“There Is No Place Like Home: True – But…”

Tri-Regional Dialysis Symposium

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Objectives

- To understand the patients' perceived barriers to adopt NHD
- To compare HHD and PD patients' perception / quality of life

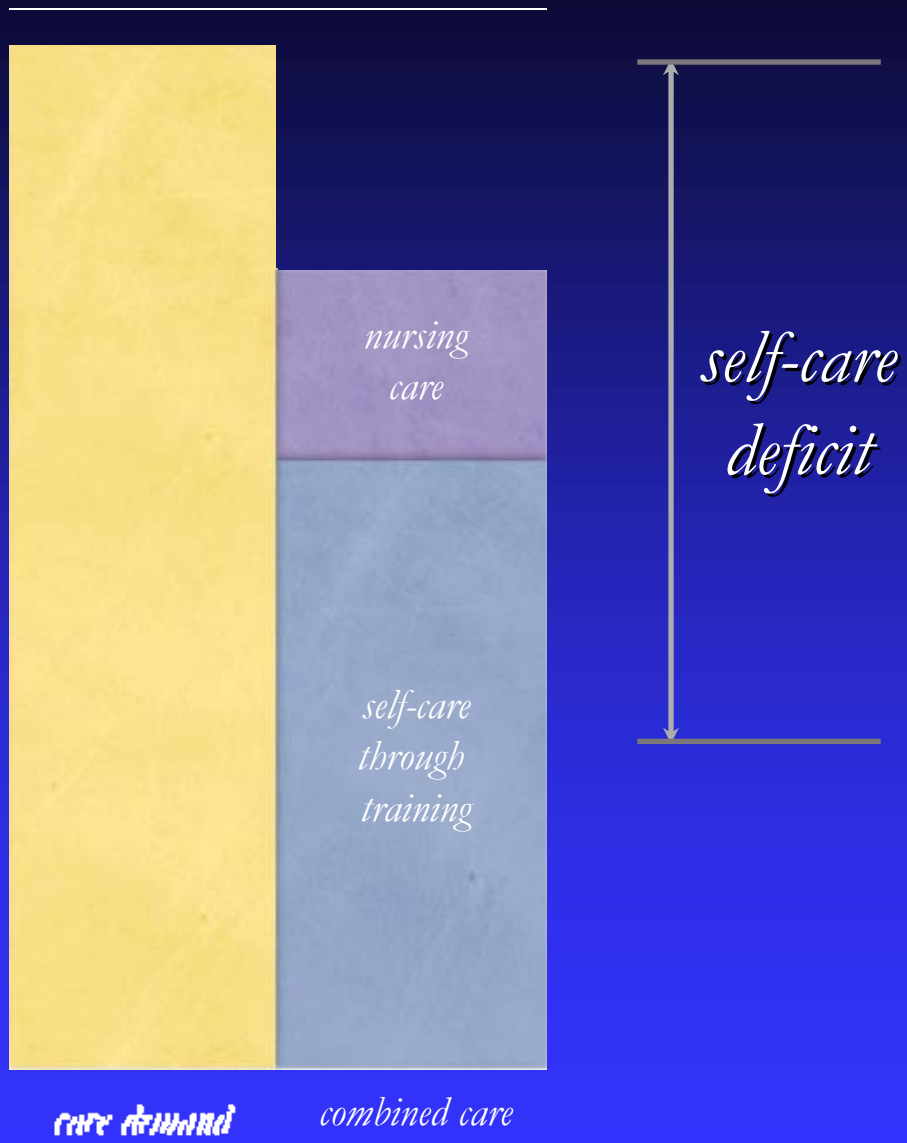
Effects of Quotidian HD

Variables	NHD	SDHD
BP control	+++ Reduction in TPR	++ Reduction in ECFV
LVH	+++ ⇓ Afterload	++ ⇓ preload
LV systolic function	+++ ⇓ Afterload	Not shown
Arterial compliance	+++	Not shown
Sleep Apnea	Correction	Not shown
Cardiac ANS abnormalities	Restoration	Not shown
Exercise Capacity	Improved	Not shown
Phosphate	Correction	Depends on duration

Effects of Quotidian HD (cont)

Variables	NHD	SDHD
Inflammation	Dec CRP, IL6	Dec CRP
Metabolism/ Endo	Vit D Carnitine Fertility	Not shown
Anemia	EPO resistance dec. ++	EPO resistance dec. +
QOL	++/+	+/?

Why aren’t people doing NHD?


nursing care
self-care through training
self-care deficit
combined care

Time 2
(ESRD)

We need Data…

- Validated metrics
- Patient perception
- Differences between NHD vs CHD

Design

A cross-sectional study to determine the profile of the nocturnal hemodialysis patient and factors determining the use of NHD compared to CHD.

