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# Development and validation of nutrition related knowledge, attitude and practice (KAP) questionnaire among Psoriatic patients.

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## Abstract

**Aim:** Psoriasis is a common, generically determined auto-inflammatory and proliferative skin disease of unknown origin. There has been enormous evidence indicating the positive and negative role of diet on several skin conditions including psoriasis. The study aims to design and validate a knowledge, attitude and practice (KAP) questionnaire to assess the level of dietary awareness, beliefs and practices about psoriasis among the psoriasis patients.

**Methods:** A self-developed KAP questionnaire is validated through the expert input and piloting for construct and content analysis. Repeated amendments and validation 25, 34 and 35 questions were developed each for the domains of knowledge, attitude and practices to assess the nutritional awareness, attitude and practices among the patients suffering from psoriasis.

**Results:** Using the literature review, Items with an I-CVI of >79% were retained. Items having CVR less than 0.59 (Lawshe method) were excluded. The inter-rater agreement (Kohen kappa) was maintained >0.7. The reliability analysis of the KAP questionnaire with Cronbach's alpha for Knowledge, Attitude and Practices was measured at 0.75, 0.72, and 0.93 respectively showing acceptable internal consistency. a score of 3.46 out of 4 was recorded. Thus, the KAP questionnaire indicated an appropriate level of content validity and is supported by good reliability scores as well.

## Introduction

### Background of Psoriasis:

Psoriasis is a common chronic, immune mediated complex skin disorder of unknown origin. Evidence suggests a complex role of multiple genes, a dysregualted immune system and environmental factors play crucial role in the development of the diseases [1].

It is characterized by the appearance of slightly itchy multiple scaly red patches on the body, trunk, and dorsal aspects of arms, forearms, thighs and legs. Scalp, nails, palms and soles are also affected. Approximately 2-4% of the population is affected throughout the world. In India, the prevalence rates are 0.44-2.8% [2]. It is seen in all age groups in both sexes. Relapses and remissions are common. The disease has a significant impact on quality of life.

Beyond the skin, psoriasis negatively impacts most daily activities through numerous comorbid conditions [3,4]. Psoriasis is associated with depressive illness, Cardiovascular disease, hypertension, diabetes mellitus, obesity, and psoriatic arthritis (PsA) [5,6].

The growing trend of Psoriasis both in numbers and severity indicates that there are many unmet research gaps in addressing various aspects of the disease such as epidemiology, etiology, association with co-morbidities, treatment and ways to improve healthcare services. It has been recommended that therapeutic research should focus on options which can be applicable globally, on a large scale.

### Impact of Nutrition on Psoriasis

Psoriasis is frequently associated with obesity, diabetes mellitus, dyslipidemia, cardiovascular diseases, and inflammatory bowel diseases (IBDs). Obesity is a risk factor as well as an aggravating factor to the disease. It is postulated that weight reduction may improve the severity of psoriasis in overweight patients [7].

It has been observed that several faulty dietary practices have been found prevalent in Psoriasis patients like; a higher intake of total fat, and simple carbohydrates and a lower intake of proteins, complex carbohydrates, monounsaturated fatty acid, n-3 polyunsaturated fatty acids (PUFAs), vegetables, and fibres, compared to healthy controls [8]. They have been reported of a lower intake of components of Mediterranean dietary components (extra virgin olive oil, fruits, fish, and nuts) compared to healthy controls [9]. Table 1

Also, it is suggested that few food items and nutrients such as saturated fatty acids (SFAs), simple sugars, red meat or alcohol can exacerbate psoriasis while the others ameliorate psoriasis, like vitamin D, n-3 PUFAs, dietary fibres, selenium, short chain fatty acids (SCFAs). An in vivo murine study reported that a diet high in fat and simple sugars aggravate the psoriasis form of dermatitis [10].

