

# Awareness and consumption of indigenous foods for health benefits in Gauteng, South Africa

Alex D. Tchuenchieu Kamgain<sup>1,2\*</sup>, Hema Kesa<sup>1</sup>

<sup>1</sup> Food Evolution Research Laboratory, School of Tourism and Hospitality, University of Johannesburg, South Africa; <sup>2</sup>Centre for Food, Food Security and Nutrition Research, Institute of Medical Research and Medicinal Plants Studies, Cameroon

**Keywords:** indigenous foods, nutrition transition, urban diets, health awareness, non-communicable diseases (NCDs)

<https://doi.org/10.26596/wn.202516337-46>

---

World Nutrition 2025;16(3):37-46

---

## Abstract

Rapid urbanization and globalization in South Africa over the past two decades have shifted diets from traditional Indigenous Foods (IFs) to processed, Western-style foods. This study aimed to assess urban South Africans' awareness of the health benefits of IFs and explore the potential for promoting these foods for improved health. A descriptive quantitative survey was conducted in nine Gauteng municipalities with 780 participants aged 18 and older. Respondents completed a questionnaire on their knowledge and consumption of the 18 official South African indigenous foods, including whether health influenced their choices. The most consumed IF was sorghum (20.3%). However, health-related consumption was low for all 18 IFs, with pearl millet (3.33%) and sorghum (2.56%) leading. Half of the respondents (50.5%) rated their knowledge of IFs' health benefits as poor, and 56.1% expressed interest in improving their understanding. Additionally, 59.6% indicated they would increase IF consumption if informed about their health benefits. Sociodemographic factors, including race and household size, influenced awareness and interest, with Black participants showing the highest levels of knowledge and interest (26% and 67.3% of them, respectively). Participants with poor knowledge were 10.7 times (95% CI 5.4-21.1) more likely to seek information than those with excellent knowledge. Those wishing to improve their understanding were 55.3 times (95% CI 17.7-173.3) more likely to increase IF consumption. The study reveals significant knowledge gaps and underscores the need for targeted educational interventions to promote IFs as healthful dietary options. Addressing these gaps could help increase IF consumption, thereby helping to mitigate non-communicable diseases linked to poor dietary choices in Gauteng.

## INTRODUCTION

Rapid urbanization, economic development, and globalization over the last two decades have led to dietary transitions across many Sub-Saharan African countries, with South Africa the most affected. The population is increasingly abandoning their healthy traditional diets based on indigenous foods (IFs) in favour of modern Western diets characterized by fast foods, sugary drinks, and ultra-processed products, which are widely recognized as unhealthy (Nel & Steyn, 2022; Nnyepi et al., 2015; Vorster et al., 2013).

Indigenous foods are defined as crops that originate in a specific region, are culturally acceptable, adapted to local climatic conditions, and traditionally consumed by the inhabitants. They serve as rich, inexpensive sources of proteins, carbohydrates, dietary fibre, minerals, and vitamins for millions, particularly in low- and middle-

income countries (Mbhenyane, 2017). Furthermore, many IFs possess medicinal properties due to the bioactive compounds they contain, such as phenolics, terpenes, carotenoids, and alkaloids, which support health and wellness (Tselaesele et al., 2023). Key advantages of these foods include their adaptability to adverse environmental conditions, resistance to pests, and sufficient nutritional qualities (Akinola et al., 2020). Traditional diets based on indigenous foods are generally recommended to prevent nutrient deficiencies and non-communicable diseases (NCDs), especially when compared to Western diets high in sugars, fats, animal-source foods, and refined carbohydrates but poor in fruits and vegetables (Budreviciute et al., 2020).

WHO (2018) and World Bank Group (2020) pointed out the fact that in South Africa, NCDs accounted for 51% of total deaths, particularly from cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases. Given that diet is the most significant

---

\*Corresponding author: [kamgaina@uj.ac.za](mailto:kamgaina@uj.ac.za)

behavioural risk factor for these health issues, the place of indigenous foods in contemporary South African eating habits warrants further investigation. Indeed, South African indigenous foods, such as grain crops, vegetables, and fruits, have been acknowledged for their nutritional and health benefits that are effective against non-communicable diseases (NCDs) (Takaidza, 2023). But currently, data on public awareness and consumption of these foods remains scarce (Kesa et al., 2023).

This study thus aimed to evaluate the awareness of South Africans, particularly among urban populations, regarding the health benefits of their indigenous foods, as well as the extent to which these foods are incorporated into their diets for health reasons. It also sought to explore their thoughts on whether promoting these foods could increase their consumption.

## METHODOLOGY

### STUDY DESIGN AND SAMPLING

Data for this study were gathered through a descriptive quantitative survey conducted from August to November 2019 across nine municipalities in the Gauteng Region of South Africa: Johannesburg North, Johannesburg South, Lanseria, Eastrand, Johannesburg CBD, Lenasia South, Soweto, Pretoria, and Westrand. This province is notable for its racial and cultural diversity and is the most urbanized region of the country.

Data were collected unsystematically from interested participants in public spaces (malls, churches, and community centres) across various municipalities in Gauteng. Participants needed to be at least 18 years old and have resided in the province for a minimum of two years.

