

A Comparison Between Dialysis Versus Conservative Management as Modes of Treatment in the Management of Elderly Patients with End Stage Renal Disease: A Systematic Review

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Abstract

Background: The number of elderly patients reaching end-stage renal disease is increasing over time. This subset of patients and their families, as well as nephrologists and other physicians, have to make a difficult decision whether or not to start dialysis. Hence, evidences are needed to guide them in their decision-making for or against dialysis, especially in those patients affected by multiple comorbidities for which dialysis may not increase survival or may not improve the quality of life.

Methods: Medline, PubMed, EMBASE and Cochrane Library were searched for records in English from the year 2004 to 2014 using the following terms: End-stage Renal Disease, Dialysis, Conservative Management and Elderly. Bibliographies of included articles were also reviewed. All studies identified during the database search were assessed for relevance to the review based on the information provided in the title and abstract. Full copies of the articles were retrieved for all the studies that met the inclusion criteria. Data from all the chosen articles were then carefully appraised to come up with a descriptive analysis.

Results: Seven studies were included in this systematic review. In studies on survival rates, it was found that dialysis prolongs survival in the elderly more than that of the conservative management with a median survival of 39.5 months versus 18.9 months, respectively. However, it was observed that there is no significant difference in the survival rates between the two treatment modalities in patients who have multiple comorbid conditions. In terms

of quality of life, there is no statistically significant difference between the two groups. However, patients who chose dialysis have lower satisfaction with life scale score and patients who opted for conservative management scored higher in terms of mental health and social functioning as compared to those who chose dialysis. Moreover, patients managed with conservative management have less hospitalization rates and they most likely die at home or in a hospice. Thus, while patients may live longer with dialysis, they can expect to spend a significant proportion of that time in a medical setting. Patients and their families differ at how they prioritize between prolonging life versus maximizing time at home and these preferences are important to elicit when discussing dialysis initiation.

Conclusion: In patients 70 years and above with end-stage renal disease, dialysis offers a higher survival rate over conservative management. However, the survival advantage of dialysis is substantially reduced by the number of comorbid conditions most especially ischemic heart disease. Furthermore, in this subset of patients, those who chose to maximize conservative management maintained quality of life comparable with those patients on long-term dialysis but with more hospital-free days and higher life satisfaction. These findings show that conservative management is a valid treatment option for selected patients.

Keywords: dialysis, conservative management, elderly, end-stage renal disease

Introduction

End-stage Renal Disease (ESRD) is already the seventh leading cause of death among Filipinos according to the Department of Health. One Filipino develops chronic renal failure every hour or about 120 Filipinos per million population per year.¹

In the past, chronic glomerulonephritis was the most common cause of chronic renal failure. Today, according to the Philippine Renal Disease Registry Annual Report in 2008, the leading cause of kidney failure in the Philippines is diabetes (41%), followed by an inflammation of the kidneys (24%) and high blood pressure (22%).¹

The incidence of ESRD has been increasing most rapidly among people aged 75 and older and is now highest in this age group. This may be attributed to the fact that elderly patients have more comorbidities such as diabetes and hypertension which are the leading causes of chronic kidney disease.

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In response to the aging population and trends of dialyzing older and sicker patients, interest is growing in nondialytic alternatives in managing end-stage renal disease. Conservative or nondialytic management of ESRD includes careful attention to fluid balance, treatment of anemia, and correction of acidosis and electrolyte imbalances. Conservative management also involves advance care planning and provision of psychological support and education to both patients and their families and caregivers.² This type of management is multidisciplinary as it entails good professional relationships between nephrologists, general practitioner or a family physician, community nurses and social workers to provide the majority of health care at home. However, despite the importance of conservative management as an option for elderly patients with ESRD, many physicians are still unfamiliar with this approach and lack the confidence to offer this to their patients.

There is a growing literature on conservative management suggesting that survival may not be significantly different in selected subgroups as compared with those on chronic dialysis. Conservative management can also provide a better quality of life and functional capacity among these patients. Moreover, less hospitalizations and more patient deaths at home may also be possible in those treated medically and using a multidisciplinary team approach which may provide a more humane and dignified end of life experience for the frail geriatric patient and their family.

Objective

To summarize the evidences from different studies as to objectively compare conservative management and dialysis in managing elderly patients with end-stage renal disease with focus on survival and quality of life.

Methodology

Medline, PubMed, EMBASE and Cochrane Library were searched for records in English from the year 2004 to 2014. Searches combined the following terms: End-stage Renal Disease, Dialysis, Conservative Management and Elderly. For consistency, the same search strategy was used in each database. Given the difficulty in translating this particular research question into concise search terms, extensive additional strategies were pursued to capture any articles that might have been missed in the database searches. Bibliographies of included articles were also reviewed. All studies identified during the database search were assessed for relevance to the review based on the information provided in the title and abstract. Full copies of the articles were retrieved for all the studies that met the inclusion criteria set by the author as follows:

Inclusion Criteria:

A. Type of Participants

Patients who are 70 years old and older and who were already diagnosed with end-stage renal disease for greater than three months.

