

Development of a Standardized Scale about Knowledge and Attitude towards Sanitation and Personal Hygiene

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Abstract

Access to safe water and sanitation for life is basic and fundamental human rights. Similarly healthy living depends upon some practice and principles of health and hygiene rules. So we cannot ignore the importance of personal hygiene in our life. There is a significant rise in the burden of communicable diseases due to poor personal hygiene. Schools becomes an active place for the transformation of infection between students and it also serves as a home for molding the knowledge and attitude of students towards sanitation and personal hygiene. In India, the parasitic and intestinal infections are quite prevalent because of the lack of personal hygiene. Therefore, it is of utmost essential to measure the knowledge and attitude towards sanitation and personal hygiene among school students. The main objective of this study is to assess the quality of items for preparation of a standardized tool on knowledge and attitude towards sanitation and personal hygiene of higher secondary grade students. To assess the knowledge and attitude towards sanitation and personal hygiene, the investigator prepared a self-made questionnaire. To achieve the pre-determined objectives of the study, the scale was administered on higher secondary grade students of Nadia district. The scale consists of thirty two (32) knowledge items and thirty one (31) attitude items regarding sanitation and personal hygiene. The difficulty index and discrimination index of each item was determined and on the basis of this indices value, seven (7) knowledge items and five (5) attitude items were rejected. Finally twenty five (25) knowledge items and twenty six (26) attitude items were selected in the final form of the scale.

To determine the reliability of the test, a test was applied two times on the same group between fifteen (15) days gap through the use of test- retest method. Pearson's product moment method was used to determine the correlation between two set of scores. The coefficient of correlation of the scale was found as 0.76 and 0.82 respectively for knowledge and attitude scale which is highly significant. It has been revealed that item analysis and test reliability play a crucial role in constructing a scale.

Key words: Knowledge, Attitude, Sanitation, Personal Hygiene, Item Analysis

1. INTRODUCTION:

Sanitation is one of the basic determinants of quality of life and human development index (Sheethal, *et. al.*, 2016). It is a fundamental requirement to ensure safe health, environment and overall well-being of the society. Sanitation and hygiene practices are heavily influenced by people's knowledge and attitude towards it. Personal hygiene generally includes cleanliness of the body and proper maintenance of

personal hygiene. This generally covers all body areas and clothing. Hygiene refers to practices and conditions that help to maintain health and prevent the spread of diseases.

Knowledge refers to the level of understandings that a person has toward certain matters whereas the attitude is a propensity toward a particular thing or an individual or a specific situation. Knowledge about a particular health issue plays a key role in shaping the attitude and thereby transforming it into a positive attitude and further it amends the behavioral change (Gumucio,*et. al.*, 2011). It is evident that the person who has acquired sufficient knowledge about the specific health problems will change their attitudes and it will also facilitate toward adopting the correct practices by altering their behavior. The information regarding the Knowledge and Attitude towards definite activity is used as an efficiently tool in assessing the effectiveness of intervention programs and it is also being used to measure the target populations. Knowledge and Attitude on precise health areas and also it gives us the chance to understand their needs, demands and the barriers for enhancing their awareness (WHO, 2008). There are various studies conducted across different countries of the world on measuring the Knowledge and Attitude towards Sanitation and Personal Hygiene at the community level, School level and also at the hospital level with different study populations (Wall,*et. al.*, 2012). There is a significant rise in the burden of communicable diseases due to poor personal hygiene (WHO, 2017). Schools becomes an active place for the transformation of infection between students and it also serves as a home for molding the knowledge and attitude of children towards sanitation and personal hygiene (Deb,*et. al.*, 2010). In India, the parasitic and intestinal infections are quite prevalent because of the lack of personal hygiene and another study in Arabia demonstrated a significant association between the lack of good personal hygiene practices and parasitic infection (Al- Mohammed,*et. al.*, 2010).

However, there is a lack of validated and reliable instrument for measuring Knowledge and Attitude regarding Sanitation and Personal Hygiene among Higher Secondary grade Students. Therefore, the current study aimed at developing a valid and reliable tool to evaluate the Knowledge and Attitude of Higher Secondary grade students towards Sanitation and Personal hygiene.

