

Nurse-driven care for hypertension and diabetes in rural Cameroon



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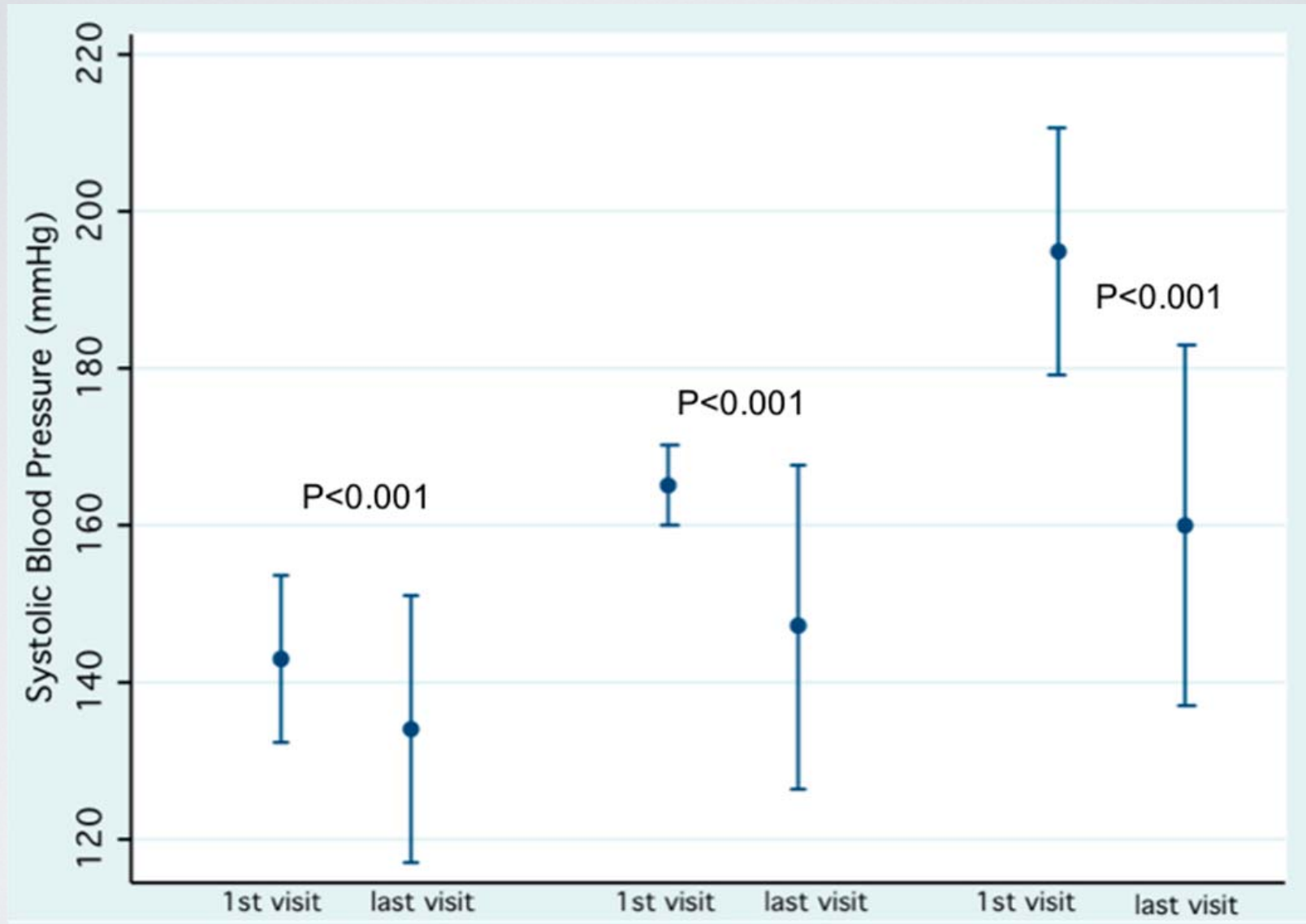
Integrating NCCDs into PHC

- 8 semi-rural districts, ~400'000 habitants
- 8 district hospitals, 4 peripheral physician clinics, **75 non-physician clinics** (22% missionary)
- 3-day training of nurses, 6-monthly 1-day refresher course, equipment & initial stock of drugs for NPC-facilities
- Integration into daily activities, no incentives, no additional salary

