

Does Participation of Rural Women in Agriculture Associated with Sociodemographic Characteristics? Case of Ranau District in Malaysia

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Abstract

Rural women play a pivotal role in the agricultural sector to feed the world. However, rural women are usually perceived by others as “helpers” to their husbands, have low participation in the workforce, and are associated with poverty. The high illiteracy rate among rural women also limits their involvement in decision-making, even if they actively engage in home and farm activities. Thus, this study investigates the association between rural women’s demographic profiles and their perception levels towards their participation in agriculture activities. A cross-sectional study was conducted using a self-administered questionnaire with a sample of 248 rural women from Kundasang, selected through a simple random sampling technique. Descriptive and chi-square analyses were employed to analyse the data. Findings revealed Kadazan-Dusun as most respondents, aged between 45 and 55 years old, married, and primarily engaged in farming. Most had 1 to 10 years of agricultural experience with no agricultural education background and earned a monthly income of RM 501 to RM 1,000. The study also revealed that age and education status significantly affect the respondents' perception level towards their participation in agriculture activities. The study recommended that government should encourage and assist rural women farmers in terms of necessary farm input and incentives and provide credit facilities through various women's groups or cooperatives to enable them to participate fully and effectively in agricultural activities.

Keywords: Rural women, Agriculture, Participation, Farmers, Malaysia

Introduction

More recently, extensive scholarly research has been conducted on the role of women in agriculture, garnering recognition from academics worldwide regarding the prevalence of the gendered dimension of agriculture, particularly in underdeveloped nations. Women comprise 49.6 per cent of the world's population (The World Bank, 2022) and significantly contribute to agriculture and food security. In low-income countries, women make up 48 per cent of the agricultural labour force (FAO, 2021) and produce more than 50 per cent of the food in the world (Akter et al., 2017; FAO, 2011b). However, numerous studies found that gender differences hamper women in agriculture, like asset ownership, education, and credit access, resulting in less productivity (Mishra et al., 2017; Sell & Minot, 2018). Therefore, empowering women to participate equally in agriculture is a key strategy for gender equality and enhancing sustainable economic development (Anderson et al., 2021; Mobarok et al., 2021). In Malaysia, women constitute 48.6 per cent of the population (DOSM, 2021), and their employment in agriculture (% of female employment) stood at approximately 6.13 per cent in 2020 (Trading Economics, 2022). However, women in agriculture face a consistent gender gap in accessing productive resources, leading to undervaluation of their contributions even when their involvement in the agricultural workforce is twice as likely as men (Amin et al., 2009; Gupta et al., 2014). Furthermore, statistics reported that women in the Malaysian agriculture sector have declined, likely due to agrarian women's challenges in accessing productive resources, such as land, financial services and agriculture inputs. (Amran & Abdul Fatah, 2020; Haimid et al., 2016).

Traditionally, women in rural areas engaged in farm work primarily for subsistence living to ensure the sustainability of rural households and improve rural livelihoods and well-being. They are usually associated with a low education level, low participation in the workforce, and mainly play a role as caregivers without participating in local economic activities (Masdek, 2015). However, as males migrate from rural to urban areas to seek high-income jobs, agricultural productivity has become more reliant on rural women (FAO, 2005). The transition from male to female dominating the workforce in agriculture as farmers, entrepreneurs, and workers contributed vastly to agriculture growth and development through their participation in crop production, horticulture, animal husbandry, fisheries, and natural resource management (Patil & Babu, 2018). Their endowment in agriculture is vital to global food security, which is being prioritised as one of SDG's Goals, precisely Goal 2: Zero Hunger (Amran & Fatah, 2020).

In the rural area of Sabah, women play a dominant and crucial role in domestic agricultural production and the economic well-being of their communities and families (PUANDESA, 2004). They thrive by relying on traditional farming, fishing practices, and low-wage labour in the plantation and timber sectors. Recognising the importance of agricultural activities in contributing to rural women's livelihoods and increasing family income, the state government has enhanced rural women's agricultural and related activities to empower their participation using available resources (Chee, 2007). However, rural women are rarely involved in decision-making, even when actively engaged in home and farm work. Because of their limited involvement in economic activities, men are always perceived as the primary breadwinner, even when some women are the head of the household.

