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Development of knowledge test to measure the knowledge level of the village councillors about Public Distribution System (PDS) in Meghalaya

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ABSTRACT

An attempt has been made to develop a knowledge test to measure the knowledge of village councillors about Public Distribution System (PDS) in Meghalaya. Relevant statements about 60 items covering all aspects of PDS were collected. After getting jury opinion on the items, 60 items were selected and administered to 30 non-sample respondents. Finally, 20 knowledge items were included in the final format of the knowledge test based on the difficulty index ranges from 30 to 70, discrimination index from 0.20 to 0.80. The reliability of the knowledge test was measured with the help of split-half method and reliability coefficients was found to be $r=0.58$. A total of 120 village councillors consisting of both the FPS dealers and Vigilance committee members implementing PDS with four respondents from each village covering 30 villages in three districts of the state were selected purposively for the final study. Results revealed that 82.50 percent of the respondents had knowledge that FPS dealers shall not be the Headman/Village Secretary including members of the Executive Committee, followed by knowledge on issue of license to the FPS for distribution of essential commodities (79.16%), while only 23.33 percent had knowledge that whenever the FPS dealer surrenders or suspended, the quota is transferred temporarily to the nearest dealer and only 12.50 percent of them had awareness about tollfree number 1967. Results also shown that majority of the village councillors (74.16%) belonged to the medium category of knowledge level, followed by high (13.33%) and low knowledge level (12.50%) respectively.

1. Introduction

Public Distribution System (PDS) was started in Meghalaya in the year since the state inception in the year 1972 with the objective to ensure availability of food grains to everyone and to ensure that it is at price affordable for even the poorest in the state. This programme has been implemented in the state by being implemented by the Department of Food Civil Supplies & Consumer Affairs through the Sub Divisional Office (Supply), DC office and being executed by the licensed the Fair Price Shops (FPS) dealers at the grassroot level. The FPS dealers are selected by the village council through the community participation and are being renewed from time to time. Knowledge of the FPS dealers and the village councillors particularly for programme execution as well as monitoring the overall programme is

very much important. Bloom *et al.* (1956) defined knowledge as those behaviour and test situation, which emphasized the remembering, by either recognition or recall, of ideas, materials and phenomenon. English and English (1961) defined knowledge as "the body of understood information possessed by an individual or by a culture". As knowledge test has not been developed in the past with respect to the knowledge of the village councillors about PDS and assessment of village councillors' knowledge about PDS has become an important issue which needs to be explored. With this background, a present study is conducted to develop the knowledge test of the village councillors about PDS so that we could determine the knowledge level of the village councillors about PDS in Meghalaya.

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2. Methodology

Locale of study and sampling plan

PRIs have to play a major role for the rural development (Singh, 2015). As Meghalaya is absent of Panchayati Raj system in the state and implementation of rural development programmes are usually executed through the traditional Village Councils in different regions of the state, there is an urgent need for development of knowledge test of village councillors about PDS. For development of knowledge test, 30 non-respondents from Pyndengumiong village area of West Khasi Hills were taken, subjected to item analysis to screen more items based on the opinion of the respondents. Later, for calculating reliability of the developed knowledge test, 30 fresh non-sample respondents from Mairangbah village, West Khasi Hills were taken. Further, the developed Knowledge test was administered to test the knowledge level of 120 respondents of the study area. A total of 120 village councillors consisting of both the FPS dealers and Vigilance committee members implementing PDS with four members from each village covering 30 villages implementing PDS were selected purposively for the final study covering two blocks each from three districts of the state-East Khasi Hills, West Jaintia Hills and West Garo Hills.

A. Development of village councillors' knowledge test about PDS

Construction of knowledge test

The Knowledge test was developed in the line elucidated by Lindquist (1951). The procedure followed for constructing the knowledge test is described as below:

Collection of items

The most important element of a knowledge test is the set of statements or questions called items. The content of knowledge test is composed of questions called items (Chatterjee *et. al.*,2020). Here, the items for the test were constructed from the content generated by the Directorate of Food Civil Supplies & Consumer Affairs, Government of Meghalaya. Initially, about 75 items related to PDS focusing on the basic information, guidelines for fair price shop etc. for implementation at the village level were collected from various sources viz., relevant literatures, consultation with the PDS officials, group discussion and personal experience. While selecting the items, necessary care was taken to see that the items should abet in differentiating the well-informed respondents with poorly informed ones, have certain level of

difficulty value and encourage thinking rather the mechanical memorization (Ray and Mondal, 2014). After screening, fine tuning, editing and discussion with the field experts, the items were reduced to 60 items. The items of the test were converted into genuine dichotomous objective type questions to facilitate facile scoring and analyses.

