Healthcare Demographics, Prevalence, and Pharmacoeconomics of Hospital Malnutrition in the Nephrology Setting: Indian Perspective

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With a population of 1.2 billion people, India is one of the rapidly emerging economies of the world. However, the gross domestic product (GDP) per capita income remains at 60,732 rupees (1115.50 US dollars) per year, which is a low-income economy. It is believed that about 10% of the population has chronic kidney disease (CKD) and the prevalence of stage IV CKD, age adjusted, is 150–232 per million population.[1]

The healthcare system is two-tiered, with most of the population seeking medical care from the government-run, suboptimally equipped hospitals. The middle class and the rich are provided healthcare through corporate hospitals, paying out of pocket. Treatment in tertiary care facilities and specialist care are available in the private sector for a fee. The government spends 1904 rupees (35 US dollars) per person per year for healthcare. This amounts to 1.2% of the GDP, and the private contribution to healthcare is 4% of GDP.

Due to cost and unaffordability of healthcare services, more than 95% of Indian patients with CKD die when they reach end-stage kidney failure. The CKD registry of India (www.ckdri.org) shows that as the CKD stages progress, the percentage of patients with malnutrition and low body mass index (BMI) increases from 3.35% to 20.4%. Irrespective of income, 74% of patients with CKD at stage IV or V see a nephrologist; patients with higher incomes see a nephrologist at an earlier disease stage (Figure).[2] Males account for 70.6% of CKD patients, with a mean age 50.7 ± 14.6 years. Females account for 29.4% of the patient population, with a mean age of 48.1 ± 14.3 years.

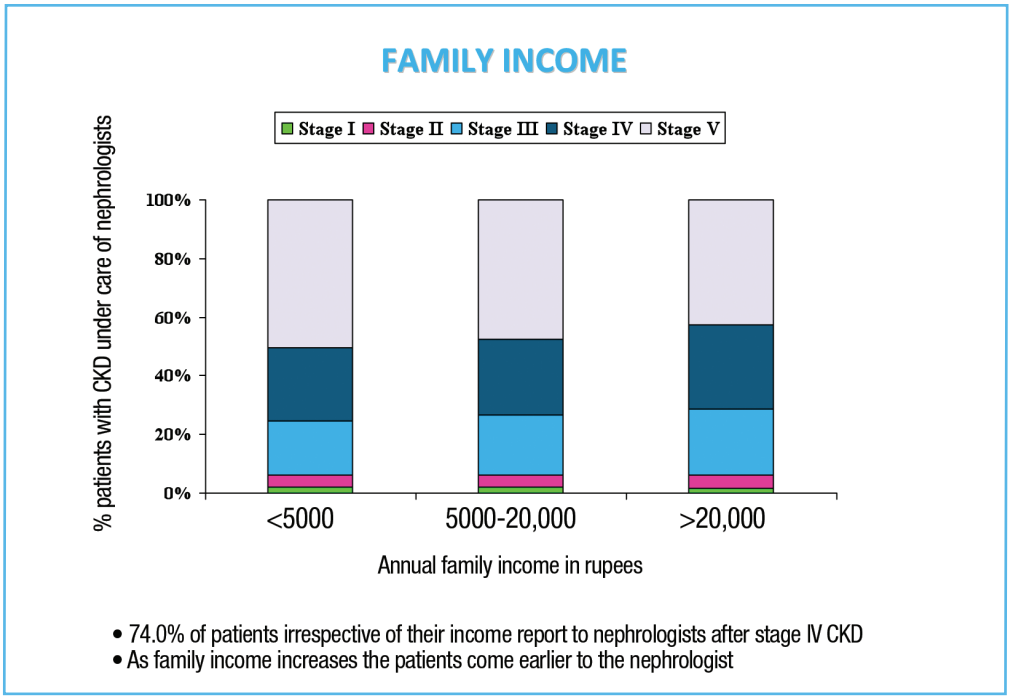

Figure. Relationship between family income and CKD stage at which patients see a nephrologist.[2]

CKD=chronic kidney disease, n=63,538

Source: 6th Annual Report of CKD Registry of ISN published during the 44th Annual Conference (2011) at Hydradad, www.ckdri.org. Reprinted by permission of the Indian Society of Nephrology.

The most common cause of CKD, seen in 30.9% of the patient population, is diabetic nephropathy. Hemoglobin levels recorded in the CKD registry show that 51.6% of patients in stage I CKD are anemic, as are 64.3% in stage II, 80.7% in stage III, 92.6% in stage IV, and 98.6% in stage V. Erythropoiesis-stimulating agents were being used by 7.8% of patients in stage I CKD and 46.1% in stage V. About 75% of the patients starting on chronic peritoneal dialysis (PD) were found to be malnourished, which is associated with increased morbidity and mortality.[3]

The major cause of malnutrition in PD is inadequate intake of food and loss of protein through urine and the PD process. A study by Prasad et al showed that when patients undergoing continuous ambulatory PD were stratified into low, moderate, and severe malnutrition categories, mortality was highest among those who were moderately or severely malnourished.[4] A study of nutritional parameters

in patients who lived on PD for 3 years or more showed that those patients with a normal BMI, appropriately controlled blood pressure, adequate calcium-phosphorus ratio and hemoglobin level, and a serum albumin with an adequate (over 1.7) KT/V (a measure of dialysis adequacy) survived.[5] A dietary survey in 106 Indian patients on hemodialysis showed that calorie intake was 29 ± 6.6 kcal/kg and mean protein intake was 0.93 ± 0.39 g/kg, with 49% ± 8.5% of the protein of high biological value.[6] Dietary deficiencies of protein and calories were seen in 64.9% of the patients. This longitudinal study showed that after 6 months, total calorie intake increased significantly, with a disproportionate drop in the biological value of protein. Further study by this group showed that serum albumin levels and nutritional status improved with an intervention that included dietary recall, counseling, and nutritional supplementation, either commercial or homemade, providing 500 kcal and 15 g protein.

Malnutrition is present in 42%–77% of patients with end-stage kidney disease in developing countries, which may be due to various reasons, including religious practices that promote abstinence from meat, fish, and eggs. The ensuing complications of protein-energy wasting, malaise wasting, anemia, and decreased immunity may predispose these patients to infections. There is an urgent need for nutrition counseling by a dietitian to provide important nutrition information to the patient to reduce the risk for complications of malnutrition. Consultation with a dietitian should take place at least three times yearly, and in malnourished patients more often as needed. Nutrition assessment should include reports of food intake, subjective global assessment, anthropometric measurements, estimation of the normalized protein nitrogen appearance (nPNA), serum albumin and prealbumin levels, serum lipid profile, salt and potassium intake, calcium-phosphorus ratio, and changes in body weight.[7]

Nutrition assessment is essential for early intervention and has significant impact on patient care (Table).

Table. Nutrition Assessment Guidelines

- Is essential for early intervention
- Has a significant impact on patient care
- Is not based on a single marker but on multiple parameters
- Should be conducted at initiation and follow-up

No single nutritional marker is adequate: assessment requires using multiple parameters at initiation and follow-up. Nutritional intake, losses, and body stores need to be assessed.

References

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