



To Access the Knowledge of Community Science: A Fresh Perspective on B.Sc. Community Science Grade

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JSRR/2024/v30i51988

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/115777>

Original Research Article

Received: 02/02/2024

Accepted: 04/04/2024

Published: 08/04/2024

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ABSTRACT

Community Science formerly Known as Home Science is a profession and area of study that deals with the management and economics of the home and community. It is also referred to as family and consumer sciences, human ecology, and home economics. The present study was conducted during 2022-23 to measure the knowledge level of the B.Sc. Community Science graduates. To construct and standardize Knowledge scale the researcher outlined a scale and after that analyzing the content framed 600 items related to the course. After seeking the opinion of the experts some of the items were reframed. Finally, 450 items were considered to form initial stage for developing a standardized knowledge test. These items were subjected to item analysis. After which, a total 300 items were remained for the final study. The selected items sent to 15 State or central Agricultural Universities, 150 M.Sc. Community Science Students as respondents through Online google forms for the data collection. The result of the study revealed that there are 14% of the respondents had low level of Knowledge, majority of the respondents, 74% fall into the medium level of knowledge and 12% of the respondents had demonstrate a higher level of knowledge.

Keywords: Community science; knowledge scale; B.Sc. community science degree holders.

1. INTRODUCTION

As per 5th Dean's Committee of ICAR, Home Science has been renamed as Community Science in India and a major change has been suggested in its curricula leading to maximum career opportunities further. Community Science is an inter-disciplinary field of knowledge which integrates concepts from Physical, Biological, Agricultural, Social and Environmental Sciences with along its basic components of Food and Nutrition, Resource Management and Consumer Science, Human Development and Family Studies, Apparel and Textile Science and Extension Education and Communication Management [1,2]. It prepares the individuals to obtain recent scientific information for dealing with real life situations in order to cope up with everyday problems effectively by providing broad-based, culturally relevant knowledge in different areas of Home Science. State Council of Educational Research and Training [3] conducted "a study on Home Science teaching – new perspectives and came to the conclusion that it teaches a scientific approach to modern housekeeping which is important for achieving household welfare and preserving family life in a constantly changing society".

As a discipline, it also integrates the ingredients of the sciences, social sciences and technology to facilitate the study of and enhance the quality of human life. Its approach is therefore inherently interdisciplinary [4,5].

The late Placid Association defined Home Science "as study of those principles, conditions and ideals which are concerned, on the one side,

with immediate and physical environment of man and on the other, with his human nature" [6-18].

The need of Home Science Colleges as a part of State Agricultural Universities emerged with an increase in awareness of contribution of rural and urban women to family economy and in raising the standard of living. Arfi and Kiran [9] conducted a study on perception towards home science and discovered that it is the science that covers everything related to the individual, house, family, and resources. The present curricula aim at increasing both the academic as well as vocational capabilities of the students for better employability. Sawhney, S. [10] studied on career opportunities in Home Science and came to this conclusion home science is a multidisciplinary field of study that offers methodical, scientific information about numerous facets of family life.

2. MATERIALS AND METHODS

For the present study, the following procedures were followed for sampling, preparing the draft tool, administration of the tool and finally to measure the Knowledge of B.Sc. Community Science Degree Holders.

2.1 Standardization of Knowledge Test

The Present study required a standardized "Knowledge Test" to measure quantitatively the Knowledge of B.Sc. Community Science Graduates with regards to various courses. The procedure followed in developing the knowledge test is as under.

2.2 Collection of Test Materials

The content of knowledge test is composed of statements called items. Based on the content area 600 statements regarding B.Sc. Community Science were prepared from the pertinent Syllabus with consulting the Text Books and ICAR e-course. The items were edited and drafted in such a way that each item highlighted only one idea and did not have any ambiguity. All items were logically sequenced to form initial test set to carry out the item analysis.

