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A systematic review on linking community livelihood in social forestry with food security

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Abstract. Food security issues, particularly forest resources, have gained increasing worldwide attention over the past few years. Although studies have discussed various food security contributions, few have addressed the connection between community livelihood with food security, particularly in social forestry areas. Thus, the study aims to address the gap from an overview of community livelihood and food security in various Asian countries. The study retrieved approximately 142 articles from different databases and filtered 71, highlighting 30 case studies related to social forestry and food security, published between 2010 and 2021 cross schemes in Asia. The key indicators of community livelihood and food security mainly stated access to forest area, consumption of forest resources and non-timber forest products. The findings could improve future planning and management of social forestry and enhance food security for rural development and community livelihood. Ultimately, the study proposed a framework of forest-food security linkages, specifically for social forestry areas.

Keywords: Community livelihood; social forestry; food security; Asia; systematic review.

1. Introduction

Social forestry is crucial in helping manage forest resources and linking the community livelihood with forest management and conservation to ensure sustainable forest management. Social forestry is applied to mitigate forest encroachment [1] and secure the forest food [2]. These conditions demonstrate that social forestry functions are widely recognised globally [3]. The idea of social forestry increasing the contribution of forests through food security is highlighted in numerous studies including [4-6]. Therefore, the strategies of integrated food security with social forestry are a positive effort to sustain the forest food security and community livelihood.

Numerous studies worldwide have been conducted to promote food security through forest resources management and consumption [5]. Rural households are still heavily dependent on forest food to secure their daily needs [6], dietary, and other health purposes. Nevertheless, forest services contribution to food security is often overlooked, due to the focus on agricultural food production and forest conservation [7]. Contrarily, [2] reported an increased recognition of forests contribution to food security. Therefore, this study addressed the gap in the relationship between community livelihood with social forestry and food security and overviewing food security from various Asian countries. Moreover, the study identified the factors of linkages between social forestry and food security.

2. Methods

The study assessed the link between community livelihood in social forestry and food security by examining the contribution of rural communities in social forestry and their perception of food security.



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The systematic review was conducted based on criteria and keywords relevant to the topic. A systematic review is a research methodology and processes including searching, compilation, selection, and critical views to fulfil the outcomes [8]. The study selected relevant online publications from various sources, such as Google Scholar, ScienceDirect, and Scopus website using the Universiti Malaysia Sabah Library access. The searching and selection of the keywords included “social forestry”, “food security”, “livelihood”, “community forestry”, “community forestry management”, “community-based forest management”, “agroforestry”, “forest management”, “community livelihood”, and “food security and nutrition”.

The initial search generated 142 articles that were assessed and related to the keywords and title. After the screening performance based on the country locations or study areas and related to the keywords, only 71 out of 142 articles were included in the analysis. The temporal scope was limited between 2010 – 2022. The publication year is essential element in a systematic review paper [9]. The study area was limited to Asia, excluding other countries from the results. Malaysia, Indonesia, Thailand, Vietnam, China, India, and Nepal are among the 23 Asian countries that have been covered. Figure 1 illustrates the procedures of the selection and extraction process of the systematic review.

