



Development of Knowledge, Attitude and Practice Questionnaire for Patients with Diabetes Mellitus

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 26 Oct 2023	<p><i>Diabetes is one of the most common chronic diseases worldwide. The number of people with type 2 diabetes began to rise globally in the 1990 s, and since 2000, the world has seen a dramatic increase. There is a need to assess Knowledge, Attitude and Practice (KAP) of patients with diabetes in order to aid in future development of control programs and techniques for effective health education and patients counselling. this study was intended to develop a KAP questionnaire. It is a 27-question closed ended questionnaire with 12 knowledge, 8 attitude and 7 practice questions. Each correct answer was given a score 1 and the incorrect answer was given 0. Total scores of Knowledges, Attitude and Practice were added together to yield the final KAP score, where 25 was the highest and 0 was the least KAP score a subject could get. The questionnaire was reviewed by doctors and fellow pharmacists. Reliability of the questionnaire was calculated using "Kuder Richardson 21 (KR21)" method using a sample data of KAP score from 20 patients. After applying the formula, the scores obtained for Knowledge, Attitude, Practice and KAP were 0.71, 0.80, 0.71, and 0.75 respectively. The results show that the questionnaire is a valid instrument that allows an assessment of knowledge, attitudes and practices levels of patients with diabetes mellitus.</i></p>
CC License CC-BY-NC-SA 4.0	Keywords: Diabetes, Patients, Knowledge

1. Introduction

Diabetes is one of the most common chronic diseases worldwide.¹ The number of people with type 2 diabetes began to rise globally in the 1990 s, and since 2000, the world has seen a dramatic increase.² According to the International Diabetes Federation (IDF), 8.8% of the adult population have diabetes, with men having slightly higher rates (9.6%) than women (9.0%). Current global statistics show that 463 million and 374 million individuals have diabetes and a prediabetic condition called impaired glucose tolerance (IGT). These numbers are estimated to increase to 700 million people with diabetes and 548 million people with IGT by 2045, which represents a 51% increase compared to 2019.³ The top three countries with the highest number of individuals with diabetes are China (116.4 million), India (77.0 million), and the U.S.A. (31.0 million), according to the IDF in 2019. This trend is expected to continue in 2030 and 2045, with China (140.5 and 147.2 million) and India (101.0 and 134.2 million) remaining to have the highest burden of diabetes.⁴ The prevalence of Diabetes is 9.1% in India. Lifestyle management is the basis of management of diabetes mellitus (DM) and is recognized as being an essential part of diabetes and cardiovascular disease prevention.⁵ Long term uncontrolled blood glucose will lead to micro and macro vascular complications with higher morbidity and mortality and negatively affects the quality of life. To reduce the complications of Diabetes there is a necessity for inclusive diabetes care which is a composite task that takes a team of healthcare professionals including the pharmacist to work together to provide multidisciplinary care for patients.⁶ With increasing incidence of diabetes worldwide, evaluation of diabetes knowledge, attitude and practice (KAP) has become crucial for guiding behavioural changes for persons with diabetes and individuals at risk. When treating patients with diabetes, it is essential to improve lifestyle habits before using medication. KAP-related studies are critical in shaping a health programme to help control the risks due to the disease. Adequate

information helps the public understand the risks of diabetes and its complications, seeks treatment of existing disease, takes preventive measures, and develops pro-active attitude towards health. Knowledge is a set of understandings. It is one's capacity to imagine and way of perceiving. The degree of knowledge assessed helps to locate areas where information and education efforts remain to be employed. Attitude is an intermediate variable between the situation and the reaction to the situation. Attitudes are not directly observable as are practices, and hence it is a good idea to assess them. Practices or behaviours are the observable actions of an individual in response to a stimulus.⁷ There are evidences that show patient education and awareness are effective in reducing the complications of diabetes.⁸ There is a requirement to assess Knowledge, Attitude and Practice of patients with diabetes in order to assist in future development of control programs and procedures for better and effective health education and patients counselling. This facilitates in ensuring that each patient with diabetes has sufficient information and are encouraged to lead a better life. Hence, this study was aimed to develop a KAP questionnaire.

2. Materials And Methods

The process of questionnaire development and validation of items for the KAP of diabetes patients was undertaken in the following stages: Stage 1: generating questions that suit the study purposes by reviewing the relevant literature; Stage 2: evaluating content validity by sending the first draft of the questionnaire to a panel of expert reviewers and modifying the first draft according to the expert review.

3. Results and Discussion

Stage 1: Questionnaire Generation

Extensive literature review was performed to define the construct of interest and to obtain the initial questionnaire. After the literature review, a total of 27 items were generated for the initial questionnaire.