Pre-testing and item analysis

The item analysis of a test yields two kinds of information: item difficulty index, item discrimination index as reported by Guiford (1964). The sixty items were administered to 30 non sample respondents conducted in Pyndengumiong village area of West Khasi Hills as a pilot study and respondents were selected for those that were not included in the final test with two-point response continuum. The scores allotted were '1' for right answer and '0' for wrong answer for each of the 60 items. The total correct response was the knowledge score obtained by an individual respondent. After computing the total score obtained, they were arranged in order from highest to lowest. The respondents were then divided into 6 groups (G1 to G6) each having 5 respondents and were labelled as G1, G2, G3, G4, G5 and G6. For the purpose of item analysis, the middle two groups G3 and G4 were eliminated keeping only four extreme groups with high and low scores.

Item Difficulty Index (P)

Garrett (1966) described several ways to determine the difficulty of an item (i) by the judgments of the competent people who rank the items in order of difficulty, (ii) speed with which the items can be correctly solved, and (iii) by the number of examinees in the group who can solve the item correctly. Item difficulty index indicates the extent to which an item was difficult or unable to answer correctly. The index of difficulty was worked out as the percentage of the respondents answering an item correctly. The difficulty level was calculated using the following formula:

$$P_i = \frac{n_i}{N \times 100}$$

Where, P_i =Difficulty index for i th item, n_i =Number of respondents who correctly answered the i th item, N =Total number of respondents to which i th item were administered that is 30 respondents. The items with 'p' values ranging from 30 to 70 were considered for the final selection of the knowledge test battery.

Table 1. Range of Scores obtained by the Respondents (G1= Group 1 G6=Group 6)

Group No.	G1	G2	G3	G4	G5	G6
Score Range	16-19	13-15	12-13	10-12	8-10	5-8
No. of respondents	5	5	5	5	5	5

Item Discrimination Index ($E^{1/3}$)

The discrimination Index is calculated to express the extent to which a particular item discriminates the respondents who sharply has more knowledge about the topic with those who lacks the same. The statement or items which is either answered correctly by everyone or none in the sample, is supposed to have no power of discrimination (Sinha *et. al.*, 2020). Item discrimination index provides information on how well an item discriminates in agreement that is whether an item really discriminates well informed respondent from poorly informed respondent.

The item discrimination index indicated by " $E^{1/3}$," which is calculated by the formula.

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

Where S1, S2 and S5, S6 are the frequencies of correct answers in the groups G1, G2 and G5 and G6 respectively. 'N' is the total member of respondents of the sample selected for the item analysis that is 30. The discrimination index varies from 0 to 1.

Final selection of Items

Those items, which met all the following conditions, were finally selected for the knowledge test: Difficulty index value from 30 to 70, discrimination index value between 0.20 and 0.80. Thus, a total of 20 items from a total 60 items were retained finally, for the final knowledge test.

Reliability of the Test

Split half reliability method was used to find out the reliability of the test. In this method, all the twenty items were first randomly arranged and then divided into two equal halves one containing the odd items and other one containing the even items. The test was administered to thirty respondents and the two sets of knowledge scores obtained were correlated. The co-efficient correlation ($r=0.58$) was highly significant indicating a high degree of dependability of the test for measuring knowledge of village councillors about PDS.

Table 2. Calculated difficulty and discrimination indices of the selected items of knowledge test

A	B	C				D	E	F
		G1	G2	G5	G6			
1	4	5	4	1	1	18	60	0.7
2	11	5	5	2	4	24	80	0.4
3	13	5	3	2	2	21	70	0.4
4	17	4	3	3	1	15	50	0.3
5	18	5	4	2	1	22	73.3	0.6
6	22	5	5	4	4	24	80	0.2
7	25	4	1	2	1	14	46.6	0.2
8	27	5	4	4	2	24	80	0.3
9	28	3	1	0	0	10	33.3	0.4
10	32	4	4	1	3	19	63.3	0.4
11	33	5	5	2	3	23	76.6	0.5
12	34	5	5	3	4	24	80	0.3
13	36	5	5	3	4	26	86.6	0.3
14	37	5	5	1	1	20	66.6	0.8
15	38	3	2	0	1	7	23.3	0.4
16	46	1	4	3	0	11	36.6	0.2
17	47	5	3	3	1	18	6	0.4
18	56	4	2	1	0	9	3	0.5
19	58	5	4	2	2	21	70	0.5
20	59	4	3	1	2	15	46	0.4

A=Item No. B=Sl. No. of item in the initial test

C=Frequencies of correct answer of respondents in four extreme groups

D= Total frequencies of correct answers of all the six groups

E= Difficulty index; F= Discrimination index

Validity of the Test

Content validity was used to check the validity of this test. All possible care was taken on including the statements covering all aspects of Public Distribution System. The items selected were collected through consulting specialists, subject experts, field functionaries in PDS and also from relevant literatures. Hence, it was logical to assume that the test satisfies representation as well as sensible method of test construction.