Table 1: Dietary aggravating and relieving factors of Psoriasis and associated diseases

| **Diseases associated with Psoriasis** | **Dietary Factors may Aggravate Psoriasis** | **Dietary Factors may Subside or Protect from Psoriasis** |
|---|---|---|
| • Obesity<br>• Diabetes<br>• Dyslipidemia<br>• Hypertension<br>• Arthritis | • Simple Sugar<br>• Saturated Fatty Acids (SFA's)<br>• Red Meat<br>• Alcohol | • n3 PUFA's<br>• Vitamin D<br>• Dietary Fiber<br>• Short Chain Fatty Acids (SCFs)<br>• Selenium |

There are several questionnaires available to assess the clinical symptoms and severity of disability created by the disease. Few western studies have collected data on the dietary intake and preferences of the patients. But, there is not a single questionnaire available that can be used

to obtain comprehensive information on diet-related practices among psoriasis patients, especially in India.

To fill the informational gap, this study is proposed to develop and validate a KAP questionnaire that is specifically designed to determine the nutritional understanding and practices among psoriasis patients.

**KAP questionnaire**

Knowledge, attitude, and practice (KAP) surveys are useful methods in health sciences. In the field of nutrition, KAP surveys can be utilized to gather data on the behaviour, belief and practices of specific illnesses or treatments. A KAP survey is meant to be a representative survey of a target population; it aims to elicit what is known (knowledge), believed (attitude), and done (practised) in the context of the topic of interest.

Profound knowledge helps in developing an optimistic attitude and appropriate practices at work [11]. The knowledge about the patient's attitude and practices is important in the formulation and implementation of scientific protocols for adequate disease protection.

The questionnaire is expected to guide the healthcare workers to develop and implement appropriate diet-related recommendations and strategies for a better disease outcome. The dietary modifications should be considered to complement the standard medical care for psoriasis, and also impact positively the standard therapy for co-morbidities like cardio-metabolic diseases or inflammatory imbalances.

**Aim:** To develop and validate questionnaire to detect the knowledge, attitude and practice of psoriasis patients towards nutritional aspects of psoriasis.

## Methodology

***Study Design:*** Survey based empirical research.

**Study locale:**

- ***For questionnaire piloting****:* Dermatology Outpatient department (OPD) of Chhatapati Shivaji Subharti Hospital (CSSH), Netaji Subhash Chandra Bose Subharti Medical College (SMC), Meerut.
- ***For questionnaire testing****:* Maharishi Aurobindo Subharti College and Hospital of Naturopathy and Yogic Sciences (MASCHNYS), Swami Vivekanand Subharti University (SVSU), Meerut

**Study Population:**

- ***For questionnaire piloting****:* Clinically diagnosed Psoriasis patients visiting Dermatology Outpatient department (OPD) of Chhatapati Shivaji Subharti Hospital, Netaji Subhash Chandra Bose Subharti Medical College (SMC), Meerut.
- ***For questionnaire testing****:* students and staff members of MASCHNYS, SVSU, Meerut.

**Sampling:** Non-probability Purposive (Selective) sampling was used to gather the sample from the population.

**Sample Selection criteria:**

**Inclusion criteria**:

- ***For questionnaire piloting****:* patients diagnosed with psoriasis, male or female, of any age, volunteriyly willingly for the study. Guardian or patents shall be intervied in case of minor.

- ***For questionnaire testing****:* students and staff members of Maharishi Aurobindo Subharti College and Hospital of Naturopathy and Yogic Sciences, Swami Vivekanand Subharti University, Meerut

**Exclusion criteria:**

***For questionnaire piloting and testing:*** non-teaching staff members who are unable to read and write.

**Ethical approval:**

Ethical approval was obtained from University Ethical Committee of Swami Vivekanand Subharit University. Informed consent from the Psoriasis patients visiting Dermatology OPD of CSSH was obtained. Informed consent was also obtained from the students and staff members of MASCHNYS, SVSU, Meerut.

**Developmental Procedures and activities involved :**

Before participating in the survey, prospective participants had to answer a yes/no question to confirm their consent to participate voluntarily. By answering the yes question, the participants provided informed consent before completing the survey. After providing their consent, the participants were directed to complete the questionnaire. Participation was voluntary and anonymous, and the subjects could withdraw from the survey at any time.