Women should be afforded a complete chance to participate in decision-making when they are engaging actively in home and farm activities. Their contribution is essential for rapid economic development (Chayal et al., 2013). Unfortunately, Sabah has the highest poverty and unemployment rate of any Malaysian state (Wahab et al., 2018), and rural women in

Sabah have a high illiteracy rate. These explain the exclusion of rural women in decision-making because they lack the knowledge and information necessary to make sound and rational decisions. Despite shouldering the household chores at home and working as farmers when their male partners are away, rural women are usually only perceived as “helpers” to their husbands, with unpaid salaries and, most importantly, no say in the farm. According to the FAO (2011), women work as farmers on their accounts, as unpaid workers on family farms, and paid and unpaid labourers on other farms and agricultural enterprises.

To date, there needs to be more research that systematically investigates rural women's participation in the agriculture sector. This research is important as it can support capacity-building efforts and advocate for policy reform to empower women to actively participate in agricultural activities on equal footing with their male counterparts. Additionally, research can inform the development of gender-responsive agricultural policies and programs that can help women access necessary resources, training, and markets. Therefore, it is significant to note that no comprehensive study of the status and contribution of women in the state has been conducted to date. It is evidenced by the difficulties in finding official information and statistics to clarify the “gender relation” and to understand the current situation of “women” and “rural women” in Sabah.

While women's involvement in agriculture may be higher in rural Sabah, their perception of the subject must be determined to gain valuable insight. Hence, this study aims to determine the association between demographic profiles and rural women's perceptions of their participation in agricultural activities in Sabah. The specific objectives of this study are: 1) to clarify the social demographic profiles of rural women and 2) to determine the association between demographic profiles and the perception level of rural women's participation in agriculture activities.

Literature Review

In third-world countries, women in rural areas play a crucial role, primarily in seasonal farming activities. In Asia, women's roles are essential in assuring household food security as they are involved in food production and preservation (Agarwal, 2018; Aziz et al., 2021). For example, in the Philippines, women are actively involved as economic actors, agricultural traders, fishery producers, and micro-manufacturing enterprises (Mishra et al., 2017). In Bangladesh, rural women support male members in rice farming (Chakma et al., 2021). In Malaysia, women participate in almost all economic sectors besides agriculture, such as education, health, and tourism. In the rural area, women's involvement in a variety of agricultural operations is increasing due to the increase in male outmigration for searching higher pay jobs (FAO, 2005). Philosophy et al. (2021) indicated that most rural women participate in post-harvest activities like drying, processing, grinding, storing, preserving, and sowing seed and livestock rearing. Overall, rural women contribute significantly to the rural economy through their productive and reproductive responsibilities.

The role of women in the agriculture sector has been highlighted as a contributing influence on a country's economy, food security, and poverty reduction. In Malaysia, government efforts, through the role of the Department of Agriculture (DOA) in Sarikei Division, are commendable for promoting the Women Economic Development (WEDA) program to increase the income of rural women entrepreneurs and lift them out of poverty (Man, 2010). In Sabah, extension workers have provided training courses to rural women for skill development in food processing, health, handicraft and sewing and educating them about business expansion. However, successful entrepreneurship remains low due to financial

constraints and issues with cooperation and understanding between rural women and extension workers (Chee, 2007).

It has previously been observed that women's participation in agriculture is conditioned by economic, social, and cultural factors, including their access to assets and other productive resources. Akter et al. (2017) observed that women usually encounter consistent gender gaps in agriculture sectors, typically dictated by community norms and values. Muhamad et al. (2017) opined that rural women's participation in economic activities could be higher due to limited facilities and job opportunities. Therefore, they only participate in small-scale subsistence economic activities. Druza and Peveri (2018) reported that rural women in some areas are defined by gender division of labour, like raising livestock is what women do, in the same way that raising crops is what men do. In addition, economic variables such as agricultural income and landholding size also influence the women working on the farm (Pattnaik & Lahiri-dutt, 2020). Therefore, it explains why women's substantial contribution continues to be undervalued and overlooked in many policies development.

