**RenalSmart Diabetic Nephropathy Illustrations**

**Table 1: Dietary recommendations for adults with diabetic nephropathy**1,13,16,17,18,19,20

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Pre-Dialysis** | **Haemodialysis** | **Peritoneal dialysis** |
| Protein g/kg/day | NKF KDOQI: 0.6-0.8 | NKF KDOQI: 1.2 | NKF KDOQI: 1.2-1.3 |
| High biologic value protein % | NKF KDOQI: 50 (at least) | NKF KDOQI: 50 (at least) | NKF KDOQI: 50 (at least) |
| Energy (per day) | H-Bakcal or 30-35 kcal/kg | H-Bakcal or 30-35 kcal/kg | H-Bakcal or 30-35 kcal/kg |
| Carbohydrates (%TE) | 50-60 | 50-60 | 50-60 |
| Fat (%TE) | ≤30 | ≤30 | ≤30 |
| Saturated fatty acids (% TE) | ≤10 | ≤10 | ≤10 |
| Polyunsaturated fatty acids (%TE) | 6-8 | 6-8 | 6-8 |
| Monounsaturated fatty acids (%TE) | ≤15 | ≤15 | ≤15 |
| Cholesterol (mg/day) | <200 | <200 | <200 |
| Fibre (g/day) | 20-30 | 20-30 | 20-30 |
| Fluid (ml/day) | Output + (500-750) | 1000- 2000 | 1000 - 3000 |
| Sodium (mg/day) | <2300 | 2000-4000 | 2000-4000 |
| Potassium (mg/day) | 2000-3000(Restrict if raised) | 2000-3000 | 2000-4000 |
| Calcium (mg/day) | <2000-2500(Including binder) | <2000-2500(Including binder) | <2000-2500(Including binder) |
| Phosphorous (mg/day) | 800-1000 | 800-1000 | 800-1000 |
| Iron (mg/day) | 10-18 (Individualize supplementation) | 10-18 (Individualize supplementation) | 10-18 (Individualize supplementation) |
| Zinc (mg/day) | 12-15 (male)10-12 (female) | 12-15 (male)10-12 (female) | 12-15 (male)10-12 (female) |
| Selenium (μg/day) | 55 | 55 | 55 |

NKF KDOQI: National Kidney Foundation Kidney Disease Outcome Quality Initiative

aH-B: Harris Benedict Equation for determining Basal Energy Expenditure

TE: Total energy

**Fig. 1: Flow diagram of the process followed in adapting the RenalSmart Application for diabetic nephropathy**

**Fig. 2: Phase 2, adapting RenalSmart web-based Application for Diabetic Nephropathy, green shapes**

**Fig. 3: Quality assurance testing stages of the Application**

Final study sample that tested the Application

Dietitians agreeing to test the Application **n=92**

Participating in final testing: **n=37**

Incomplete questionnaire responses:

n=11

Complete questionnaire responses:

n=26

**Fig. 4: Recruitment process of the final testing phase**

**Table 2: Profile of the participants**

|  |  |
| --- | --- |
| **Description of sample (N=37)** | **Results [N (%)]** |
| Mean age (years) | 33 (SD 7.77) |
| Work in government | 21 (57) |
| Work private | 16 (43) |
| Consult diabetic patients | 36 (97) |
| Consult renal patients | 30 (81) |
| Previous experience with RenalSmart | 8 (22) |
| **Province**  | **Results [N (%)]** | **Experience with RenalSmart (%)** |
| Western Cape | 13 (35.1) | 8.0% |
| Eastern Cape | 9 (24.3) | 5.4% |
| Gauteng | 7 (18.9) | 5.4% |
| Kwazulu Natal | 5 (13.5) | 2.7% |
| Free State | 1 (2.7) | 0% |
| Limpopo  |  1 (2.7) | 0% |