2.3 Preliminary Selection of Items

“The prepared items were subjected to scrutiny by a panel of experts of DRPCAU, Pusa, Bihar in the field of Community Science. The experts were requested to check each item carefully whether items were really measuring the knowledge of the respondents about Community Science or not. They had, of course, liberty to add/delete or modify any of the items. After considering the opinion of experts, 450 items were selected for developing a standardized knowledge test. All the selected items were in the form of having correct and incorrect type of questions” [4]

2.4 Item Analysis

“The item analysis was carried out as per the standard procedure, so as to yield three kinds of information viz., “index of item difficulty”, “item discrimination index” and “point biserial correlation”. The items were finally administered to those experts of Home Science of All India Agricultural Universities with the help of Available Online Address through Proper Channel, who did not involve earlier process of standardization. The data thus obtained by 30 experts was subjected for item analysis. To analyze 450 items each of the 30 to whom the test item was administered was scored on the basis of the score allotted i.e., 1 for correct response and 0 for incorrect response. Therefore, there was a possibility of respondents scoring the maximum points for all correct answers and zero points for all wrong answers. Thus, the range of obtainable score was 0-450. After computing the total score obtained by each of the 30 respondents on 450 items, they were arranged in order from highest to the lowest. These 30 respondents were then divided into six equal groups- G1, G2, G3, G4, G5 and G6 respectively with 5 respondents in each group. For the purpose of item analysis, the middle two groups G3 and G4 were eliminated keeping only four extreme groups with high (G1 and G2) and low (G5 and G6) score” [4]

2.5 Item Difficulty Index (P)

Item difficulty was determined by the percentage of individuals able to pass each item. In practice, if an item is to distinguish among individuals, it should not be so easy that all persons can pass it, nor should be difficult that none are able to pass it.

The index of item difficulty indicated the extent to which an item was difficult. The item difficulty as worked out in the present study was P i.e., the percentage of respondents answering an item correctly. The item with P values ranging from 30 to 70 was considered for the final selection of the standard knowledge test. It was calculated by following formula:

$$P = \frac{\text{No.of Respondents answer correctly}}{\text{Total no.of Respondents}} * 100$$

2.6 Item Discrimination Index (E1/3)

The second criteria for item selection were the discrimination index indicated by E 1/3 value for an item. The function of item discrimination index is to find out whether an item really discriminates a well-informed respondent from a poorly informed respondent.

The formula used is as follows:

$$E \ 1/3 = \frac{(S1+S2)-(S5+S6)}{\frac{N}{3}}$$

Where,

S1, S2, S5 and S6 = frequencies of correct answers in groups G1, G2, G5 and G6 respectively.

N = Total number of respondents in the sample selected for item analysis. In the present study, the item with E1/3 values ranging from 0.30 to 0.80 was considered for the final selection for inclusion in the knowledge test.

2.7 Point Biserial Correlation (rpbis)

“For establishing internal validity of the check point biserial correlation coefficient (rpbis) was estimated since the items were scored simply as 1 if correct and 0 if incorrect” [4]. According to Garrett (1979) “point biserial r assume that the variable, which has been classified into two categories, can be thought of as concentrated at two distinct points along a graduated scale or continuum”.

The formula for the point biserial r is:

$$R_{pbis} = \frac{M_p - M_q}{SD} \times Pq$$

Where,

r_{pbis} = Point biserial correlation coefficient

M_p = Mean of the total scores of the respondents who answered correctly

M_q = Mean of the total scores of the respondents who answered incorrectly

SD = Standard deviation of the entire sample

p = Proportion of the respondents giving correct answers to the item

q = Proportion of the respondents giving incorrect answers to the item or $q=1-p$

Items having significant Point biserial correlation, either at 0.01 per cent or 0.05 percent level of probability were selected for the final knowledge check.

