3. MATERIALS AND METHODS

The present investigation entitled “Counseling of kidney stone patients based on their dietary pattern in the selected areas of District Kangra (H.P.)” was carried out in the Department of Food Science and Nutrition, College of Home Science, CSK Himachal Pradesh Krishi Vishwavidyalaya, Palampur. Various techniques, methodologies, selection and applications of scientific methods were applied to arrive at the results and to obtain clarity of research design. This chapter therefore explicate in detail, the sequential steps used for investigation, which are distinctively described under the following headings:

3.1 Domain of the study
3.2 Sampling procedure
3.3 Development/construction of questionnaires
  3.3.1 Questionnaire/interview schedule
  3.3.2 Awareness/knowledge testing schedule
3.4 Collection of data
  3.4.1 General and socio economic profile
  3.4.2 Information regarding kidney stones
  3.4.3 Information regarding other complications/disorders and risk factors
  3.4.4 Anthropometry
  3.4.5 Dietary assessment
  3.4.6 Nutrition knowledge and education/counseling
3.5 Data analysis
  3.5.1 Tabulation of data
  3.5.2 Statistical analysis
3.1 Domain of the study

This study was undertaken in the Department of Food Science and Nutrition, College of Home Science, CSK Himachal Pradesh Krishi Vishwavidyalaya, Palampur.

3.2 Sampling procedure

The present study was conducted on a total of 130 kidney stone patients selected randomly from various reputed medical institutions such as CSK HPKV Health centre, Civil Hospital Palampur and Karan Hospital (Himachal Stone Clinic) of Kangra district (Himachal Pradesh) and information regarding kidney stone patients was collected for analysis. Information on the disease and patients suffering from the ailment was also collected from local Vails (local medical practitioners) who prescribe herbal medicines for curing ailment. Techniques and remedies suggested to patients by them were also discussed.

3.3 Development/ construction of questionnaires

Initially, a preliminary survey of few patients was conducted to investigate their dietary habits. Other baseline information for further investigation was also collected.

3.3.1 Questionnaire/interview schedule

A comprehensive and exhaustive questionnaire was formulated specifically keeping in mind the objectives of the study. The questionnaire was prepared after referring literature on the subject and other relevant information (Internet and Journals). This sample questionnaire was presented to 10 kidney stone patients other than the selected patients and was then evaluated for response of the patients. The questionnaire was also discussed with the doctor at Karan Hospital and necessary improvement /alterations/modifications were incorporated on the basis of collected information and difficulties faced, thus making the questionnaire more functional. The final questionnaire which was used for data collection is placed as Appendix-I.
3.3.2 Awareness/knowledge testing schedule

In order to judge awareness/knowledge of the kidney stone patients on general nutrition awareness, knowledge regarding kidney stones and nutrition and kidney stone concepts, an interview administered questionnaire was drafted, which is placed as Appendix—II. This questionnaire was got filled up by the patients to adjudge their basic knowledge (pre-testing). After this step nutrition education was imparted to all the patients and the questionnaire was then presented to selected 30 patients to see any change in the knowledge of the patients (post-testing).

3.4 Collection of data

The data was collected through personal interview. A conscious effort was made to develop a rapport with the patients to extract reliable and correct information as far as possible. In order to ascertain the authenticity of data, cross checking and indirect questions were also raised. For the purpose of meeting the objectives of the study, the data was collected through a well structured questionnaire cum interview schedule which was divided in various sections viz:

3.4.1 General and socio economic profile

3.4.2 Information regarding kidney stone

3.4.3 Information regarding other associated complications/disorders and risk factors

3.4.4 Anthropometry

3.4.5 Dietary assessment

3.4.5.1 Food consumption pattern

3.4.5.2 Food preferences

3.4.5.3 Nutrient intake

3.4.6 Nutrition knowledge and education/counseling
3.4.1 General and socio economic profile

General information such as name, age, sex, marital status, address, educational qualification, occupation as well as the socio economic particulars such as family type, family composition, type of housing, land holding, total monthly family income and expenditure pattern of the kidney stone patients were included in this segment. For quantifying family size, educational qualification, occupation, total monthly income Trivedi modified SES scale (1963) and Aggarwal et al. SES scale (2005) was used.