2. REVIEW OF RELATED LITERATURE:

In Literature, the work of Sriram*et.al.*, was used extensively to construct a questionnaire to assess knowledge, attitude and practices towards personal hygiene among Primary School Children in Abha, Kingdom of Saudi Arabia (2017). The cross sectional study was conducted among the primary school children from 4th, 5th and 6th classes and content validity was performed by the high quality professionals whereas the face validity was achieved by the pilot study. Reliability of the questions was tested using the Cronbach's alpha.

The study results showed that most of the corrected item- total correlation in terms of measuring the internal consistency of KAP domain items was more 0.3 and it showed that the correlation is reasonable and the Cronbach's alpha is also in the acceptable range. This was feasible, valid and reliable questionnaire for assessing the KAP of personal hygiene among primary school children in the local community.

An essay type questionnaire was developed by Khan *et. al.*, for the measurement of knowledge of MBBS students of J.N.M.C, A.M.U, Aligarh, U.P., India (2014). The study contains 150 medical students

undergone terminal examination consist of questions of essay type. Studies described that facility values of 62.5% questions were come under recommended and acceptable range and Discrimination value of 100% questions were come under recommended and acceptable range.

Item analysis using a derived science achievement test data was done by Bichi, (2015). This study showed the use of classical item analysis to evaluate the quality of multiple choices chemistry test items used in Kano state qualifying examination in July 2014. The results indicated a positive correlation between item difficulty and item discrimination indices.

Development and validation of the KAP questionnaire (CS-TBKAPQ) regarding Tuberculosis among college students was done by Jing,*et. al.*, 2017. The reliability of the questionnaire was determined by calculating Cronbach's coefficient, test- retest reliability and the split – half reliability coefficient.

The development and standardization of a questionnaire was done for the measurement of Knowledge about polio by Sengupta and Sikdar (2018). The final form of the questionnaire contained 52 items for measurement of knowledge about Polio.

A questionnaire was developed for the measurement of attitude towards family programme among Muslim women of Murshidabad district (Halder&Sikdar, 2019). In this study, data was collected after administration of self-made questionnaire and then data was analyzed and standardized.

The development and validation of questionnaire was done for assessing knowledge, attitude and practices about obesity among obese individuals (Reethesh, *et. al.*, 2019). In this study, Cronbach's alpha coefficient was used for the determination of internal consistency of questionnaire.

Item Analysis Using a derived Test Data of Knowledge, Attitude and Practice Regarding Drug Addiction was done by Karmakar, *et.al.*,(2021). In this Study the difficulty index and discrimination index of each item were calculated. Pearson's correlation coefficient between the two tests scores justified the reliability of the questionnaire.

After reviewing the various related literature, researcher found that so much research work had already been done on the development of tools regarding knowledge, attitude and practice in the field of health education like sanitation and personal hygiene, polio, tuberculosis etc. There were however few studies about the construction of Knowledge and Attitude tools regarding sanitation and Personal hygiene. So, there is need to develop a knowledge and attitude tool for assessing knowledge and attitude towards sanitation and personal hygiene among higher secondary grade students.

3. OBJECTIVES OF THE STUDY:

The study is conducted to develop a scale in order to evaluate knowledge and attitude towards sanitation and personal hygiene among higher secondary grade students. It also identified the poor item from the scale and modified or removed this item and standardizes the scale. The present study aimed at fulfilling the following objectives –

- I. To find out the effective items for the knowledge scale and eliminate the poor items on the basis of item difficulty and discrimination index from the initial scale of knowledge regarding sanitation and personal hygiene.

- II. To find out the effective items for the attitude scale and eliminate the poor items on the basis of discrimination index from the initial scale of attitude towards sanitation and personal hygiene
- III. To standardize the knowledge and attitude scale towards sanitation and personal hygiene by measuring its reliability.

4. METHODOLOGY:

In the present study, the investigator developed a scale to assess the knowledge and attitude towards sanitation and personal hygiene.

Design: In this study, a descriptive research design was employed which was survey based where a purposive random sampling technique was used to collect the relevant data.

Population and Sample: In this study all the students who are studying in class XI and XII in Nadia district, West Bengal comprise the population of the study. Purposive Random sampling technique was adopted for this research work and 40 students were taken for this study.

