

Comprehensive Assessment of Chronic Kidney Disease Risk Perception in a Community Sample: A Study in Bhubaneswar, Odisha, India

Dr. Sidhartha Sankar Kuanr¹, Dr. Madhusmita Patnaik², Dr. Nagendra Kumar Rajsamant³,
Dr. Saroj Kumar Das⁴

¹Assistant Professor, Department of Paediatrics, SVPPGIP/ SCB Medical college & Hospital, Cuttack, Odisha

²Associate Professor, Department of Medicine, SLN Medical College & Hospital, Koraput, Odisha

³Assistant Professor, Department of Surgery, SCB Medical College & Hospital, Cuttack, Odisha

⁴Assistant Professor, Department of Radiotherapy, MKCG Medical College and Hospital, Berhampur, Odisha

Mail- dasdrsaroj2019@gmail.com

Abstract:

Background:

Chronic Kidney Disease (CKD) is a global health concern associated with substantial morbidity and mortality, particularly linked to diabetes and hypertension. Detecting CKD in its asymptomatic early stages poses a significant challenge, potentially leading to costly interventions like Renal Replacement Therapy (RRT). The perceived low risk of kidney disease in the general population further hinders prevention and early intervention efforts. Understanding individual CKD risk perception is crucial for proactive risk management.

Methodology:

A diverse cohort of 320 participants aged 18 and above, proficient in English or Odiya, was recruited from three general medicine clinics in different areas of Bhubaneswar city. Personal interviews, utilizing a pre-structured questionnaire covering family history, quality of life, perceived risk, physician diagnosis, demographic information, and perceived efficacy in managing health conditions, were conducted. Responses were recorded using Likert-style scales or binary options. Statistical analysis employed open-source R software. Data collection spanned from June 2020 to August 2021.

Results:

Among 320 subjects, 228 (71.3%) were female, categorized into three age groups. Hypertension was diagnosed in 34.1% of subjects, type 2 diabetes in 15.0%, and kidney disease in 5.3%. A notable portion reported a lack of control over their diseases. Those with family histories perceived higher risk. Noteworthy differences in awareness existed between CKD and type 2 diabetes versus CKD and hypertension. The findings highlight the complex interplay between diagnosis, family history, and individual perceptions.

Discussion:

A substantial proportion reported a perceived lack of control over their diseases, potentially linked to the unpredictable nature of chronic disease management. Surprisingly, a low percentage identified themselves as at increased risk, with family history influencing risk perception. Discrepancies in awareness between CKD and diabetes versus hypertension align with the Health Belief Model, emphasizing the role of community awareness in shaping perceptions.

Conclusion:

The study underscores a significant lack of awareness about CKD and its risk factors within the local population. Addressing this gap necessitates targeted awareness and education programs focusing on the asymptomatic nature of CKD. Regular renal care counseling and lifestyle modifications are pivotal interventions for individuals at high risk, aiming to prevent or slow down CKD progression.

Keywords: Chronic Kidney Disease, Risk Perception, Diabetes, Hypertension, Renal Replacement Therapy, Health Education, Disease Prevention, Public Health, India, Bhubaneswar.

INTRODUCTION:

Chronic Kidney Disease (CKD) is an increasingly significant global health concern, with its prevalence linked to substantial morbidity and mortality across diverse populations^{1,2}. The interplay between CKD and diabetes (both type 1 and type 2) as well as hypertension is widely recognized as a major and primary risk factor^{3,4}. The complexity of addressing CKD is compounded by the challenge of detecting the disease in its early stages, which often presents asymptotically. Failure to identify or treat CKD during these initial phases may lead to a gradual progression toward End Stage Renal Disease (ESRD), necessitating the adoption of costly Renal Replacement Therapy (RRT) methods such as dialysis or renal transplantation⁵.

Adding to the complexity, the limited perceived risk of kidney disease within the general population contributes to a reduced opportunity for prevention and early intervention⁶. Understanding an individual's perceived risk for CKD emerges as a critical factor in proactively managing associated risk factors. In this context, our study unfolds with the overarching objective of comprehensively assessing the perceived risk for kidney disease within a community sample located in the vibrant city of Bhubaneswar, situated in the state of Odisha, India.

