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Kalyani Konch
Ph.D. Research Scholar, College of Home Science, S.K.R.A.U., Bikaner, Rajasthan, India

Juliana Sarmah
Professor, Dept. of ECM, College of Community Science, AAU, Jorhat, Assam, India

Sayanika Borah
Assistant Professor, Dept. of ECM, College of Community Science, AAU, Jorhat, Assam, India

Corresponding Author:
Kalyani Konch
Ph.D. Research Scholar, College of Home Science, S.K.R.A.U., Bikaner, Rajasthan, India

Knowledge check for assessing food hygiene knowledge of homemakers

Kalyani Konch, Juliana Sarmah and Sayanika Borah

Abstract
Good food hygiene is essential to ensure that the food we eat is safe. Harmful germs that cause food poisoning can spread very easily. Food hygiene also prevents stomach infections and body illnesses. The health status of the family mainly depends on the women or homemakers of the house. Therefore, it is very essential to give adequate knowledge to homemakers about personal hygiene, environmental hygiene and different aspects of food hygiene such as cleaning, storing, preparing, cooking and serving of food etc., their quality will be increased to provide good hygienic diet and improve the health status of the family. Thirty items having significant biserial correlation at 0.01 level and 0.05 level of probability were selected for the final knowledge check on food hygiene.

Keywords: Food hygiene, knowledge, homemaker

Introduction
According to WHO (2006) [2] each year 1.8 million people die as a result of diarrhoeal diseases and most of these cases can be attributed to contaminated food or water. The health and well-being of an individual; families and nation are obtained by the good quality hygienic diet. Food can become contaminated at any point during harvesting, processing, storage, distribution, transportation and preparation. In our Indian society women play an important role in preparing food items for her family. In every time women cook, serves food for her family. Therefore, their knowledge on food hygiene is important. The health status of the family mainly depends on the women or homemakers of the house.
The present study was undertaken to develop knowledge check to assess food hygiene knowledge of homemakers.

Material and Method
Deciding the items
Based on the content of the seven different aspects of food hygiene, 53 statements were developed to form the initial test series to carry out item analysis. All the 53 items were in the 'objective' form with dichotomous (Correct- Incorrect) statements giving 1 score for correct statement and 0 for incorrect statement.

Administration of knowledge check on selected sample
The knowledge check thus prepared was administered on 60 homemakers of Jorhat district not included in the final study.

Item analysis
Item analysis was carried out for the seven stages in food hygiene. The score obtained by the 60 respondents (homemakers) for the seven stages were arranged in the descending order of the total scores and the respondents were divided into 6 equal groups G1, G2, G3, G4, G5, and G6 with 10 respondents in each group. For item analysis, the middle two groups namely G3 and G4 were eliminated retaining only the four terminal groups with high scores (G1 & G2) and with low scores (G5 & G6).
The next step was to determine the item difficulty index. The index of items differently indicates the extent to which an item is difficult. An item should not be so easy that all people can pass it; nor it should be so difficult that none can pass it.

The item difficulty as worked out in the present study was 'P' i.e., the percentage of respondents answering an item correctly. The items with 'P' values ranging from 20 to 80 only were considered for the final selection of the knowledge test series.

The second criterion for item selection was 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 well informed respondents from poorly informed respondents. The formula used was as follows:

$$E1/3 = \frac{(S1 + S2)\ (S5 + S6)}{N/3}$$

Where,

S1, S2, S5 and S6 are the frequencies of correct answer in the group G1, G2, G5 and G6 respectively.

N= Total number of respondents in the sample selected for the item analysis.

In the present study the items with E 1/3 values ranging from. 20 to 0.73 were considered for the final selection for inclusion in the knowledge check.

For establishment of internal validity of the knowledge check, point biserial correlation co-efficient (rp bis) was estimated since the items were scored simply as 1 if correct and 0 if incorrect. According to Garrett, (1979) point assumes 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:

$$rp\ bis = \frac{Mp - Mg}{r} \times pq$$

Where,

rp bis = point biserial correlation co-efficient.

Mp = Mean score on continuous variable of successful group on dichotomous variable.

Mq= Mean score on continuous variable of unsuccessful group on dichotomous variable.

σ = Standard deviation on continuous variable for total group.

p= Proportion of persons falling in successful group on dichotomous variable.

q= 1-p, or the second group.

Point biserial correlation was worked out for all the items having difficulty index between 20 to 80. The significance of the point biserial 'r' values was tested with Table 25 of Garret (1979).