The minimum sample size was determined using Slovin's formula, based on a population of 15.7 million, excluding 23.6% for children. A margin of error of 0.05 was established.

$$n = N / (1 + Ne^2) \text{ people}$$

$$n = 11\,994\,800 / (1 + 11\,994\,800 \times 0.0025) = 399.99$$

Thus, the minimum sample size was calculated to be 400, with an additional 10% added to account for potential attrition, resulting in a total of a minimum of 440. However, in total, 780 valid completed questionnaires were obtained.

### DATA COLLECTION

The survey utilized a questionnaire designed for a larger research project focused on knowledge, perceptions, accessibility, and consumption of indigenous foods in the region. This part of the study includes only the portion of the questionnaire relevant to this dataset, which explores interest in the health benefits of indigenous foods in Gauteng. It comprises three main sections. The first section gathers socio-demographic information, including gender, race, age, education level, household size, residential area, and settlement type. In the second section, participants were asked to indicate with a Yes or No whether they are familiar with and whether they consume each of the 18 most common official South African indigenous foods (South African Department Agriculture, Forestry and Fisheries, 2013) listed on the questionnaire, and whether there was a

health-related reason behind their consumption. They were also asked to indicate if they or anyone in their household were personally affected by a non-communicable disease. The third section employs a five-point Likert scale to evaluate participants' responses to three statements: (i) How would you rate your knowledge of the health value of indigenous foods? (Excellent, Good, Average, Poor, Very Poor); (ii) I would like to enhance my knowledge of the health benefits of indigenous foods (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree); (iii) I would consume more indigenous foods if I knew about their health benefits (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree). These questions were designed to assess awareness of the health potential of indigenous foods and to evaluate whether promoting these foods could lead to increased consumption based on perceived benefits.

The questionnaire was initially piloted on 15 individuals to ensure its validity and reliability, with no changes found to be necessary. The survey was then administered by trained field workers who explained the study's objectives, obtained informed consent before distributing the self-administered questionnaire to willing participants, responded to any questions participants had, and collected the questionnaires when completed.

### ETHICAL STATEMENT

This study received approval from the Research Ethics Committee at the University of Johannesburg (ethics clearance number 2019STH012). Informed consent was obtained from each participant after explaining the study's objectives. Privacy and confidentiality were rigorously upheld.

### STATISTICAL ANALYSIS

Data analysis was conducted using SPSS version 27.0 (SPSS Inc., Chicago, Illinois). Descriptive statistics were computed, and a Chi-Square test was employed to identify sociodemographic factors influencing the responses. A multinomial logistic regression analysis was also performed to examine the relationship between respondents' knowledge of the health benefits of indigenous foods and their interest in furthering their knowledge, as well as the association between that interest and their willingness to increase consumption of these foods if better informed about their health benefits. A p-value below 0.05 was considered significant.

## RESULTS

### DESCRIPTION OF THE STUDIED POPULATION

Table 1 summarizes the key sociodemographic characteristics of the 780 respondents. The sample was predominantly female (60.1%) and largely composed of individuals with secondary or higher education, residing mainly in urban and peri-urban areas. Only a small proportion lived in rural areas or informal settlements, which may have implications for interpreting access-related variables discussed later in the study. There was a wide inclusion of the country's most common racial groups, with most living in households of at least three people.

**Table 1. Sociodemographic characteristics of the studied population (N=780)**

Variable		Frequency	Percentage
Gender	Female	469	60.1
	Male	311	39.9
Race	Asian	16	2.1
	Black	235	30.1
	Coloured	176	22.6
	Indians	161	20.6
	White	190	24.4
Age	18-25	223	28.6
	26-35	191	24.5
	36-45	144	18.5
	46-55	130	16.7
	56-65	63	8.1
	66+	29	3.7
Education level attained	Grade 0-7	12	1.5
	Grade 8-12	284	36.4
People living in the household	Tertiary Education	484	62.1
	1-2	121	15.5
	3-5	430	55.1
Residence area	6 or more	229	29.4
	Peri-urban	185	23.7
Settlement category	Rural	41	5.3
	Urban	554	71.0
Settlement category	Former homeland or homeland towns	21	2.7
	Informal settlement	88	11.3
	Suburb/Edge City	442	56.7
	Township	229	29.4

**OVERALL AND HEALTH-RELATED CONSUMPTION OF INDIGENOUS FOODS**

Participants were asked about their knowledge of different South African IFs, if they consume them, and if yes if it is for health reasons (Table 2).