Status of NPC-facilities

	Before program	2-year assessment
Equipped to measure BP	67 %	100 %
Equipped to measure FPG	14 %	70 %
≥ 1 anti-hypertensive drug	20 %	96 %
≥ 1 anti-diabetic drug	12 %	72 %
MC-test performance	41 %	80 %

SBP- response



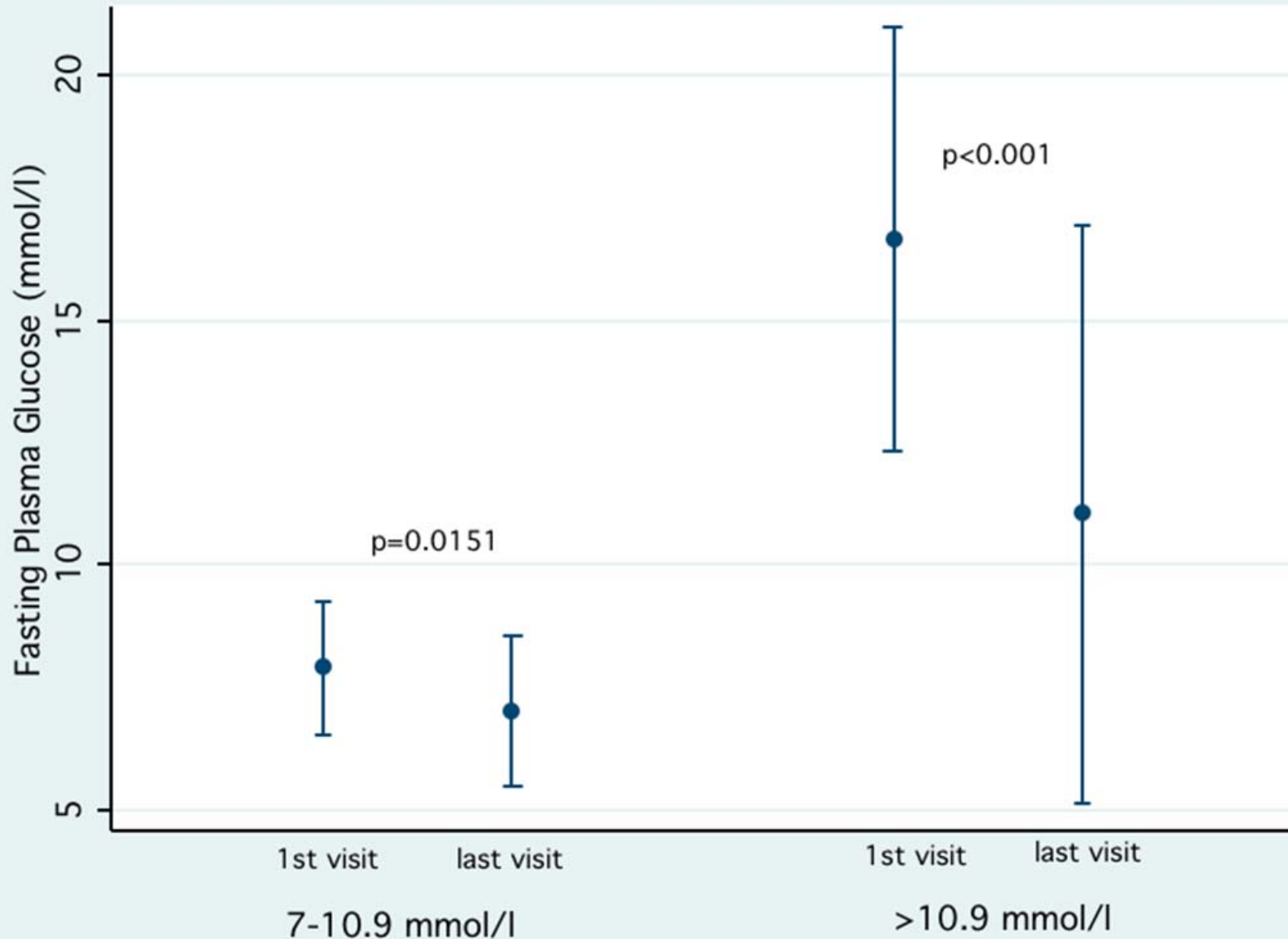
WHO Grade

1 (n=82)

