Research Article

HOME MANAGEMENT GUIDE – BOON FOR PATIENTS ON MAINTENANCE HEMODIALYSIS

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ABSTRACT

Hemodialysis is the linchpin of Renal Replacement therapies. A study was conducted to assess the effectiveness of a home management guide regarding self-care in maintenance hemodialysis in terms of knowledge, practice and selected parameters of patients attending dialysis units of a selected hospital of Delhi. One group pre-test post-test design was considered to be appropriate for the study. Sample comprised of 30 patients on maintenance hemodialysis once a week selected by purposive sampling from a selected hospital of Delhi after taking prior approval. A home management guide for patients on maintenance hemodialysis was developed based on review of literature and expert opinion. The tools used for data collection were (1) Structured knowledge questionnaire (2) Structured interview (3) Selected parameters Performa (Inter Dialysis Weight Gain, Serum Na, Serum K and BP) (4) Structured opinionnaire. On Day 1, pre-test was administered to the patients on maintenance hemodialysis and selected parameters were measured following which home management guide was given. On Day 7, post-test was conducted and selected parameters were measured, along with distribution of opinionnaire which was collected on the same day.

Home management guide was an effective strategy in improving knowledge and practice scores of the subjects and maintaining inter dialysis weight gain in an acceptable range with reduction in diastolic BP but it could not reduce the values of serum Na, serum K and systolic BP significantly. Additionally, it holds high acceptability and utility among the subjects. Home management guide was found effective for self-care of patients on maintenance hemodialysis.

INTRODUCTION

Chronic kidney disease (CKD) is emerging as a major public health problem worldwide. First, the costs of renal replacement therapy are exceedingly high and are consuming a significant proportion of health care budgets of developed countries, while in developing countries they are out of reach. Second, complex interactions are clearly emerging between chronic kidney, cardiovascular disease, and diabetes.1,2

The prevalence of CRF in India was found~0.8%.3 Patients with CKD are at high risk for progression to the end stage renal disease (ESRD) – a complex disease associated with compromised quality of life (QOL), unplanned hospital admissions, high mortality and therefore high burden of illness with increasing proportions of healthcare budgets.1,2,4

End-stage renal disease can be treated by renal replacement therapies (RRT), such as hemodialysis, transplantation, and peritoneal dialysis.

In India and Pakistan, treatment of ESRD is a low priority for cash-strapped public hospitals, and in the absence of health insurance plans, or private insurance, less than 10% of all patients receive any kind of RRT (renal replacement therapy). Although renal transplantation is the cheapest option, only about 5% of all patients with ESRD have a transplant.5

Hemodialysis is the linchpin of RRT but it requires radical lifestyle changes including regular attendance at the dialysis unit for treatment, restrictions in fluid intake, changes to diet and medication intake. Estimates within the hemodialysis population suggest that the prevalence of non-adherence is between 10% to 60% for fluid intake, 2% to 57% for dietary advice, 19% to 99% for medications and up to 35% skip or

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shorten dialysis sessions. Central to effective management of patients with end-stage renal disease is adherence to this therapeutic regimen and poor adherence can have a significant impact on the risk of morbidity and mortality.6,7

More than one third of patients were found noncompliant with at least one dietary restriction. Patients’ knowledge of the medical consequences of noncompliance was poorer than knowledge of renal dietary restrictions.5

Majority of patients with chronic renal insufficiency (CRI) have only limited knowledge of their disease and no awareness regarding treatment options. Perceived knowledge improved with the progression of kidney disease and frequency of nephrology visits. The education of patients early in the course of CRI offers many potential benefits for patients and healthcare professionals, including improved treatment outcomes, reduced anxiety, greater prospect for continued employment, improved timing for the start of dialysis, and a greater opportunity for intervention to delay disease progression.9, 10

