



## Introduction

- Understanding nutrition knowledge, attitudes, beliefs and practices (NKABP) of people can guide us to design appropriate and comprehensive nutrition education programs.
- Globally, previous studies mainly focused on nutrition knowledge, attitudes, and practices of children [1-6] or adolescents [7-9]. However, children's and adolescents' eating behaviors are influenced by their parent's health and eating behaviors [10,11].
- There are differences between urban and rural people's living conditions that affect various aspects of life such as prevalence of chronic diseases and their risk factors [12,13], as well as dietary practices [14-18].

## Aim

- Examining the level of NKABP and their interrelated correlations among adults in urban and rural communities in the Free State province of South Africa.

## Study Design and Population

- Assuring Health for All in the Free-State (AHA-FS) is a cross-sectional study, which was approved by the Ethics Committee of the Faculty of Health Sciences, University of Free State (UFS-ETOVS number 21/07).
- This sub-study forms part of AHA-FS and was approved by Texas Tech University Institutional Review Board (IRB2022-353).
- Participants were household adult members aged 25-64 years from both urban and rural parts of the Free State province.

## NKABP Questionnaire

The NKABP questionnaire was adapted from a validated and reliable questionnaire [19] and consisted of four sections:

- Nutrition Knowledge:** 12 questions with true, false and do not know answer choices. It focused on food-based dietary guidelines for South Africa. Complete score of correct answers was 12 points.
- Nutrition Attitudes:** 8 questions with agree, disagree and do not know answer choices. It focused on health effects, time for eating, and food purchase. Complete score for positive attitudes was 8 points.
- Nutrition Beliefs:** 7 questions agree, disagree and do not know it focused on healthy eating, nutrition advice, and food purchase. Complete score for positive beliefs was 7 points.
- Nutrition Practices:** 9 questions with regular, never and occasional answer choices. It focused on Food-based dietary guidelines for South Africa. Complete score was sum of regular and occasional healthy practices and it was 18 points.

## Statistical Analysis

- The analyses were performed using the R statistical software program.
- Due to non-normal distribution, Mann-Whitney U tests were performed to compare NKABP domains scores between rural and urban participants.
- Spearman correlation analyzed the interrelated correlations between NKABP domains.
- P-value less than 0.002 was considered statistically significant after adjusting for multiple comparisons using Bonferroni Correction.

## Results

- Total sample size consisted of 846 participants with 363 (42.9%) from urban and 483 (57.1%) from rural areas of the Free State Province.
- The sample had predominantly women with 660 (78.2%) of participants.
- The mean  $\pm$  SD age of urban participants ( $44.42 \pm 10.67$ ) was significantly ( $p < 0.0001$ ) different than the mean age of rural participants ( $47.45 \pm 10.32$ ).
- Most participants had primary school education (34.01%) or studied until 6-8 grade (25.54%).
- The income level was also significantly different between urban and rural adults ( $p < 0.0001$ ), with rural adults had higher income level compared to urban.

Table 1: Nutrition knowledge, attitudes, beliefs and practices

	Total Score	Overall (n=846) Median (Q1-Q3)	Urban (n=363) Median (Q1-Q3)	Rural (n=483) Median (Q1-Q3)	P-value
Nutrition Knowledge	12	9 (8 - 10)	8 (7 - 9)	9 (8 - 10)	< 0.0001
Nutrition Attitudes	8	6 (4 - 7)	5 (4 - 6)	7 (6 - 7)	< 0.0001
Nutrition Beliefs	7	5 (5 - 6)	5 (4 - 6)	6 (5 - 6)	< 0.0001
Nutrition Practices	18	9 (8 - 11)	9 (8 - 12)	9 (8 - 11)	0.03

Table 2: Correlations between nutrition knowledge, attitudes, beliefs and practices

	Overall	P-value	Urban	P-value	Rural	P-value
Nutrition Knowledge and Attitudes	0.25	< 0.0001	0.11	0.03	0.27	< 0.0001
Nutrition Knowledge and Beliefs	0.19	< 0.0001	0.15	0.003	0.16	< 0.0001
Nutrition Attitudes and Beliefs	0.36	< 0.0001	0.11	0.03	0.38	< 0.0001
Nutrition Knowledge and Practices	0.04	0.28	-0.04	0.46	0.12	0.007
Nutrition Attitudes and Practices	-0.00086	0.97	0.12	0.02	-0.01	0.77
Nutrition Beliefs and Practices	0.03	0.4	0.09	0.08	0.01	0.82

## Strength and Limitation

### Strengths

- Large sample size.
- Multiple comparisons adjustment to control type one error rate.

### Limitations

- Participants were predominantly women, and people with low education and income levels.

## Conclusion and Implication

- Adults in rural areas have better nutrition knowledge, attitudes, and beliefs compared to those in urban areas and their knowledge, attitudes, and beliefs were correlated with each other.
- However, nutrition knowledge, attitudes and beliefs were not correlated with nutrition practices in both urban and rural areas.
- Future nutrition education interventions should consider socioeconomic status of people and include behavior change strategies to translate nutrition knowledge, attitudes and beliefs into practices.

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