B. Type of Intervention

This review considered studies which the intervention is either hemodialysis or peritoneal dialysis for the elderly patients with ESRD and the control is conservative management or palliative/ supportive care.

C. Type of Outcomes

This review considered studies that included any of the following outcome measures:

- Quality of life
- Survival
- Rate of hospital admissions

D. Type of Studies

This review considered both experimental and epidemiological study designs including randomized controlled trials, prospective and retrospective cohort studies, cross sectional studies, case control studies and observational studies.

Exclusion Criteria:

This review did not include studies that involved participants who were less than 70 years old, known ESRD for less than three months or those who have acute kidney injury (AKI). Review articles, practice guidelines and editorials were excluded.

Articles were assessed for quality using the Strength of Recommendation Taxonomy (SORT) system. This was chosen because it includes extensive guidelines for cohort studies which is the most common type of research design for the included articles. This system assigns strength of recommendation from levels A, B and C with level A as the highest evidence level.

Meta-analysis was not performed due to a wide variability in the study populations and on the methods of outcome measurements. The articles were therefore analyzed descriptively with emphasis on the trends.

Results

A total of 66 citations were obtained through the initial literature search and five studies were obtained from the bibliographies of the included researches. However, upon review of this studies based on the inclusion and exclusion criteria, only seven were included in the final analysis (Table I).

Table I. Studies included in this Systematic Review

Authors	Study Design	Year Published	Level of Evidence	Age of Participants	Outcome Measure/s
Chandna et al. ³	Retrospective cohort study	2010	A	>75 years old	Survival
Murtagh et al. ⁴	Retrospective cohort study	2007	A	>75 years old	Survival
Carson et al. ⁵	Prospective cohort study	2009	A	70 years old and older	Survival; Hospitalization rates; Location of death
Ellam et al. ⁶	Retrospective cohort study	2009	A	80 years old	Survival
Silva-Gane et al. ⁷	Prospective cohort study	2012	A	70 years old and older	Survival Quality of life
De Biase et al. ⁸	Observational study	2008	B	>75 years old	Quality of life
Joly et al. ⁹	Prospective cohort study	2004	A	80 years old and older	Survival

Table II. Median survival of elderly ESRD patients on dialysis versus conservative management

REFERENCE	DIALYSIS GROUP	CONSERVATIVE MANAGEMENT GROUP	RESULTS
Chandna et al. ³	Mean age: 58.5 n=689	Mean age: 77.5 n=155	Median Survival: D: 67.1 months CM: 21.2 months (P<0.001)
Murtagh et al. ⁴	Median age: 79.6 n=52	Median age: 83 n=77	1- and 2-year survival rates were 84% and 76 % in the dialysis group and 68% and 47% in the CM group (P<0.001). Median Survival: D: 588 days (range: 67—2528 days) CM: 540 days (range: 4—2193 days)
Carson et al. ⁵	Median Age: 75 n=173	Median age: 83 n=29	Median Survival: D: 37.8 months (range: 0-106) CM: 13.9 months (range: 2-44) (P<0.01)
Ellam et al. ⁶	Median Age: 80 n=69	Median age: none n=0	Median Survival: 21 months (range 1-100)
Silva-Gane et al. ⁷	Median Age: 72 n=124	Median age: 84 n=30	Median Survival: D: 1317 days CM: 913 days
Joly et al. ⁹	Median Age: 83.2 n=107	Median age: 84.1 n=37	Median Survival: D: 28.9 months (range: 24-38) CM: 8.9 months (range: 4-10)

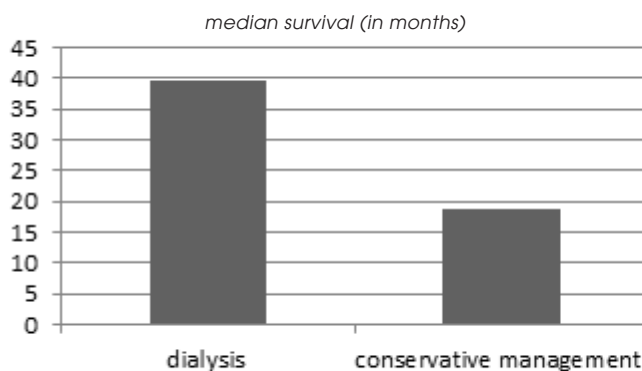


Figure 1. Median Survival of Elderly ESRD Patients on Dialysis versus Conservative Management

