the primary owners of the tourism products – human resources and natural resources – so they are the ones to be the best candidates to manage the resources. It means that tourism activities and businesses are to operate and be developed by the community. Namely, the concepts, attractions,

support, and needs should be analyzed and proposed by the community.

As for Sigerongan Village and elsewhere, sustainable tourism is mainly emphasized on natural resources conservation being commercialized for tourism business profits and purposes. Disparities are getting bigger in which local food security is no longer the main priority since the industry has to channel the food for tourism business purposes (Ferguson & Moreno, 2014). Therefore, our sustainable tourism model, specifically designed to tackle the food security issue, is aimed to promote a community-based food security system. Meanwhile, the locals can have a communal space to store their agricultural products, avoiding all food being used solely for business purposes.

Conclusion

Significant progress has been made towards reducing the prevalence of stunting worldwide, and the effort is undoubtedly continued to address the risk factors. However, our endeavor to impact the local level prevention requires a different level of action and measurement. Indeed, we have to generate comprehensive and contextual data needed to improve the approaches to this already complicated situation and its risks and develop a safe and effective program.

We have conducted several data collection methods throughout this study and generated a new model, namely the DEWI SANTI model, to generate a brand new contextual model for tackling stunting issues in a tourism setting. The complexity of stunting scenarios demands an ecological approach that includes nutritional ecologies to facilitate the translation of the complex nature of stunting. By generating a culturally sensitive and specific assessment and measurement, positive public health outcomes are still visible to achieve. The limitation of this research in this research was not directly designed to examine the nutrition problem at the expense of reviewing whether or not the stunting issue has become a significant problem faced by village-based tourism – employing interviews, observations, and questionnaires – specifically by Sigerongan Village as one of the chosen village-based tourism.

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