2.8 Test of Significance of R_{pbis}

To test significance of Point biserial correlation co-efficient the following „t“ test was used.

$$t = \frac{r_{pbis}\sqrt{N-2}}{\sqrt{1-r_{pbis}^2}}$$

Where,

r_{pbis} = Point biserial correlation

N = Total number of respondents

2.9 Testing the Reliability of the Knowledge Test

A split half reliability coefficient method was used to find out the reliability. The test was administered to thirty respondents and test was corrected by using Spearman Brown Formula. The reliability coefficient of the whole test was estimated from the formula given below:

$$r_{tt} = 2 r_{oe}/1 + r_{oe}$$

Where,

r_{tt} = reliability coefficient of the whole test

r_{oe} = reliability coefficient of the half-test found experimentally.

Both these coefficients provide an estimate of the internal consistency of the test and thus the dependability of the test scores.

2.10 Validity of the Scale

Content validity was measured by the extent to which the items included in the test represent the total universe of Community Science graduates. The universe of the content was covered widely from the available text books, ICAR e-Course content and experts of Home Science. Hence, it was assumed that the scores obtained by administering the knowledge test measures what it was intended to be measured. Moreover, the validity of the test item was also tested by method of point biserial correlation coefficient (r_{pbis}). The items with highly significant biserial correlation coefficients at 0.01 and 0.05 levels of probability indicated the validity of the items in relation to the knowledge test designed to measure the knowledge of B.Sc. Community Science Students. The final scale consisted of 300 statements which involved positive and negative statements both.

2.11 Sampling Plan for the Find Out Knowledge Level

The study was conducted during the year 2022-23. The data were collected from 15 State or Central Agricultural Universities of India. The data were collected from 150 randomly selected M.Sc. Community Science Students of those universities who had already awarded for the B.Sc. Community Science Honors Degree. For the purpose of data collection, a questionnaire was developed which was involved those constructed Knowledge scale for the final study and sent through online google form. The selected respondents responses were recorded on a two-point continuum as True /False and scored as 1 and 0. The collected data administrated to statistical tool Frequency, Percentage and mean for the result and discussion.

3. RESULTS AND DISCUSSION

The data in this Table 1 represent the distribution of respondents knowledge levels based of Frequency and Percentage and mean in this Table 1, with a total sample size of 150 respondents. The knowledge levels are divided into three categories based on the scores obtained in the test.

Table 1. To assess the knowledge of students pertaining to B.Sc. community science degree

Knowledge level	N=150	
	Frequency	Percentage
Low Knowledge level (< 174.55)	21	14%
Medium Knowledge level (174.55-230.39)	111	74%
High Knowledge level (>230.39)	18	12%

3.1 Low Knowledge level (< 174.55)

There are 21 respondents 14% of the respondents who scored below 174.55 in total response 300. These individuals had lower level of knowledge.

3.2 Medium Knowledge Level (174.55-230.39)

The majority of the respondents 111 respondents 74% of the sample fall into this category. They have scores ranging from 174.55 to 230.39, indicating a medium level of knowledge.

3.3 High Knowledge Level (230.39-300)

There are 18 respondents 12% of the sample who scored within the range of 230.39 to 300. These respondents demonstrate a higher level of knowledge of B.Sc. Community Science Degree Programme.

4. SUMMARY AND CONCLUSION

This study aimed to assess the knowledge level of B.Sc. Community Science graduates through the development of a standardized knowledge test. The research process involved constructing a scale, generating 600 items related to the course content, refining them with expert input, and finally selecting 300 items for the study. Data was collected from 15 State or Central Agricultural Universities and 150 M.Sc. Community Science students via online Google Forms. The findings revealed that 14% of respondents had a low level of knowledge, 74% had a medium level, and 12% demonstrated a higher level of knowledge.

The results of this study highlight the varying knowledge levels among B.Sc. Community Science graduates. The majority of respondents fell into the medium category, suggesting a solid foundation of understanding. However, it is crucial to address the needs of the 14% with lower knowledge levels, perhaps through targeted interventions or additional support

systems. Additionally, the 12% with higher knowledge levels represent potential leaders and experts in the field, indicating the importance of nurturing and empowering them further. Overall, this study underscores the importance of continuous assessment and tailored educational approaches to ensure the effectiveness and relevance of B.Sc. Community Science programs in meeting the demands of the profession and community.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/115777>