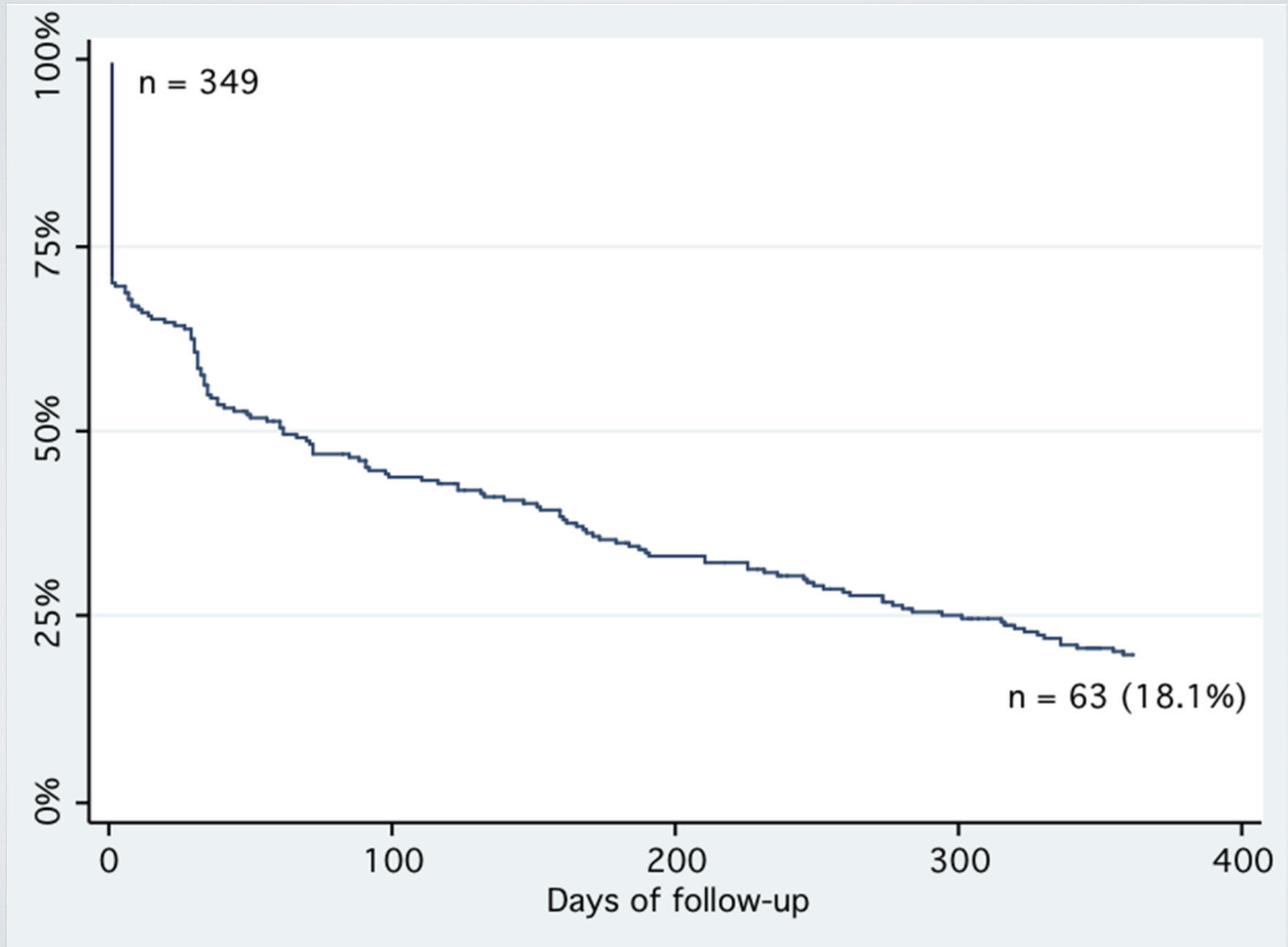
2 (n=160)

3 (n=196)

FPG-response (n=79)



Retention at 1 year



TAHADIRA-TRIAL

Treat Arterial Hypertension And
Diabetes In Rural Africa

—

a cluster-randomized trial in rural
Cameroon

(www.clinicaltrials.gov NCT00744458)

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Purpose

Improve by *proportionate* interventions
retention of hypertensive and/or diabetic patients
in NPC-facilities



