

Reliability of General Nutrition Knowledge questionnaire on Community Extension Agents in Uganda

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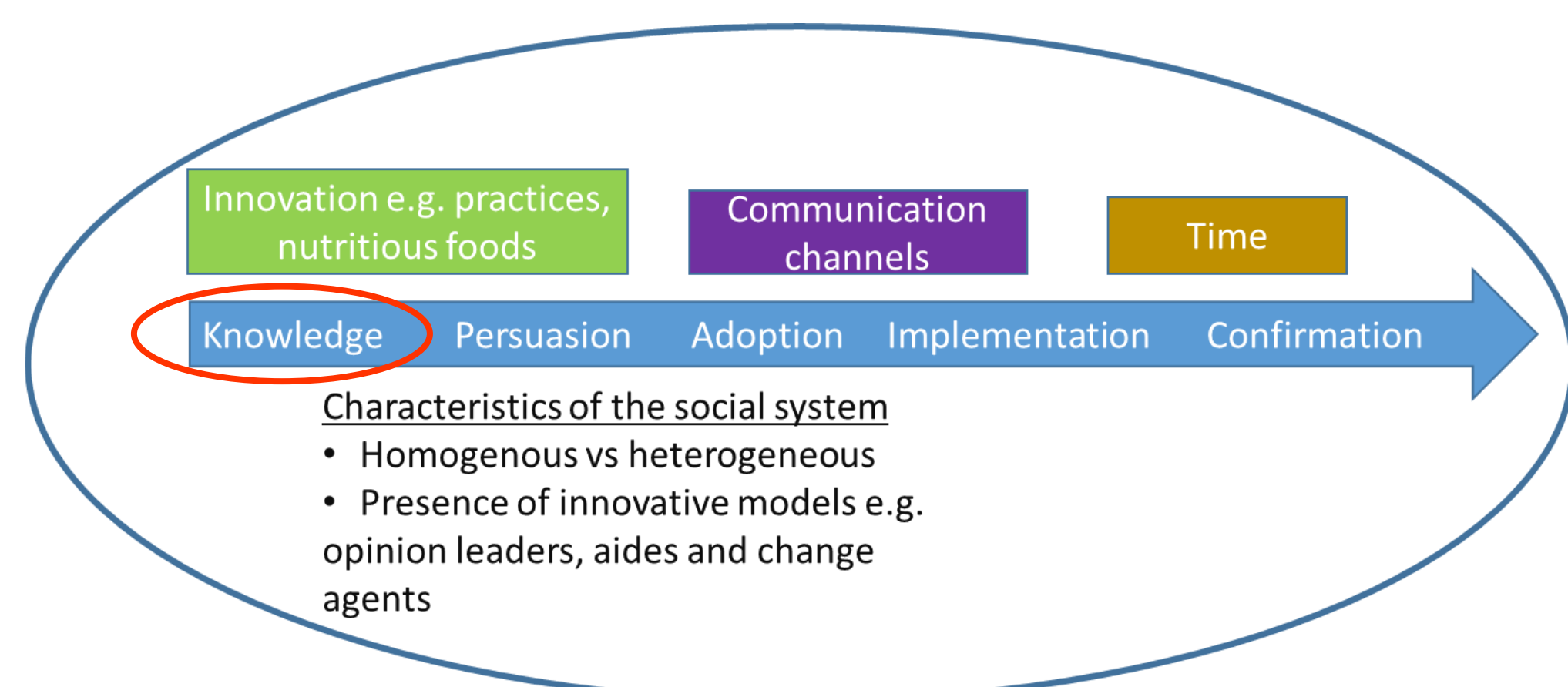


Abstract

Nutrition knowledge facilitate decision on national nutritional strategies by the extension agents. However, there is no questionnaire that evaluates nutrition knowledge of extension agents. In this study a questionnaire that was earlier developed for head teachers was used on extension agents of Kiboga and Kyankwanzi districts. The questionnaire was administered twice in a span of two weeks. The questionnaire had five constructs on nutrition knowledge: expert recommendations, food groups, selecting foods, relationship of diet and diseases, and food fortification. The reliability of items was determined using internal consistency (α) and test retest using spearman's correlation coefficient. The knowledge level of extension agents were determined. After removal of items based on item difficulty (10-90%) and discrimination (<0.2), the construct on "selecting of food" lost all items. The resulting internal consistency (α) were: expert recommendations (0.73, 0.72), food groups (0.85, 88), relationship of diet and diseases (0.77, 0.70), and food fortification (0.9, 0.88) on the first and second round respectively. The questionnaire can be used to obtained reliable nutrition knowledge data of extension agents.

Introduction

- The Uganda Nutrition Action Plan has the following strategies:
 - Promotion of adequate feeding practices and behaviors;
 - Increase availability, access, and consumption of diversified foods;
 - Providing care and support to the malnourished; and,
 - Strengthening of food and nutrition policies.
- This has to be integrated into the community through a multi-sectoral approach.
- In the Ag Extension sector, extension workers are the primary connection between the farming families and the new knowledge or practices.
- Modifying nutrition related behaviors starts with knowledge of nutrition content (scheme below). As such, training of extension workers starts with assessing their knowledge.