Validated instruments:

- *Modified Appraisal of Self-Care Agency (m-ASA)*
- *Speilberger State-Trait Anxiety Inventory for Adults*
- *Multidimensional Scale of Perceived Social Support*
- *QOL - SF*

Patients

Patient Modality	Patient population, eligible patients	Returned	Response rate
NHD	66	56	**85%**
CHD	199	153	**77%**

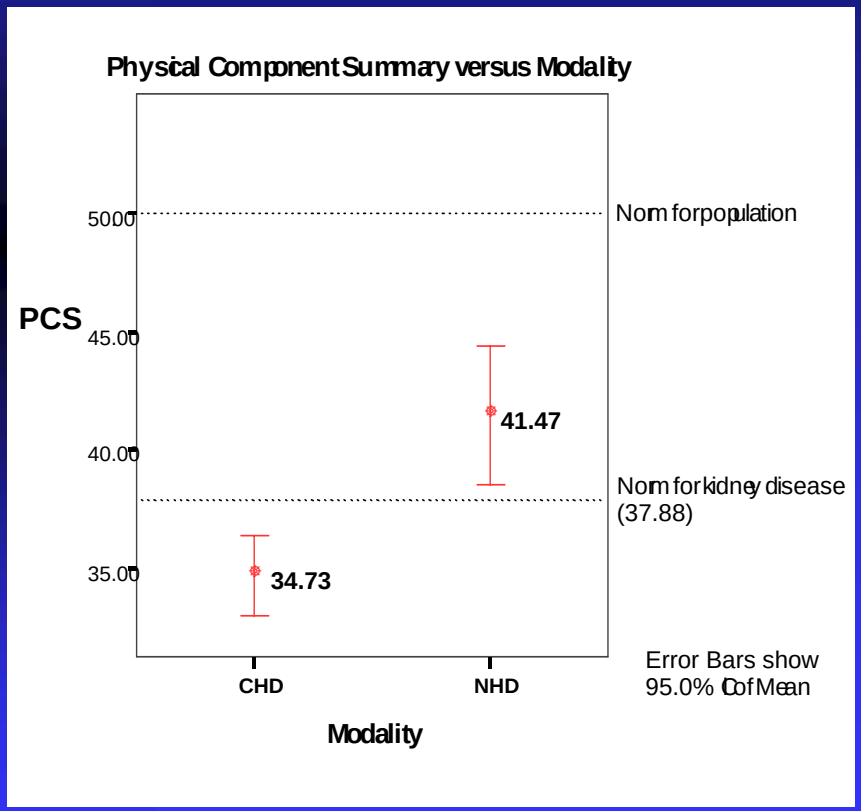
Patients

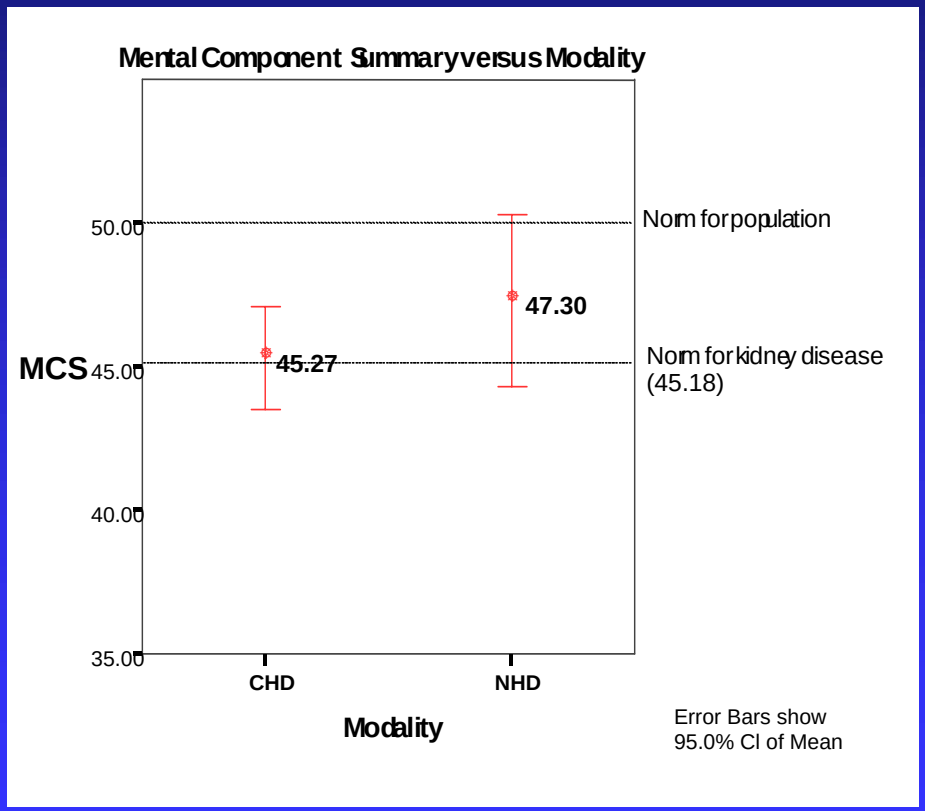
Variables	CHD	NHD
Age	55	47
Gender	56% M	60% M
English	67%	79%

