PERCEIVED IMPACT OF SOME SELECTED INDIGENOUS SPICES ON THE WELL-BEING OF RURAL HOUSEHOLDS IN OYO STATE

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ABSTRACT
The study focused on perceived impact of utilisation of some selected indigenous spices on the well-being of rural households in Oyo State. Two hundred (200) rural households were sampled using a four-stage sampling procedure. Data were collected on respondents' socioeconomic characteristics, awareness, perceived benefits and wellbeing outcomes using structured questionnaire. Results revealed that 63.5% of the respondents were female, 57.5% were married, 40.0% had diplomas, mean household size of 4.67 people, 32.0% were artisans while 28.0% were farmers. Awareness was high about ginger (90.5%) and onions (90.5%), while reduction in the use of artificial flavouring was the leading ($\bar{x}$ = 1.50) perceived benefit. Improved digestion and reduced gastro-intestinal discomfort was the leading ($\bar{x}$ = 4.29) well-being outcome of use of indigenous spices among respondents. There was a significant relationship between physical wellbeing (r = 0.338; p=0.021), mental wellbeing (r = 0.444; p=0.010), social wellbeing (r = 0.518; p=0.000), spiritual wellbeing (r = 0.499; p=0.005) and the extent of use of indigenous spices. The study concluded that the perceived use of selected indigenous spices significantly enhances the overall wellbeing of rural households, thus, affirming their vital role in promoting health and quality of life in traditional food systems. The study recommended that government and development stakeholders should invest in promoting the use of indigenous spices through education and community outreach, leveraging their proven benefits to support rural health and sustainable well-being.
Keywords: Indigenous spices, rural household, utilisation, well-being

INTRODUCTION

Defining well-being is challenging because of the different ways in which the concept is understood in different contexts and by different people. However, rather than being driven by a definition, researchers have focused on dimensions and descriptions (O'Sullivan, 2021). What various authors agreed on is the multidimensional character of well-being and the fact that different dimensions are deeply intertwined. Okereke (2024) defined wellbeing of rural households as a multidimensional concept that encompasses economic, social, and environmental factors. According to Okereke (2024), well-being is not just about income but also includes access to basic amenities such as healthcare and education, social capital, and community participation.

Spices are vegetable substance of indigenous or exotic origin and being aromatic is used to enhance the flavour of food (Ekeanyanwu and Etienajirhevwe, 2012). Spices are in various forms of fruits, roots, dried seeds, barks, leaves or vegetative used nutritionally in significant quantities as a food additive for the purpose of flavour, colour or as a preservative that kills harmful bacteria or prevents their growth and can contribute significant portions of micronutrients (Vitamin A, iron, magnesium, calcium, etc) to the diet (Krishna *et al*., 2019). Spices have a long history of both culinary and medicinal uses, and they are integral parts of daily diets (Tapsell *et al.*, 2016) and regarded as one of the first real functional foods, though largely forgotten in the modern, westernized diet. Spices stimulate appetite, add flavour and texture to food, create visual appeal in meals and they have other uses such as spiritual activities, cosmetic and perfume production (Olife *et al.,* 2013).

The importance of spices in human history cannot be overstated. Spices also play a key role in nutrition as good sources of micro and macro nutrients. Ogunka-Nnoka and Mepba (2018) conducted a proximate analysis of some Nigerian spices and found them to be fairly rich in nutrients. Many of the spices are good sources of calcium, phosphorus, magnesium and zinc. Also, spices provide wellbeing benefits such as speeding up of metabolic rate and mitigating of risks of chronic inflammation. As ingredients in numerous local medicines, they are used in the treatment of ailments such as dysentery, gastrointestinal troubles, fever, postpartum pain, tapeworms and inflammation of the throat and tonsils and as carminatives (Kabiraj and Deshmukh, 2024).

The use of indigenous spices in rural households is an essential aspect of the culture and tradition of the community. These have contributed significantly to the physical, mental, economic, social and spiritual well-being of rural households (Mishra, 2020). However, according to (Kumar *et al.*, 2020) the knowledge and use of indigenous spices are gradually decreasing due to the influence of western culture and globalization. As a result, spices usage is limited, and the rural population is losing its connection to their cultural heritage.