3.4.2 Information regarding kidney stone

The information regarding the disease condition included duration and method of diagnosis, size, location of stone, frequency of stones, family history of the disease was collected. The data was also obtained regarding the type of measures used to control the disease like information about type of medication in use for kidney stones, type of surgery undergone as well as dietary modifications, if made any.

3.4.3 Information regarding other associated complications/disorders and risk factors

Information on any associated complication besides kidney stones and risk factors such as personal habits (smoking and alcohol) was also collected from patients.

3.4.4 Anthropometry

Anthropometrical measurements are considered as a tool for assessing nutritional status. Body measurements though are simple and easy to measure, at the same time giving maximum information on nutritional status of the patients. The details of various anthropometric measurements taken and standard methods followed are given below:

3.4.4.1 Height

Height was measured according to the method described by Jelliffe (1966) with the help of anthropometer rod. The barefooted respondents were made to stand erect with heels, buttocks, shoulders and back of the head touching the upright of anthropometer rod at the back. The head was held comfortably erect
and the arms hanging on the sides in a natural manner. The head piece was
gently lowered crushing the hair and making contact with the top of the head.
Height was measured and the readings were recorded to the nearest of 0.5 cms.
The same procedure was repeated thrice to avoid any error and the mean was
taken.

3.4.3.2 Weight

The weight of the patients was taken using the weighing balance
calibrated in kilograms and grams (Jelliffe, 1966). The balance was initially
standardized with known weight before use and kept on a flat surface adjusted to
zero. The patients with light clothing and without shoes were made to stand erect
on the centre of the platform without any support. The weight was recorded in
kilograms and determined to the nearest of 0.5 to avoid errors. The mean of
three readings was taken as the weight of the patient.

3.4.3.3 Body Mass Index (BMI)

BMI, a measure of body weight adjusted for height is used as an indicator
of nutritional status and size of the body energy store in adult population and
includes both fat and lean tissues.

BMI was calculated by the equation given by Garrow and Webster (1985)

\[ \text{BMI} = \frac{\text{Weight (kg)}}{\text{Height}^2 \text{ (m)}} = \text{Kg/m}^2 \]

Classification of BMI (WHO, 1998)

<table>
<thead>
<tr>
<th>BMI (Kg/m²)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 18.50</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.50- 24.99</td>
<td>Normal range</td>
</tr>
<tr>
<td>25.00- 29.99</td>
<td>Overweight</td>
</tr>
<tr>
<td>30.00- 34.99</td>
<td>Obese- Grade -I</td>
</tr>
<tr>
<td>35.00- 34.99</td>
<td>Obese- Grade -II</td>
</tr>
<tr>
<td>≥ 35.00</td>
<td>Obese- Grade -III</td>
</tr>
</tbody>
</table>
3.4.4 Dietary assessment

3.4.4.1 Food consumption pattern

The patients were interviewed to collect information regarding the detailed dietary history with added information about his/her food likes/dislikes, preferences/intolerances if any, eating habits, general meal pattern and dietary intake. Added information about dietary modifications (if any) in relation to the kidney stone conditions such as foods specially taken or avoided, consumption of salt and amount and source of water consumed were also collected.

3.4.4.2 Food preferences

Information on food preferences of the patients in terms of frequency of consumption was also collected. A detailed list of food stuffs selected with special reference to their mineral content (calcium, phosphorus magnesium and oxalates), stone forming constituents and food stuffs helping in reducing the risk factors of stones was also collected from the patients.