Co-morbidities

	Diabetes*	Hypertension	Heart Disease*	Cancer
CHD	31.4%	57.5%	22.9%	6.5%
NHD	12.5%	50.0%	10.7%	7.1%

Results


Physical Component Summary versus Modality
PCS
50.00
45.00
40.00
35.00
41.47
34.73
Norm for population
Norm for kidney disease
(37.88)
CHD
NHD
Modality
Error Bars show
95.0% CI of Mean


Mental Component Summary versus Modality
MCS
50.00
45.00
40.00
35.00
45.27
47.30
Norm for population
Norm for kidney disease
(45.18)
CHD
NHD
Modality
Error Bars show
95.0% CI of Mean

Modified Appraisal of Self-care Agency

Modality	N	Mean	Std. Deviation	Std. Error Mean	*p*
CHD	153	3.8490	.41258	.03335	.394
NHD	56	3.9075	.32953	.04403	

MSPSS

Modality	N	Mean	Std. Deviation	Std. Error Mean	*p*
CHD	130	5.1832	1.49214	.12063	.274
NHD	50	5.4280	1.23434	.16495	

State-Anxiety

Modality	N	Mean	Std. Deviation	Std. Error Mean	*p*
CHD	149	38.44	13.387	1.097	.882
NHD	55	38.15	10.680	1.440	

Indicate your interest level in NHD as a treatment option (5-point Likert scale).

Modality	N	Mean	Std. Deviation	Std. Error Mean
CHD	145	1.68	1.262	.105

I will be able to perform the treatment properly. (self-efficacy and self-care agency)

Modality	N	Mean	Std. Deviation	Std. Error Mean	*p*
CHD	142	**2.57**	1.522	.128	**. 000**
NHD	49	**4.37**	1.185	.169	

I will receive as good care as I would in the hospital. (quality of care)

Modality	N	Mean	Std. Deviation	Std. Error Mean	*p*
CHD	140	**2.34**	1.477	.125	**. 000**
NHD	48	**4.10**	1.292	.187	

I will be comfortable inserting the needles myself. (self-cannulation)

Modality	N	Mean	Std. Deviation	Std. Error Mean	*p*
CHD	138	2.11	1.551	.132	**. 000**
NHD	46	3.57	1.440	.212	

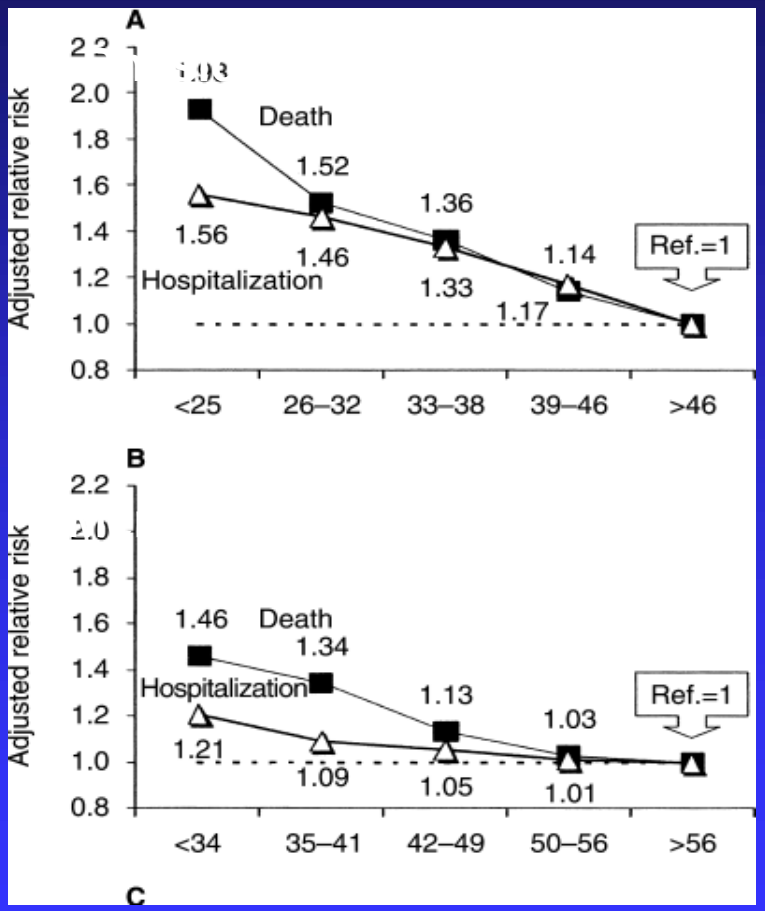
I worry that something will go wrong during my treatment. (worry of adverse outcome)

Modality	N	Mean	Std. Deviation	Std. Error Mean	*p*
CHD	143	**3.72**	1.540	.129	**.002**
NHD	48	**2.94**	1.465	.211	

Perception / Quality of Life

- Arguably the most important outcome from the patients' perspectives
- Clinical outcomes → Important
  - But: "Can't feel my heart getting better!"