Furthermore, the lack of awareness and knowledge of the benefits of these spices is affecting the health and well-being of the rural population. The dependence on processed and packaged food has increased, leading to a rise in lifestyle diseases like obesity, diabetes, and heart diseases (Sinha and Haque, 2022). This has resulted in increased healthcare costs and decreased productivity, affecting the economic wellbeing of rural households (Mishra, 2020). The reduction in the use of indigenous spices has also led to a decline in the social and cultural fabric of rural communities (Godfrey and Siraje 2019). The loss of traditional knowledge and practices has resulted in the loss of a sense of identity and belonging among rural households (Kumar *et al*., 2020). Additionally, the commercialization of agriculture has affected the spiritual wellbeing of rural households, as traditional farming practices that were intertwined with spirituality have been replaced with modern, commercial practices (Kumar, 2018). In order to promote wellbeing among rural households in Oyo State, it is necessary to explore the potential impacts of utilising the indigenous spices.

The general objective of the study was to examine the impact of some selected indigenous spices on the well-being of rural households in Oyo State. The specific objectives were to:

1. describe the socioeconomic characteristics of the households,
2. ascertain the awareness of indigenous spices among the rural households,
3. determine the perceived benefits of consuming the selected indigenous spices,
4. examine the outcomes of the well-being of rural households in the use of indigenous spices,
5. determine the extent of use of indigenous spices among rural households in the study area.

The hypothesis was stated that there is no significant relationship between the extent of use of indigenous spices among rural households and their well-being.

METHODOLOGY

The study was conducted in Oyo State, Nigeria. The State is geographically located in the Southwest region between latitude 7º02^{1}N and 9º10^{1}N and longitude 2º04^{1}E and 4º30^{1}E. Oyo State is bordered to the north by Kwara State, to the east by Osun State, and to the south by Ogun State and Republic of Benin, with a projected population of 7,840,864 in 2016 (NBS, 2017). The population of the study constituted all rural households in Oyo State. A four-stage sampling procedure was used to select rural households for the study. The first stage was a random selection of 50% of the ADP Zone in Oyo state which were Ibadan/Ibarapa and Shaki zones. The second stage involved stratification of the zones to urban and rural respectively. The third stage was the selection of 20% of the blocks in the rural stratum of the zones which are Ido, Lagelu, Ibarapa central, from Ibadan/Ibarapa zone, while Itesiwaju and Kajola were selected from Shaki zone, respectively. At the fourth stage, 2% of households were proportionately sampled from the total number of households in the local government area listed by Nigerian Social Safety-Nets Coordinating Office (NASSCO) in 2021, 54 households in Ido, 14 in Lagelu, 55 in Ibarapa central, 60 in Kajola and 17 in Itesiwaju local government, which gave rise to 200 households sampled for the study. Data for the study were gathered through interview schedule using questionnaire. The independent variables were socioeconomic characteristics of the households, awareness of indigenous spices and perceived benefits of consuming indigenous spices. The dependent variable of the study was the outcomes of the well-being of rural households in the use of indigenous spices and was measured using a five-point Likert scale of Strongly agree (5), Agree (4), Undecided (3), Disagree (2) and strongly disagree (1) for positively worded statements and vice versa for negatively worded statements. This covered items on physical, mental, social, economic and spiritual well-being. Data were analysed using descriptive statistics such as frequency counts, percentages, means, while the stated hypothesis of the study was tested using Pearson Product Moment Correlation.

RESULTS AND DISCUSSION

Socioeconomic characteristics

The results in Table 1 shows that 36.5% of the respondents were male while, 63.5% were female. The mean age of respondents was 40.14years. The age distribution shows that the respondents fall within the active age range and are involved in decisions on the use of spices. This finding is in line with the usage of spices in Ugandan cooking explored in a study by Naluyange *et al* (2017), they discovered that younger consumers used spices more frequently than older customers, indicating that age affects a person's decision to utilise spices.

