5. SUMMARY AND CONCLUSIONS

Mankind is affected by kidney stones since centuries, which in turn is silent cause of renal failure. Keeping this aspect in preview, the present study entitled ‘Counseling of kidney stone patients based on their dietary pattern in the selected areas of District Kangra (H.P.)’ was planned and executed. A sample of 130 kidney stone patients was randomly selected from various reputed medical institutions such as CSK HPKV Health centre, Civil Hospital Palampur and Karan Hospital (Himachal Stone Clinic) of Kangra region. The data was collected by using questionnaire cum interview schedule and wherever possible cross checking and indirect queries were raised to help ascertain authenticity of the data. The detailed information was collected regarding their general and socioeconomic profile, dietary/nutrient intake, information regarding kidney stone patients, anthropometry followed by nutrition counseling. The data was tabulated and analyzed by using standard methods. Following were the main findings of the study-

- Out of total (N=130) kidney stone patients, 60 per cent were males and 40 per cent were females.

- Majority (46.15%) of the kidney stone patients were in age group II (30-45 years; 27.69% males and 18.46% females), followed by 33.08 per cent in the age group I (less than 30 years, 20.77% males and 12.31% females) and remaining were in age group III (above 45 years of age; 11.54% males and 9.23% females).

- General information revealed that majority i.e. 70 per cent of kidney stone patients were married belonging to nuclear families (62.31%). Majority (59.23%) of them had 4-6 members in their families and were living in Pucca houses (59.23%). Majority (80%) of kidney stone patients had land and out of which 71.15 per cent were using only for their own subsistence.
• Literacy level of the kidney stone patients was on an average. Maximum kidney stone patients were educated up to matric (39.92%). Only 13.08 per cent kidney stone patients were graduates and 9.23 per cent were post graduates.

• There was significant difference (at 1% level) in occupation of male and female kidney stone patients. Maximum males were from service class (32.05%) and majority of female kidney stone patients were housewives (59.62%).

• Family income varied significantly (at 1% level) with gender of kidney stone patients. Only 19.23 per cent of kidney stone patients had income less than ₹5000/-, while 10 per cent of patients had income of more than ₹20,000/-. 

• Monthly expenditure pattern revealed that all kidney stone patients were keeping monthly share for food, health and miscellaneous expenses. However 66.92 per cent of kidney stone patients were keeping share for education and 95.38 per cent on self expenses.

• Around 47.44 per cent of male kidney stone patients were smokers and smoking was most prevalent at age group I (i.e. less than 30 years). While 66.67 per cent of male kidney stone patients were alcoholics and alcoholism was most prevalent among male kidney stone patients of age group II (i.e. 30-45 years).

• Majority (50%) of kidney stone patients got diagnosed their kidney stones less than one week ago when contacted for the first time. Only 27.69 per cent kidney stone patients were aware of presence stones in their kidneys from six months.

• Majority of them had stones in their right kidney. Only 8.46 per cent had stone in their both kidneys. Majority of kidney stone patients had stones of size ranging from of 5-10 mm (65.38%).
• Majority (95.38%) of kidney stone patients had experienced renal colic, however, nausea (35.38%), vomiting (40%) and reduced urination (23.85%) were also experienced by kidney stone patients.

• Out of 124 patients experiencing renal colic, daily pain was experienced by 61.29 per cent. Only 4.63 per cent patients were experiencing renal colic monthly and during pain 55.84 per cent were on regular diet.

• Around 80.77 per cent of kidney stone patients were suffered for the first time form kidney stones while only 2.31 per cent for the third time.

• Around 21.54 per cent of kidney stone patients were known of their family history of stones and among them, mother was common relation to which their stone disease was related (46.43%). Also there was significant (at 1 % level) association between family history of kidney stone patients with respect to gender of patients. Male patients were more aware of stone inheritance than female patients

• The selected kidney stone patient got diagnosed their stones by ultrasound and only 3.08 per cent had urine test for stone diagnosis.