**Table 2. Knowledge and consumption of IFs for health reasons (N=780)**

Crop	Knowledge (%)	Consumption (%)	Consumption for Health (%)	
Grain crop	Pearl millet	22.3	15.1	2.6
	Grain sorghum	30.4	21.0	3.3
	Cowpea	17.2	10.8	0.9
	Bambara groundnuts	14.4	8.5	1.3
	Mungbean	11.5	7.2	1.0
Vegetable crop	Cleome	11.4	7.7	1.2
	Amaranth	12.1	7.8	1.3
	Blackjack	15.3	8.1	0.5
	Jews mallow	9.1	6.0	1.4
	Cassava	11.9	6.3	1.2
Fruits	Amadumbe	19.0	13.5	1.4
	Marula	30.8	16.4	1.0
	Red milkwood	7.2	3.2	0.6
	Mobola plum	7.6	3.5	0.5
	Wild medlar	6.4	3.2	0.5
	Num_num	8.3	5.4	0.8
	Kei apple	9.0	5.5	1.0
	Monkey orange	9.6	5.9	1.0

Among the list of 18 common IFs, the top 6 which were known were Marula Grain Sorghum Pearl millet Amadumbe Cowpea and Blackjack. A clear difference between knowledge and consumption was noticed, the latter being much lower. A very low consumption of IFs for health reasons was observed. Pearl millet and Grain Sorghum are the top 2 in that case with just 3.33% and 2.56%, respectively.

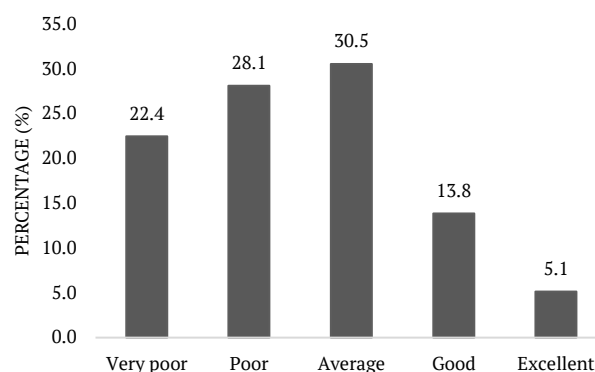
Nearly all participants were consuming between 0-6 of the listed 18 IFs purely for health purposes (Table 3). The number of IFs consumed was not associated with the respondent or someone living in the respondent household being affected by an NCD (p>0.05).

**Table 3. Consumption level of IFs associated with personal or household member NCD status (N=780)**

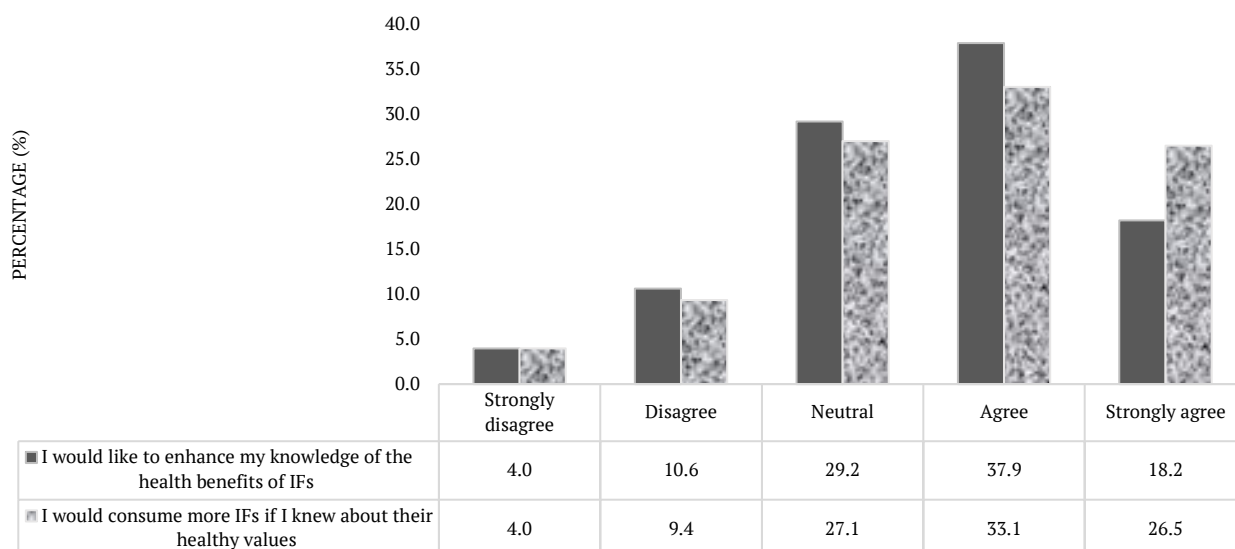
Group	Number of IFs consumed for health purposes			
	0-6	7-12	13-18	
Personally affected by an NCD	No	Frequency 664	5	2
		Percentage 99.0%	0.7%	0.3%
	Yes	Frequency 109	0	0
		Percentage 100%	0.0%	0.0%
Somebody in the household affected by an NCD	No	Frequency 588	4	2
		Percentage 99.0%	0.7%	0.3%
	Yes	Frequency 185	1	0
		Percentage 99.5%	0.5%	0.0%

**AWARENESS OF THE HEALTH BENEFITS OF INDIGENOUS FOODS AMONG RESPONDENTS**

Regarding their personal assessments of their knowledge of the health value of indigenous foods, half of the respondents (50.5%) rated it negatively (22.4% as very poor and 28.1% as poor). Only 18.9% rated it as either good or excellent, while the remaining 30.5% considered their knowledge to be average (Figure 1). As illustrated in Figure 2, over half of the respondents (Agree + Strongly Agree) expressed a willingness to improve their understanding of the health benefits of indigenous foods (56.1%) and felt this could boost their desire to consume more (59.6%). Another 29.2% and 27.1% remained neutral on these issues, respectively.