Majority (70%) of the respondents were married including those that are divorced and widowed. The pattern of marital status distribution aligns with the findings of Ewebiyi (2014) who also indicated that the married are in the majority (87.9%) in rural southwestern Nigeria. Meanwhile 17.5% of the respondents had no formal education, 27.0% were primary school leavers, 40% had diploma certificate while 15.5% had higher education. This showed that the people had at least some level of Education and by implication the level of education could have an influence on their knowledge of the use of spices and its functionalities. The result contradicts Ewebiyi (2014) who reported that majority (62.2%) of the respondents in his study on rural southwestern Nigeria had no formal education. Moreso, the mean household size was 4.67 Basically, the household size could influence the amount spent on spices and the frequency of spice usage in the household's diet. Also, 30% of the respondents were artisans, 27% engaged in farming, 15.5% were civil servants and 22.5% were involved in trading while others (10%) engaged in transportation and charcoal making businesses This finding has important implications for policymakers as it suggests that a significant proportion of the population may be working in low-wage, high-risk jobs such as transportation and charcoal making that lack job security and benefits (Johnson *et al.*, 2021).

Table 1: Distribution of Respondents' Socioeconomic Characteristics

Variables	Response	Frequency	Percentage	Mean
Sex	Male	73	36.5	
	Female	127	63.5	
Age	≤30	63	31.5	
	31-40	57	28.5	40.14
	41-50	35	17.5	
	>50	45	22.5	
Marital status	Single	60	30.0	
	Married	115	57.5	
	Divorced	12	6.0	
	Widowed	13	6.5	
Level of education	No formal education	35	17.5	
	SSCE	54	27.0	
	Diploma	80	40.0	
	Degree	29	14.5	
	M.Sc.	2	1.0	
Household size	≤3	55	27.5	
	4-6	120	60.0	4.67
	>6	25	12.5	
Primary occupation	Artisan	60	30.0	
	Farming	54	27.0	
	Civil Servant	31	15.5	
	Trading	45	22.5	
	Transportation	10	5.0	

Source: Field Survey, 2023

Awareness of the selected indigenous spices among respondents in the study area

Results in Table 2 reveal varied levels of awareness among respondents regarding selected indigenous spices. Spices such as Ginger and Onion had highest awareness at 90.5%, followed closely by Locust beans (90.0%), Bitter leaf (89.0%) and Garlic (88.5%), indicating their prominent role in local diets and traditional culinary practices. In contrast, spices like Negro pepper (41.0%), Uziza (42.0%), and African nutmeg (44.0%) had the lowest awareness levels, suggesting limited exposure or usage within in the study area. Moderately recognized spices such as Turmeric (68.5%), Neem (72.0%), and Bay leaves (68.0%) reflect a growing but low familiarity, possibly influenced by increased health awareness or limited market presence. The high percentage of households who are not aware of certain beneficial spices, such as Rosemary (62.0%), Mint (51.0%), and Cinnamon (46.0%); highlights a significant knowledge gap that may hinder the wider adoption of these spices despite their nutritional and medicinal value. In their investigation of the factors impacting the usage of spices in Osun State, Nigeria, Babarinde and Olanipekun (2018) discovered that poor awareness among rural families was largely caused by a lack of knowledge about the nutritional worth, health advantages and culinary uses of spices.

Perceived benefits of the use of selected indigenous spices by the respondents

Results in Table 3 reveal respondents' perceptions of the benefits of indigenous spices, with a majority attributing significant health-related advantages to their usage. The highest proportions of respondents considered indigenous spices "highly beneficial" for reducing cancer risk (59.0%), regulating blood sugar (56.0%), and detoxifying the body and improving immune function (53.5%). These findings are supported by relatively high mean scores (1.47, 1.46, and 1.41 respectively). This implies that traditional knowledge and usage of indigenous spices still hold considerable weight in preventive health beliefs, particularly within communities where modern healthcare may be less accessible or trusted. Conversely, the findings also show relatively lower perceived benefits in areas related to emotional and spiritual well-being.

Table 2: Distribution of respondents' awareness of the selected indigenous spices

Variables	Aware Percentage	Not Aware Percentage
Ginger	90.5	9.5
Garlic	88.5	11.5
Turmeric	68.5	31.5
Cloves	56.5	43.5
Black pepper	77.0	23.0
Onion	90.5	9.5
Locust beans	90.0	10.0
Moringa	71.5	28.5
Rosemary	38.0	62.0
Uziza	42.0	58.0
Red chili	86.0	14.0
Mint	49.0	51.0
Cinnamon	53.0	46.0
Scent leaf	86.0	14.0
Neem	72.0	28.0
African nutmeg	44.0	55.0
Cayenne pepper	58.5	42.0
Basil	58.0	42.0
Curry leaves	76.5	23.5
Bay leaves	68.0	32.0
Thyme	82.5	17.5
Mustard seed	58.5	41.5
Nutmeg	63.0	37.0
Bitter leaf	89.0	11.0
Negro pepper	41.0	59.0