3. Results and discussion

B. Assessment of the knowledge level of the village councillors about PDS

Knowledge Level of the respondents

From Table 3, it is evident that 82.50 % of the respondents had knowledge that FPS dealers shall not be the Headman/Village Secretary including Members of the Executive Committee, followed by knowledge on issue of

license to the FPS for distribution of essential commodities (79.16%), while only 23.33 percent knew that whenever the FPS dealer surrenders or suspended, the quota is transferred temporarily to the nearest dealer and only 12.50 percent respondents had awareness about tollfree number 1967. The score was more for the items which they experienced than on factual knowledge about the programme. So, it is of immediate importance to introduce awareness programme to the rural population especially to the village councillors from time to time to update their knowledge level with respect to PDS.

From Table 4 it was shown that majority of the village councillors (74.16%) belonged to the medium category of knowledge level, followed by high level (13.33%) and low level (12.50%) respectively. Research findings are in line with the findings of Kirar and Mehta (2009), Devarani and Bandhyopadhyay (2014). This happened due to the fact that most of the respondents acquired the knowledge about PDS based on work experience and training participation at the SDO and DC offices.

Table 3. Knowledge test of the village councillors about PDS in Meghalaya

(n=120)			
Sl. No.	Knowledge items	Frequency	Percentage (%)
1.	PDS in Meghalaya is implemented by Food Civil Supplies and Consumer affairs department through BDO office? Yes/No	82	68.33
2.	NFSA was implemented from 2012 in Meghalaya? Yes/No	51	42.5
3.	The quantity for rice entitlement under AAY is 35kg per family member? Yes/No	59	49.16
4.	Two/three/four wheeler is the inclusion parameter under PHH for rural areas? Yes/No	71	59.16
5.	Under PHH each beneficiary is entitled to 5 kg per household? Yes/No	78	65.00
6.	All those who are not covered under the NFSA 2013 are eligible to be covered under Non-NFSA Category? Yes/No	70	58.33
7.	Non-NFSA allocation should be substituted or taken from the NFSA allocation? Yes/No	43	35.83
8.	The selling rate for the ration items will be as directed by the village council? Yes/No	57	47.50
9.	Ration Card can be used as an official ID, proof of identity, proof of residence/address or any other purposes? Yes/No	83	69.16
10.	FPS dealers shall not be the Headman/Village Secretary including Members of the Executive Committee? Yes/No	99	82.50
11.	The term of FPS dealer is five years? Yes/No	69	57.50
12.	Issue of license to the FPS for distribution of essential commodities shall be clearly laid down by the State Government? Yes/No	95	79.16
13.	SECC report decides the finalization of the PDS beneficiaries? Yes/No	94	78.33
14.	Whenever the FPS dealer surrenders or suspended, the quota is transferred to the nearest dealer permanently identified by SDO(S)/DC? Yes/No	28	23.33

15	The fair price shop owner shall provide such extracts of records to the ration cardholder within 10 days from the date receipt of a request? Yes/No	34	28.33
16	Information such as Stock of food grains received during the month should not be displayed on the notice board? Yes/No	79	65.83
17	Fair Price Shop Dealers used to get monthly honorarium from the government? Yes/No	40	33.33
18	Tollfree Number 1967 deals with address only the price issues of the citizens on PDS? Yes/No	15	12.50
19	The S.K. Oil under PDS is white in colour which is meant for the purpose of cooking and lighting by the vulnerable sections of the society? Yes/No	60	50.00
20	Consumer could file your complaints within one year of the incident? Yes/No	42	35.00

Table 4. Distribution of respondents according to knowledge Level of the village councillors about PDS

(n=120)

Variable	Category	Frequency	Percentage (%)
Knowledge Level of the village councillors	Low (<8.33)	16	13.33
	Medium (8.33-12.49)	89	74.16
	High (>12.49)	15	12.5
	Mean: 10.41, SD: 2.08		

4. Conclusion

The study revealed that availability of information by the Village Employment Council members especially on the guidelines of the scheme and its implementation at the grassroot level is of utmost importance for the successful implementation of the programme. Therefore, this developed knowledge test may be used to assess knowledge level of the village councillors which could easily differentiate the knowledgeable persons from the poorly knowledgeable persons. After assessing their knowledge level, different interventions may be arranged to upgrade their knowledge level. Hence, knowledge is the first hand tool necessary for an individual to achieve a better work performance.

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