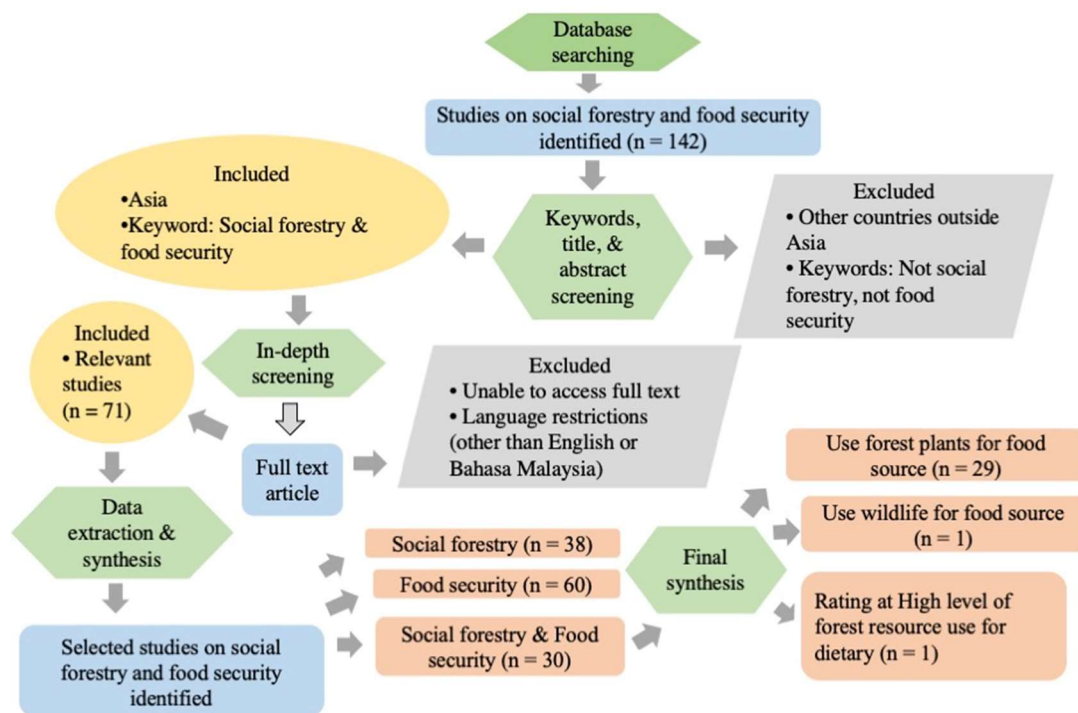


Figure 1. Selection and extraction process of the systematic review
(Adopted and modified from [10]).

3. Results and discussion

The article extraction presented more than 50% of the 71 articles from both keywords of food security and social forestry linked with community livelihood (Figure 2). [11] stated that two databases are applicable for systematic reviews, hence the database source in the study is reliable. Moreover, the initial screening of 71 articles was reasonable. Less than 100 papers were recorded after the final synthesis related to social forestry, including [12-14], and food security [15]. This study found that less than fifteen per cent of the social forestry articles were published in 2010, 2020, and 2021. The articles have increased over time, with the visible increased beginning in 2018 to 2021 for food security and social forestry. The study also shared a similar pattern with findings from [16], whereby the number of articles related to food security increased between 2018 and 2019. Additionally, other papers limited the

publication year to review current literature, such as less than 15 years [12,14], 20 years [15,17], and more than 20 years [16].

Most of the articles were published in India (15 articles) and followed by Indonesia and Malaysia with 10 articles, respectively. Moreover, other Asia countries like Afghanistan, Bangladesh, Bhutan, Korea, and Papua New Guinea have less publication on food security in social forestry (Figure 3). Southeast Asia and a few other Asian countries have experienced rising food security concerns [13,18-19]. Despite this, food security and resources have become more prominent in India [20].

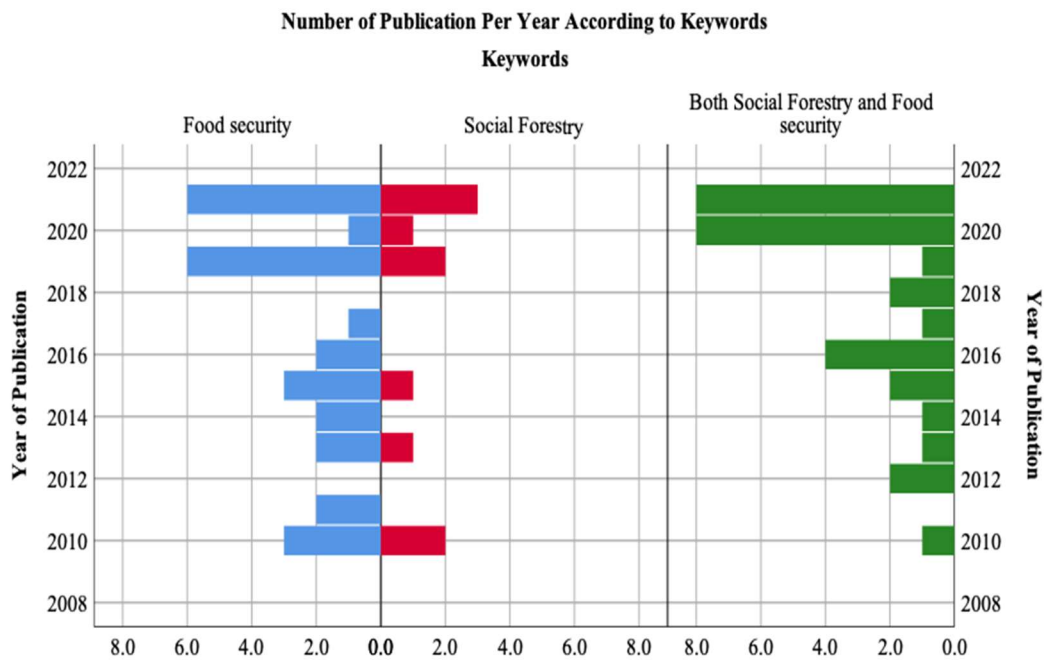


Figure 2. Publication year accessed by keywords.