In the research of Kaaria et al. (2016), they distinguished that women's participation in agriculture is determined by various factors, such as social-cultural norms and perceptions, time burden, status, age, previous membership in an organisation, access to assets and resources, rule of entry, legal and policy environment, preferences and motivations, education, training and access to information. Chakma et al. (2021) also found that socio-economic characteristics like age, farming experience, agricultural knowledge and education significantly influenced rural women's participation in rice farming activities. Tologbonse et al. (2013) claimed that education, age, and marital status are significantly related to the participation of women farmers in agriculture activities. Recent studies by Amtul et al. (2016), Tologbonse et al. (2013), and Pattnaik and Lahiri-Dutt (2020) identified that education is associated with women's participation, albeit with a negative correlation. The researchers indicated that the higher the literacy rate, the lower the tendency for women to be involved in agriculture since educated women tend to involve in politics. Plus, women have been deprived of better educational opportunities due to gender inequality, especially in the rural area. Therefore, rural women farmers are confronted with more difficulties than men because they are not skilful and knowledgeable.

Meanwhile, studies also found that women always face inequality in access to land, credit inputs, and lack of access to training, which limited their participation in agriculture (Abebe & Yazie, 2019; Alwang et al., 2017; Kaaria et al., 2016; Ugwu, 2019). The poverty associated with women has led them to disadvantages regarding schooling, productive resources like land and assets, and voice in their households and society (Doss et al., 2018). All form of limited access to resources has made it difficult for women to exercise decision-making power in all aspects of agriculture, reducing their influence and bargaining power both inside and outside the household. Recently, several studies have begun to examine women's empowerment in the agriculture sector as a core agricultural research and outreach practice in developing countries (Alkire et al., 2013; Balayar & Mazur, 2021; Malapit & Quisumbing, 2015; Umeh & Chukwu, 2014). It considers the direct impact of women's empowerment on agricultural output and the food security of their families (Sraboni et al., 2014). Gupta et al. (2014) claimed that women could increase the yield on their farms by 20 to 30 per cent, raise total agriculture production by 2.5 to 4 per cent and reduce hunger worldwide by 12 to 17 per cent if they have the same access to resources as men.

Women could have equal access to productive resources and decision-making power over production and income when empowered. Nevertheless, other studies concluded that

women's empowerment and gender equality vary by region. In Southeast Asia countries, such as Myanmar, Thailand, Indonesia, and the Philippines, Akter et al. (2017) highlighted that women appear to have equal access to productive resources like land and inputs and greater control over household income than men.

In any case, equitable participation of men and women in agriculture activities benefits families greatly. Increasing women's participation in agriculture significantly impacts a country's economic and poverty reduction. Women's participation is always encouraged to elevate women's leadership in politics and public institutions, which can further empower women to achieve gender equality and accelerate women's progress in all aspects.

Theory of Participation

"Participation" could be defined in different contexts rendering different meanings. McEvoy et al. (2019) cited the definition of participation as a process by which people are empowered to participate actively and honestly in defining the issues that interest them, making decisions about factors affecting their lives, formulating, and implementing policy, planning, developing, and providing and taking action to achieve change. Davidson (1998) developed the "Wheel of Participation" to define and encourage levels of citizen participation for community planning and development. The wheel of participation highlights four overarching approaches to community involvement: information, consultation, participation, and empowerment, and implies that no level is necessarily better than another, but the appropriateness of each will be determined by specific circumstances (McEvoy et al., 2019). The wheel promotes the appropriate level to achieve clear goals without suggesting that the goal is always to climb to the top of the ladder. Women in agriculture's participation in important decisions were minimal, if not non-existent, despite their primary contribution to the household, animal husbandry, and agriculture (Pattnaik & Lahiri-dutt, 2020). The researchers also highlight women's limited, decentralised decision-making participation. As Spielman and Campenhout (2019) defined the Davidson model, targeting women with agricultural information enhances their knowledge of farm practice, their role in agricultural decision-making, production-related outcomes, and marketing skills. Women's participation in agriculture should consistently be demonstrated through a high level of community involvement in agricultural activities that encourages active and genuine participation and empowerment rather than a more passive process of providing information and advice.