This research is poised not only to shed light on the prevalent perceptions of CKD risk within the community but also to contribute valuable insights into the factors influencing risk perception and engagement in risk management practices. By delving into the dynamics of risk perception, our study seeks to uncover the nuances that underlie the community's awareness of CKD and its associated risk factors. Such insights are instrumental in developing targeted interventions and educational initiatives that can enhance public understanding and foster proactive health management⁶⁻⁹.

Furthermore, by situating our study in the unique context of Bhubaneswar, we aim to capture the region-specific nuances that may influence CKD risk perception and management. Cultural, economic, and social factors often play a crucial role in shaping health beliefs and practices. Therefore, a nuanced exploration of these factors within the community will not only enrich our understanding of CKD risk perception but will also contribute to the development of context-specific strategies for health promotion and disease prevention⁷⁻¹¹.

Our study endeavors to provide a comprehensive examination of CKD risk perception within the community of Bhubaneswar, Odisha. Through a meticulous exploration of the factors influencing risk perception, we aspire to contribute not only to the scientific understanding of CKD but also to the development of tailored interventions that can positively impact public health outcomes in this specific region.

METHODOLOGY:

The study involved a cohort of 320 participants aged 18 and above, who expressed willingness to participate in the survey and demonstrated proficiency in either English or Odiya (the local language). The participants were recruited from three distinct general medicine clinics situated in different parts of Bhubaneswar city. Recognizing the diversity in health literacy levels among the participants, personal interviews were conducted using a pre-structured questionnaire. This questionnaire encompassed inquiries related to family history, quality of life, perceived risk, physician diagnosis, demographic information, and perceived efficacy in managing their health conditions.

To facilitate responses, a Likert-style scale or binary options (yes/no) were provided for each question in the pre-designed questionnaire. The estimated time required to complete the questionnaire was approximately 6 minutes. The data collection phase spanned from June 2020 to August 2021, allowing for a comprehensive representation of responses over this period. This approach was designed to capture a holistic understanding of participants' perspectives on various aspects related to chronic kidney disease and its associated factors.

For the statistical analysis, open-source R software was employed. The utilization of R facilitated a rigorous examination of the collected data, enabling the derivation of meaningful insights and correlations. The statistical analyses aimed to uncover patterns, relationships, and trends within the dataset, contributing to the robustness of the study's findings.

This methodology was implemented to ensure a diverse and representative sample from the community, taking into account language proficiency and health literacy variations among participants. The use of a structured questionnaire with varied response formats aimed to gather nuanced information on the subjects' experiences, perceptions, and attitudes towards chronic kidney disease within the specified timeframe.

RESULTS:

The study encompassed 320 subjects recruited from three different general medicine clinics situated in various parts of Bhubaneswar city. Among the total population, 228 individuals (71.3%) were female. Participants were categorized into three age groups: 18-25 years (31 individuals, 9.7%), 26-45 years (132 subjects, 41.3%), and over 46 years (157 individuals, 49.1%).

Hypertension was diagnosed in 109 subjects (34.1%), while 48 individuals (15.0%) were identified with type 2 diabetes, and 17 subjects (5.3%) were diagnosed with kidney disease. A significant proportion of the subjects reported feeling a lack of control over their respective diseases. Regarding family history, those with a family history of both type 2 diabetes ($\chi^2=13.7$, $p<.001$) and hypertension ($\chi^2=14.2$, $p<.001$) perceived themselves to be at higher risk compared to those without such a family history.

Table 1 Variables and risk factors

Variable	Total Sample (n=320)	Percentage
Age (Years)		
18-25	31	9.7
26-45	132	41.3
46 and above	157	49.1
Hypertension		

Male	92	28.8
Female	228	71.3
Medical History		
Hypertension	109	34.1
Diabetes	48	15.0
Kidney Disease	17	5.3
Family Medical History		
Hypertension	193	60.3
Diabetes	144	45.0
Kidney Disease	23	7.2

Among those diagnosed with diabetes (36 individuals, 11.3%) and hypertension (25 individuals, 7.8%), both recognized as leading risk factors for kidney disease, 53.1% and 36.9%, respectively, felt in control of their diseases. For patients with kidney disease, 22.2% reported being in control. Among individuals without a kidney disease diagnosis, 7.2% with a family history of renal disease considered themselves at risk for kidney disease, compared to 4% without a family history, although these groups did not exhibit significant differences ($p > .05$).

Interestingly, 10% of individuals diagnosed with diabetes but not kidney disease believed they were at an increased risk for renal disease. This nuanced insight into perceived risk highlights the complex interplay between diagnosis, family history, and individual perceptions within the studied population.

