Can a protocol-based, nurse-led Diabetes Renal Clinic improve outcomes?

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Introduction

Nurse-led clinics have been accepted as effective ways to manage long term conditions. We evaluated the current practice and outcomes of a nurse-led diabetes renal clinic at a teaching hospital.

Our aims were to find out if :

• adequate control of HbA1c (<7%)[1], BP <130/80 mmHg[2] and cholesterol (<4.0) [3] were being achieved?

• Are we adhering to prescription of aspirin, ACE inhibitors/ARBs and statins as recommended?

- Aspirin indicated in age >50, cardiovascular disease, BP >145/90, microalbuminuria[2]
- ACEi/ARBs indicated in urine ACR >3 mg/mmol [1,2]
- Statin indicated in age >40, cholesterol >4.0 mmol/l

• Is there any significant improvement in HbA1c, BP, cholesterol, urine ACR and renal impairment?

Method

Patients attending the diabetes renal clinic between 2010 and 2014 were requested using a clinic code.

Generated 365 clinic attendances from 208 patients.

Excluded if they

- did not attend 2 or more nurse-led clinics within 12 months
- attended the 2 visits less than 2 months apart

This generated 91 patients in total

Baseline data at time of referral (TR) compared to the final clinic visit within a 12 month period (T1)

Data from clinic letters and electronic records.

Systolic (SBP) and diastolic blood pressures (DBP) from clinic letters were taken (lowest in the case of multiple BP readings)

The following measurements at TR and T1 were compared: **HbA1c** , **total cholesterol** (mmol/l), **urine albumin:creatinine ratio** (ACR; mg/mmol), **creatinine** (µmol/l), **estimated glomerular filtration rate** (eGFR; ml/minute/1.73m^2)

TR measurements were taken within 6 months preceding referral date, as close to the time of referral as possible.

If no measurements were available at this time, then a measurement between TR and T0 was taken.

T1 measurements were taken as close to T1 clinic date as possible, or within 3 months before or after T1 (unless this overlapped with T0, in which case the measurement was declared "not available").

Data comparison was performed using the computer programme Minitab.