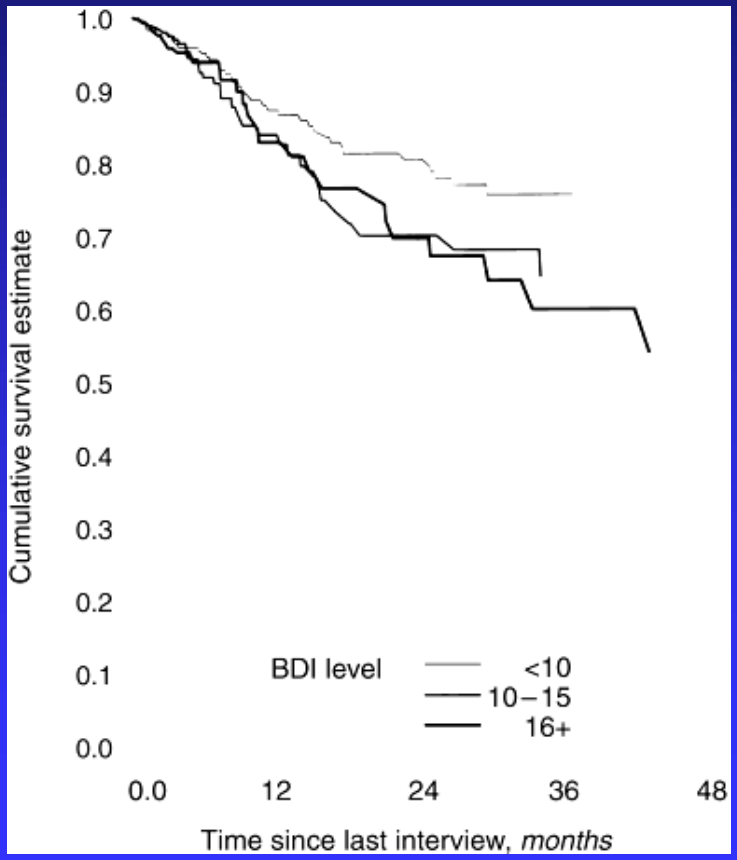
Why Do We Care About Quality of Life (Q of L)?



- DOPPS data base
- lower Q of L values associated with more hospitalization and death
- applies to both physical and mental components
- “adjusted” for co-morbidities

Mapes et al Kidney Int 2003

Depression is Associated with Reduction in Survival

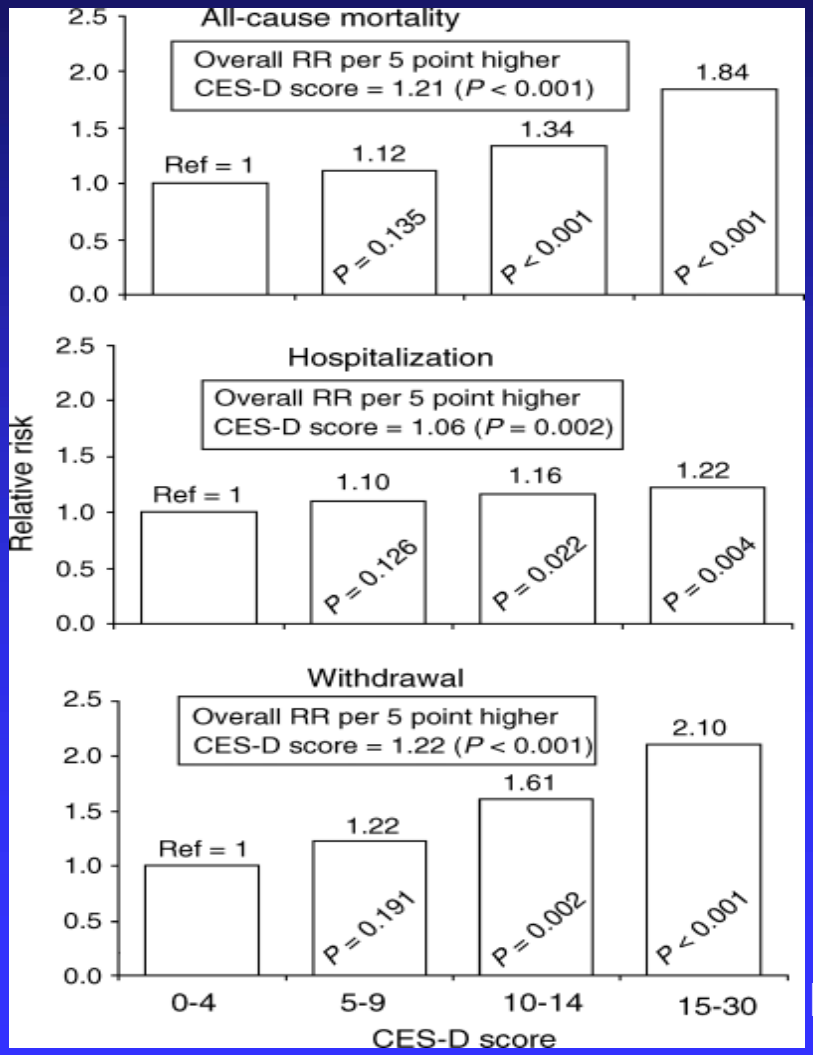


Least depressed

Most depressed

Kimmel et al, Kidney Int 2000

Depression is Associated with Multiple Poor Outcomes



- DOPPS II data
- increase in the CES-depression index associated with greater risk of
  - mortality
  - hospitalization
  - withdrawal of dialysis