**Figure 1. Self-rating of the knowledge of indigenous foods' health value by respondents (N=780)**



**Figure 2. Willingness of participants to enhance their knowledge of indigenous foods health properties and its potential impact on their consumption (N=780)**

Table 4 displays responses to the three statements according to the socio-demographic factors of the participants. These opinions were not associated with the gender, age, or education level of the respondents. In contrast, race, the number of people living in a household, the residential area, and the settlement category of respondents emerged as significant factors linked to opinions ( $p < 0.05$ ). The Black population appears to have the highest knowledge of indigenous foods and shows the greatest interest in learning more about them and consuming them for health reasons. Despite lower levels of knowledge, all other racial groups (Asian, Coloured, Indian, and White) also demonstrated around 50% interest within each subgroup. People living in households of 3-5 members and those with 1-2 members exhibited greater interest compared to households with 6 or more members.

Participants residing in urban areas were the most likely to report that they would consume indigenous foods if they learned more about their health benefits, compared to those living in peri-urban and rural areas. Regarding settlement category, a significant difference in opinions was observed among respondents from homeland towns (predominantly located in peri-urban and rural areas), who demonstrated the highest knowledge of indigenous foods (42.9%), the greatest interest in learning more (71.5%), and the strongest willingness to increase their intake for health reasons (71.4%).

Compared to individuals who believed they had excellent knowledge of the health benefits of indigenous foods, those with average, poor, and very poor knowledge showed a significantly higher desire to learn more (agreement) (OR: 10.3, 95% CI 5.2-20.5; OR: 10.7, 95% CI 5.4-21.1; and OR: 6.6, 95% CI 3.3-13.2, respectively) (see Table 5a). This pattern also held true for those who considered themselves to have good knowledge, as their willingness to learn more was 4.3 times greater (95% CI 2.1-8.9,  $p = 0.000$ ) than those with self-reported excellent knowledge.

Interest in improving understanding of the health benefits of indigenous foods was closely associated with an intention to increase their consumption (see Table 5b). In

comparison to those who strongly disagreed that they had interest in enhancing their knowledge, the majority of those who agreed expressed this intention (OR: 55.3, 95% CI 17.7-173.3). Among those who were neutral about enhancing their knowledge, while a significant portion remained neutral regarding their intentions (16.4% of respondents), 6.7% agreed with the statement.

## DISCUSSION

We explored the knowledge surrounding the health benefits of indigenous foods (IFs) in a largely urban population in South Africa. Our observations align with previous research, such as that by Akinola et al. (2020), which highlights a concerning trend in Africa: many individuals do not fully value the potential benefits of indigenous foods, leading to a gradual erosion of knowledge from one generation to the next. This loss of knowledge is compounded by a lack of recipe/cooking guidelines and mentorship to teach younger generations about preparation and preservation methods (Akinola et al., 2020; Gewa et al., 2019).

As noted by Van der Hoeven et al. (2013), we found that communities residing deeper in rural areas retained a stronger grasp of the medicinal uses and preparation methods for indigenous foods. This urban-rural divide in consumption patterns suggests that efforts to promote indigenous foods must be particularly focused on urban areas, where the nutrition transition towards Western diets is more pronounced (Nengovhela et al., 2018; Tchuenchieu et al., 2024). This aligns with Kesa et al. (2023), who noted that urban populations have reported irregular incorporation of IFs into their diets. The accessibility of these foods remains a critical factor influencing consumption patterns, highlighting the need for strategic interventions that address both availability and awareness (Kesa et al., 2024). Although some respondents may desire to change from modern dietary habits, doing so may conflict with social norms or cultural perceptions. This opens an opportunity for interweaving modern and traditional practices through food innovations that respect both cultural identities. Such blending could ...

**Table 4. Percentages with different opinions on three statements according to socio-demographic characteristics of the respondents (N=780)**