METHODOLOGY

This study adopted a descriptive survey design conducted in a town in Sabah, specifically Kundasang, situated in the Ranau district. Because of the town's hilly geographical structure, eco-tourism and highland agriculture have become the key industries, and the local people are heavily involved in the agricultural sector, making the town a primary producer of highland vegetables. A simple random sampling method selected 248 women farmers out of 690 female farmers (Ranau District Office, 2020). Data were collected using structured questionnaires and direct interviews with women farmers. The questionnaire was constructed using closed-ended questions. Information elicited pertained to the perception of the respondents' engagement in a variety of agricultural activities, including farm preparation, planting activities, crop maintenance, crop harvesting, post-harvest activities, crop marketing, processing of crops as food products, production of handicrafts from agricultural goods, selling agricultural goods, and agritourism. All items were measured based on a 5-point Likert scale. Data obtained were subjected to descriptive analysis to clarify the

respondents' demographic profile and Chi-square analysis to determine the association of demographic profiles and perception level of rural women in participation in agriculture activities.

Results

Demographical Information of The Respondents

Table 1 shows the frequency distribution of the sociodemographic characteristics of the respondents of this study. The results indicate that 27.0% were aged between 45 and 55 years old, 21.8% between 35 and 44 years old, 19.0% between 25 and 34 years old, 17.3% between 55 and 64 years old, 8.9% were 64 years old and above, and 6.0% were between 18 and 24 years old. Kadazan-Dusun constituted 99.2% of the ethnic population, with Malay and Chinese accounting for the remaining 0.4%. Most respondents were married (83.9%), 6.9% were divorced or widowed, and only 9.3% were single.

In terms of education, most respondents had SPM/SPMV certificates (57.3%), 14.9% had PMR certificates, 10.1% had gone to primary school, 6.5% had diplomas, 5.6% had a certificate in skill/STPM, and 2.8% each for other education level and without education background. Only 1.6% of the respondents had tertiary education, either Bachelor, Master, or PhD degrees. Regarding agricultural education, most had not received any (91.1%). Only 6% had received agriculture education programs from government or private agencies, 2% had graduated from agricultural institutions, and 0.8% had agriculture diplomas.

Most of the respondents work as farmers (88.7%). Only 10.1% were self-employed, and 1.2% worked in the government or private sector as staff in schools and dairy farms. As for the farmers' spouses, the majority were self-employed (52.0%), 26.2% worked as farmers, 17.3% had no work, and 4.4% worked in the government or private sector serving as a public assistant, maintenance workers, lorry drivers, staffs in school, government servants, hospitality, or *Imam Ruwatib*. Regarding the number of dependents, 53.6% of the respondents have 3 to 5 dependents, 16.9% have less than three dependents, 16.5% have no dependents, and 12.9% have six and more than six dependents. For respondents' experience in agriculture, most had between 1 to 10 years of experience (68.5%), followed by 11 to 20 years of experience (21.8%), 21 to 31 years of experience (6.5%), no experience (1.2%), 31 to 40 years of experience and 41 to 50 years of experience (0.8%), and 51 years above of experience (0.4%). About two-thirds of the respondents are low-income earners with a monthly income between RM501 to RM1000 (66.5%) and below RM500 (21.4%). Only some of them earned monthly income between RM1001 to RM3000 (7.7%), RM 3001 to RM5000 (3.6%), and RM5001 and above (0.8%).

Table 1.0

Demographical Information of the Respondents

Variables	Frequency	Percentage (%)
Age		
18-24	15	6.0
25-34	47	19.0
35-44	54	21.8
45-55	67	27.0
55-64	43	17.3
65 and above	22	8.9
Races		

Malay	1	0.4
Chinese	1	0.4
Others	246	99.2
Marital Status		
Single	23	9.3
Married	208	83.9
Divorce/Widow	17	6.9
Educational Background		
No School	7	2.8
Primary School	25	10.1
PMR	37	14.9
Diploma	16	6.5
SPM/SPMV	142	57.3
Certificate in Skill/STPM	14	5.6
Bachelor/Master/PhD	4	1.6
Others	7	2.8
Education in Agriculture		
Technical and Vocational High School	0	0
Agricultural Institute	5	2.0
Agricultural Diploma	2	0.8
University	0	0
Agricultural Education Programs by Government/Private Agency	15	6.0
None	226	91.1
Main Occupation		
Farmer	220	88.7
Government/Private Sector	3	1.2
Self-employed	25	10.1
Spouse's Occupation		
Farmer	65	26.2
Government/Private Sector	11	4.4
Self-employed	129	52.0
None	43	17.3
Number of Dependents		
No dependent	41	16.5
<3	42	16.9
3-5	133	53.6
≥6	32	12.9
Years of Experience in Agriculture		
None	3	1.2
1-10 years	170	68.5
11-20 years	54	21.8
21-30 years	16	6.5
31-40 years	2	0.8
41-50 years	2	0.8
51 years and above	1	0.4
Monthly Income		