The pilot study was conducted at CSSH, SVSU, Meerut. The protocol was approved on 06-09-2021 by the ethics committee. The collection of data was conducted from October 2021 -

March 2022. A total number of 12 patients volunteered for the study. The final version of questionnaire was filled by 200 students and staff members of MASCHNYS, SVSU, Meerut. Collected data was then entered into an MS Excel sheet and coded for anonymity. Data analysis was conducted usisng Systat 13.2 and Microsoft Excel 2013

**Stage 1: Instrument design**

A questionnaire is constructed based on determining content domain, literature review, experts' opinion, item generation and instrument validation. Validation of the KAP questionnaire assesses the ability of the questionnaire to detect the belief, ideas, and practices of the patients concerning the psoriasis disease.

A set of 114 multiple-choice questions (MCQs) was segregated into three dimensions (domain); knowledge, practice and attitude. Each domain consists of 38 questions. Participants documented their replies by choosing (tick √) from 5 options;

*Option 1-No, Completely Disagree, Negative Response*

*Option 2-Disagree a little, Somewhat Disagree*

*Option 3-Don't Know, Can't Say, No Idea*

*Option 4-Agree a little, Somewhat Agree*

*Option 5-Yes, Completely Agree, Positive Response*

**External Validation**: The questionnaire (114 questions) was sent to 11 different experts that included naturopathy & yoga (BNYS doctors), dieticians & nutritionists, and MD/PG nutrition students and PhD scholars. They provided their opinion on relevancy, clarity and ambiguity.

They provided their feedback on the individual questions by choosing one from the three options; Useful, Not so useful and not required.

As per the expert inputs, new questions were added to cover the domain information in totality. As a result, the number of questions grew from 114 to 150 (50 each on nutritional knowledge, attitude and practice). Depending upon the I-CVI values the questions were revised and those found with I-CVI less than 70% were eliminated, questions with an I-CVI between 70 – 79% were revised again and questions with I-CVI of more than 79% were retained. Table -2

Table 2: I-CVI scores

| **Validity** | **Range** | **Action** |
|---|---|---|
| I-CVI | > 79% | Appropriate |
| I-CVI | 70 – 79 % | Need revision |
| I-CVI | < 70 % | Eliminated |

The questionnaire was revised several times to improve the clarity and understanding and relevency with the study constructs. It was observed that few questions were representing more than one domain out of the three study domains (knowledge, attitude and practice). In that case the question was shifted to the domain to which they seems more strongly and closely related. For the sake of obtaining accurate information; a strategy of negative marking was decided for the negative questions.

The revised questionnaire was sent again to the experts for second round of inputs. Based on the expert's inputs further modifications were made to the questionnaire. The modified questionnaire now consisted; of 25 MCQs to assess the **Knowledge** of the patients about nutritional aspects of the disease, 34 MCQs to assess the **Attitudes** of the patients about the

disease and its nutritional interventions, and 35 MCQs to assess the patient's **Practices** about diet and nutrition. (Annexure-I)

**Stage 2: Judgement**

**Quantification of Content Validity: I-CVI, S-CVI, Kappa**

After the 2nd round of modifications, the questionnaire attained an excellent level of validity on; I-CVI, S-CVI (Ave.), S-CVI (UA) and kohen kappa values. (Annexure-II)

**Determining face validity of the instrument: piloting, testing**

This questionnaire was provided to 12 psoriasis patients for piloting. Patients rated the questions on the merits of clarity, understanding and simplicity of the questionnaire items. (Annexure-III)

Patients responses were analyzed for internal consistency using Cronbacch's alpha. Here again the patients responses showed acceptable values for Cronbach's alpha.

Next, the questionnaire was distributed among 200 BNYS students for testing. The test results from the students and patients were analyzed for internal consistency and found appropriate level of reliability. The questionnaire was translated into Hindi for those who could not understand English.