		How would you rate your knowledge of the health value of indigenous foods?					I would like to enhance my knowledge of the health benefits of IFs					I would consume more IFs if I knew about their healthy values				
		Excellent	Good	Average	Poor	Very poor	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Gender	Female	5.3	12.8	29.9	29.4	22.6	18.3	38.4	30.9	8.7	3.6	27.9	32.2	27.5	8.7	3.6
	Male	4.8	15.4	31.5	26.1	22.2	18.0	37.3	26.7	13.5	4.5	24.4	34.4	26.4	10.3	4.5
Race* <sup>o+</sup>	Asian	0.0	12.5	18.8	18.8	50.0	18.8	43.8	31.3	0.0	6.3	18.8	31.3	25.0	6.3	18.8
	Black	9.4	16.6	36.6	22.1	15.3	31.1	36.2	23.8	6.8	2.1	43.8	25.5	25.5	3.4	1.7
	Coloured	3.4	9.1	35.8	31.3	20.5	9.7	39.8	32.4	13.6	4.6	19.3	35.2	29.0	10.8	5.7
	Indians	2.5	16.2	25.5	31.7	24.2	16.8	32.9	29.2	15.5	5.6	20.5	31.1	28.6	16.2	3.7
	White	4.2	13.2	23.2	30.0	29.5	11.6	42.1	32.6	9.5	4.2	17.9	41.6	26.3	10.0	4.2
Age	18-25	9.0	13.5	26.0	26.9	24.7	19.7	39.5	25.6	10.3	4.9	32.7	29.2	25.1	9.9	3.1
	26-35	3.1	13.1	33.5	27.8	22.5	19.4	35.1	34.6	8.4	2.6	26.2	33.5	28.3	8.4	3.7
	36-45	4.2	12.5	26.4	31.3	25.7	18.8	36.8	25.7	14.6	4.2	21.5	32.6	29.9	8.3	7.6
	46-55	3.9	14.6	33.9	27.7	20.0	13.1	41.5	30.0	12.3	3.1	22.3	36.2	27.7	11.5	2.3
	56-65	3.2	15.9	34.9	31.8	14.3	15.9	38.1	30.2	11.1	4.8	25.4	38.1	22.2	11.1	3.2
	66+	3.5	20.7	41.4	17.2	17.2	24.1	34.5	34.5	0.0	6.9	27.6	37.9	27.6	3.5	3.5
Educational Level	Grade 0-7	0.0	8.3	50.0	33.3	8.3	25.0	33.3	33.3	0.0	8.3	33.3	33.3	33.3	0.0	0.0
	Grade 8-12	6.0	11.3	34.2	31.0	17.6	14.8	37.7	29.9	12.3	5.3	25.4	33.5	27.1	9.9	4.2
	Tertiary Education	4.8	15.5	27.9	26.2	25.6	20.0	38.2	28.7	9.9	3.1	27.1	32.9	26.9	9.3	3.9
Number of people living in the household <sup>o+</sup>	1-2	4.1	13.2	26.5	31.4	24.8	19.0	36.4	26.5	12.4	5.8	24.8	35.5	23.1	8.3	8.3
	3-5	4.9	14.2	29.5	28.6	22.8	20.2	40.7	28.6	7.7	2.8	27.2	33.5	29.5	7.9	1.9
	6 or more	6.1	13.5	34.5	25.3	20.5	14.0	33.6	31.9	15.3	5.2	26.2	31.0	24.5	12.7	5.7
Residence area*	Peri-urban	7.0	16.2	38.4	17.3	21.1	21.6	31.4	32.4	10.8	3.8	28.1	27.6	32.4	7.6	4.3
	Rural	7.3	19.5	22.0	36.6	14.6	14.6	39.0	36.6	7.3	2.4	12.2	46.3	34.2	4.9	2.4
	Urban	4.3	12.6	28.5	31.1	23.5	17.3	40.1	27.6	10.8	4.2	27.1	33.9	24.7	10.3	4.0
Settlement category* <sup>o+</sup>	Former border or homeland towns	4.8	38.1	38.1	14.3	4.8	19.1	52.4	19.1	9.5	0.0	23.8	47.6	28.6	0.0	0.0
	Informal settlement	6.8	18.2	34.1	18.2	22.7	5.7	29.6	37.5	19.3	8.0	9.1	28.4	35.2	18.2	9.1
	Suburb / Edge city	3.2	12.7	26.2	30.1	27.8	19.7	39.4	26.9	10.2	3.9	28.5	32.4	25.1	10.2	3.9
	Township (Kasi)	8.3	12.2	36.7	29.3	13.5	20.1	37.1	31.4	8.3	3.1	29.7	34.9	27.5	5.2	2.6

\*Variable with a significant effect on knowledge of the health value of IFs (p<0.05);

° Variable with a significant effect on the desire to enhance knowledge (p<0.05);

+Variable with a significant effect on desire to consume more IFs if aware of their healthy value (p<0.05).

**Table 5a. Interest in the health benefits of indigenous foods based on participants' self-evaluation of their knowledge**

Self-rating of the knowledge of indigenous foods health value	Interest in enhancing the knowledge of the health benefits of indigenous foods	n (%)	Odd Ratio (OR)	Confidence Interval (95% CI)		p-value
Very poor	Strongly disagree	4 (0.5)	2	0.4	10.9	0.423
	Disagree	25 (3.2)	4.2	1.7	10.2	0.002*
	Neutral	49 (6.3)	4.1	2.2	7.7	0*
	Agree	59 (7.6)	6.6	3.3	13.2	0*
	Strongly agree	38 (4.9)	3.5	1.8	6.8	0*
Poor	Strongly disagree	8 (1)	4	0.8	18.8	0.08
	Disagree	24 (3.1)	4	1.6	9.8	0.002*
	Neutral	68 (8.7)	5.7	3.1	10.5	0*
	Agree	96 (12.3)	10.7	5.4	21.1	0*
	Strongly agree	23 (2.9)	2.1	1	4.3	0.044*
Average	Strongly disagree	13 (1.7)	6.5	1.5	28.8	0.014*
	Disagree	21 (2.7)	3.5	1.4	8.7	0.007*
	Neutral	74 (9.5)	6.2	3.4	11.3	0*
	Agree	93 (11.9)	10.3	5.2	20.5	0*
	Strongly agree	37 (4.7)	3.4	1.7	6.6	0*
Good	Strongly disagree	4 (0.5)	2	0.4	10.9	0.423
	Disagree	7 (0.9)	1.2	0.4	3.5	0.782
	Neutral	25 (3.2)	2.1	1	4.1	0.037*
	Agree	39 (5)	4.3	2.1	8.9	0*
	Strongly agree	33 (4.2)	3	1.5	5.9	0.002*
Excellent*	Strongly disagree	2 (0.3)	1			
	Disagree	6 (0.8)	1			
	Neutral	12 (1.5)	1			
	Agree	9 (1.2)	1			
	Strongly agree	11 (1.4)	1			