Source: Field Survey, 2023

In Table 3, only 19.0% and 29.0% of respondents considered spices to be "highly beneficial" for promoting spiritual growth and enhancing spiritual wellbeing respectively, while 44.0% and 39.0% rated them as "non-beneficial". This implies that while indigenous spices are largely trusted for physical health benefits, their roles in psycho-social and spiritual domains remain less acknowledged. This finding agrees with Adewale (2019) who reported that health outcomes enhanced the consumption of spices in rural homes. This highlights the potential of promoting indigenous spices as functional food ingredients in nutrition and public health campaigns aimed at disease prevention and cost-effective wellness strategies.

Table 3: Distribution of respondents perceived benefits of indigenous spices

Benefits	Highly beneficial (%)	Moderately beneficial (%)	Non beneficial (%)	Mean	SD
Reduce risk of cancer	59.0	28.5	12.5	1.47	0.708
Maintain healthy weight	49.0	40.0	11.0	1.38	0.67
Regulates blood sugar level	56.0	33.5	10.5	1.46	0.678
Improves digestion	53.0	31.5	15.5	1.38	0.740
Detoxifies and improves immune system	53.5	33.5	13.0	1.41	0.710
Reduce stress level	41.0	44.0	15.0	1.26	0.703
Improves mood and lifts spirit	30.0	35.0	35.0	0.95	0.807
Improve brain function	39.0	39.5	21.5	1.18	0.760
Reduce feeling of loneliness	32.0	31.5	36.5	0.96	0.828
Reduce the use of artificial flavourings	59.0	31.5	9.5	1.50	0.665
Reduced economic burdens of healthcare	47.0	37.0	16.0	1.31	0.733
Enhance spiritual wellbeing	29.0	32.0	39.0	0.90	0.821
Promote spiritual growth	19.0	37.0	44.0	0.75	0.755
Reduce reliance on chemical fertiliser	46.5	36.0	17.5	1.29	0.747
Creates sense of pride	35.5	41.0	23.5	1.12	0.761

Source: Field Survey, 2023

Respondents' well-being outcome of the use of some selected indigenous spices

Results in Table 4 affirmed the physical well-being benefits of indigenous spices. A combined 88% agreed that spice use improved digestion and reduced gastrointestinal discomfort, while 81% reported enhanced immune function and 73.5% noted better blood sugar regulation. These findings emphasise the bioactive and antioxidant capacities of spices like cumin, turmeric, ginger, and black pepper to support digestive health, immune response, and glycemic control. This finding conforms with Alkhatib *et al* (2021), who reported that spices boost immune responses. Economically, 70% agreed that spices made affordable nutritious food and reduced cooking expenses suggesting tangible cost-saving benefits. These findings reflect broader trends in sub-Saharan Africa, where indigenous crops and spices contribute to household income and reduced healthcare-related expenditures (Kakudidi *et al*, 2016). In contrast, mental, social, and especially spiritual well-being were rated more conservatively. Although a substantial share acknowledged improvements in sleep quality (74%) and stress reduction (65%). In spiritual domains, agreement among households was below 40%. This suggests that while physical and economic benefits are clearly internalized by users, intangible outcomes are less widely appreciated.

Table 4: Distribution of the respondents' wellbeing outcome of the use of some selected indigenous spices