3.4.4.3 Nutrient intake

A 24-hour recall method for three consecutive days was used to collect information regarding food intake. Standard measures including glasses, Katories and serving spoons were used to record the amount of food consumed by the patients. Detailed information about the ingredients used and the method of cooking was also recorded. The amount of cooked food consumed was converted into raw ingredients and the nutrient intake was calculated by using the value per 100 grams of edible portion using food consumption table (Gopalan, et al., 2000). Nutrient intake for three consecutive days was taken and the calculated mean values were used for further analysis. The mean nutrient intake by the patients was compared with RDA (Gopalan, et al., 2000; FNB, 1980; Holmes and Kennedy, 2000).
3.4.5 Nutrition knowledge and education/ counseling

3.4.5.1 Pre and post testing of knowledge

The evaluation of nutrition counseling was done through a composite questionnaire by pre and post test of knowledge, attitude and practices (KAP) of the patients suffering from kidney stones (Monga et al., 2008). They were initially evaluated to test their basic knowledge regarding various aspects of the disease using knowledge/ awareness testing questionnaire divided in three parts i.e. general nutrition awareness test, knowledge regarding kidney stone and regarding nutrition and kidney stone. The topics covered for imparting nutrition education were various aspects of kidney stone, its causes, symptoms, the complications associated with the disease and diet during kidney stone conditions. Patients were also educated about the importance of various nutrients, balanced diet as well as necessary dietary and lifestyle modifications required for healthy living. Nutrition education was given individually through printed matters like leaflets and pamphlets according to the field situation and patient’s convenience. All queries were cleared and discussions were also made with the patients. The medium of interaction was mostly Hindi and local dialect. Personal contacts with the patients were maintained and moreover, all the selected patients were counseled during the period of data collection.

After imparting nutrition education, any changes in the knowledge of selected proportion of kidney stone patients (N₀=30) were reassessed by asking them to fill up the same questionnaire (post testing). The patients were evaluated by awarding one score for each correct and zero score for each wrong answer ("Don’t Know" response was awarded zero score) (Kaur et al., 2007). For correlation study between literacy and knowledge of each kidney stone patient, the per cent nutrition knowledge was calculated and used for analysis of correlation. The per cent nutrition knowledge was calculated as:

\[
\frac{\text{Total score of single patient}}{\text{Total number of questions in questionnaire}} \times 100
\]
3.4.5.2 Gain in knowledge

Knowledge is a body of understood information possessed by an individual about a particular thing, act or a process. For correlation study between literacy and gain in knowledge after nutrition education and for calculating overall mean gain after study, the total scores of each patient before and after nutrition education were calculated and raw mean gain of each patient was then converted to percentage as follows:

\[
\frac{(\text{Post-test score}) - (\text{Pre-test score})}{\text{Pre-test score}} \times 100
\]

The effect of nutrition education was assessed in terms of gain in knowledge and quantum of improvement. Gain in knowledge and quantum of improvement was calculated as follows (Kaur et al., 2007):

Gain in Knowledge = Score in Post test - Score in Pre-test.

Quantum of Improvement = Post test score/ Pre test score.

For categorizing the gain in knowledge of patients, the raw mean gain converted to percentage was categorized as low (0-50%), medium (51-74%) and high (>75%), as suggested by the Technical Working Group on Research, Ministry of Health. This category of nutrition knowledge was based on the Committee of Nutrition, Attitude and Practice, Department of Nutrition and Dietetics, UKM (1999).

3.5 Data analysis

3.5.1 Tabulation of data

After collection of field data, the information was coded on the master sheets and then tabulated into master tables. Depending upon the objectives, different modes of classification i.e. sex wise, age wise and according to degree of kidney stone were made to get maximum information from the data.
3.5.2 Statistical analysis

The tables were quantified by using frequency tables and the percentages, standard errors and means for studying variables were calculated. Statistical analysis was carried out on socio economic parameters, disease variables, anthropometric measurements and nutrient intake by the patients. The data was statistically analyzed to find out various differences and associations among variables using chi square test, correlation, regression and t-tests (paired ‘t’ test for nutrition education) given by Snedecor and Cochran, 1967.