Table 3: The work flow chart

| | | | |
|---|---|---|---|
| Background | Setting up Research objectives<br>Target audience | | |
| | ⇩ | | |
| Conceptualization | Deciding method of administration of questionnaire<br>Determining questionnaire format<br>Deciding on the length of questionnaire<br>Deciding on the constructs & variables | | |
| | ⇩ | | |

| | | | |
|---|---|---|---|
| Developmental process | Item generation based on scientific guidelines/evidences<br>Deciding on the sequence<br>Deciding on scale of measurement, data analysis and format | | |
| | ⇩ | | |
| Validity & Reliability - 1st and 2nd round | Construct validity (Expert opinion) – for clarity & relevancy<br>Content validity (Expert opinion) – for clarity & relevancy<br>Face validity (Piloting) – clarity | ⇔ ⇨ | Revised several times for accuracy, clarity & keeping the questions short |
| | ⇩ | | |
| Validity & Reliability - 3rd round | Questionnaire testing | ⇨ | FINAL QUESTIONNAIRE |

**Adopted Scoring method**

Knowledge, attitudes, and practices scores for each respondent were obtained from their responses respectively on 25 knowledge questions, 34 attitude questions, and 35 practice questions. The percentage of correct answers to knowledge, attitudes, and practices questions yielded the scores of the respective categories.

A cut point of 80% correct answers was used for all of the categories to differentiate between *good* and *poor* knowledge, attitudes, and practices. Table-4

Table 4: Adopted scoring method

| **Score %** | **Knowledge** | **Attitude** | **Practice** | **Total KAP** |
|---|---|---|---|---|
| <60 | Poor | Negative | Inadequate | Poor |
| 60-70 | Fair | Neutral | Adequate | Fair |
| >70 | Good | Positive | Good | Good |

Knowledge scores were calculated by assigning incremental points (1 to 5) to each correct answer with the degree of confidence, and the lowest marks to a negative answer. . **The**

**knowledge score is assessed as good, fair and poor. The attitude was assessed as positive and negative** [12] and **the practice was assessed as good and poor**.

It is important to mention that negative questions were marked with negative scoring pattern for correct information's.

## Statistical Analysis

The statistical analysis was conducted using IBM **SPSS Statistics** V21.0.

## Results

### Testing Content Validity Index

From a set of 94 items, the content validity process identified three dimensions include knowledge (25 questions), attitude (34 items), and practice (35 questions). Items with an I-CVI of >79% were retained. Items having CVR less than 0.59 (Lawshe method) were excluded. The inter-rater agreement (Kohen kappa) was maintained >0.7. Finally, the total number of items (questions) reduced from 150 to 94. The S-CVI (universal agreement) was calculated as 78/94=0.829. It Indicated that experts opinioned on the questionnaire positively.

### Testing internal consistency

Cronbach's alpha was used to estimate the internal consistency of the questions in the questionnaire among 12 subjects. The reliability analysis of the KAP questionnaire with Cronbach's alpha for Knowledge, Attitude and Practices was measured at 0.78, 0.72, and 0.93 respectively showing acceptable internal consistency.

Lastly, the questionnaire was distributed among 134 BNYS students for face validity and a score of 3.46 out of 4 was recorded.

## Conclusions

Up-gradation of scientific tools like the KAP questionnaire will help in the enhancement of understanding of the complexities of multi-factorial diseases like psoriasis. It would aid researchers to work on this chronic disease wherein definitive preventive or curative protocol is not yet available.

The prepared questionnaire showed high reliability and validity between KAP scores. The questionnaire is acceptable, valid, reliable and is supposed to provide statistically appropriate outcomes for the propose cause. Study revealed that the instrument enjoys an appropriate level of content validity and reliability scores and outlines it as relevant and useful measuring instrument. The KAP questionnaire is simple and easy to use.

The strength of the KAP questionnaire lies in the documentation of extensive dietary and nutritional information about the knowledge, attitude or beliefs and practices concerning psoriasis. The KAP questionnaire can be implemented in practice by the healthcare worker(s) for obtaining dietary awareness and practices among the patients for further clinical trials.

**Limitations behind present Study :**

The instrument should be cautiously used for generalization since its validation has been conducted at a single locality / a medical college hospital in Meerut, Uttar Pradesh, India.

Practices being self-reported may not be actual; hence in depth and focussed studies will pour light on the performance of the developed tool.

Revalidation of the questionnaire at different locations and languages is highly warranted.

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