- Community extension agents in rural communities combine their basic knowledge with the new knowledge about the strategies described, potentially influencing behaviors of their beneficiaries.



- Yet basic nutrition knowledge level of extension agents is unknown. Validated tools to measure this are limited.

Research Question

Is the general nutrition knowledge questionnaire (Bukenya et al. 2016) recently developed and administered to head teachers reliable to assess nutrition knowledge of community extension workers in Uganda?

Method

- The GNKQ comprised of five dimensions on nutrition knowledge, sources of nutrition knowledge, and demographic characteristics (Fig. 1).
- Forty six extension agents (also known as Innovation platform members) working with Bioversity International, Uganda in Kiboga and Kyankwanzi districts, Uganda were selected.
- Thirty four extension agent that were not working with Bioversity International with the similar employment characteristics were included in this study.
- The questionnaire was administered twice in a span of two weeks.
- Data were entered in SPSS-23 and item difficulty (10-90%) and discrimination (<0.2) were determined and items removed.
- Internal consistency (using Kuder-Richardson formula -20), test-retest reliability (using spearman's correlation coefficient).
- Due to its non-normal distribution, the Mann-Whitney U-test was used to determine the differences.



Fig. 1. Components of the GNKQ

Results: Demographics

Table 1: characteristics of extension agents

Characteristic	Extension agents working with Bioversity		Extension Workers not working with bioversity		All extension agents	
	n	%	n	%	n	%
Gender						
Male	19	41.3	17	50.0	36	45
Female	27	58.7	17	50.0	44	55
Age						
18-24	3	6.5	8	23.5	11	13.8
25-34	21	45.7	12	35.3	33	41.3
35-44	12	26.1	8	23.5	20	25.0
45-54	7	15.2	5	14.7	12	15.0
55-64	2	4.3	1	2.9	3	3.8
65-74	1	2.2	0	0.0	1	1.3
Education						
Primary level	9	19.6	6	17.6	15	18.8
Ordinary Secondary school	17	37.0	8	23.5	25	31.5
High School (A' level)	1	2.2	6	17.6	7	8.8
Technical college	9	19.6	5	14.7	14	17.5
Diploma	4	8.7	2	5.9	6	7.5
Degree	6	13.0	7	20.6	13	16.3
Number of children						
None	6	13.0	10	29.4	16	20.0
1	6	13.0	6	17.6	12	15.0
2	9	19.6	3	8.8	12	15.0
3	6	13.0	4	11.8	10	12.5
4	4	8.7	6	17.6	10	12.5
≥ 5	15	32.6	5	14.7	20	25.0
Do you have any nutrition-related qualification						
Yes	14	30.4	6	17.6	20	25
No	32	69.6	28	82.4	60	75

Results: Item Discrimination, Internal Consistency and Test-Retest Reliability

Table 2: Internal consistency and test-retest reliability of the items

Topic on general nutrition	Internal reliability (α)						Test-retest reliability	
	Before deleting items			After deleting items			Before	After
	Items	Round 1	Round 2	Items	Round 1	Round 2	r	r
Expert recommendations	16	0.69	0.68	10	0.73	0.72	0.66	0.73
Food groups	67	0.81	0.85	44	0.85	0.88	0.73	0.77
Selecting foods	10	0.24	0.26	0			0.06	
Relationship of nutrition and disease	22	0.63	0.63	9	0.77	0.70	0.55	0.77
Food fortification	22	0.90	0.88	22	0.90	0.88	0.63	0.63
Total	137	0.91	0.91	85	0.93	0.93	0.81	0.82

Internal consistency and test-retest reliability of the items in the GNKQ before and after deletion of items based on item difficulty and discrimination.

- There was improvement in internal consistency items after deleting items with poor item difficulty and discrimination except section on "selecting food".
- There was improvement in the test retest reliability of items except for items in sections "selecting foods" and "Food Fortification".

Nutrition Knowledge of extension agents

Table 3. Nutrition knowledge scores of extension agents characterized (round one)

Characteristic	On program			Not on program		
	n	mean	SD	n	Mean	SD
Gender						
Male	19	48.00	14.87	17	42.41	16.67
Female	27	37.67	13.49	17	42.88	13.24
Have Nutrition related qualification						
Yes	14	37.30	16.11	6	48.33	16.71
No	35	43.14	16.53	27	42.19	12.54
Level of education						
Primary	9	25.89	7.96	6	40.00	16.01
Secondary	18	40.11	10.92	14	35.93	13.48
Tertiary	19	51.26	13.61	14	50.50	13.00
Sources of nutrition information						
At school	31	43.32	15.93	23	44.04	16.16
Peers and friends	21	44.38	15.32	17	49.35	14.97
Health personnel	35	42.91	13.70	27	44.19	14.46
Parent/Guardian	27	43.48	14.20	16	45.31	15.23
Books and magazines	34	42.88	15.41	23	45.44	15.65
Internet	17	42.12	14.32	24	43.38	15.06
Total	46	41.94	14.83	34	42.65	14.82

- The difference in general nutrition knowledge between extension agents on "program" and "not on program" was observed only among the agents with primary school level of education.
- The knowledge was not different between agents in all four concepts with acceptable reliability:
 - Expert recommendations ($U = 690, P = 0.365$),
 - Food groups ($U = 730, P = 0.612$),
 - Relationship of nutrition and diseases ($U = 765.5, P = 0.871$),
 - Food fortification ($U = 728.0, P = 0.591$), and,
 - Total score ($770.5, P = 0.911$).
- Therefore, data were combined during analysis.