• 76.92 per cent of kidney stone patients were taking drugs as treatment of kidney stones. Around 30 per cent of kidney stone patients had other medicines i.e. Ayurvedic and homeopathic in the past for the treatment of stones.

• Around 12.32 per cent of kidney stone patients had undergone surgery from which stone of 56.25 per cent kidney stone patients were operated by extra corporal shock wave lithotripsy. Majority of patients (50%) had taken two months as recovery time after operation.

• Among all selected kidney stone patients 32.21 per cent were suffering from other disorders viz. diabetes (4.76%), hypertension (54.76%), urinary tract infection (26.90%), and gastric acidity (14.29%).
• Anthropometric measurements of selected kidney stone patients revealed that majority i.e. 33.08 per cent of patients had height in the range of 160-165 cms, weight (40%) in the range of 50-60 kgs and BMI (58.46%) in the range of 18.5-24.99 kg/m². There was significant difference (at 5 per cent level) between their height and BMI of kidney stone patients with respect to gender.

• The mean height of male kidney stone patients (161.44±0.73 cms) was significantly (at 5% level) higher than female kidney stone patients (159.20 ± 0.63 cm). Also weight and body mass index of male kidney stone patients was also high (60.24±0.82 kgs and 23.10±0.28 kg/m² respectively) than female kidney stone patients (58.37 ±1.05 kgs and 22.80±0.47 kg/m² respectively).

• A wider range of variation was observed with respect to common meal pattern of selected kidneys tone patients. The observed meal timings were found to be early morning, breakfast, before lunch, lunch, evening, dinner and after dinner. The maximum per cent of kidney stone patients were in the habit of tea (73.85%) during early morning, at breakfast (63.85 %) and before lunch (49.23%). Majority of kidney stone patients were taking Chapatti +vegetable in lunch (46.92%), tea (43.85%) at evening and rice +Dhal (43.85%) at dinner and fruit (36.92 %) after dinner.

• Majority (60%) of selected kidney stone patients were non-vegetarian and maximum (40%) of them were consuming more salted foods.

• Water consumption by selected kidney stone patients revealed that majority (59.23%) of patients were consuming only 1000 ml of water per day which may be a cause of stone formation as less water consumption increases crystallization, which leads to kidney stone formation. Around 77.69 per cent of kidney stone patients were using water from hand pump which may be attributed to another reason for stone formation.
• Status of food allergy revealed that only 11.54 per cent of selected kidney stone patients had food allergy. Out of these, 40 per cent were allergic to egg, 53.33 per cent to brinjal and rest 6.67 per cent to banana.

• Food preferences in terms of overall frequency of consumption of special foodstuffs revealed that frequency varied from weekly to rarely for most of the food stuffs from various selected categories. Daily consumption was observed more frequently for Dalia (5.13% of male and 3.84% of female patients), cornflakes (1.28% males), bread (1.28% males), cucumber (25.64% of males and 15.38% of females), tomato (58.97% of males and 75.00% of females), banana (17.95% of males and 19.23% of females), lemon/Darunj (26.92% females), milk (57.69% males and 36.54% females), curd (38.46% males and 44.23% females), egg (5.13% males and 3.85% females), almonds (15.38% males and 11.54% females), tea (100% male and female patients) and coffee (2.56% of males). Alternate day consumption for Dalia, cornflakes, bread, all pulses, cucumber among vegetables, all fruits, milk and milk products, egg among animal foods, all beverages and tamarind among miscellaneous food items was observed for both male and female kidney stone patients.

• Nutrient intake by selected kidney stone patients revealed that among macro-nutrients, the intake of energy, protein and carbohydrate was found to be the highest by male kidney stone patients of age group I (less than 30 years), whereas fat intake was higher by male kidney stone patients of age group II (30-45 years). On the other hand, in female kidney stone patients, the intake of macro nutrients was high for the age group I (less than 30 years). The mean intake of energy and carbohydrates was lower than RDA while protein intake was slightly higher than RDA.