\* Defined as reference category. † Significant p-value (<0.05)

**Table 5b. Intention to increase consumption of indigenous foods based on participants' interest in enhancing their knowledge of their health benefits**

Interest in enhancing the knowledge of the health benefits of indigenous foods	Intention to increase IFs consumption if more aware of health benefits	n (%)	Odd Ratio (OR)	Confidence Interval (95% CI)		p-value
Strongly agree	Strongly agree	104 (13.3)	10.4	5.4	19.9	0*
	Agree	24 (3.1)	8	2.4	26.6	0.001*
	Neutral	11 (1.4)	2.2	0.8	6.3	0.144
	Disagree	3 (0.4)	0.4	0.1	1.7	0.22
	Strongly disagree	0 (0)	0	0	0	
Agree	Strongly agree	68 (8.7)	6.8	3.5	13.2	0*
	Agree	166 (21.3)	55.3	17.7	173.5	0*
	Neutral	49 (6.3)	9.8	3.9	24.6	0*
	Disagree	6 (0.8)	0.9	0.3	2.6	0.782
	Strongly disagree	7 (0.9)	1.2	0.4	3.5	0.782
Neutral	Strongly agree	15 (1.9)	1.5	0.7	3.3	0.321
	Agree	52 (6.7)	17.3	5.4	55.5	0*
	Neutral	128 (16.4)	25.6	10.5	62.6	0*
	Disagree	24 (3.1)	3.4	1.5	8	0.004*
	Strongly disagree	9 (1.2)	1.5	0.5	4.2	0.442
Disagree	Strongly agree	10 (1.3)	1	0.4	2.4	1
	Agree	13 (1.7)	4.3	1.2	15.2	0.022*
	Neutral	18 (2.3)	3.6	1.3	9.7	0.011*
	Disagree	33 (4.2)	4.7	2.1	10.7	0*
	Strongly disagree	9 (1.2)	1.5	0.5	4.2	0.442
Strongly disagree*	Strongly agree	10 (1.3)	1			
	Agree	3 (0.4)	1			
	Neutral	5 (0.6)	1			
	Disagree	7 (0.9)	1			
	Strongly disagree	6 (0.8)	1			

\* Defined as reference category † Significant p-value (<0.05)

foster cultural continuity while supporting healthier dietary choices. In a hopeful sign, 61% of participants residing in urban areas reported that they would consume indigenous foods if they learned more about their health benefits. Moreover, our findings indicate that individuals living alone or in smaller households have a higher preference for modern foods, suggesting that social dynamics play a role in dietary choices.

Black respondents seemed to be more aware of indigenous foods health values compared to other racial groups. They showed higher interest in learning more about and consuming them for health reasons. This correlation is likely rooted in cultural heritage, as indigenous foods have historically been integral to the African diet, especially in rural areas from which they originate (Kesa et al., 2023; Mushaphi et al., 2017; Quiroga, 2020). While perceptions of IFs as being associated with poverty and outdated practices have often been reported (Cloete et al., 2013; Demi, 2014; Majova, 2011; Van der Merwe et al., 2016), this study revealed a surprising degree of interest across racial groups in learning more about the health benefits of these foods whatever the settlement category of participants. These data align with the findings of Cheikhyyoussef & Embashu (2013) and Weinberger (2007), who noted that wealthier consumers in East and Southeast Africa are increasingly drawn to traditional diets, recognizing the nutritional benefits of IFs. This suggests that the potential exists to reshape the narrative around indigenous foods, positioning them as valuable components of a modern, health-conscious diet.

Given the identified knowledge gaps and the potential health benefits of indigenous foods (Takaidza, 2023), targeted nutrition education is essential. Such initiatives should aim not only to enhance awareness of the nutritional value of IFs but also to provide practical knowledge on their preparation and incorporation into daily diets. As highlighted by Mushaphi et al. (2017), promoting the consumption of IFs as supplementary foods can be beneficial across all household members.

We found that individuals who self-rated their knowledge of the health benefits of indigenous foods as very poor or poor were significantly more motivated to learn than those who considered themselves knowledgeable, with odds ratios of 6.6 and 10.7, respectively. Even those with good knowledge showed a willingness to learn (OR: 4.3). This desire for knowledge was in turn strongly associated with intentions to increase consumption, especially among those who agreed on the need to enhance their knowledge (OR: 55.3). This exceptionally high odds ratio reinforces the powerful link between nutrition knowledge and behavioral change. It also indicates that awareness campaigns could generate a considerable impact when targeting populations open to learning. Despite the high interest, actual consumption remained low, raising the question of potential barriers. These may include lack of access, limited availability in urban retail settings, time constraints, or lingering stigma about IFs being sometimes considered as “food of the poor” (Kesa et al., 2024).