Below RM 500	53	21.4
RM 501- RM 1,000	165	66.5
RM1,001- RM 3,000	19	7.7
RM 3,001- RM 5,000	9	3.6
RM 5,001 and above	2	0.8

Table 2 indicates the respondents' perception of rural women's participation in agricultural activities. Most respondents agreed, with mode 4, that they participated in agricultural activities, such as farm preparation, planting, crop maintenance, crop harvesting, post-harvesting, crop product marketing, and processing crops as food products and selling agricultural products. However, the respondents needed to be more sure about being perceived as participating in producing handicrafts from agricultural products and agritourism.

Table 3 indicates the overall perceived level of the respondents about rural women's participation in agricultural activities. The results show that 92.3% perceived they were highly involved in agricultural activities, while 7.7% were moderately involved. However, none of the respondents perceived they were not involved in any agricultural activities.

Table 2.0

Perception of Respondents Towards Rural Women's Participation in Agricultural Activities

Participation in Agricultural Activities	Scale Frequency (%)					Mean	S.D.
	1	2	3	4	5		
Farm preparation	3 (1.2)	8 (3.2)	4 (1.6)	204 (82.3)	29 (11.7)	4.00	0.610
Planting	0	4 (1.6)	9 (3.6)	209 (84.3)	26 (10.5)	4.04	0.453
Crop maintenance	1 (0.4)	3 (1.2)	11 (4.4)	203 (81.9)	30 (12.1)	4.04	0.499
Crop harvesting	0	3 (1.2)	11 (4.4)	210 (84.7)	24 (9.7)	4.03	0.435
Post-harvesting	2 (0.8)	2 (0.8)	7 (2.8)	213 (85.9)	24 (9.7)	4.03	0.480
Crop product marketing	1 (0.4)	1 (0.4)	9 (3.6)	204 (82.3)	33 (13.3)	4.08	0.466
Cultivation and processing of crops as food products	3 (1.2)	2 (0.8)	10 (4.0)	210 (84.7)	23 (9.3)	4.00	0.525
Production of handicrafts from agricultural products	2 (0.8)	2 (0.8)	156 (62.9)	68 (27.4)	20 (8.1)	3.41	0.685
Selling agricultural products	1 (0.4)	2 (0.8)	18 (7.3)	206 (83.1)	21 (8.5)	3.98	0.476
Agri-tourism	3 (1.2)	3 (1.2)	166 (66.9)	64 (25.8)	12 (4.8)	3.32	0.642
Total Average Mean						3.89	0.527

Note: Likert scale: 1=Strongly disagree, 2=Disagree, 3=Not sure, 4=Agree, 5=Strongly Agree

Table 3.0

Overall Perception Level Towards Participation of Rural Women in Agricultural Activities

Level	Frequency	Percentage (%)	Mean	S.D.
Low (1.00-2.33)	0	0		
Medium (2.34-3.66)	19	7.7	3.89	0.527
High (3.67-5.00)	229	92.3		
Total	248	100.0		

The Association Between the Respondents' Demographic Profiles and Their Perception Level Towards Rural Women's Participation in Agriculture Activities

The results show that age had a significant association with the perception level, with a chi-square value of 14.956 and p-value of 0.012 ($p < 0.05$) (Table 4), with a weak association ($\phi_c = 0.012$, $\phi_c < 0.25$) (Table 5). Meanwhile, educational status was also found to have a significant association with the respondents' perception level towards rural women's participation in agriculture activities, with a chi-square value of 27.257 and p-value of 0.000 ($p < 0.05$) (Table 4), with a moderate association ($\phi_c = 0.332$; $0.25 < \phi_c < 0.75$) (Table 5).

