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Diagnosis and Management of Chronic Kidney Disease in Spain: A Cross-Sectional Survey of Primary Care and Nephrology Professionals

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Abstract

Background: Chronic kidney disease (CKD) is frequently underdiagnosed, particularly in primary care. This study evaluates diagnostic practices, referral patterns, and interprofessional coordination in Spain.

Methods: A cross-sectional survey was conducted among primary care physicians and nephrologists. Qualitative responses were analyzed thematically and complemented with descriptive statistics.

Results: Major barriers included insufficient training in primary care, limited access to timely laboratory data, and fragmented communication systems. Referral decisions were frequently based on advanced disease markers rather than early indicators.

Conclusions: Improving CKD outcomes in Spain requires enhanced training, digital integration, and early detection strategies.

Keywords: Chronic Kidney Disease, Primary Care, Nephrology, Early Diagnosis, Health Systems, Spain, Digital Health

Introduction

CKD affects approximately 10–15% of the adult population globally and is associated with increased cardiovascular risk and mortality [1-3]. Despite guideline recommendations, early detection remains suboptimal, particularly in primary care [4-6]. In Spain, healthcare is universally accessible, yet fragmentation between care levels may impair CKD management.

CKD is a very important public health problem directly related to climate change and causing serious burden to the sustainability of environment and health system as well [7-10].

The most common renal replacement therapy (RRT), hemodialysis (HD) and peritoneal dialysis PD practices generate a considerable environmental footprint, and kidney health is particularly sensible to the effects of climate change.

Due to the way that the human increases the demand for food, fresh water, carburant, industry, and so forth during the last 50 years, the world is facing a large and irreversible loss of diversity of ecosystem on the earth [11]. There is the need to adopt a sustainable process in Renal Care based on CKD prevention and sustainable RRT [12,13].

The focus of this article is to collect and analyze the opinion of health care professionals (HCP) about measures that can be taken to implement effective CKD prevention. Our research aims to assess the environmental impact of chronic kidney disease through field surveys conducted in hospital renal departments and various primary care in Spain.

Materials and Methods

A cross-sectional survey was conducted among healthcare professionals in Spain. The study received ethical approval from the Universidad Politécnica de Madrid Ethics Committee.

Qualitative responses were analyzed using thematic analysis, focusing on:

- Diagnostic practices
- Referral criteria
- Communication barriers
- Resource needs

Results

The survey was completed by 15 Health Care Professional (HCP) from renal units and primary care center across Portugal and Spain.

Training and Knowledge Gaps

Participants highlighted insufficient nephrology training:

- More training is needed in primary care

This aligns with evidence showing low adherence to CKD guidelines in primary care [14,15].

Participant Characteristics

Variable	Spain (%)
Primary Care Physicians	60
Nephrologists	40
>10 years experience	55
Urban practice	70

Table 1: Participant Characteristics

Key Barriers to CKD Diagnosis

BARRIER	Spain (%)
Lack of training	70
Communication issues	65
Late referral	55
Limited lab access	50

Table 2: Key Barriers in CKD Management

Diagnostic Challenges

Key barriers included:

- Limited albuminuria testing
- Delayed laboratory access
- Lack of decision-support tools

CKD detection relies heavily on electronic health record (eGFR) and albuminuria, yet these are underutilized in routine care [16-19].

Referral Patterns

Referral to nephrology was often triggered by:

- Elevated creatinine
- Reduced eGFR

This reflects late referral patterns, associated with worse outcomes [20-24].

Communication Barriers

Participants reported:

- Lack of integrated electronic health records
- No direct communication channels
- Reliance on patients for information transfer

Poor coordination is a known barrier to CKD care continuity [13-16].

Improvement Strategies

Common recommendations included [17-20]:

- Early screening programs
- Multidisciplinary care
- Patient education

- Integration of digital tools

Resource Needs

Suggested improvements included [21-24]:

- Training programs
- Decision-support tools
- Better coordination with nephrology

Discussion

The findings highlight systemic challenges in CKD management in Spain.

Primary Care Limitations

Primary care plays a central role in CKD detection, yet lacks adequate support and training [25-29].

Digital Health Opportunities

Integrated EHRs and automated alerts could improve early detection and referral accuracy [17-19].

Health System Implications

Reducing fragmentation between care levels is essential to optimize CKD pathways.

Limitations

- Qualitative design
- Limited sample size [22-25,28]
- Potential selection bias

Conclusions

The results of this survey show that the implementation of prevention and sustainability policies can improve renal healthcare and patient outcomes.

CKD diagnosis and management remain suboptimal in both Spain. While challenges are shared, Spain exhibits greater systemic barriers. Addressing these gaps requires coordinated efforts in training, digital integration, and early detection strategies.

CKD management in Spain requires:

- Improved training in primary care
- Early detection strategies
- Integrated digital health systems

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Conflict of Interest Statement / Disclosure Statement

The author(s) declared that there is no potential conflict of interest concerning the research, authorship, and/or publication of this article.

Ethics Approval and Consent Participate

Despite the participant had to answer the first and mandatory question about consent to participate, we got the Ethical approval from Ethic Committee of Universidad Politécnica de Madrid. (See the supplemental Material).

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Consent for Publication / Informed Consent

Consent was asked of all participants before starting to answer the questionnaire.

Author Contributions

Abel Mata-Lima conceived and conducted the study. José Javier Serrano-Olmedo reviewed and edited the manuscript and approved the final version of the manuscript. Abel Mata-Lima conceptualized and developed the questionnaires and wrote the first draft of the manuscript. Abel Mata-Lima and José Javier Serrano-Olmedo undertook the survey review, distribution, and diffusion. J.J. Serrano provided project guidance and ethical approval management. Abel Mata-Lima and José Javier Serrano-Olmedo undertook the questionnaire and manuscript review and informed the interpretation of findings. All authors contributed significantly to the study design. Material preparation, data collection, and analysis

were performed by all authors. All authors commented on previous versions of the manuscript, read and approved the final manuscript;

Abel Mata-Lima verifies the data used in these analyses. All authors confirm they ad full access to all the data in the study and accept responsibility to submit for publication.

Supplementary Material

The ethical approval – confidential

This article contains the following online survey questionnaires:

<https://docs.google.com/forms/d/1Owc81qpVVaPSsJBCEGonW9UDC2Plu4DOyzR2zNSjCh0/edit>

https://docs.google.com/forms/d/1auW31D99gzAgAcBc-fO7AIQvndz61TQUNzTeW_I_zbA/edit

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