Study-design

- Prospective cluster-randomized trial
- Open label
- Eligibility
 - Clusters: NPC-clinics in 4 Cameroon districts
 - Patients:
 - Hypertension and/or diabetes type 2
 - Newly diagnosed
 - Treatment naive
 - Adults

Outcomes

- Primary outcome
 - Retention at one year
- Secondary outcomes
 - Retention and respecting > 80% of visits
 - Treatment response

Interventions

All 3 groups

- „Treatment contract“

Incentive group

- 4 months of respected visits → 1 month treatment for free

Letter group

- Missed visit → invitation letter



47 NPC-facilities assessed for eligibility

14 excluded
-non-functional (3)
-Refuse (3)
-Poor functioning (8)

33 randomized

11 Control-group

11 analyzed

92 patients assessed

89 patients enrolled
- (3 refused)

89 patients analyzed

11 Incentive-group

8 analyzed
- (3 non-functional)

57 patients assessed

56 patients enrolled
- (1 refused)

55 patients analyzed
- 1 retrospectively not
meeting inclusion criteria

11 Letter-group

11 analyzed

80 patients assessed

78 patients enrolled
- (2 refused)

77 patients analyzed
- 1 retrospectively not
meeting inclusion criteria

NPC-facilities

	Control (11)	Incentive (8)	Letter (11)	p- value
Sex	10m, 1f	6m, 2f	10m, 1f	0.647
Age	49 (\mp 6)	42 (\mp 7)	46 (\mp 4)	0.042
Level of medical education				1
- registered nurse (3 years)	5	3	5	
- staff nurse (2 years)	5	4	4	
- nurse assistant (1 year)	1	1	2	
Professional experience	23 (\mp 10)	16 (\mp 7)	21 (\mp 5)	0.111
Time spent in current facility	8 (\mp 5)	8 (\mp 6)	6 (\mp 3)	0.493
Performance in MC knowledge test	93% (\mp 9)	88% (\mp 12)	75% (\mp 17)	0.017