Research Instrument: The preliminary draft of the questionnaire were developed through review of related literature and consulted with experts and resource persons. Primarily a set of 40 statements were framed for the preliminary form of the knowledge and attitude scale. List of revised forms of statements were again presented to the experts and requested them to examine the language, appropriateness, intensity, clarity and purposes. According to their suggestions necessary changes were done and 32 statements were prepared for knowledge scale and 31 statements were prepared for attitude scale by judging the face validity and content validity, encompassing various dimensions (Source of drinking water, Economic condition of family, food habit, cleanliness, family education, disposal of human excreta, disposal of waste material, environmental sanitation, and school education) of Sanitation and personal hygiene issues.

Data collection procedure: Test was administered by the researcher herself for data collection. A total of 60 students were participated in the test. The test consisting of 32 items for Knowledge scale and 31 items for Attitude scale were given to the students and 40 minutes was the time limit. The reliability of the knowledge and Attitude scale was estimated by test- retest method.

Correlation of the two scores was performed to assure the reliability of the test. The copies were evaluated by the researcher herself and marks were given. In the present study the investigator had followed two alternative option such as 'Yes' and 'No' ratings technique for knowledge scale and three point's likert type scaling technique (Agree, Neutral, and Disagree) for attitude scale. For knowledge scale the positive statements were scored from maximum to minimum as 2, 1 and negative statements from minimum to maximum that is opposite order. Also for attitude scale 3 marks assigned with 'agree', 2 marks assigned with 'neutral' and 1 mark assigned with 'disagree' for positive item. For negative item 3 marks assigned with 'disagree', 2 marks assigned with 'neutral' and 1 mark assigned with 'agree'.

Data analysis: After collection of data, the investigator scored the item and analyzed each item by item analysis method. In this study, item analysis was done by using the item difficulty index; discrimination index and test- retest method to determine the reliability of the test. Item difficulty refers to the proportion of the respondent that gave answers to the item correctly (Boopathiraj & Chellamani,

2013).Difficulty value was calculated only for knowledge scale. For Attitude scale Difficulty value not required, only discrimination index done.

The item difficulty can be computed by using the following formula—

$$\text{Difficulty Index (p)} = \frac{H+L}{N} \times 100$$

Where, H= Number of correct answers in the higher group, L= Number of correct answers in the lowest group and N= Total Number of students in both the groups.

Item discrimination is the percentage of difference in the success of an item between high and low scores respondents (Karmakar, *et. al.*, 2021).The discrimination index was obtained by using the following formulae:

$$\text{Discrimination Index (D)} = 2 \times \frac{H-L}{N} \times 100$$

Where,H= Number of Correct answers in the higher group, L= Number of correct answers in the lower group and N= Total number of respondents in both the groups.

Pearson’s product moment formula is used to find out the test-retest reliability. The formula is given below:

$$r = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

Where , r = coefficient of correlation, N = Sample, X = Test scores and Y = Retest scores.

5. RESULT:

According to objective-I,

Initially thirty two (32) items were prepared for knowledge scale out of which twenty one (21) were favourable items and eleven (11) were unfavourable items. After item analysis seven (7) poor items viz. K5, K6, K13, K29, K30, K31 and K32 were rejected from the knowledge scale on the basis of difficulty value and discrimination index. The final form of knowledge scale regarding sanitation and personal hygiene consisted of twenty five (25) items covering 10 dimensions (Source of drinking water, Economic condition of family, Food Habit, Cleanliness, Family Education, Disposal of Human excreta, Disposal of waste material, Environmental sanitation, School Education, Menstrual Hygiene). There were seventeen (17) favourable items and eight (8) unfavourable items in the final form of the knowledge scale.

Table 1 represents the effective items after elimination of poor items on the basis of item difficulty and discrimination index in the knowledge scale regarding sanitation and personal hygiene.

SL. No.	Dimension	Knowledge Items		Total Number of Items
		Favourable	Unfavourable	
1.	Source of drinking water	3	1,2	3

2.	Economic condition of family	4,	7	2
3.	Food habit	9,11,12,14	-	4
4.	Cleanliness	8,10,17,18	-	4
5.	Family Education	15,16	-	2
6.	Disposal of human excreta	22,23	21	3
7.	Disposal of waste material	-	19,20	2
8.	Environmental sanitation	24,27,28	-	3
9.	School Education	-	25,26	2
10.	Menstrual Hygiene	-	-	0
Total		17	08	25

According to objective-II,

Initially thirty-one (31) items were prepared for attitude scale out of which eighteen (18) were favourable items and thirteen (13) were unfavourable items. After item analysis five (5) items viz. A19, A23, A26, A29 and A30 were rejected from the attitude scale on the basis of Discrimination Index. The final form of Attitude scale towards sanitation and personal hygiene consisted of twenty six items covering 10 dimensions (Source of drinking water, Economic condition of family, Food Habit, Cleanliness, Family Education, Disposal of Human excreta, Disposal of waste material, Environmental sanitation, School Education, Menstrual Hygiene). There were fifteen (15)favourable items and eleven (11)unfavourable items in the final form of attitude scale.