Table 4.0

The Association between Respondents' Demographic Profiles and their Perception Level towards Rural Women's Participation in Agriculture Activities

No.	Variables	X ²	d.f.	P-value	Decision
1.	Age	14.956	5	0.012*	Reject H ₀
2.	Education Status	27.257	7	0.000*	Reject H ₀
3.	Educational in Agriculture	6.757	3	0.080	Fail to Reject H ₀
4.	Monthly Income	1.226	4	0.874	Fail to Reject H ₀
5.	Years of Involved in Agriculture	11.076	6	0.086	Fail to Reject H ₀

*Significant $p < 0.05$

Table 5.0

Symmetric Measures of the Association between Respondents' Demographic Profiles and their Perception Level towards Rural Women's Participation in Agriculture Activities

No.	Variables	Cramer's V (ϕ_c)	Approximate Significance
1.	Age	0.243	0.012*
2.	Education Status	0.332	0.000*
3.	Educational in Agriculture	0.165	0.080
4.	Monthly Income	0.070	0.874
5.	Years of Involved in Agriculture	0.211	0.086

*Significant $p < 0.05$

Discussion

Age is associated with the perception level of rural women's participation in agriculture (Table 4) as older rural women tend to stick to farming to have a steady source of income to support their families. Chakma et al (2021) also found that specific socio-economic characteristics, such as age, had a significant positive relationship with rural women's participation in rice farming activities in Bangladesh. This result further supports Tologbonse et al (2013), who stated that age was significantly related to the level of participation of women farmers in agricultural programs. Meanwhile, the educational status associated with the perception level of women farmers' participation in agriculture activities was the most noteworthy

finding of this study. Rural women, even those with a higher level of education (Table 1), participate in agricultural activities at a high rate (Table 3). This is an interesting finding, and it could be inferred that rural women may participate in agricultural activities other than labour, such as acting as a manager, collector, entrepreneur, retailer, wholesaler, etc. This contrasts the findings of Abebe and Yazie (2019) and Tologbonse et al. (2013), who found that the female literacy rate was negatively correlated with the female work participation rate in agriculture, with the lower the farmers' education level, the higher the farmers' tendency to participate in agriculture.

On the other hand, the social demographic profile of agricultural education, monthly income, and years of involvement in agriculture had no significant association with the respondents' perception level towards rural women's participation in agriculture activities. This indicates that rural women in Ranau, Sabah, were involved in agricultural activities regardless of their agricultural education background, monthly income, or years of experience in agriculture. This could be due to the geographical location where it is strategic for agricultural operations.

Conclusion and Recommendations

Based on the findings of this study, it can be concluded that most of the rural women in Ranau, Sabah, are Kadazan-Dusun, north Borneo's predominant indigenous ethnic group. They are typically married and of middle age. Most are low-income farmers with little agricultural experience and no professional agricultural education background. The study found that rural women in Ranau have a high perception level of participation in agricultural activities, with only a handful of them perceiving they are not involved in specific agricultural activities. However, their involvement in agriculture activities is limited to small-scale farming. Age and education status were significantly associated with rural women's participation level in agriculture activities. Older women engage in agriculture to support their families, while educated rural women are highly involved in agricultural activities with various roles such as managers, foragers, entrepreneurs, retailers, and wholesalers. Armed with the knowledge they obtained from their education, rural women with higher education backgrounds can fully participate in agricultural activities and empower them in decision-making. This highlights the importance of educating rural women, particularly in agriculture, to empower them and enhance decision-making. Agriculture extension agencies could provide suitable training and programs to aid in developing their capabilities, enabling them to access essential resources and improve agricultural production and rural livelihoods.

Meanwhile, the government should focus on agricultural resources, especially where it is not available for rural women. Efforts should be made to encourage and assist rural women farmers regarding farm inputs and incentives. In addition, credit facilities should be channelled to various women groups or cooperatives to finance their involvement in agricultural activities. Agriculture banks could also provide special programs to facilitate the establishment of small businesses by rural women. Agriculture banks should review the terms of loan principles or policies that encourage and support rural women for farms and special businesses.

Similarly, the government should revise its agricultural policies to grant full land ownership rights to rural women, particularly married women, ensuring their access to land for agricultural activities. This will convince rural women that a firm agriculture policy and government support exist. Furthermore, future research should explore the patterns and perceptions of women farmers' participation in agricultural activities, considering the variations across different geographical regions.

Author Contributions

Siaw Shin Yee: substantially contributed to the conception and design of the article, interpreted the relevant literature, wrote the article, conducted data gathering and performed statistical analyses. Norsida Man: supervised the writing process; critically revised the article for important intellectual content.

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