Sangalalee M conducted a quasi-experimental study which showed the education program for diet modification can enhance knowledge of self-care, perceived self-care abilities in patients undergoing hemodialysis, and decrease the level of some clinical parameters of patients undergoing hemodialysis. The mean change of interdialytic weight gain, serum phosphate, and blood pressure in the experimental groups was significantly lower than in the control group, but the mean change of serum potassium was not different.11

Self-management interventions and group interactive educational session offer an effective tool to support adjustments to the lifestyle changes required in hemodialysis and increase the proportion of patients who intend to initiate dialysis with self-care dialysis.12 13 Yasmein TK et al. found that there was a significant reduction in pre-dialysis weight means, mean interdialytic weight gain and pre-dialysis systolic blood pressure mean patients undergoing hemodialysis and nonadherent to fluid restriction treatment after salt and fluid restriction education.14

Literature says there is no chronic illness in today’s society which requires as many diet restrictions, medications or large volume of technical knowledge as is required by patients on dialysis. Patients who develop chronic renal failure must deal with the fact that renal replacement therapy will be necessary for their rest of their lives. Nurses play an important role in patient education in this complex treatment programme. Various studies conducted and discussed above highlight the importance of educating the patients about self-care in maintenance hemodialysis. The investigator did not come across any study by nurses to evaluate the effectiveness of any type of teaching programmeregarding self-care for patients on maintenance hemodialysis in India.

METHODS

Objectives of study

To assess the knowledge and practice of patients regarding self-care in patients on maintenance hemodialysis before and after administration of the home management guide.

To assess the selected parameters (Inter dialysis weight gain, Pre dialysis serum sodium, Pre dialysis serum potassium and Pre dialysis BP) of the patients on maintenance hemodialysis before and after the administration of home management guide.

To determine the acceptability and utility of the home management guide for patients on maintenance hemodialysis.

METHODOLOGY

The conceptual framework adopted for the study was Orem’s self-care deficit theory. Chronic renal failure is an irreversible disease condition and patient need life-long maintenance hemodialysis (or renal transplantation) and self-care demands of these patients include adequate knowledge, desirable practice and ability to maintain selected parameters (Interdialytic Weight Gain (IWG), serum Na, Serum K and BP-systolic and diastolic) value in an acceptable range.

One group pre-test post-test design was considered to be appropriate for the study. Sample comprised of 30 patients on maintenance hemodialysis once a week selected by purposive sampling from a selected hospital Delhi after taking prior approval.

A home management guide for patients on maintenance hemodialysis was developed based on review of literature and expert opinion. Home Management Guide for Patients on Maintenance Hemodialysis was developed covering the information about kidneys, chronic renal failure, treatment options including maintenance hemodialysis, self-care in maintenance hemodialysis, common problems with suggested solutions and follow ups.

The tools which were developed for the research were

- Structured knowledge questionnaire (knowledge test) for assessing the knowledge of patients on maintenance hemodialysis regarding self-care.
- Structured interview (practice test) for assessing expressed practices of patients on maintenance hemodialysis regarding self-care.
- Structured performa to record the selected parameters.
- Structured opinionnaire to determine the acceptability and utility of the home management guide.

Content validity of the tool was established by 10 experts (6 nephrologists and four nurse educators). The reliability for the structured knowledge questionnaire was established by Kuder Richardson Formula-(KR-20). The reliability co-efficient was found to be 0.92 and thus the tool was found to be reliable.

On Day 1, pre-test (knowledge and practice test) was administered to the patients on maintenance hemodialysis and selected parameters were taken following which home management guide was given. On Day 7, post-test (knowledge and practice test) was conducted and selected parameters were measured, along with distribution of opinionnaire and it was collected on the same day. Then all items were coded and transferred to master data sheet. Then analysis of data was done using descriptive and inferential statistics. The level of significance was kept at 0.05 level.