DISCUSSION:

The study incorporated individuals attending diverse general medicine clinics across different parts of Bhubaneswar city who were willing to participate in the survey and were proficient in either English or Odiya (the local language). It's crucial to acknowledge that this inclusion criterion introduces a potential bias in our sample, as those fluent in these languages may differ in demographic and health-related aspects from those who do not meet these language criteria.

A significant portion of our sample reported a perceived lack of control over their respective chronic diseases. Notably, among individuals with hypertension, only half felt a sense of control, while similar proportions were observed in 63% of individuals with diabetes and a substantial 78% of patients with Chronic Kidney Disease (CKD). The unpredictable nature of managing chronic diseases and the resulting sense of loss of control may contribute to this prevalent perception. Moreover, the lack of control over illness may potentially be linked to non-adherence to treatment regimens.⁷⁻⁹

Surprisingly, a relatively low percentage of individuals identified themselves as being at an increased risk for various diseases. However, individuals with a definite family history demonstrated a heightened perception of increased risk compared to subjects without such a family history. Notably, there was a discernible difference in awareness regarding the associations of CKD with Type 2 Diabetes (T2DM) and hypertension. The community seemed more informed about the link between CKD and T2DM than the relationship between CKD and hypertension. This discrepancy aligns with the Health Belief Model, indicating that risk factors lacking acute symptomatology may not be readily perceived as posing an increased risk and susceptibility for kidney disease within this sample.

In delving into the dynamics of risk perception within our study population, it becomes evident that community awareness plays a pivotal role in shaping individual attitudes toward disease risk. These findings underscore the importance of targeted health education interventions to bridge existing knowledge gaps and enhance public understanding of the diverse risk factors associated with chronic diseases, particularly CKD.

CONCLUSION:

The study revealed a notable lack of awareness regarding Chronic Kidney Disease (CKD) and its associated risk factors within the local population. Recognizing this deficiency, there is a crucial need to implement awareness and education programs focusing on the asymptomatic nature of CKD during its initial stages. Prioritizing regular renal care counseling as part of these initiatives is of paramount importance. Additionally, lifestyle modifications and targeted education should be offered to individuals at a high risk of CKD, aiming to either prevent or slow down the progression of the disease.

Funding:

The authors declare no conflicts of interest in this work. No external funding sources were involved in supporting this research.

REFERENCES:

1. Levey AS, Atkins R, Coresh J, Cohen EP, Collins AJ, Eckardt KU, *et al.* Chronic kidney disease as a global public health problem: approaches and initiatives - a position statement from Kidney Disease Improving Global Outcomes. *Kidney Int* 2007; 72: 247–59. doi:10.1038/sj.ki.5002343

2. Tonelli M, Wiebe N, Culeton B, House A, Rabbat C, Fok M, *et al.* Chronic kidney disease and mortality risk: a systematic review. *J Am Soc Nephrol* 2006; 17: 2034–47.
3. Levey AS, Astor BC, Stevens LA, Coresh J. Chronic kidney disease, diabetes, and hypertension: what's in a name? *Kidney Int* 2010; 78: 19–22. doi: 10.1038/ki.2010.115
4. Levey AS, Coresh J. Chronic kidney disease. *Lancet* 2012; 379: 165–80. doi:10.1016/s0140-6736(11)60178-5
5. Plantinga LC, Tuot DS, Powe NR. Awareness of chronic kidney disease among patients and providers. *Adv Chronic Kidney Dis* 2010; 17: 225–36. doi: 10.1053/j.ackd.2010.03.002
6. Plantinga LC, Tuot DS, Powe NR (2010) Awareness of chronic kidney disease among patients and providers. *Adv Chronic Kidney Dis* 17: 225-236.
7. Cukor D, Cohen SD, Peterson RA, Kimmel PL (2007) Psychosocial aspects of chronic disease: ESRD as a paradigmatic illness. *J Am Soc Nephrol* 18: 3042-3055.
8. Warren N, Canaway R, Unantenne N, Manderson L (2012) Taking control: Complementary and alternative medicine in diabetes and cardiovascular disease management. *Health (London)* 17: 323- 339.
9. Gonzalez JS, Shreck E, Psaros C, Safren SA (2015) Distress and type 2 diabetes- treatment adherence: A mediating role for perceived control. *Health Psychol* 34: 505-513.