Results: percentages of correct answers

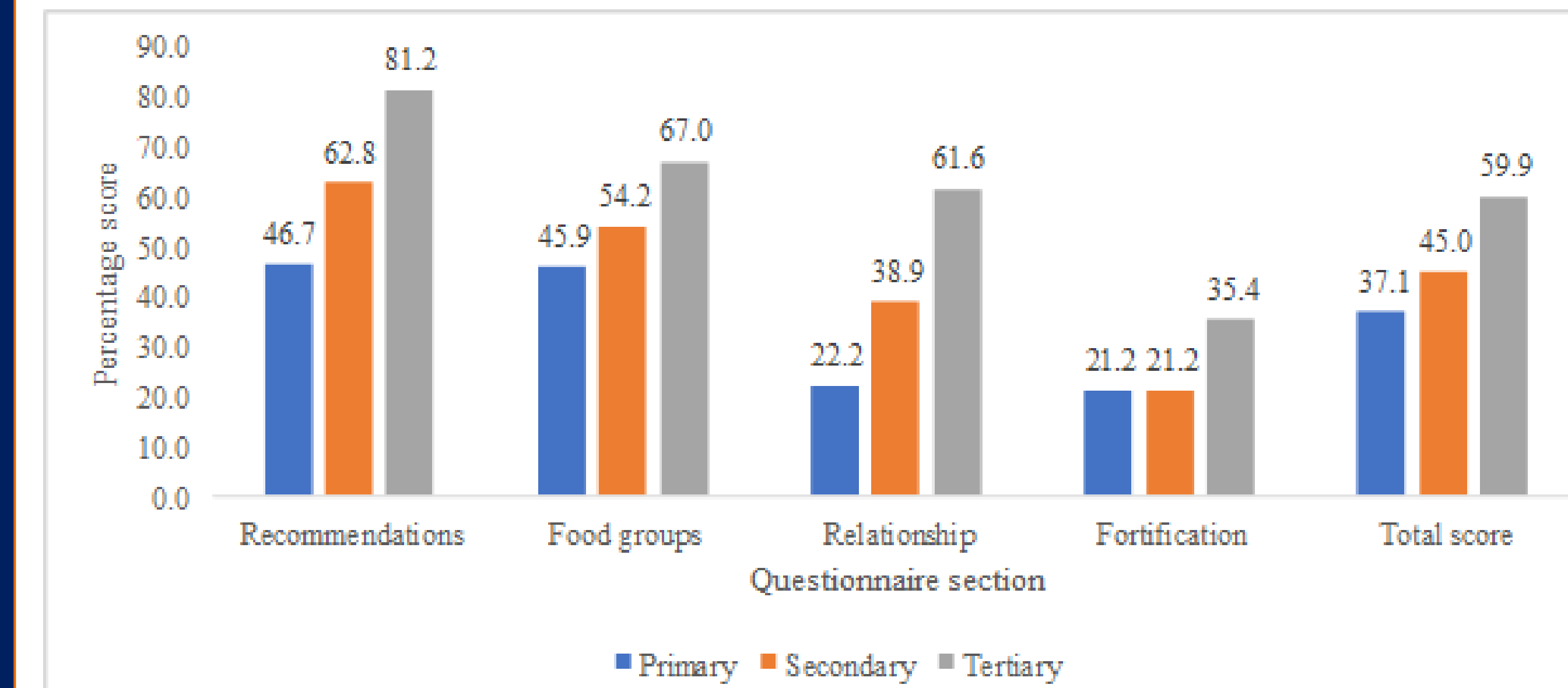


Fig 2. Knowledge level across maximum education attained

- The nutrition knowledge of extension agents was associated with their level of education. ($F [1, 78] = 28.23, P < 0.001$)

Conclusions and Future Studies

- The questionnaire that was earlier developed to evaluate nutrition knowledge among head teachers had items that provided reliable data on nutrition knowledge of ag. extension agents. Therefore, the earlier questionnaire could be used to collect valid and reliable nutrition information from this population.
- In general, the nutrition knowledge of the agents was high on expert recommendations and very low on food fortification.
- Future studies will seek to use the questionnaire to study relationship of nutrition knowledge and other behavioral indicators and practices during dissemination of key nutrition messages.
- The questionnaire can facilitate the evaluation of impact of interventional education programs provided to extension agents.

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