Community-level outreach must actively involve multiple stakeholders including government institutions, NGOs, schools, health centers, media, and local leaders to

ensure culturally adapted, context-specific delivery of nutrition education. Strategies could include mobile health clinics, community nutrition clubs, inclusion of IFs in school feeding programs, and digital campaigns promoting IF recipes and benefits. Community-driven programs that emphasize collective knowledge sharing and the social aspects of food preparation could foster greater interest in indigenous foods, particularly among those more neutral towards dietary changes. Matenge et al. (2011) also argue that the mixing of traditional and modern foods can enhance dietary diversity, further supporting the need for culturally sensitive educational interventions.

#### STUDY LIMITATIONS

The reliance on self-reported data can introduce bias, as individuals may incorrectly estimate their knowledge of indigenous foods. In this type of research, social desirability and courtesy biases are also difficult to avoid.

#### CONCLUSION

The knowledge of health benefits related to indigenous foods in our sample of largely urban South Africans was significantly influenced by geographic location, cultural factors, and urbanization trends. There was a substantial desire to learn more about their potential healthy benefits and to consume more, presumably if this further knowledge proved convincing. While there exists a rich heritage of knowledge surrounding IFs, this is increasingly at risk of being lost, particularly in urban settings. By addressing these gaps through targeted education and community engagement, there is an opportunity to revitalize the consumption of indigenous foods, thereby improving public health outcomes and preserving cultural identity. This study serves as a foundational step towards developing effective interventions that promote the health benefits of indigenous foods across diverse populations in South Africa.

#### AUTHOR CONTRIBUTIONS

ADTK: Conceptualization, Methodology, Investigation, Data curation, Writing- Original draft preparation. HK: Conceptualization, Methodology, Supervision, Writing- Reviewing and Editing. All authors have read and approved the final version of the paper and its submission.

#### CONFLICT OF INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN SCIENTIFIC WRITING

AI (ChatGPT) was used for language editing. Authors take full responsibility for the content of this article.

#### ACKNOWLEDGEMENTS

We are grateful to all the people who took part to this survey. A special thanks to the field workers who helped in collecting the data.

#### FUNDING

This research was supported by the University of Johannesburg URC Grant 2019.

#### DATA AVAILABILITY STATEMENT

All relevant data are within the paper. However, if additional information is required, it will be provided upon request from the corresponding author.

**Received:** April 9, 2025; **Revised:** July 22, 2025;  
**Accepted:** July 30, 2025; **Published:** September 30, 2025.



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-4.0). View this license's legal deed at <http://creativecommons.org/licenses/by/4.0> and legal code at <http://creativecommons.org/licenses/by/4.0/legalcode> for more information.