A. Studies on Survival

Six out of the seven chosen articles were identified describing survival. All of them were cohort studies (three retrospective and three prospective). All of these studies were given a level of evidence 1 rating. Median survival with conservative management group was 18.9 months (range: 8.9 to 30.4 months) versus 39.5 months (range: 19.6 to 67.1 months) for the dialysis group. (Figure 1 and Table II)

In the study by Chandna et al., (2010), it was found that patients aged >75 y.o when corrected for age, diabetes and other high comorbidities, the survival advantage from dialysis was four months, which was not statistically significant and that in CM patients, age >75 y.o and female gender independently predicted better survival.³

Another important finding was that in the study of Murtagh et al., (2007) where it was found that the survival advantage given by dialysis was lost in those patients with high comorbidity scores, especially when the comorbidity included ischemic heart disease.⁴

B. Studies on Quality of Life

Two^{7,8} out of the seven studies also compared quality of life among those who chose dialysis and those who chose conservative management (Table III).

C. Study on Hospitalization Rate and Location of Death

There was also one study which compared the rate of hospitalization and location of death among elderly patients with ESRD who chose dialysis versus conservative management. According to the study by Carson et al., (2009), dialysis patients had higher rates of hospitalization (0.069 (95% CI 0.068 to 0.070)) versus 0.043 (95% CI 0.040 to 0.047) hospital days/patient-days survived) compared with

conservative management patients. Moreover, patients who chose CM were significantly more likely to die at home or in a hospice (odds ratio 4.15; 95% CI 1.67 to 10.25).⁵

Discussion

The results of this systematic review demonstrate that conservative management is a viable option for certain patients. For the elderly and patients with multiple comorbid conditions, dialysis does not always offer a survival advantage especially for those patients who have ischemic heart disease.² An important consideration in the management of elderly patients with advanced kidney disease is the rate of decline of their residual renal function and their likelihood of death from a non-uremia cause before renal function declines to a level at which death would be imminent without dialysis.⁹ Elderly patients were found to be more likely to die of an associated comorbidity than to require dialysis. In the five survival studies included in this review, three of which^{3,4,5} found a statistically significant survival benefit with dialysis but two of which^{7,9} found no difference when adjusted for certain variables. One of the significant observations was patients in the conservative management groups were older, more dependent, and has higher comorbidity scores which may also contribute to their higher mortality rate. The survival studies included in this review also have different starting points in the measurement of survival: decision not to initiate dialysis, proposed date of first dialysis, first measurement of GFR $\leq$ 15, etc. These factors contributed to the wide variability in the reported median survival. While this variability makes it more difficult to counsel individual patients about what to expect with dialysis and conservative management, this systematic review provides at least a starting point for discussion.

Even if dialysis can be expected to prolong survival, the burdens of dialysis (high cost, infections, vascular access issues, etc.) also deserve careful consideration. Routine outpatient hemodialysis is also extremely time-consuming. Thus, while patients may live longer with dialysis, they can expect to spend a significant proportion of that time in a medical setting. In a study by Carson et al., (2009), dialysis patients had higher rates of hospitalization compared with conservative management patients and those who chose conservative management were significantly more likely to die at home or in a hospice. Many of the elderly ESRD patients express their desire to maximize their time at home with their families than to spend it in the hospital or in a dialysis center twice or thrice a week.⁵ These preferences should be elicited when discussing management options for these particular patients.

Table III. Quality of Life of Elderly ESRD Patients on Dialysis versus Conservative Management

REFERENCE	DIALYSIS GROUP	CONSERVATIVE MANAGEMENT GROUP	QUESTIONNAIRE/S USED	RESULTS
De Biase et al. ⁸	Mean age: 79.4 n=11	Mean age: 81.5 n=5	Short-Form 36 Health Survey Questionnaire (SF36) which included the following parameters: Physical functioning, Role physical, Bodily pain, General Health, Vitality, Social Functioning, Role emotional, and Mental Health	There was no statistically significant difference between the two groups in terms of Quality of Life. However, patients who opted for conservative management scored higher in terms of mental health and social functioning as compared to those who chose dialysis.
Silva-Gane et al. ⁷	Median Age: 72 n=124	Median age: 84 n=30	Short-Form 36 Health Survey Questionnaire (SF36), Hospital Anxiety and Depression Scale (HADS) and Satisfaction with Life Scale (SWLS)	Patients who chose CM maintained their quality of life as compared to those who chose dialysis. There was a noted significant reduction in the SWLS score after dialysis initiation and did not subsequently recover.