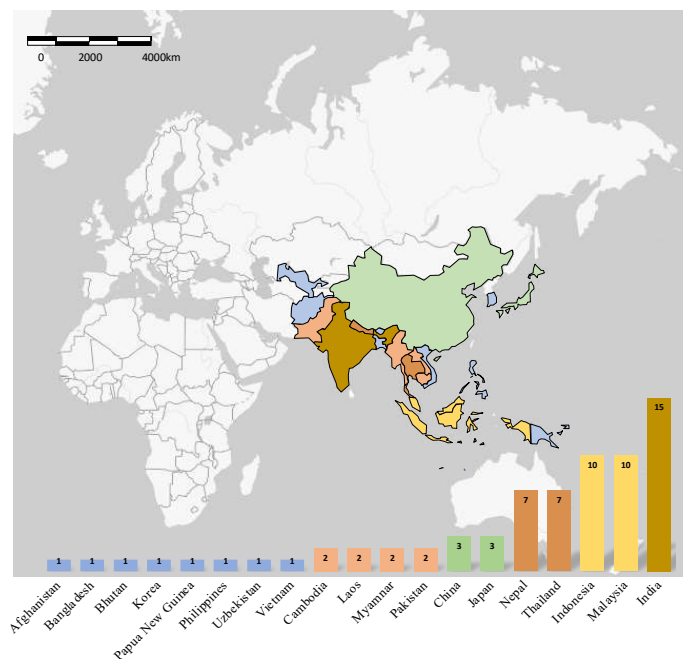


Figure 3. Asian countries coverage of the case study.

The linkage distribution between publication and community livelihood attributes with the usage of forest food security and social forestry were tested using the chi-squared test (Table 1). The results revealed a significant association between some variables with the usage of forest food as food security in social forestry. For instance, type of article showed $X^2(4) = 14.339$, $p = 0.006$, social forestry differences $X^2(2) = 7.126$, $p = 0.028$, and both social forestry and food security differences were $X^2(2) = 7.071$, $p = 0.029$. Moreover, community livelihood such as wildlife food $X^2(4) = 70.944$, $p = 0.0001$, have access to the forest area $X^2(2) = 77.716$, $p = 0.0001$, and use of NFTPs $X^2(2) = 40.688$, $p = 0.0001$ revealed a significant relationship with the usage of forest food security. The results demonstrated that the variables, particularly the type of articles, social forestry topic, and both social forestry and food security, had a significantly influence on the usage of forest food as food security in social forestry. Forests provide positive contributions to food security [2,5,7] and improve community livelihood [1,21].

Table 1. Chi-square tests of independence for determinants of linkages between publication attributes and community livelihood on the usage of forest food as food security in social forestry.

Attributes	Mean (SD)	Chi-square tests			
		X^2	df	p -value	
Publication attributes	Year of publication	2017 (3.22)	20.330	22	0.562
	Type of article (1 = review paper)	1.54 (0.51)	14.339	4	0.006
	Social forestry (1 = included)	0.28 (0.450)	7.126	2	0.028
	Food security (1 = included)	0.43 (0.497)	5.898	2	0.052
	Both social forestry and food security (1 = included)	0.21 (0.412)	7.071	2	0.029
	Type of method (2 = Qualitative)	2.00 (0.816)	1.253	2	0.535
Community livelihood	Number of case studies	89.33 (200.76)	10.125	12	0.605
	Wildlife food (1 = Yes)	0.77 (0.961)	70.944	4	0.0001
	Level of dietary (1 = High)	0.04 (0.251)	3.915	2	0.141
	Access to forest area (1 = Yes)	0.60 (0.818)	77.716	4	0.0001
	Use NFTPs ^a (1 = Yes)	0.18 (0.383)	40.688	2	0.0001
	Forest tenure (1 = Yes)	0.17 (0.492)	8.925	4	0.063

^a NFTPs refer to Non-Timber Forest Products.

4. Conclusion

The paper provided clear evidence of community livelihood linkages with social forestry and food security in Asia. The function of forest food security in community livelihood still exists globally. The objectives of the systematic review were achieved through the analysis. Observably, the number of publications on food security in social forestry has decreased in Asia. The study also identified community livelihood relations with food security. The findings revealed that food security, particularly forest food in Asia, is significant in many countries. Nevertheless, the study observed limitations of publication accessibility, coverage, and context-specification while searching for database information on food security in social forestry.

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