Eventually, 30 items having significant biserial correlation at 0.01 level and 0.05 level of probability were selected for the final knowledge check on food hygiene. The selected items are given below:

Knowledge check developed for the study

Following is a mixture of some correct and some incorrect statements, please state appropriately against each statement whether it is correct or incorrect.

1. Packed Food items if used after its expiry date affect on health.
2. Purchasing of packed food items with incomplete instruction on its packet has no risk.
3. Cleaning, interior and exterior of the refrigerator once in six months helps to control bacterial growth.
4. Any water used for cleaning edible items are potential source of food contamination.
5. Thoroughly rinsed and scrubbed fruits and vegetables reduces the risk of consuming unhygienic food.
6. Removing outer leaves of vegetables such as cauliflower, cabbage (while sorting) reduces the chance of food contamination.
7. To maintain food hygiene, fruits and vegetables are to be sorted out before storing.
8. To maintain food hygiene, fruits and vegetables are to be stored without washing it.
9. Improper storage of foods may cause health hazards to family members.
10. Dumping of cartons, boxes in same place for longer periods are responsible for spreading germs through rodents, cockroaches etc.
11. The cool temperature of refrigerator slows down bacterial growth but don't stop the growth completely.
12. Cooked food kept in refrigerator or cool chamber helps to slow down bacterial growth.
13. Cooked food and raw food can be kept in the same shelves of a refrigerator.
14. Cooked food if kept in refrigerator needs more cool temperature than the raw foods.
15. There is no chance of food-borne illness (eg: vomiting, diarrhea etc) if one consumes food prepared in the previous day (keeping without refrigerator).
16. If a knife is to be used for several purposes, only rinsing of knife (in between two purposes) helps to reduce the risk of cross contamination.
17. Peeling of vegetables just before cooking reduces the risk of food contamination.
18. Chopping of vegetables long before cooking reduces the risk of food contamination.
19. A potato is safe to eat, if its green portion is removed.
20. Wearing cap while cooking food decreases the risk of food contamination.
21. There is no chance of transmission of bacterial growth, when the nose, mouth, hair, or eyes are touched during cooking.
22. Wearing jewellery or other costume accessories during cooking helps in transmission of harmful pathogens.
23. Reusing oil in cooking has no risk of food contamination.
24. Use of lid during cooking is not that important to maintain food hygiene.
25. Covering of cooked food with netted food cover has the risk of food contamination
26. Before serving food items, rinsing plates, bowls, and glasses with hot water helps to reduce the chance of food contamination.
27. Before serving food items, only rinsing hands help to reduce the chance of food contamination.
28. Cleaning of soiled crockery immediately after used reduces the micro- bacterial growth.
29. Cleaning of floor of dining area, tables, chairs etc. at the end of every meal reduces spread of any contamination.
30. Cleaning of cooking area once in a day is sufficient for maintaining food hygiene.

Testing reliability of the knowledge check

Reliability co-efficient of the test by the method of national using Kuder Richardson formula-80 (Garret, 1979) was computed and it was found to be 0.95 for the selected statements on different stages in food hygiene. The method of national equivalence stresses the inter correlation of the items with the test as a whole. Test reliability was determined by using the formula:

$$rtt = \frac{n}{n-1} \times \frac{\sigma^2 t - pq}{\sigma^2 t}$$

Where,
rtt= reliability co-efficient of the whole test
n= number of items in the test
$\sigma^2 t$= the SD of the test scores
p= the proportion of the group answering a test item correctly
q= (1-p)= the proportion of the group answering a test item incorrectly
A split half reliability co-efficient of the test was also computed by using the Spearman Brown Formula and it was found to be 0.97 for the selected statements on different stages in food hygiene. The reliability co-efficient of the whole test was estimated from the formula:
rtt=2roe/1 + roe
Where,
rtt=reliability co-efficient of the whole test
roe=reliability co-efficient of the half-test, found experimentally

Both the co-efficient provide an estimate of the internal consistency of the test and thus of the dependability of the test scores. According to Garret (1979), "the method of national equivalence is superior to the split half in certain theoretical aspects, but the actual difference in reliability co-efficient found by the two methods is often negligible". This fact was apparent in the present study case.
The knowledge check developed could be used for assessing food hygiene knowledge of homemakers.
Further the developed knowledge check was used for collecting data form homemakers. To assess the food hygiene knowledge of the homemakers.
The study was conducted in the Jorhat district of the State of Assam. Baghcung Block was selected randomly. A total of 60 homemakers selected randomly constituted the sample for the study. The data were collected from the selected homemakers by using the developed knowledge check.

Conclusion
The knowledge check developed was found to be very effective for collecting data from the homemakers. Hence, the check could serve the purpose for assessing food hygiene knowledge of homemakers.

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