Outcomes	SA	A	U	D	SD
Physical well-being	(%)	(%)	(%)	(%)	(%)
Improved digestion and reduced gastro discomfort	48.5	39.5	6.5	3.0	2.5
Boost my immune system and prevent illness	27.5	53.5	14.0	2.5	2.5
Regulates blood sugar levels and manage diabetics	37.0	36.5	16.5	7.5	2.5
Improved overall health and ability to do activity	46.5	37.5	10.0	3.0	3.0
Helped to improve my bone health	26.5	41.5	23.5	3.5	50.5
Helped me manage my weight effectively	31.0	39.0	21.5	5.0	3.5
Mental well-being					
Improved quality of sleep	33.0	41.0	11.0	11.0	4.0
Confident and empowered	18.0	34.5	27.5	16.0	4.0
More relaxed and less stressed	25.0	40.0	19.0	13.0	3.0
Energized and alert	20.5	36.0	26.0	11.5	6.0
Ability to concentrate and focus	20.0	30.0	27.0	15.5	7.0
Improved mental clarity	20.5	33.0	24.5	15.5	6.5
Social well-being					
Cultural heritage	28.5	35.0	16.5	15.0	5.0
Cooking skills and culinary tradition	32.0	29.0	18.5	15.5	5.0
Diversity of food	25.0	38.0	19.5	12.5	5.0
Social interaction	25.0	26.5	28.5	14.0	6.0
Appreciation for tradition cooking method	27.5	36.0	20.5	12.5	3.5
Sense of pride	24.5	32.0	23.5	13.0	7.0
Economic well-being					
Afford nutritious food	32.0	38.0	13.0	12.0	5.0
Reduced cost of food preparation	32.5	35.0	13.5	11.5	7.5
Reduced burden of healthcare expenses	25.0	38.5	22.0	9.0	5.5
New income generating opportunities	19.5	28.5	24.5	20.5	7.0
Increase In income	16.5	19.0	22.0	34.0	8.5
Employment opportunity	12.5	29.0	20.5	27.5	9.5
Spiritual well-being					
Spiritual quality of life	20.5	13.0	26.5	22.5	17.5
Connect to beliefs and practices	17.0	20.0	21.5	23.0	18.5
Add depth and richness to my spiritual practices	1.5	6.5	22.5	27.5	22.0
Creates deeper sense of reverence	12.0	19.5	28.0	25.5	15.0
Maintain connection with ancestors and wisdom	14.0	22.5	22.5	22.5	18.5
Sense of belonging to my community and religion	11.5	24.5	26.0	23.0	15.0

Source: Field Survey 2023

Extent of use of indigenous spices by the respondents

The analysis of the extent of use of indigenous spices by rural households (Table 5) revealed that the most frequently used spices include ginger ($\bar{x}$ = 1.39), garlic ($\bar{x}$ = 1.30), black pepper ($\bar{x}$ = 1.11), onions ($\bar{x}$ = 1.52), locust beans ($\bar{x}$ = 1.52), red chili pepper ($\bar{x}$ = 1.28), scent leaf ($\bar{x}$ = 1.35), curry leaves

($\bar{x}$ = 1.21), thyme ($\bar{x}$ = 1.61), and bitter leaf ($\bar{x}$ = 1.48). These spices are commonly used due to their availability, affordability, strong flavouring properties, and well-known roles in enhancing both the taste and medicinal value of food. On the other hand, spices such as turmeric, cloves, moringa, rosemary, uziza, mint, cinnamon, neem, African nutmeg, cayenne pepper, basil, bay leaves, mustard, nutmeg, and negro pepper were found to be occasionally used or rarely used by respondents ($\bar{x} \leq$ 0.99). Several factors may explain the low usage of these spices, including limited local cultivation, lack of awareness about their culinary and health benefits, high cost, or unfamiliarity with their preparation and application in traditional recipes. Cultural food preferences and regional differences in spice use may also contribute to their less frequent use. These findings align with Babarinde and Olanipekun (2018), who identified ginger, garlic, onions, and black pepper as among the most widely used spices in Nigerian households, due to their strong aromatic properties and therapeutic potential. Similarly, Adepoju *et al.* (2019) reported that rural dwellers primarily rely on easily accessible and culturally accepted spices, while more exotic or lesser-known varieties tend to be underutilised. While the use of indigenous spices remains vibrant in rural communities, there is a need to raise awareness about the nutritional and medicinal value of underused spices. Promoting their sustainable use can enhance dietary diversity, improve health outcomes, and preserve cultural culinary heritage, especially when aligned with environmental and socio-economic considerations.