Lopes et al Kidney Int 2004

Problems with Quality of Life Studies

- different instruments
- not an exact science
  - compare to change in left ventricular mass index, doubling of serum creatinine, etc
- which patients are going on what type of dialysis?
- statistical treatment of the data

Problems with the Early Studies in Particular

- generic instruments: not validated for renal disease or dialysis
- dialysis has changed
- the patients have changed
- erythropoietin arrived

Quality of Life: Effect of Modality of Renal Replacement Therapy

Evans et al N Engl J Med 1985

- 859 patients
- 3 subjective indices:
  - life satisfaction
  - well-being
  - psychological affect
- Results: transplant > home dialysis > in-center hemodialysis

Studies Comparing PD and HD: 1980s and 1990s

- most studies cross-sectional
- different Q of L instruments
- not all “corrected” for co-morbid disease or demographics (eg racial distribution)
- results:

home dialysis (PD *or* HD) > in-centre

Longitudinal Study of Quality of Life Over 1 Year

Kutner et al Neph Dial Transpl 2005

- DMMS Wave 2 data (US)
- KDQOL-SF instrument
- PD and in-centre HD not too different, but PD scored better at baseline and also at 1 year

Longitudinal Study of Quality of Life Over 1 Year *Kutner et al*

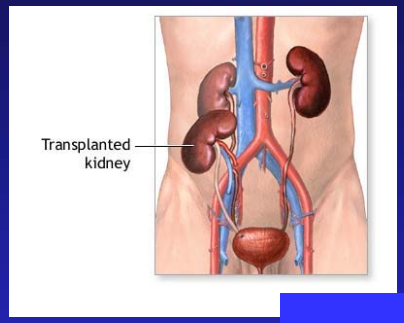
Quality of Life	Baseline
Symptoms/problems	PD better
Effects on daily life	PD better
Burden of Kidney dis	PD better
Social support	PD better
Cognitive function	No diff
Sleep	No diff
Sexual Function	No diff
Staff encouragement	PD
Satisfaction	PD

Longitudinal Study of Quality of Life Over 1 Year *Kutner et al*

Quality of Life	Baseline	1 year
Symptoms/problems	PD better	No diff
Effects on daily life	PD better	PD better
Burden of Kidney dis	PD better	PD better
Social support	PD better	No diff
Cognitive function	No diff	No diff
Sleep	No diff	No diff
Sexual Function	No diff	No diff
Staff encouragement	PD better	PD better
Satisfaction	PD better	PD better

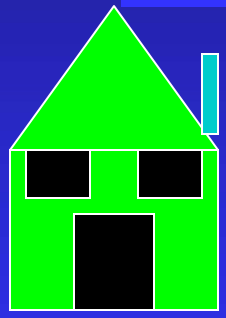
Quality of Life: The Story So Far…

A successful kidney transplant



is better than…

home dialysis (PD or HD)

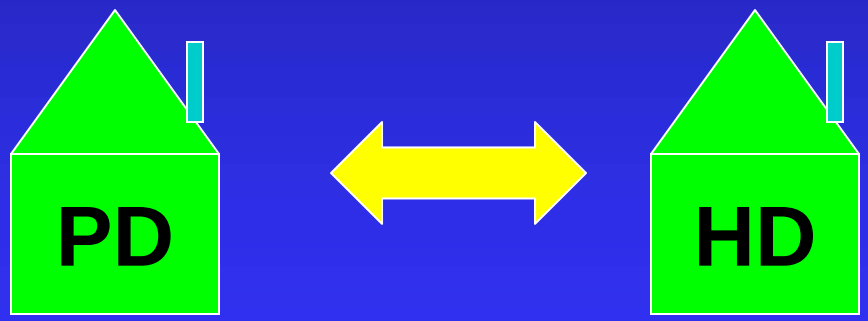


which is better than…

in-centre hemodialysis

An Unanswered Question… Home vs Home

- Are there differences in Quality of Life between Home PD and Home Hemodialysis?