## REFERENCES

- Akinola, R., Pereira, L. M., Mabhaudhi, T., de Bruin, F. M., & Rusch, L. 2020. "A review of indigenous food crops in africa and the implications for more sustainable and healthy food systems". *Sustainability*, 12(8), 3493. <https://doi.org/10.3390/su12083493>
- Budreviciute, A., Damiani, S., Sabir, D. K., Onder, K., Schuller-Goetzburg, P., Plakys, G., Katileviciute, A., Khoja, S., & Kodzius, R. 2020. "Management and prevention strategies for non-communicable diseases (NCDs) and their risk factors". *Frontiers in public health*, 8, 574111. <https://doi.org/10.3389/fpubh.2020.574111>
- Cheikhoussef, A., & Embashu, W. 2013. "Ethnobotanical knowledge on indigenous fruits in Ohangwena and Oshikoto regions in Northern Namibia". *Journal Of Ethnobiology and Ethnomedicine*, 9, 34. <https://doi.org/10.1186/1746-4269-9-34>
- Cloete, P. C., & Idsardi, E. F. 2013. "Consumption of indigenous and traditional food crops: Perceptions and realities from South Africa". *Agroecology and Sustainable Food Systems*, 37, 902–914. <https://doi.org/10.1080/21683565.2013.805179>
- Demi, S. M. 2014. "African indigenous food crops: their roles in combating chronic diseases in Ghana. Master's Thesis, University of Toronto, Toronto, ON, Canada.
- Gewa, C. A., Onyango, A. C., Obondo Angano, F., Stabile, B., Komwa, M., Thomas, P., & Krall, J. 2019. "Mothers' beliefs about indigenous and traditional food affordability, availability and taste are significant predictors of indigenous and traditional food consumption among mothers and young children in rural Kenya". *Public Health Nutrition*, 22(16), 2950–2961. <https://doi.org/10.1017/S1368980019001848>
- Kesa, H., Tchuenchieu Kamgain, A. D., Kwazi Zuma, M., & Mbhenyane, X. 2023. "Knowledge, Perception and Consumption of Indigenous Foods in Gauteng Region, South Africa". *International Journal of Environmental Research and Public Health*, 20(20), 6961. <https://doi.org/10.3390/ijerph20206961>
- Kesa, H., Tchuenchieu Kamgain, A. D., Zuma, M. K., & Mbhenyane, X. 2024. "Availability and accessibility of indigenous foods in Gauteng region, South Africa". *Frontiers in Sustainable Food Systems*, 8:1385230. <https://doi.org/10.3389/fsufs.2024.1385230>
- Majova, V. J. 2011. "The rural-urban linkage in the use of traditional foods by peri-urban households in nompumelelo community in east london, eastern cape: A comparative study. Master's Thesis, University of South Africa, Pretoria, South Africa. Available online: <https://uir.unisa.ac.za/handle/10500/4973> (accessed on 28 July 2024).
- Matenge, S. T. 2011. "Utilisation of indigenous plant foods in the urban and rural communities". *Indilinga African Journal of Indigenous Knowledge Systems*, 10, 17–37.
- Mbhenyane, X. G. 2017. "Indigenous foods and their contribution to nutrient requirements". *South African Journal of Clinical Nutrition*, 30(4), 5-7.
- Mushaphi, L. F., Dannhauser, A., Walsh, C. M., Mbhenyane, X. G., and van Rooyen, F. C. 2017. "The impact of a nutrition education programme on feeding practices of caregivers with children aged 3 to 5 years in rural Limpopo province, South Africa". *South African Journal of Clinical Nutrition*, 30, 101–108. <https://doi.org/10.1080/16070658.2017.1322823>
- Nel, J. H., & Steyn, N. P. 2022. "The nutrition transition and the double burden of malnutrition in sub-saharan african countries: how do these countries compare with the recommended lancet commission global diet?". *International Journal of Environmental Research and Public Health*, 19(24), 16791. <https://doi.org/10.3390/ijerph192416791>
- Nengovhela, R., Taruvunga, A., & Mushunje, A. 2018. Determinants of indigenous fruits consumption frequency among rural households: evidence from mutale local municipality, South Africa". *Journal of Advanced Agricultural Technologies*, 5. <https://doi.org/10.18178/joaat.5.3.227-231>
- Nnyepi, M. S., Gwisai, N., Lekgoa, M., & Seru, T. 2015. "Evidence of nutrition transition in Southern Africa". *The Proceedings of the Nutrition Society*, 74(4), 478–486. <https://doi.org/10.1017/S0029665115000051>
- Quiroga Ledezma, C. C. 2020. "Native food crops for present and future generations: Their role in nutrition and health". *Sustainability of the Food System: Sovereignty, Waste, and Nutrients Bioavailability*; Betoret, N.; Betoret, E., Eds.; Academic Press: London, UK. <https://doi.org/10.1016/B978-0-12-818293-2.00001-X>.
- South African Department Agriculture, Forestry and Fisheries. Most common indigenous food crops of South Africa. 2013. (Online) Available from: <https://www.nda.agric.za/docs/Brochures/Indigfoodcrps.pdf> (Accessed: 14th June 2019).
- Takaidza, S. 2023. "Indigenous South African food: nutrition and health benefits, Phytochemicals in Agriculture and Food, <https://doi.org/10.5772/intechopen.110732>. IntechOpen
- Tchuenchieu Kamgain, A. D., Onyenweaku, E., & Kesa, H. 2024. "Modern vs traditional indigenous diet preference in Gauteng region, South Africa: A public health concern?" *Heliyon*, 10(11), e32055. <https://doi.org/10.1016/j.heliyon.2024.e32055>
- Tselaesele, N., Bultosa, G., Molapisi, M., Makhabu, S., Kobue-Lekalake, R., Haki, G. D., ... Sonno, K. 2023. "Plant-based traditional foods and beverages of Gumare Village, Botswana". *Food Production, Processing and Nutrition*, 5, 28. <https://doi.org/10.1186/s43014-023-00142-3>
- Van der Hoeven, M., Osei, J., Greeff, M., Kruger, A., Faber, M., & Smuts, C. M. 2013. "Indigenous and traditional plants: South African parents' knowledge, perceptions and uses and their children's sensory acceptance". *Journal of Ethnobiology and Ethnomedicine*, 9(1), 78. <https://doi.org/10.1186/1746-4269-9-78>
- Van der Merwe, J. D., Cloete, P. C., & van der Hoeven, M. 2016. "Promoting food security through indigenous and traditional food crops". *Agroecology and Sustainable Food Systems*, 40, 830–847. <https://doi.org/10.1080/21683565.2016.1159642>
- Vorster, H., Badham, J., & Venter, C. 2013. "An introduction to the revised food-based dietary guidelines for South Africa". *South African Journal of Clinical Nutrition*, 26, S5-S12.

- Weinberger, K. 2007. "Are Indigenous vegetables underutilized crops? Some Evidence from Eastern Africa and South East Asia". *ISHS Acta Horticulturae*, 752, 29–34
- World Health Organization. 2018. Noncommunicable diseases country profiles 2018. World Health Organization. <https://apps.who.int/iris/handle/10665/274512>.
- (Accessed: 24th November 2024)
- World Bank. 2020. Cause of death, by non-communicable diseases (% of total)—South Africa. Global Health Estimates 2020. <https://data.worldbank.org/indicator/SH.DTH.NCOM.ZS> (Accessed: 20th July 2025)