Another important thing to discuss is the quality of life issues for these elderly ESRD patients. In one of the two studies which compared quality of life among those in dialysis and those in conservative management, they found no statistically significant difference between the two groups. However, patients who opted for conservative management were noted to have higher scores in terms of mental health and social functioning as compared to those who chose dialysis. In the other study, it was found that patients who chose conservative management maintained their quality of life up to their last month and that those who opted to initiate dialysis have reduced Satisfaction with Life Scale (SWLS) score and were not able to recover. The findings presented in these studies were limited and preliminary. The included studies compared small groups of patients and the results were not stratified by age or comorbidities to allow more precise determination of which patients benefit from dialysis in terms of quality

of life. Ideally, comparative data about both survival and quality of life should be presented when counseling patients and their families about dialysis versus conservative management. Patients and their families must be reassured that if conservative management is chosen, there will be no reduction in care and symptom management and focus will be on preserving quality of life.

Future research could develop clinical tools to predict which patients will survive longer with dialysis versus conservative management. Several models already exist to predict survival on dialysis but similar models have not yet been developed for conservative management. If dialysis is not expected to prolong life due to extremely advanced age and comorbid conditions, patients and families should receive counseling to ensure that their expectations are realistic. For patients who opt for conservative management, guidelines are needed to determine

the best clinical practices in nondialytic management. Several centers in other countries are starting to develop specialized palliative care teams to provide concurrent renal care and symptom management for patients who decline or discontinue dialysis. These multidisciplinary teams typically include physicians from nephrology and palliative care, nurses and social workers. Preliminary data suggests that they are successful in managing symptoms and providing for advanced care planning and family support. ESRD represents a growing opportunity to offer a palliative care to a nonmalignant disease with extensive end-of-life care needs.² Educational efforts targeting elderly ESRD patients and their families, primary care physicians, and the renal community are needed to raise awareness about conservative management as an acceptable alternative.

Conclusion

In patients 70 years and above with end-stage renal disease, dialysis offers a higher survival rate over conservative management. However, the survival advantage of dialysis is substantially reduced by the number of comorbid conditions most especially ischemic heart disease. Furthermore, in this subset of patients, those who chose to maximize conservative management maintained quality of life comparable with those patients on long-term dialysis but with more hospital-free days and higher life satisfaction. These findings show that conservative management is a valid treatment option for selected patients. An individualized approach is essential, taking into account not only prolongation of survival, but also quality of life and the patient's end-of-life wishes.

It is recommended that future researches on this topic include larger sample size to establish more precise outcomes and trends to predict which patients will survive longer with dialysis versus conservative management and to formulate guidelines needed to determine the best clinical practices in nondialytic management.

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References

1. **Danguilan RA.** The burden of kidney disease in the Philippines. In ABS-CBN News. July 29, 2008. Retrieved from <http://www.abs-cbnnews.com/node/14995>.
2. **O'Connor NR, Corcoran AM.** End-Stage Renal Disease: Symptom Management and Advance Care Planning. *Am Fam Physician*;85(7):705-710. 2012.
3. **Chanda SM, Da Silva-Gane M, Marshall C, Warwicker P, Greenwood RN, Farrington K:** Survival of elderly patients with stage 5 CKD: Comparison of conservative management and renal replacement therapy. *Nephrol Dial Transplant*; doi:10.1093/ndt/gfq630, 2010.
4. **Murtagh FE, Marsh JE, Donohoe P, Ekbal NJ, Sheerin NS, Harris FE:** Dialysis or not? A comparative survival study of patients over 75 years with chronic kidney disease stage 5. *Nephrol Dial Transplant*;22:1955–1962, 2007.
5. **Carson RC, Juszczak M, Davenport A, Burns A:** Is maximum conservative management an equivalent treatment option to dialysis for elderly patients with significant comorbid disease? *Clin J Am Soc Nephrol*;4:1611–1609, 2009.
6. **Ellam T, El-Kossi M, Prasanth KC, El-Nahas M, Khwaja A:** Conservatively managed patients with stage 5 chronic kidney disease—outcomes from a single center experience. *QJM*;102:547–554, 2009.
7. **Silva-Gane MD, Wellsted D., Greenshields H, Norton S, Chandna SM, Farrington K:** Quality of Life and Survival in Patients with Advanced Kidney Failure Managed Conservatively or by Dialysis. *Clin J Am Soc Nephrol* 7;doi: 10.2215/CJN.01130112, 2012.
8. **De Biase V, Tobaldini O, Boaretti C, Abaterusso C, Pertica N, Loschiavo C, Trabucco G, Lupo A, Gembaro G:** Prolonged conservative treatment for frail elderly patients with end stage renal disease: The Verona experience. *Nephrol Dial Transplant*;23:1313–1317, 2008.
9. **Joly D, Anglicheau D, Alberti C, Nguyen AT, Touam M, Grunfeld JP, Jungers P:** Octogenarians reaching end-stage renal disease: Cohort study of decision-making and clinical outcomes. *J Am Soc Nephrol*;14:1012–1021, 2004.