Quality of Life: The Toronto Study Nocturnal HD (NHD) vs PD

- patients on NHD or PD a minimum of 3 months
- English-speaking
- no recent acute illnesses or hospitalizations
- unbiased interviewer not associated with either program

Quality of Life: Nocturnal HD (NHD) vs PD

- Instruments:
  - KDQOL-SF (kidney disease component summary KDCS; mental component summary MCS; physical component summary PCS)
  - Beck Depression Inventory (BDI)
  - Intrusiveness Ratings Scale
  - Charlson Index for co-morbidity

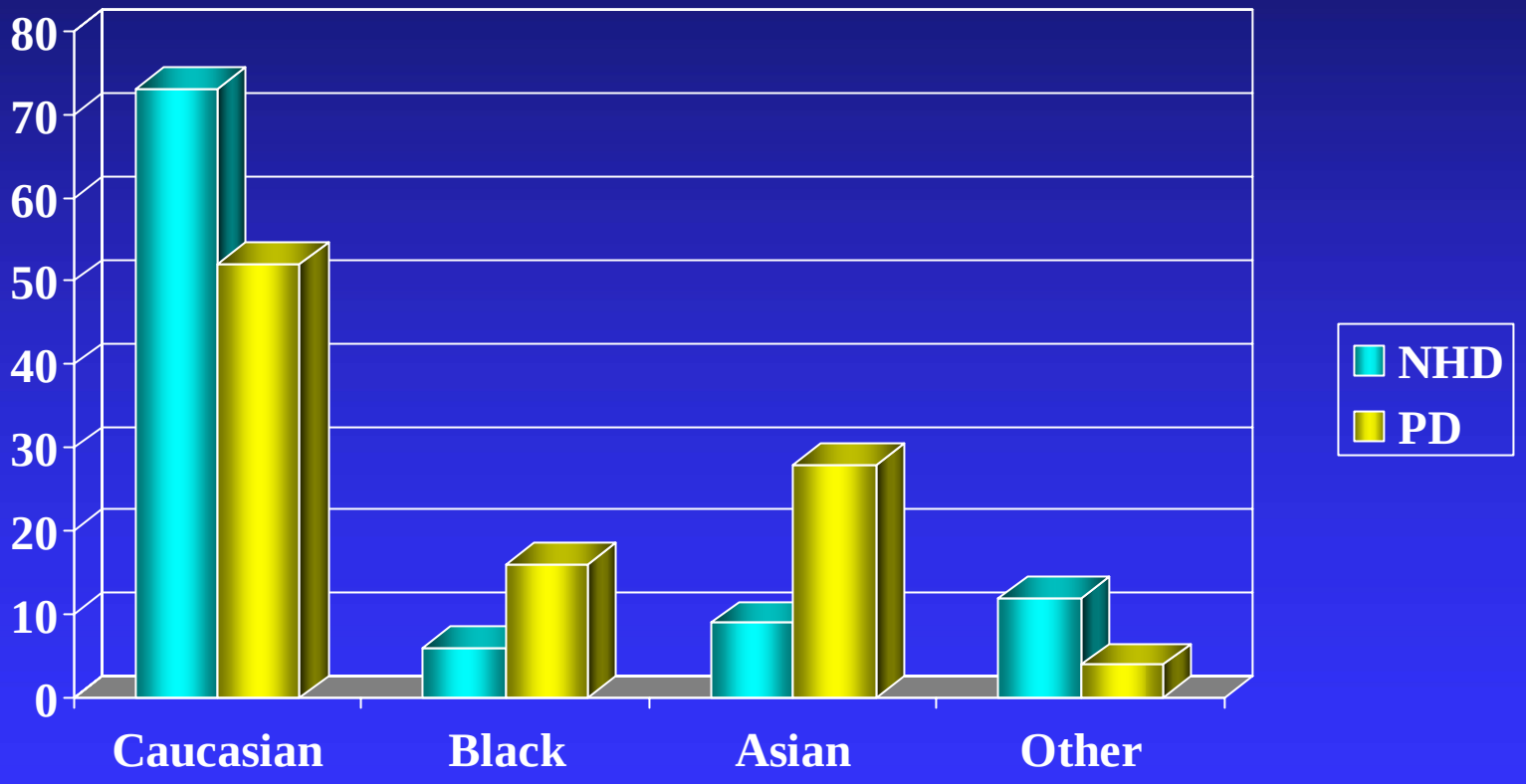
The Study Population

- 93 patients (69 % of eligible patients)
  - 36 NHD
  - 57 PD

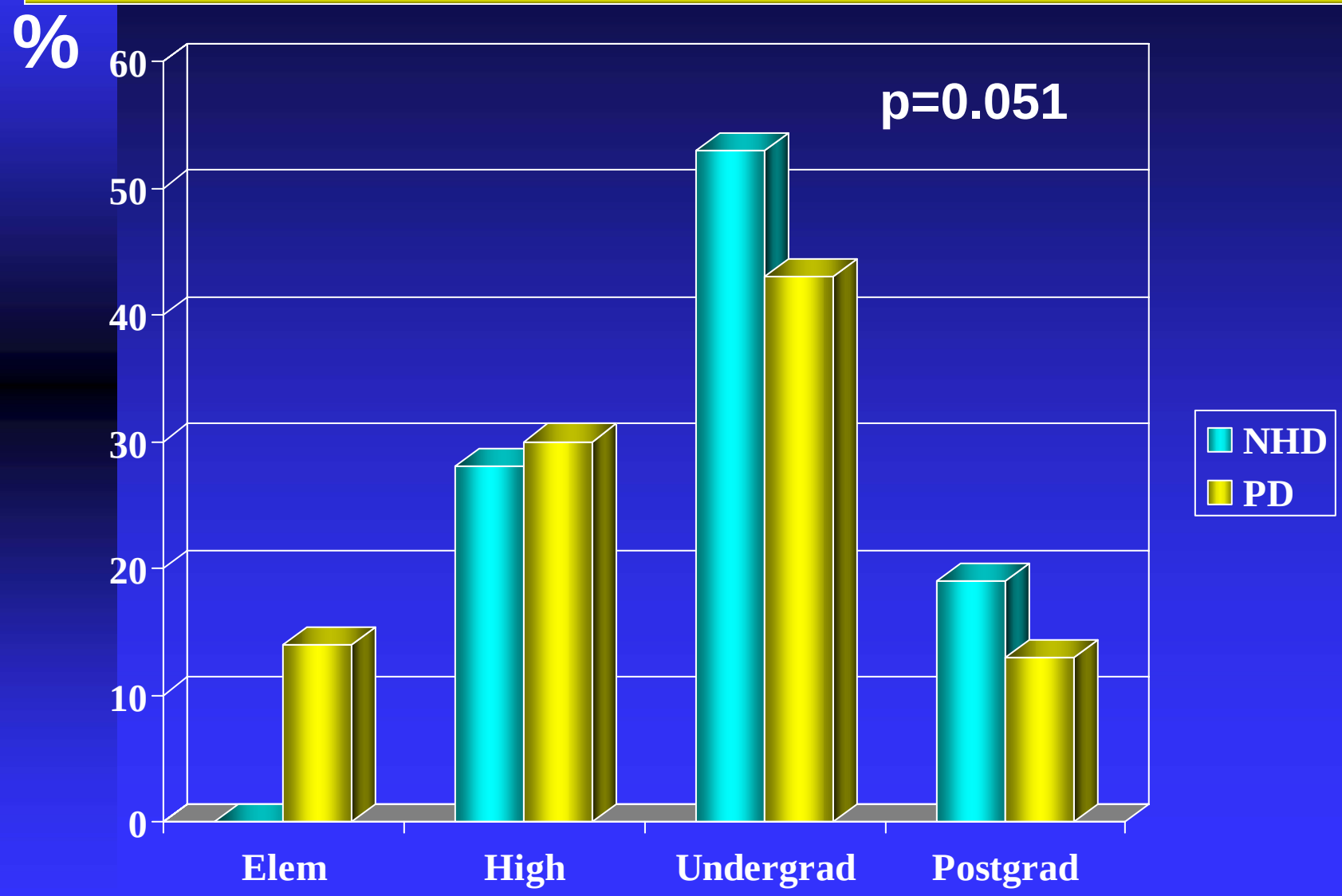
Baseline Characteristics

Variable	NHD	PD
Age (years)	49 ± 12	61 ± 13 *
% Males	67	55
Years of ESRD	10.8 ± 1.7	7.6 ± 1.0
% Living alone	25	18
% Previous Renal TP	31	14
Charlson Index	1.14 ± 0.25	1.82 ± 0.33