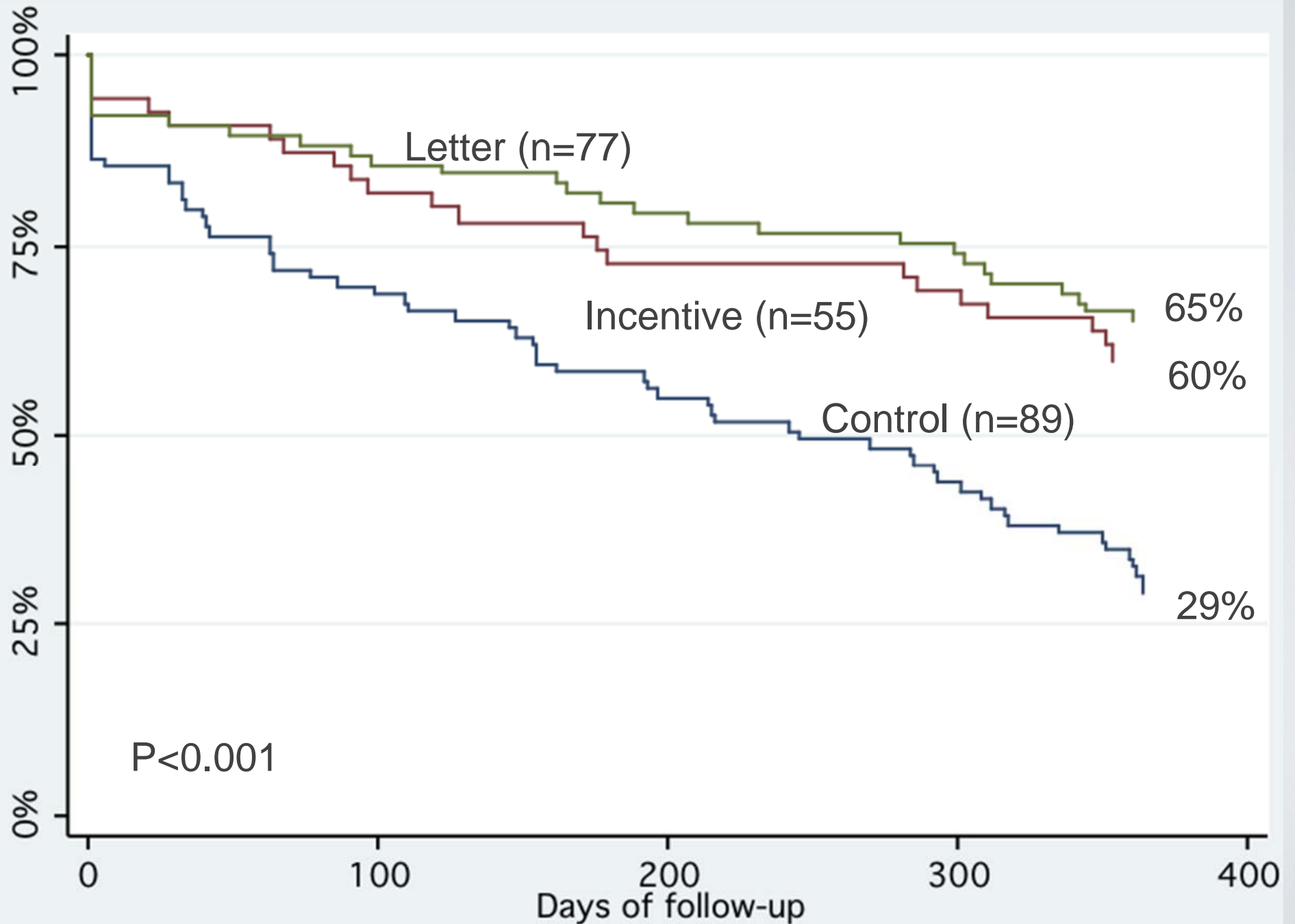
Patient characteristics 1

	Control (n=89)	Incentive (n=55)	Letter (n=77)	p-value
Female - missing	65.2% 2.3%	63.6% 1.8%	63.6% 0%	0.446
Age	59.9 (±11.8)	58.7 (±14.1)	60.8 (±12.2)	0.658
Civilstatus				0.814
- Not married	10.1%	14.5%	11.7%	
- married monogameous	39.3%	45.5%	42.9%	
- married polygameous	20.2%	7.3%	7.8%	
- Widowed	30.3%	32.7%	37.7%	
- missing	0%	0%	0%	
Age at marriage	31.1 (±12.4)	26.9 (±12.0)	31.9 (±11.7)	0.135
Nb children alive	5.9 (±3.6)	4.8 (±4.1)	6.3 (±3.8)	0.143
Educational level				0.445
- none	53.9%	36.4%	46.8%	
- primary	32.6%	38.2%	35.1%	
- secondary	11.2%	25.6%	16.9%	
- missing	2.3%	0%	1.2%	