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RESULTS

Findings Related to Knowledge and Practice Scores

The data in table 1 indicate that the mean post-test knowledge score (33) was higher than the mean pre-test knowledge score (24.53). The Standard deviation for Post-test knowledge score is 4.54 which is less than the standard deviation for pre-test knowledge score i.e. 5.72 which shows that the group is more homogeneous after the administration of home management guide. The obtained mean difference of knowledge score i.e. 8.47 was found to be statistically significant at 0.05 level indicating that the home management guide was effective in increasing the patient’s knowledge on self-care in maintenance hemodialysis.

The data also indicates that the mean post-test practice score (76.5) was higher than the mean pre-test practice score (62.66). The Standard deviation for Post-test practice score is 4.73 which is less than the standard deviation for pre-test practice score i.e. 7.9 which shows that the group is more homogeneous after the administration of home management guide. The obtained mean difference of practice score i.e. 13.8 was found to be statistically significant at 0.05 level suggesting that the home management guide was effective in enhancing the self-care practice of subjects on maintenance hemodialysis.

Table 1 Knowledge and practice Scores of Subjects on Maintenance Hemodialysis (Original)

<table>
<thead>
<tr>
<th>Scores</th>
<th>Mean±</th>
<th>SD</th>
<th>Mean±D</th>
<th>SD±D</th>
<th>SE±M</th>
<th>t’ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre test</td>
<td>24.53±</td>
<td>5.72</td>
<td>8.47</td>
<td>7.21</td>
<td>1.31</td>
<td>6.42*</td>
</tr>
<tr>
<td>Post test</td>
<td>33±</td>
<td>4.54</td>
<td>13.8</td>
<td>8.7</td>
<td>1.6</td>
<td>8.63*</td>
</tr>
<tr>
<td>Practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre test</td>
<td>62.66±</td>
<td>7.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>76.5±</td>
<td>4.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

’n’ (29) = 2.05 * p value significant at 0.05 level of significance

Findings related to evaluation of home management guide in terms of selected parameters.

Findings related to Inter dialysis weight gain

The data in the figure 1 shows 26(86.66%) gained up to 3 kg inter dialysis weight gain which is the desirable outcome and only 4(13.33%) subjects gained above 3 kg. Hence home management guide was found as an effective strategy in maintaining Inter Dialysis Weight of subjects on maintenance hemodialysis in an acceptable range.

Figure 1: Interdialysis Weight Gain

Findings related to Pre dialysis Serum Sodium and Serum Potassium

The data presented in table 2 indicates that mean of post-test value (135.5) was higher than the mean pre-test value (130.56) of serum sodium of patients on maintenance hemodialysis. It also shows that mean of post-test (4.36) was higher than the mean pre-test (4.26) value of serum potassium of patients on maintenance hemodialysis. The obtained mean difference for serum sodium and serum potassium was found to be statistically non-significant at 0.05 level indicating that the home management guide was not effective in significantly decreasing serum sodium and serum potassium value of patients on maintenance hemodialysis.

Table 2 Pre-test and post-test values of serum sodium and serum potassium of patients on maintenance hemodialysis (Original) n=30

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Pre test</th>
<th>Mean±D</th>
<th>SD</th>
<th>Mean±D</th>
<th>SD±D</th>
<th>t’ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum sodium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>130.56 meq/L</td>
<td>± 22.78</td>
<td>4.93</td>
<td>24.23</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>Pre test</td>
<td>135.5 meq/L</td>
<td>± 4.91</td>
<td>0.10</td>
<td>0.93</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>Serum potassium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>4.36 meq/L</td>
<td>± 0.77</td>
<td>12.96</td>
<td>10.29</td>
<td>2.12*</td>
<td></td>
</tr>
</tbody>
</table>

‘n’ (29) = 2.05 * p value significant at 0.05 level of significance

Findings related to Blood Pressures

The data in table 3 indicates the mean post-test value of systolic BP (145.3) was less than the mean pre-test value (148.8) of systolic BP of patients on maintenance dialysis. It also indicates the mean post-test value of diastolic BP (87.43) was less than the mean pre-test value (91.4) of diastolic BP of patients on maintenance dialysis. The obtained mean difference was found to be statistically significant at 0.05 level but non-significant for systolic BP. This suggests that the home management guide was effective in reducing the diastolic BP but not effective in reducing systolic BP of patients on maintenance hemodialysis.