Table2 represents the effective items after elimination of poor items on the basis of discrimination index in attitude scale towards sanitation and personal hygiene.

SL. No.	Dimension	Attitude Items		Total number of items
		Favourable	Unfavourable	
1.	Source of drinking water	1,2	3	3
2.	Economic condition of family	0	-	0
3.	Food habit	18	20	2
4.	Cleanliness	31	27,28	3
5.	Family Education	17	16	2
6.	Disposal of human excreta	8,9	7	3
7.	Disposal of waste material	4	5,6	3
8.	Environmental sanitation	12, 14, 15	13	4
9.	School Education	10	11	2
10.	Menstrual Hygiene	22, 24, 25	21	4
Total		15	11	26

According to objective-III,

After item analysis, the researcher conducted a test-retest on 60 male and female students from various demographic locations to determine the accuracy of the test items. In this test Pearson's Product Moment technique was utilized to calculate the correlation between the two tests

Table 3: Presents coefficient of correlation between test-retest scores of Knowledge and attitude scale towards sanitation and personal hygiene.

Test	Coefficient of correlation (r)
Knowledge	0.76
Attitude	0.82

Correlation of the two scores was performed to assure the reliability of the test. Table 3 indicates the value of r (0.76), which is highly reliable it may be said from the result that the constructed knowledge scale is reliable. Similarly, for attitude scale the value of r (0.82), this is highly reliable. It may be inferred from the result that the constructed attitude scale is highly reliable.

6. DISCUSSION:

The present study was designed for constructing a valid and reliable questionnaire for assessing the knowledge and Attitude of Sanitation and Personal Hygiene among higher secondary grade school students in Nadia district, West Bengal. Item analysis and Reliability of the questionnaire was done systematically. Content and face Validity was completed by the experts in the respective field. Similar study was also conducted in India and Saudi Arabia for standardization of the questionnaire.

The current study showed that the difficulty value of Knowledge and Attitude scale maximum number of questions fall under recommended and acceptable range. This condition indicates that most of the given questions need not to be revised. Their value implies that students did show enough interest to the study. Similarly, the discrimination index of all the questions were came in to recommended and acceptable range depicted that all the questions have good capacity to discriminate between the two groups that is high ability and low ability group. The correlation coefficient of test retest scores of Knowledge and Attitude scale were also came into recommended and acceptable range. Seven items out of 32 were rejected due to difficulty index and discrimination index. Twenty five items were accepted in Knowledge scale without any revision. Similarly in Attitude scale five items out of thirty one items were rejected due to discrimination index. Twenty six items were accepted in Attitude scale without any revision. There were various literatures which supported that the standard value of difficulty index, discrimination index and correlation coefficient of Knowledge and Attitude scale supports the study results.

7. CONCLUSION AND RECOMMENDATIONS:

The finding of this study emphasizes that item analysis play the important role in determining the quality assessment tools especially during test construction as well as validation. Item analysis is an important phase in the development of a test or tools. The study has been able to establish that an individual item of a test with moderate difficulty and a good positive discrimination power are ideal for a good test.

However, an items having zero or negative discrimination power with very high or low difficulty estimates should be completely rejected.

Item analysis results may be influenced by many factors which include examinees having poor understanding of difficult topics, ambiguity in wordings of the questions or even inappropriate key, instructional procedure applied, it may be due to personal variations in student's intelligence level. It is recommended that item analysis should be maintained in test development and evaluation, because of its importance in the investigation of reliability and in minimizing measurement errors. Item analysis can be used to judge the quality of item difficulty and discrimination indices. The two indices produce almost the same item characteristics.

So, the instrument can serve as a significant tool for determining the Knowledge and Attitude scale towards Sanitation and Personal Hygiene of the School students.

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