Results
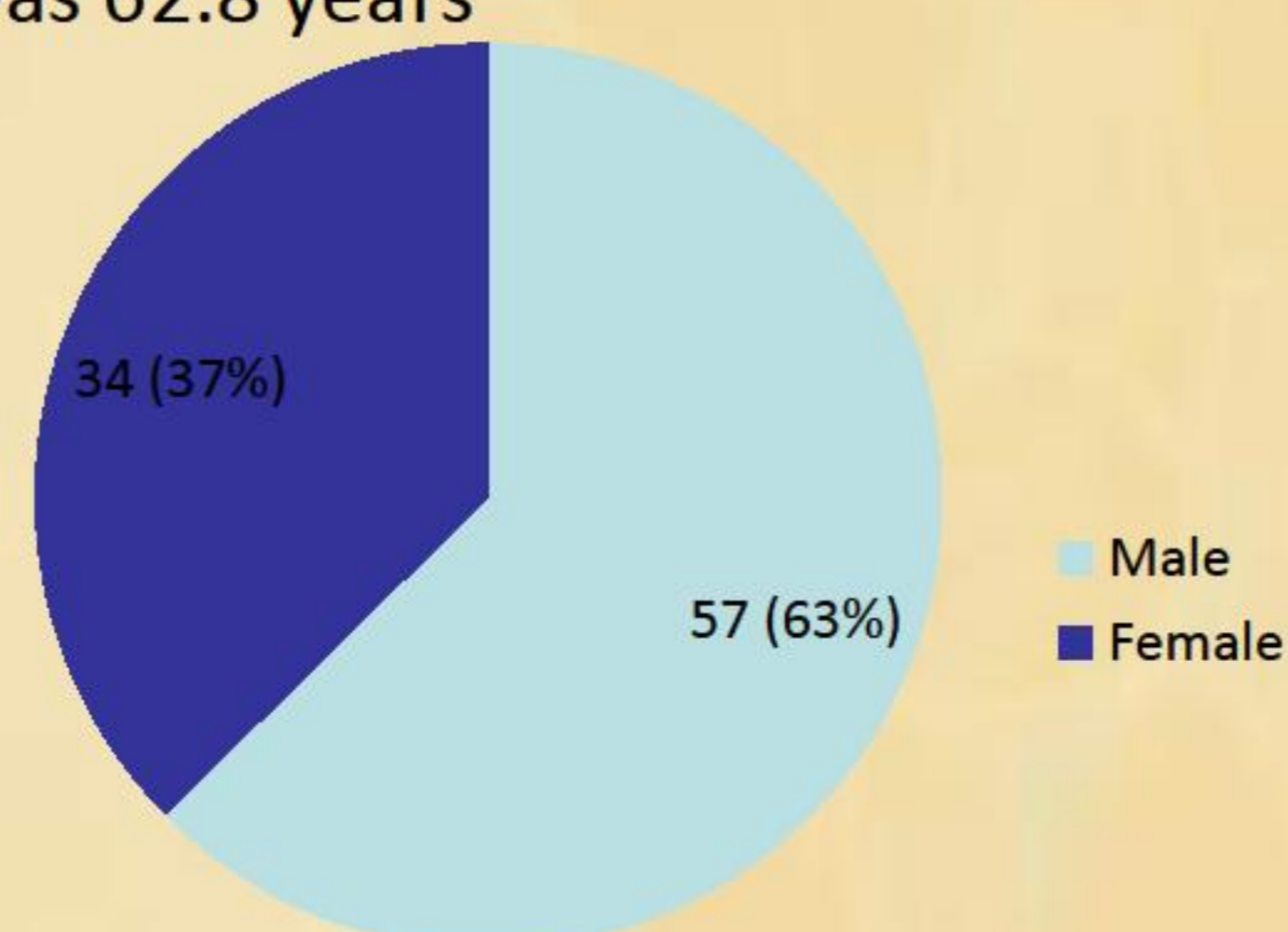
Average age was 62.8 years

57 were male

Table 1 shows changes between TR and T1.

Table 1: comparison of measurements at TR and T1			
	TR	T1	
HbA1c	74	69	**p=0.01***
SBP	152	142	**p<0.01***
DBP	75	73	p=0.113*
Total cholesterol	4.4	4.3	p=0.371*
Urine ACR	53	31	**p<0.01****
eGFR	54	51	**p=0.001***
Mean number of antihypertensive	2.34	2.52	
Antiplatelet	41 (45%)	41 (45%)	
Antilipid	73 (80%)	78 (85%)	

*paired t-test, **Wilcoxon

Aspirin use

- 41 patients (45%) were taking aspirin at T1

- All 50 off the 50 who were not taking aspirin had at least one risk factor (age >50, SPB >145, microalbuminuria) thus aspirin would have been indicated

Antilipid use

- 79 patients (86%) were were on a lipid-lowering agent by T1

- All 11 patients who were not on an anti-lipid by T1 had a risk factor (hypertension, CKD, microalbuminuria)

- 10 of 11 patients had a cholesterol >4.0

ACEi/ARB use in urine ACR >3 mg/mmol

- 77 patients had uACR>3 at T1

- 4 of 11 who were not on an ACEi/ARB had either added (7 were not initiated one, although one of these patients was on aliskiren)

- However 5 patients who were on ACEi/ARB had it stopped (only 1 documented due to hyperkalaemia)

- In total 65 (84%) were on an ACEi/ARB at T1 in patients with at least microalbuminuria

Discussion

These results from one year follow-up suggests that the nurse-led clinic is effective in reducing HbA1c, systolic blood pressure and urine ACR levels in this high CV risk patients. This should hopefully result in improved cardiovascular and renal outcomes and appropriate referrals to renal specialist clinic.

Significant improvements in HbA1c, SBP and urine ACR were observed

However DBP and total cholesterol did not improve

There was poor prescription of aspirin (all patients would have benefited from aspirin)

There was good rate of ACEi/ARB prescription and most patients with macroalbuminuria received one

There was good prescription of anti-lipids, but this could have been even higher

The prescriptions may not have been accurate due to erratic documentation of drug history in clinic letters

A new clinic proforma will be proposed to include compulsory drug history, encouragement of CV risk calculation and to check smoking status

References

[1] Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney inter., Suppl. 2013; 3: 1–150.
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[3]National Collaborating Centre for Chronic Conditions. *Type 2 diabetes: national clinical guideline for management in primary and secondary care (update). London: Royal College of Physicians, 2008.