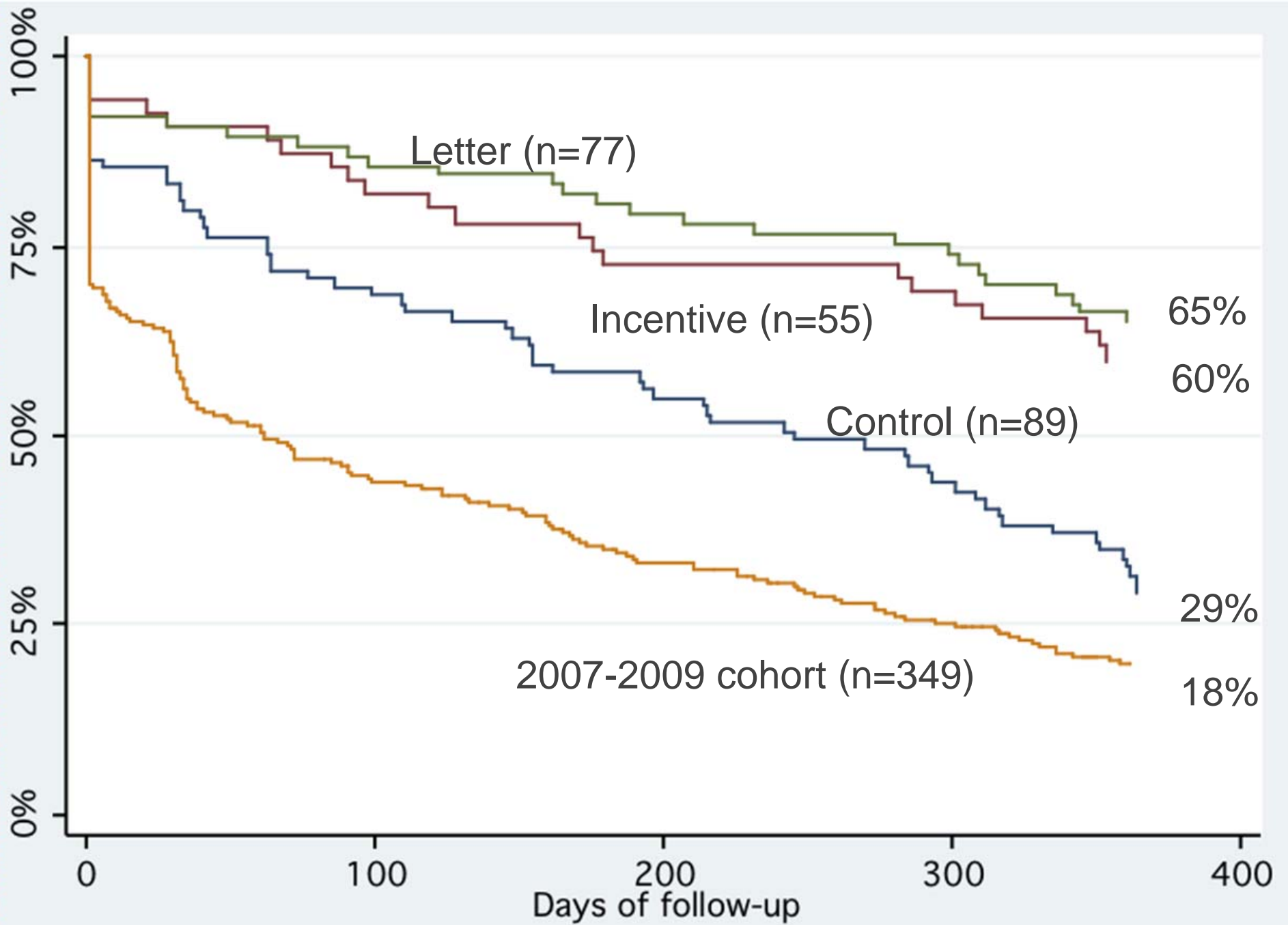
Patient characteristics 2

	Control (n=89)	Incentive (n=55)	Letter (n=77)	p-value
Housing				0.333
- brick earth	50.6%	34.6%	44.2%	
- mixed	35.9%	30.8%	37.7%	
- concrete	12.4%	34.6%	18.2%	
- missing	1.1%	0%	0%	
Electricity	50.6%	70.1%	72.7%	0.315
- missing	3.4%	1.8%		
Water	3.4%	21.8%	12.9%	0.251
- missing	5.6%	12.7%	6.5%	
Cell phone	33.7%	47.3%	42.9%	0.159
- missing	4.5%	1.8%	0%	
TV	41.6%	67.3%	49.4%	0.282
- missing	3.6%	1.8%	0%	
Regular household income	51.7%	65.5%	59.7%	0.246
Height of household income (Euro)	45 (±67)	91 (±168)	46 (±60)	0.089
Distance to facility (km)	6.8 (±11.0)	6.7 (±9.5)	5.1 (±6.2)	0.457
Transport cost to facility (Euro)	1.2 (±1.3)	1.1 (±1.3)	0.8 (±0.6)	0.069

