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BRIEF ORIGINAL ARTICLE

Retinopathy diabetic screening by non-mydriatic retinography: Concordance between primary care physicians, nurses and ophthalmologists[☆]

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KEYWORDS

Screening;
Diabetic retinopathy;
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Abstract

Aim: To compare the evaluation of retinographies by a teleophthalmology nurse and primary care physicians (PCP) with an ophthalmologist referral hospital (gold standard).

Methods: Cross-sectional study on a random sample of 337 patients on the teleophthalmology programme from January 2010 to January 2015. We analysed the diagnostic evaluation (whether or not it presented findings of RD) and the therapeutic assessment (whether or not referral to the ophthalmology department was needed) which were conducted independently on the sample retinographies by the PCP, a nurse and an ophthalmologist (gold standard). Reliability and concordance between the gold standard and the PCP and the nurse were checked and the statistical analyses were supported using SPSSv.23.00 software and diagnostic test reliability calculators (EPIDAT 4.1).

Results: In the diagnosis of RD, the nurse presented: sensitivity (S): 0.96; specificity (Sp): 0.89; PPV: 0.58; NPV: 0.99; Kappa index: 0.67 and PCP: S: 0.98; Sp: 0.99; PPV: 0.96; NPV: 0.99; Kappa index: 0.96.

In the referral to ophthalmology assessed by the nurse: S: 0.83; Sp: 0.83; PPV: 0.51; NPV: 0.96; Kappa Index: 0.53 and PCP: S: 0.62; Sp: 0.76; PPV: 0.36; NPV: 0.90; Kappa index: 0.29.

Conclusions: A nursing teleophthalmology programme could perform population screening for RD with the same quality as PCP. This would increase coverage, in addition to providing better use of resources by avoiding intermediate patient appointments through PCP and increased health savings.

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PALABRAS CLAVE

Cribado;
Retinopatía
diabética;
Telemedicina

Cribado de retinopatía diabética mediante retinografía no midriática: concordancia de médicos de familia, enfermeras y oftalmólogos

Resumen

Objetivo: Comparar la evaluación de las retinografías para el cribado de retinopatía diabética (RD) realizadas por la enfermera de teleoftalmología y los médicos de atención primaria (MAP) con un oftalmólogo del hospital de referencia (estándar de oro).

Métodos: Estudio transversal en una muestra aleatoria de 337 pacientes del programa de teleoftalmología desde enero de 2010 a enero de 2015. Analizamos la valoración diagnóstica (si presentaba hallazgos de RD o no) y la valoración terapéutica (si precisaba derivación al Servicio de Oftalmología o no) que realizaron de manera independiente sobre las retinografías de la muestra los MAP, una enfermera y un oftalmólogo (patrón de oro). Se comprobó la fiabilidad y concordancia de los MAP y la enfermera con el patrón de oro, apoyando los análisis estadísticos con SPSS v.23.00 y calculadoras de fiabilidad de pruebas diagnósticas (EPIDAT 4.1).

Resultados: En el diagnóstico de RD, la enfermera presentó: sensibilidad (S): 0,96; especificidad (E): 0,89; VPP: 0,58; VPN: 0,99; índice Kappa: 0,67 y el MAP: S: 0,98; E: 0,99; VPP: 0,96; VPN: 0,99; índice Kappa: 0,96.

En la derivación a Oftalmología valorado por la enfermera: S: 0,83; E: 0,83; VPP: 0,51; VPN: 0,96; índice Kappa: 0,53 y el MAP: S: 0,62. E: 0,76; VPP: 0,36; VPN: 0,90; índice Kappa: 0,29.

Conclusiones: La enfermera del programa de teleoftalmología podría realizar el cribado poblacional de RD con la misma calidad que los MAP. Esto permitiría incrementar la cobertura, además de proporcionar un mejor aprovechamiento de los recursos al evitar citaciones intermedias de los pacientes a través del MAP y un mayor ahorro sanitario.

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What is known?

In the studies reviewed, different professionals were proposed as the evaluators of retinographies in diabetic retinopathy screening, mainly ophthalmologists and PCPs, and also non medical staff such as optometrists, nurses and other trained technicians. Evidence highlights the ophthalmologist as the most reliable evaluator. PCPs have also demonstrated a high level of reliability and the most recent studies report 95% sensitivity and 84% specificity of the non medical staff trained as evaluators.

What does this paper contribute?

The evaluation of retinographies carried out by PCPs, performed by the teleophthalmology nurse with those performed by an ophthalmologist were compared. Results were acceptable in both cases, and it would therefore be logical to leave programme management in the hands of nurses. Coverage would thus increase with no loss of quality and more effective use of resources would be made by avoiding intermediate appointments with the PCP.

Introduction

Diabetic retinopathy (DR) is the most common cause of blindness among adults aged 20–74. Current screening tends to be performed using retinographies with non-mydiatric cameras (NMR) with >80% sensitivity and >90%¹ specificity.

Different professionals have been proposed by the reviewed studies as the evaluators of NMR, mainly ophthalmologists^{2–4} and PCPs, followed by other professionals such as nurses and other trained technicians. Evidence suggests that the ophthalmologist is the most reliable evaluator.⁵ Despite this, PCPs have demonstrated a high level of reliability in back of the eye interpretation^{6,7} and the most recent studies report 95% sensitivity and 84% specificity respectively of non medical staff trained as evaluators.^{5,8,9}

The aim of our study was to compare the evaluation made by the PCPs of the NMR, and the nurse of the current teleophthalmology programme with the evaluation of an ophthalmologist of the ophthalmology unit of the referral (gold standard) hospital. If the result was similar the question of changing the current DR screening programme to improve coverage of NMR without any loss of quality could be raised.

Method

A transversal study was designed. The sample size was calculated with a 5% precision and 95% confidence level over the 2411 NMR performed between 1st January 2010 and 1st

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