**Fig. 5: Rating the acceptability of the Application**

**Table 3: Accuracy rating of the Application per question (N=37)**

|  |  |
| --- | --- |
|  | **Responses** |
| **Questions** | **Yes****[N (%)]** | **No****[N (%)]** |
| Was the calculated prescription transferred accurately to the summary of the 'Calculated exchanges / Prescription? | 29 (85) | 5(15) |
| Did the printing function work for printing the meal plan and sample menu hand-out? | 25 (78) | 7(22) |
| Was the clinical data saved successfully?a | 30 (81) | 7(19) |
| Were the fluid requirements determined accurately from the urine volume?a | 33 (94) | 2(6) |
| Was the frame size transferred correctly from the patient data sheet to the clinical data sheet?b | 32 (86) | 5(14) |
| Was the height transferred correctly from the patient data file to the clinical data sheet?b | 34 (92) | 3(8) |
| Do you agree with the suggested diabetes medication regimes?b | 31 (84) | 6(16) |
| Were you able to change the prescription summary manually, if needed?b | 30 (86) | 5(14) |
| Was the d*ietary* prescription saved accurately?b | 29 (83) | 6(17) |
| Did your final menu plan save successfully?b | 26 (76) | 8(24) |
| Were you able to make changes, if needed to the number of exchanges?b | 28 (82) | 6(18) |
| Did the changes you made in the number of exchanges result in a corresponding change in the suggested prescription summary, after the 'Calculate' function was used?b | 29 (85) | 5(15) |
| Do you agree with the suggested biochemical investigations specific for diabetes?b | 26 (81) | 6(19) |
| Do you agree with the prescribed drugs of oral medication and insulin for diabetes?b | 27 (84) | 5(16) |

aRespondents who usually consult renal patients did not agree with the accuracy for the data saving function of the Application and the fluid requirements.

bRespondents who usually consult patients with diabetes (compared to those who do not), dietitians who have used the RenalSmart Application before (compared to those who have not used it previously), and dietitians with good or very good self-rated computer literacy skills had no significant difference (p>0.05) testing the accuracy of the Application.

**Table 4: Acceptability rating of the Application per question (N=37)**

|  |  |  |
| --- | --- | --- |
|  |  | **Responses** |
| **Questions** | **Numbera** | **Strongly agree [N (%)]** | **Agree****[N (%)]** | **Disagree****[N (%)]** | **Strongly disagree [N (%)]** |
| The section on Clinical Data was easy to complete.b | 37 | 12 (32) | 21 (57) | 3 (8) | 1 (3) |
| The instructions were clear regarding the weight that must be used for calculation of the dietary prescription.b | 37 | 8 (22) | 28 (76) | 0 (0) | 1 (3) |
| The section on Dietary Prescription was easy to follow.b | 35 | 6 (18) | 21 (60) | 7 (20) | 1 (3) |
| The section on Prescription Summarywas easy to follow. | 34 | 5 (15) | 25 (74) | 1 (3) | 3 (9) |
| It was easy to use the 'Next default' function to match suggested prescriptions to the dietary prescription.b | 34 | 4 (12) | 22 (65) | 6 (18) | 2 (6) |
| The section on Menu Planning was easy to complete.b | 32 | 6 (19) | 16 (50) | 6 (19) | 4 (13) |
| The meal distribution including snacks was correctly distributed.b | 32 | 7 (22) | 21 (66) | 3 (9) | 1 (3) |
| It was easy to add food items to the menu.b | 32 | 5 (16) | 22 (69) | 1 (3) | 4 (13) |
| It was easy to delete food items from the menu.b | 32 | 7 (22) | 21 (66) | 1 (3) | 3 (9) |
| It was easy to customize / de-select the Default Food Options listed.b | 32 | 6 (19) | 19 (59) | 5 (16) | 2 (6) |

## a The total number of responses was 37, but some questions were not completed by every respondent.

b No significant difference in the rating of older compared to younger dietitians (p>0.05) and no significant difference (p>0.05) between dietitians who usually consult patients with diabetes or renal patients (compared to those who do not), dietitians who have used the RenalSmart Application before (compared to those who have not used it previously) and dietitians with good or very good self-rated computer literacy skills.