• In case of minerals, among male patients, the intake of sodium, calcium and magnesium was higher for age group III (above 45 years) and intake of potassium and phosphorous was higher for age group I. In female kidney stone patients, intake of sodium, calcium and phosphorous was
high for age group II, intake of potassium was high in case of age group I and intake of magnesium was high for age group III. The intake of sodium, calcium, magnesium and phosphorous was higher than RDA, in case of both male and female kidney stone patients.

- The intake of oxalates was also higher than RDA for all kidney stone patients and it was higher for male and females of age group I which may be a reason of kidney stones.

- Regression studies revealed that there was higher intake of protein, calcium, phosphorous and oxalates (significant at 1% level) by male kidney stone patients than female kidney stone patients. With the increase in age, the intake of calcium, protein, phosphorous and oxalate decreased. Also the intake of oxalates increased significantly (at 1% level) increased with increase in income.

- Assessment of nutrition knowledge of selected kidney stone patients (N=130) revealed that correlation between literacy level and general nutrition awareness (in both male and female patients) and literacy level and nutrition and kidney stones (only in female patients) was significant both at 1 per cent and 5 per cent level. While correlation between literacy and knowledge regarding kidney stones was non-significant in both genders.

- Better understanding and improvement in the knowledge of selected kidney stone patients (N=30) in the education cum counseling programme was observed. Correlation study revealed that relation between literacy and gain in knowledge regarding kidney stones after nutrition education was significant (at 5% level) while the correlation between literacy and general nutrition awareness and nutrition and kidney stones was non-significant.

- The category wise comparison of mean gain in knowledge of selected kidney stone patients (N=30) revealed that there was a significant (at 1%
level) increase in mean pre-scores of three categories i.e. knowledge regarding general nutrition awareness, knowledge regarding kidney stones and knowledge regarding nutrition and kidney stones. Overall comparison of mean gain and quantum of improvement in knowledge of three categories revealed that there was more gain and improvement in knowledge regarding nutrition and kidney stones which may be due to the concern of patients towards the disease from which they are suffering. The minimum increase was in case of general nutrition awareness which may be attributed to the ignorance of patients towards healthy lifestyle.

- Overall mean gain in knowledge of selected kidney stone patients (N₀=30) after study revealed that 53.33 per cent of respondents had gain in knowledge categorized as high. The reason of this may be attributed to literacy level, personal care, retention ability and interest in patients. 30 per cent of patients had gain in knowledge in the medium range, while 16.66 per cent of patients had low gain in knowledge. The reason of this may be ignorance, ability to retain and lack of interest of selected kidney stone patients.

SUGGESTIONS AND RECOMMENDATIONS

The present study emphasizes the fact that proper nutrition education/counseling can vastly improve the knowledge of patients about the disease and precautions to be taken for it. The education provided to the kidney stone patients also gave them an overview and enhanced their knowledge about general nutrition and kidney stones.

Diet also plays an important role in prognosis of the disease, so kidney stone patients should follow the guidelines as per the dietary intervention package mentioned below.

- Drink plenty of fluids (2-2.5 lit per day) such as coconut water, corn silk tea, barley water and pineapple juice to prevent stone formation.
• Take banana, carrots, bitter guard and horse gram as they are rich in stone inhibitors.

• Take more citrus fruits such as Darunj, lemon, mausami, orange and kinnow to dissolve stones.

• Avoid foods rich in oxalates such as spinach, amaranth, tomato, amla, sapota, cashewnuts and cucumber.

• Avoid excessive use of animal foods such as chicken, egg, fish and meat to prevent uric acid stone formation.

• Restrict cauliflower, brinjal and pumpkin in diet as they form uric acid stones.

If proper counseling and guidance is provided to kidney stone patients at the right time regarding dietary management depending upon the stage of the disease and condition of the patient, it can be prove to be helpful in preventing further complications including recurrence in the long run.

Scientific evidences and research on the subject proves that this myth has substantive truth in it and thus an individual who has any history of this ailment should visit doctor for routine check up regularly to trace any symptoms of recurrence of kidney stone.