Table 3 Pre-test and post-test values of systolic and Diastolic Blood Pressures subjects on maintenance hemodialysis (Original) n=30

<table>
<thead>
<tr>
<th>Blood pressure</th>
<th>Pre test</th>
<th>Mean±D</th>
<th>SD</th>
<th>Mean±D</th>
<th>SD±D</th>
<th>t’ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic blood pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>148.8</td>
<td>± 16.01</td>
<td>3.5</td>
<td>2.4</td>
<td>1.29</td>
<td></td>
</tr>
<tr>
<td>Pre test</td>
<td>145.3</td>
<td>± 13</td>
<td>12.96</td>
<td>10.29</td>
<td>2.12*</td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td>87.43</td>
<td>± 9.6</td>
<td>4</td>
<td>4</td>
<td>2.12*</td>
<td></td>
</tr>
</tbody>
</table>

‘n’ (29) = 2.05 * p value significant at 0.05 level of significance
Findings related to Acceptability and utility of the home management guide for patients on maintenance hemodialysis

Findings related mean scores of Acceptability and Utility of the Home Management Guide for Patients on Maintenance Hemodialysis

The data in Table 4 depicts that mean scores of Acceptability and Utility of the Home Management Guide for Patients on Maintenance Hemodialysis was 27.62 which is near to the maximum score (30). This indicates a high level of acceptance of the home management guide by the patients on the maintenance hemodialysis.

Table 4 Acceptability and Utility of the Home Management Guide for Patients on Maintenance Hemodialysis (Original) n=30

<table>
<thead>
<tr>
<th>Group</th>
<th>Max Scores</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients on Maintenance</td>
<td>30</td>
<td>27.62</td>
<td>28</td>
<td>2.7</td>
</tr>
<tr>
<td>Hemodialysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Findings related to Responses of Patients Regarding Acceptability and Utility of Home Management Guide

The data in figure 2 shows that majority of patients i.e. 27 (90%) of patients said that it can be used without illustration. Also 25 (83.33%) patients believed that they can use information which is meaningful and has appropriate management guide. Maximum patients i.e. 26 (86.67%) (90%) of patients would like to have a copy of home management guide by the patients on the maintenance hemodialysis.

DISCUSSION AND CONCLUSION

The present study showed that there was significant gain in post-test knowledge and practice scores of the subjects after induction of home management guide which is supported by several studies showing the education can lead to improving knowledge of patients, leading to adherence of therapeutic treatment & hence quality of life.9,13

Home management guide was an effective strategy in maintaining interdialysis weight gain of subjects on maintenance hemodialysis in an acceptable range and reducing diastolic BP but could not reduce the values of serum Na, serum K and systolic BP significantly whereas study conducted by Yasemin et al.14 showed that there was a significant reduction in pre-dialysis weight means, mean interdialytic weight gain and pre-dialysis systolic blood pressure mean after salt and fluid restriction education. But other study conducted by Sangalee M11 showed that the mean change of interdialytic weight gain, serum phosphate, and blood pressure in the experimental groups was significantly lower than in the control group, but the mean change of serum potassium was not different.

The home management guide for patients on maintenance hemodialysis was found an effective teaching strategy in enhancing knowledge and practice of patients on maintenance hemodialysis. So nursing education programme must be more reoriented to primary health care approach, thus enabling prospective nurse to be well prepared to assist clients and community at large to develop their self-care potential. Clinical nurse specialist should be prepared to serve as resource person for patients and families. Nursing research should be directed to further explore and update knowledge and attitude of dialysis nurses towards patients. It should be focused on developing teaching strategies like self-instructional module, audio and video tapes to improve self-care of patients.

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