

VOLUME 41, NUMBER 1  
January 2024

ISSN 0189 - 160X

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# WAJMJ

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**WEST AFRICAN JOURNAL OF MEDICINE**

ORIGINALITY AND EXCELLENCE IN MEDICINE AND SURGERY



OFFICIAL PUBLICATION OF  
THE WEST AFRICAN COLLEGE OF PHYSICIANS *AND*  
WEST AFRICAN COLLEGE OF SURGEONS



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## Haematological Indices and Iron Status in Pre-Dialysis Chronic Kidney Disease Patients

*Indices Hématologiques et Statut en Fer chez les Patients Atteints de Maladie Rénale Chronique en Pré-dialyse*

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### ABSTRACT

**BACKGROUND:** Chronic kidney disease (CKD) is associated with haematological changes, the commonest being anaemia. The number and function of white blood cells (WBC) and platelets are equally affected. Iron deficiency is a common cause of anaemia in the CKD population and anaemia has been associated with reduced cardiac function, increased rates of hospitalization, morbidity and mortality. This study aimed to determine the haematological indices and iron status among pre-dialysis CKD patients.

**METHOD:** A hospital-based cross-sectional study involving 95 pre-dialysis CKD patients and 95 age- and sex-matched apparently healthy controls. Full blood count, peripheral blood film, serum ferritin, transferrin saturation, C-reactive protein (CRP), electrolytes, urea and creatinine, serum folate and vitamin B12 were done in all study participants. Comparisons were made between results obtained from participants in both groups.

**RESULT:** The mean ages were  $58.1 \pm 14.9$  years and  $58.3 \pm 15.0$  years in the CKD group and controls, respectively. The male:female ratio was 1:0.9 in both groups. The prevalence of anaemia was 51.6% and 3% in patients with CKD and controls, respectively. There was no significant difference in the total WBC count, neutrophil and lymphocyte differentials, platelet count, serum vitamin B12 and folate in patients with CKD and controls. The prevalence of iron deficiency among patients with CKD was 32.6%, of which 62.5% were absolutely iron-deficient while 37.5% were functionally iron-deficient. The median ferritin and CRP were also higher in CKD. ( $p = 0.001$ ).

**CONCLUSION:** Anaemia and iron deficiency are common in pre-dialysis CKD patients. Early diagnosis and treatment are important to avoid the problems associated with them.

WAJM 2024; 41 (1): 48 - 54.

**KEYWORDS:** Chronic kidney disease, Anaemia, Iron deficiency, Pre-dialysis

### RÉSUMÉ

**CONTEXTE:** La maladie rénale chronique (MRC) est associée à des changements hématologiques, le plus courant étant l'anémie. Le nombre et la fonction des globules blancs (GB) et des plaquettes sont également affectés. La carence en fer est une cause fréquente d'anémie chez la population atteinte de MRC, et l'anémie a été associée à une fonction cardiaque réduite, à des taux accrus d'hospitalisation, de morbidité et de mortalité. Cette étude visait à déterminer les indices hématologiques et le statut en fer chez les patients atteints de MRC en pré-dialyse.

**MÉTHODE:** Une étude transversale en milieu hospitalier impliquant 95 patients atteints de MRC en pré-dialyse et 95 témoins apparemment en bonne santé, appariés selon l'âge et le sexe. Une numération globulaire complète, un frottis sanguin périphérique, la ferritine sérique, la saturation de la transferrine, la protéine C-réactive (CRP), les électrolytes, l'urée et la créatinine, le sérum folate et la vitamine B12 ont été réalisés chez tous les participants à l'étude. Des comparaisons ont été faites entre les résultats obtenus chez les participants des deux groupes.

**RÉSULTAT:** Les âges moyens étaient de  $58,1 \pm 14,9$  ans et de  $58,3 \pm 15,0$  ans dans le groupe MRC et les témoins, respectivement. Le ratio hommes:femmes était de 1:0,9 dans les deux groupes. La prévalence de l'anémie était de 51,6% et 3% chez les patients atteints de MRC et les témoins, respectivement. Il n'y avait pas de différence significative dans le nombre total de GB, les différentiels de neutrophiles et de lymphocytes, le nombre de plaquettes, la vitamine B12 sérique et le folate chez les patients atteints de MRC et les témoins. La prévalence de la carence en fer parmi les patients atteints de MRC était de 32,6%, dont 62,5% étaient absolument carencés en fer tandis que 37,5% étaient fonctionnellement carencés en fer. La ferritine médiane et la CRP étaient également plus élevées chez les patients atteints de MRC ( $p=0,001$ ).

**CONCLUSION:** L'anémie et la carence en fer sont courantes chez les patients atteints de MRC en pré-dialyse. Un diagnostic précoce et un traitement sont importants pour éviter les problèmes qui y sont associés. WAJM 2024; 41 (1): 48 - 54.

**MOTS-CLÉS:** Maladie rénale chronique, Anémie, Carence en fer, Pré-dialyse

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