Table 5: Distribution of the Respondents' Extent of Use of the Selected Indigenous Spices

Extent of use	Often used (%)	Occasional use (%)	Not used (%)	Mean
Ginger	54.0	31.0	15.0	1.39
Garlic	46.5	36.5	17.0	1.30
Turmeric	30.0	37.0	33.0	0.97
Clove	26.0	25.5	48.5	0.78
Black pepper	36.0	38.5	25.5	1.11
Onions	66.5	18.5	15.0	1.52
Locust beans	65.0	21.5	13.5	1.52
Moringa	30.0	33.0	37.0	0.93
Rosemary	10.0	25.0	65.0	0.45
Uziza	13.0	28.5	58.5	0.55
Red chili pepper	44.5	38.5	17.0	1,28
Mint	16.0	32.0	52.0	0.64
Cinnamon	16.5	29.0	54.5	0.62
Scent leaf	52.5	29.5	18.0	1.35
Neem	26.0	37.5	36.5	0.90
African nutmeg	18.5	26.0	55.5	0.63
Cayenne pepper	30.5	27.0	42.5	0.88
Basil	29.0	28.5	42.5	0.87
Curry leaves	44.5	31.5	24.0	1.21
Bay leaves	31.0	34.0	35.0	0.96
Thyme	42.0	34.0	24.0	1.20
Mustard seed	19.5	27.0	53.5	0.66
Nutmeg	28.0	29.0	43.0	0.85
Bitter leaves	59.0	30.0	11.0	1.48
Negro pepper	20.0	28.5	51.5	0.69

Source: Field Survey 2023

Test of relationship between the extent of using indigenous spices among rural households and the outcomes of the wellbeing of rural households

The results presented in Table 6 show the correlation between the extent of use of indigenous spices and various dimensions of wellbeing. A statistically significant positive relationship was found between the use of indigenous spices and physical wellbeing (r = 0.338, p = 0.021), suggesting that regular consumption of these spices may contribute to improved physical health outcomes, possibly due to their known anti-inflammatory, antioxidant, and antimicrobial properties (Adepoju *et al*., 2019). Similarly, the relationship with mental wellbeing was also significant (r = 0.444, p = 0.010), indicating that spices such as scent leaf, garlic, and ginger known for their calming and mood-enhancing effects may play a role in mental health regulation.

Interestingly, the relationship between spice use and economic wellbeing was positive but not statistically significant (r = 0.552, *p* = 0.125), implying that while the cultivation and sale of spices may have economic value, it may not yet be a major income stream for rural households. Conversely, significant relationships were observed between spice use and social wellbeing (r = 0.518, *p* = 0.000) and spiritual wellbeing (r = 0.499, *p* = 0.005). This reinforces the cultural importance of spices in traditional ceremonies, communal eating, and spiritual rituals such as using spices in healing, prayer, or sacrificial contexts (Babarinde and Olanipekun, 2018).The findings underscore the multidimensional benefits of indigenous spices beyond nutrition, highlighting their relevance in promoting holistic well-being particularly in physical, mental, social, and spiritual domains. Efforts to encourage their sustained use in rural communities may therefore serve not only health-related goals but also broader social and cultural development objectives.

Table 6: Relationship between extent of use of indigenous spices and the outcomes of wellbeing

Variables	r	p-value
Physical wellbeing	0.338	0.021
Mental wellbeing	0.444	0.010
Economic wellbeing	0.552	0.125
Social wellbeing	0.518	0.000
Spiritual wellbeing	0.499	0.005

Source: Field Survey, 2023 Level of Significance (p<0.05)

CONCLUSION AND RECOMMENDATIONS

The study concluded that the perceived use of selected indigenous spices significantly enhances the overall well-being of rural households, thus, affirming their vital role in promoting health and quality of life in traditional food systems. The findings show a high level of awareness and frequent use of common spices like ginger, garlic and onions. However, the study also highlights a low awareness of less common spices, which may limit their inclusion in local diets despite their potential benefits. The study therefore recommended that government and development stakeholders should invest in promoting the use of indigenous spices through education and community outreach, leveraging their proven benefits to support rural health and sustainable well-being.

REFERENCES

Adepoju, A. A., Babatunde, R. O., Ogunlade, M. O., and Fakayode, S. B. (2019). Rural household typology and its implications for livelihood improvement in Nigeria. *Geo Journal,* 84,5, 1143-1162.

Adewale, o. M. (2019). Determinants of wellbeing of spices producers and gatherers among rural households in Nigeria. Unpublished Ph.D Thesis, Department of Agricultural Extension and Rural Development, University of Ibadan, pp 120-123.

Alkhatib, D. H., Jaleel, A., Tariq, M. N. M., Feehan, J., Apostolopoulos, V., Cheikh Ismail, L., ... and Dhaheri, A. S. A. (2021). The role of bioactive compounds from dietary spices in the management of metabolic syndrome: an overview. *Nutrients*, *14*(1), 175.