Racial Distribution



Highest Education Level

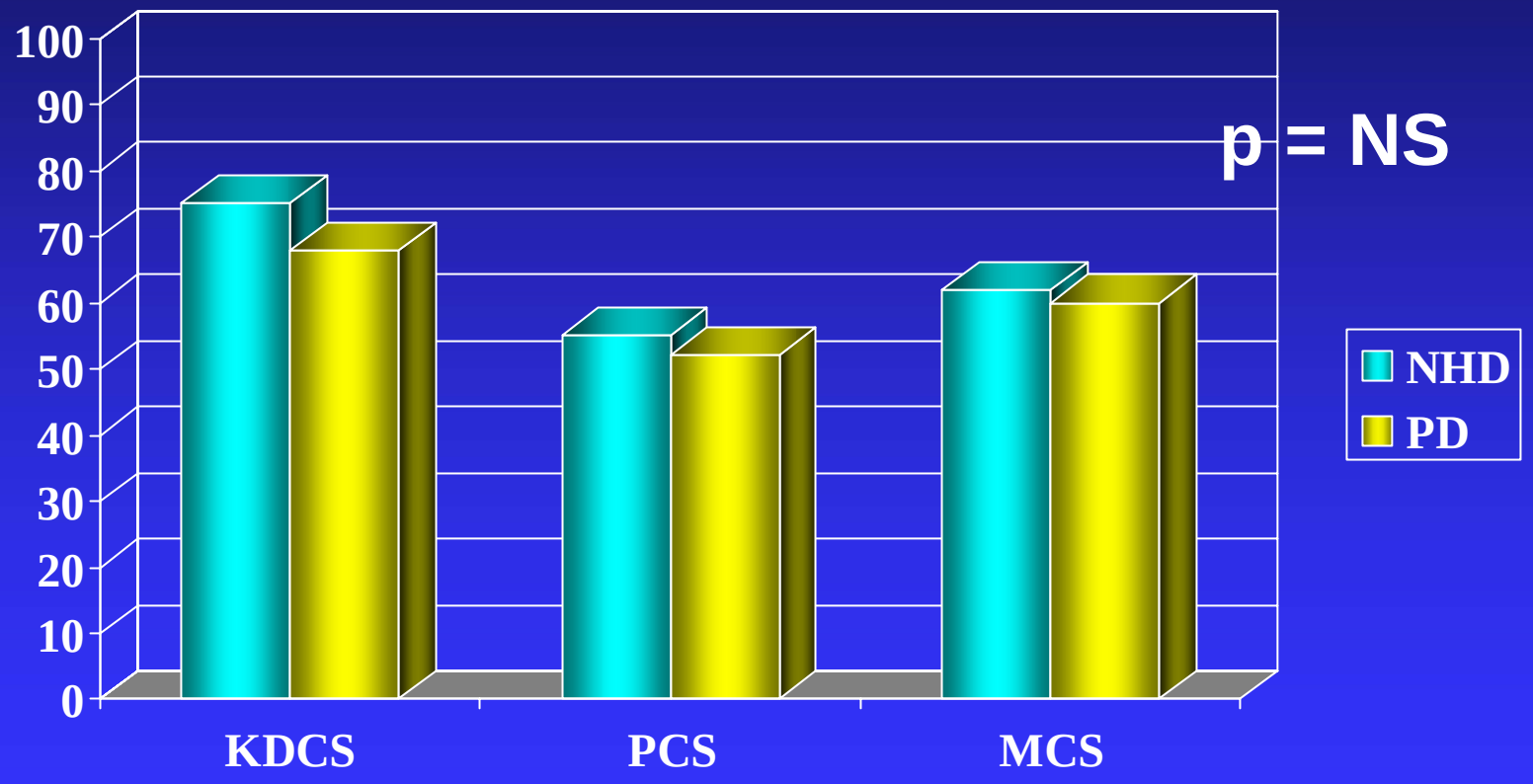


Biochemistry: NHD vs PD

Variable	NHD	PD
Plasma creatinine (umol/l) *	503 ± 34	800 ± 43
Hemoglobin conc (g/l) *	124 ± 2	117 ± 2
Plasma calcium (mmol/l) *	2.41 ± .03	2.27 ± .03
Plasma phosphate (mmol/l) *	1.11 ± .06	1.63 ± .07
Plasma albumin (g/l) *	39 ± 2	37 ± 2

(* P < 0.05)

Quality of Life: Component Scores



Kidney Disease Component Summary: Significant or Borderline-Significant Differences

PD better than NHD

- social support (p=0.027)
- burden of kidney disease (p=0.092)

NHD better than PD

- sexual function (p=0.07)

Beck Depression Inventory

	NHD	PD	p value
BDI	11± 1.7	12 ± 1.4	p = 0.52

NHD vs PD: Illness Intrusiveness

Variable	NHD	PD	P value
Physical wellbeing and diet	3.81 ± .30	3.98 ± .20	NS
Work and finance	3.77 ± .35	3.3 ± 1.64	NS
Marital/sexual/family	3.32 ± .31	2.78 ± .22	NS
Recreation and social relations	3.23 ± .28	3.11 ± .18	NS
Other aspects of life	2.46 ±.25	2.47 ± .20	NS

Role of Confounding Factors

- Data adjusted for
  - age, sex, level of education
  - transplant history
  - co-morbidity, serum albumin
  - BDI
  - RRF in PD patients
- No change in the results

Quality of Life: NHD vs PD

- stable NHD and PD patients have very similar reported quality of life, with more perceived social support in the PD patients
- NHD patients did *not* report more illness intrusiveness (despite the complexity of the therapy)
- dose of dialysis does not correlate with quality of life (agrees with HEMO, ADEMEX)

Weaknesses of the Study

- age and educational mismatch between NHD and PD
- “small” numbers (<100)
- cross-sectional (decline with Q of L over time)

Summary I

- Quality of life is an important outcome for patients on renal replacement therapy
- this study, the first to compare NHD to PD, shows similar quality of life, illness intrusiveness, and symptom control

Summary II

- it reinforces the observation that quality of life is not enhanced by more dialytic clearance
- the overall high scores suggest that dialysis at home is associated with a better quality of life

Summary: Implication

- Role of Education
- Role of Training
- Role of supplemental support

Acknowledgment

- Home dialysis – UHN
  - J Bargman
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