Stage 2: Content Validity

To ensure the authenticity of the questionnaire's content, content validity indices (CVIs) were calculated for individual questions (I-CVI) using the Delphi method. It is suggested to include a minimum of six persons for an expert panel to allow for at least one disagreement between experts.⁹ Hence, the first draft of the questionnaire was sent to 10 reviewers. The panel included 5 medical doctors, 3 pharmacists and 2 professors. The reviewers were asked to evaluate how well each question corresponds or reflects a specific domain on a four-point Likert scale. The scoring method was as follows: 1 = not relevant, 2 = somewhat relevant, 3 = relevant and 4 = highly relevant. Item-level content validity index (I-CVI) was calculated by dividing the number of experts who rated an item with a score of 3 or 4 over the total number of experts. As a general criterion, I-CVI should be ≤ 0.70 .¹⁰

Table 1 Content validity index (CVI) rating of the individual KAP

Knowledge	Question	I-CVI
1	Do you know that diabetes is a condition of high level of sugar in the blood than normal?	1
2	Do you know that frequent hunger, thirst and urination are symptoms of diabetes?	1
3	Do you know that diabetes is associated with certain complications like retinopathy, neuropathy, nephropathy and cardiovascular complications?	1
4	Do you know that people of age 40years old are at higher risk of getting diabetes?	1
5	Do you know that the major causes of diabetes are hereditary and obesity?	1
6	Do you know the symptoms of hypoglycemia?	1
7	Do you know the immediate treatment of hypoglycemia?	1
8	Do you know the normal value of fasting blood sugar level?	1
9	Do you know the normal value of post-prandial blood sugar level?	1
10	Do you know that pancreatic β -cells are affected when a person suffers with diabetes?	0.8
11	Do you know that there is low healing of cuts and wounds in patients with diabetes?	1
12	Do you know that diabetes is incurable and requires a lifelong administration of medication?	1
Attitude		

1	Do you think that following a controlled (low sugar) and planned diet will help improve diabetes?	1
2	Do you think that regular exercise can help improve diabetes?	0.9
3	Do you think missing doses of your diabetic medication will have a negative effect on your disease control?	0.9
4	Do you think you should keep in touch with your physician?	0.8
5	Do you think that keeping the blood sugar close to normal can help to prevent the complications of diabetes?	1
6	Do you think that once diabetes is controlled, eating restrictions are still required?	0.8
7	Do you think that people with diabetes should control their weight?	0.8
8	Do you think that diabetics should not skip their medication even when the blood glucose is not too high?	0.8
Practice		
1	Do you exercise regularly?	0.9
2	Do you check your feet regularly and go for regular eye check-up?	1
3	Do you follow a controlled (low sugar) and planned diet?	1
4	Do you keep in touch with your physician?	0.8
5	Do you regularly monitor your body weight?	1
6	Do you regularly monitor your blood glucose levels?	1
7	Do you take your medicines regularly?	1

The I-CVI scores of all the questions were >7. Hence this questionnaire was tested in pilot sample of patients.

The questionnaire consisted of 27-question closed ended questions with 12 knowledge, 8 attitude and 7 practice questions.

Each right answer was given a score 1 and the wrong answer was given 0. Total scores of Knowledges, Attitude and Practice were added together to yield the final KAP score, where 27 was the highest and 0 was the least KAP score a subject could acquire.

Sample and Data Collection

A convenient sample of 20 patients of either gender with ≥ 1 year history of diabetes mellitus were included for pilot study.

“Kuder Richardson 21 (KR21)” method was used for testing the reliability of the questionnaire using a sample data of KAP score from 20 patients. Kuder Richardson method is a measure of internal consistency reliability for measures with dichotomous questions, which are ones that only have two possible answers, which are presented in the following format – Yes or No, True or False, Agree or Disagree and Fair or Unfair. KR-21 scores range from 0-1 (even though it is possible to attain a negative score); 0 signifies no reliability and 1 denotes perfect test reliability. A KR-21 score above 0.70 is usually considered to denote a sensible level of internal consistency reliability.¹¹

After applying the formula, the scores obtained for Knowledge, Attitude, Practice and KAP were 0.71, 0.80, 0.71, and 0.75 respectively. (Table 2)

Table 2 Reliability of the KAP Questionnaire

Parameter	Knowledge	Attitude	Practice	KAP
k	12	8	7	27
μ (mean)	6.75	5.75	2.7	15.2
variance	8.9875	5.4875	4.21	24.46
Mean(k-mean)	35.4375	12.9375	11.61	179.36
k*variance	107.85	43.9	29.47	660.42
KR21	0.718418	0.806053	0.707047	0.756431

$$kr21 = k / (k - 1(1 - \text{mean}(k - \text{mean}) / k * \text{variance}))$$

The KAP questionnaire consists of 27 questions and contains knowledge, attitudes and practices subscales. The primary questionnaire was built based on an extensive literature review. Then, the content analysis was conducted with an expert panel consisting of 10 experts with various experiences related to diabetes mellitus was formed to avoid an exaggerated assessment of validity. Moreover,

similar questions pertaining to knowledge were included in previous studies that were conducted among various populations, including medical students, healthcare workers and the general public.^{13,14}

4. Conclusion

The results show that the questionnaire is a valid instrument that allows an assessment of knowledge, attitudes and practices levels of patients with diabetes mellitus.

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