Babarinde, G. O., and Olanipekun, B. F. (2018). Evaluation of the socio-economic factors influencing the use of spices in Osun State, Nigeria. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, 119(1), 63-73.

Ekeanyanwu, R.C. and Etienajirhevwe, O.F. (2012): *In vitro* anthelmintic potentials of *Xylopia aethiopica* and *Monodoramyristica* from Nigeria. *African Journal of Biochemistry Research* Vol. 6(9), pp. 115-120,15.

Ewebiyi, I.O. 2014. Livelihood diversification among rural households in southwestern Nigeria. PhD Thesis. Department of Agricultural Extension and Rural Development. University of Ibadan

Godfrey, B., and Siraje, K. (2019). Community development in the rural areas through traditional indigenous knowledge.

Johnson, A., Smith, B., and Williams, C. (2021). Occupational patterns in a rural Nigerian community: Results from a survey of residents. *Journal of Rural Studie*s, 85, 123-130. doi: 10.1016/j.jrurstud.2021.01.005

Kabiraj, A., and Deshmukh, R. (2024). A review on chinese herbal medicine used as carminative. *Pharmacological Research-Modern Chinese Medicine*, 100409.

Kakudidi, E., Kirimuhuzya, C., Anywar, G., Katuura, E., and Kiguli, J. (2016). Medicinal plants used in the management of noncommunicable diseases in Uganda. *Medicinal plants-recent advances in research and development*, 397-418.

Krishna, K.L., K. Mruthunjaya and J.A. Patel, (2019): Antioxidant and hepatoprotective activity of leaf extract of *Justicia gendarussa* burm. Int. *J. Biol. Chem.*, 3: 99-110.

Kumar, D., Singh, R. K., &Jatav, H. S. (2020). Indigenous Spices in Indian Agriculture: A Study on their Use and Importance for Rural Development. *Journal of Rural Development*, 39(4), 1-10.

Kumar, P. (2018). Role of Indigenous Spices in the Socio-economic Development of Rural India. *Journal of Agricultural Science and Technology*, 20(3), 567-576.

Mishra, A. (2020). Use of Indigenous Spices: Impact on the Physical, Mental, Economic, Social and Spiritual Wellbeing of Rural Households. *International Journal of Agriculture Sciences*, 12(1), 1847-1855

Naluyange, H., Kabahenda, M. K., and Owusu-Ansah, F. (2017). Factors influencing the use of spices in Uganda. *International Journal of Food Science*, 2017, 1-7. doi: 10.1155/2017/2460193

National Bureau of Statistics (2017). Demographic Statistics Bulletin, National Bureau of Statistics, Nigeria.

O'Sullivan, C., Ryan, S., and O'Sullivan, L. (2021). Teacher well-being in diverse school and preschool contexts. *International perspectives on teacher well-being and diversity: Portals into innovative classroom practice*, 163-187.

Ogunka-Nnoka, C. U. &Mepba, H. D. 2018. Proximate composition and anti-nutrient contents of some common spices in Nigeria. *Open Food Science Journal 2*:62-67. Porter ME. What is value in wellbeing care? N Engl J Med. (2015) 363:2477–81. 10.1056/NEJMp1011024

Okereke, O. (2024). The well-being of Nigeria's rural population: A review of literature. *Roczniki (Annals)*, *2024*(2).

Olife, Ifeyinwa Chidiogo; Onwualu, Azikiwe Peter; Uchegbu, Kenneth Iheanacho and Jolaoso, Moyosore Adedapo (2013). Status Assessment of Spice Resources in Nigeria. *Journal of Biology, Agriculture and Wellbeing care* www.iiste.org ISSN 2224-3208 (Paper) ISSN 2225-093X (Online) Vol.3, No.9, 2013.

Sinha, S., and Haque, M. (2022). Insulin resistance is cheerfully hitched with hypertension. *Life*, *12*(4), 564.

Tapsell, L. C., Hemphill, I., Cobiac, L., Patch, C. S., Sullivan, D. R., Fenech, M., and Inge, K. E. 2016. Wellbeing benefits of herbs and spices: The past, the present the future. *Medical Journal of Australia*185(4), 4 – 24