Retention



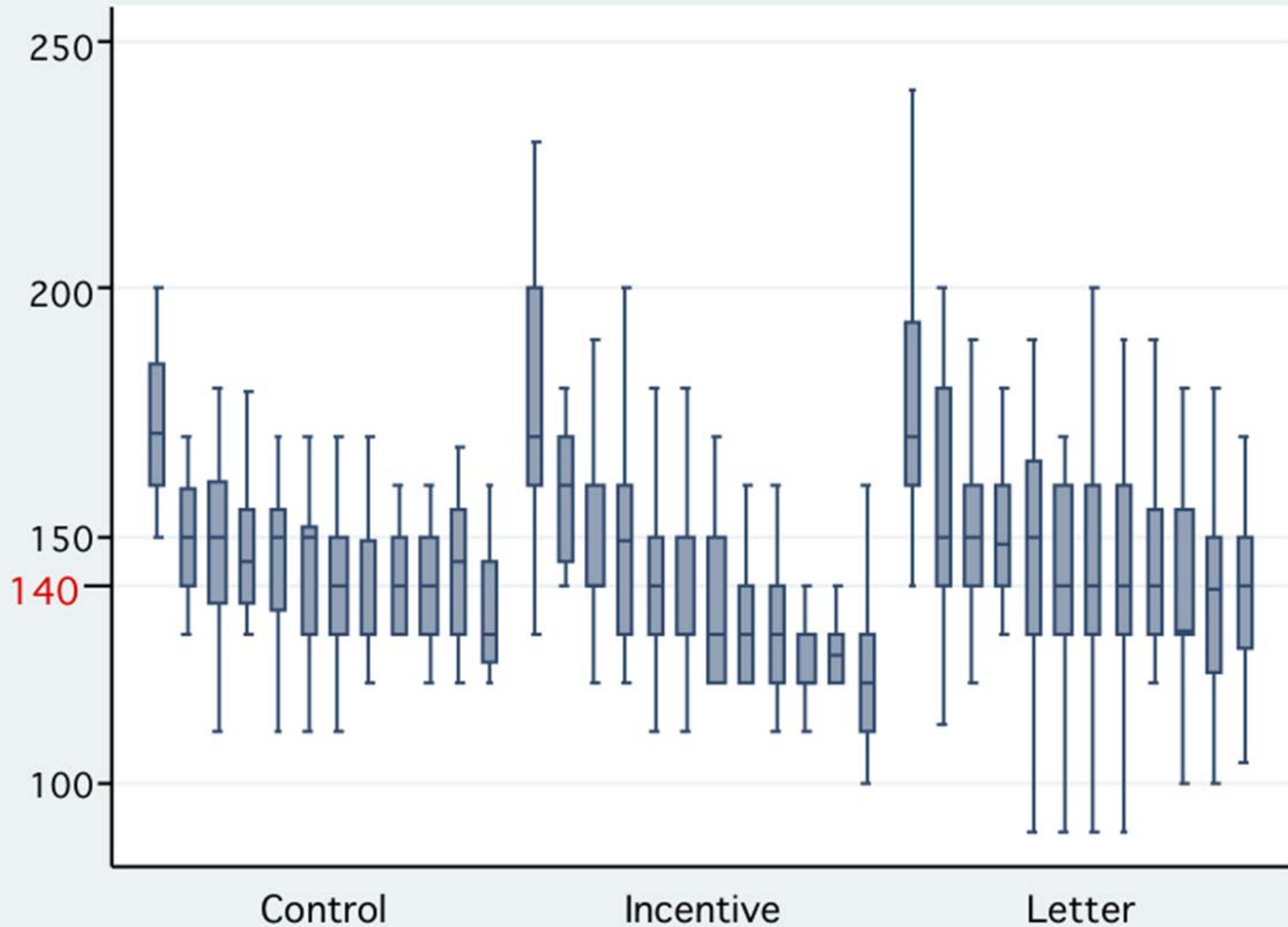
Retention



Treatment response

	Control (n=89)	Incentive (n=55)	Letter (n=77)	p-value
Systolic BP at presentation	176 (\mp 24)	179 (\mp 25)	173 (\mp 20)	0.313
Diastolic BP at presentation	108 (\mp 19)	99 (\mp 15)	99 (\mp 12)	<0.001
Δ systolic BP at 6 months	- 37 (\mp 27)	- 35.1 (\mp 24.1)	- 30 (\mp 22.8)	0.361
Δ systolic BP at 12 months	- 45 (\mp 36.8)	- 56.7 (\mp 24.3)	- 35.2 (\mp 25.9)	0.036
Δ diastolic BP at 6 months	- 23 (\mp 20.1)	- 13.6 (\mp 12.5)	- 15.6 (\mp 14.4)	0.020
Δ diastolic BP at 12 months	- 20.5 (\mp 24.1)	- 20.2 (\mp 14.2)	- 18.8 (\mp 14.6)	0.942

Treatment response SBP



Summary

- Care for uncomplicated hypertension and diabetes type 2 can become part of the routine in nurse-led primary health care
- Supply of drugs and blood glucose strips are challenges
- Retention is the main challenge
- Treatment contract + invitation letter or incentives
 - improve retention at 1 year