KEEP Data Report 2005

Chapter 3: Health history
Figure 3.1
Self-reported diabetes in KEEP & NHANES participants, by age, gender, & race/ethnicity

KEEP: N=36,727, NHANES N=11,423. Excludes participants with missing values for diabetic status.
Figure 3.2
Blood pressure stages (JNC 7) in KEEP & NHANES participants, by self-reported diabetic status

KEEP N=36,368, NHANES N=10,089. Excludes participants with missing values for diabetic or hypertensive status.
Figure 3.3
Elevated blood pressure (JNC 7) in KEEP & NHANES participants, by race/ethnicity, gender, & self-reported diabetic status

KEEP: N=36,379, NHANES=10,089. Excludes participants with missing values for diabetic status or blood pressure.
Figure 3.4
Self-reported diabetes in KEEP & NHANES participants, by blood pressure stage (JNC 7)

KEEP: N=36,368, NHANES N=10,089. Excludes participants with missing values for diabetic and hypertensive status.

JNC 7 Hypertension
normal
systolic < 120 mmHg & diastolic < 80 mmHg
prehypertension
systolic 120-139 mmHg or diastolic 80-89 mmHg
stage 1
systolic 140-159 mmHg or diastolic 90-99 mmHg
stage 2
systolic ≥160 mmHg or diastolic ≥100 mm Hg
Figure 3.5
Percent of KEEP & NHANES participants with self-reported diabetes, by education & insurance status

KEEP: N=34,956, NHANES N=11,165. Excludes participants with missing values for self-reported diabetic status, education, & insurance.
Figure 3.6
Measured glucose > normal limit in KEEP participants, by age, gender, race/ethnicity, & self-reported diabetes

KEEP: N=35,663. Excludes participants with missing values for self-reported diabetic status or blood glucose.
Figure 3.7
Measured glucose > normal limit in KEEP participants with no self-reported diabetes & who listed one of the warning signs for diabetes, by age, gender, & race/ethnicity

KEEP: N=11,641. Excludes participants with missing values for self-reported diabetic status & blood glucose. Race & Hispanic ethnicity are not mutually exclusive.

Glucose greater than the normal limit
Fasting: >126 mg/dl
Non-fasting: >139 mg/dl
Figure 3.8
Self-reported hypertension in KEEP & NHANES participants, by age, gender, & race/ethnicity

KEEP: N=36,788, NHANES 11,271. Excludes participants with missing values for self-reported hypertension status.
Figure 3.9
Elevated blood glucose in KEEP participants, by self-reported hypertension

KEEP N=35,726. Excludes participants with missing values for glucose or self-reported hypertension status.
Figure 3.10
Elevated blood glucose in KEEP participants, by gender, race/ethnicity, & self-reported hypertension

KEEP N=35,726. Excludes participants with missing values for glucose or self-reported hypertension status.

**Glucose greater than the normal limit**
- Fasting: >126 mg/dl
- Non-fasting: >139 mg/dl

**Elevated blood pressure (JNC 7)**
- DM or CKD:
  - Systolic: ≥130 mmHg or
  - Diastolic: ≥80 mmHg
- No DM or CKD:
  - Systolic: ≥140 mmHg or
  - Diastolic: ≥90 mm Hg
Figure 3.11
Self-reported hypertension vs. elevated measured blood pressure (JNC 7) in KEEP & NHANES participants, by age & gender

Elevated blood pressure (JNC 7)
DM or CKD:
Systolic: $\geq 130$ mmHg or
Diastolic: $\geq 80$ mmHg
No DM or CKD:
Systolic: $\geq 140$ mmHg or
Diastolic: $\geq 90$ mmHg

KEEP: N=36,053, NHANES N=11,271 for self-reported hypertension & N=9,423 for measured blood pressure. Excludes participants with missing values for self-reported hypertension or measured blood pressure.
Figure 3.12
Self-reported hypertension vs. elevated measured blood pressure (JNC 7) in KEEP & NHANES participants, by race/ethnicity

KEEP: N=36,053, NHANES N=11,271 for self-reported hypertension & N=9,423 for measured blood pressure. Excludes participants with missing values for self-reported hypertension or measured blood pressure.

Elevated blood pressure (JNC 7)

*DM or CKD:*
- Systolic: $\geq 130$ mmHg or
- Diastolic: $\geq 80$ mmHg

*No DM or CKD:*
- Systolic: $\geq 140$ mmHg or
- Diastolic: $\geq 90$ mm Hg
Figure 3.13
Percent of KEEP & NHANES participants with self-reported hypertension, by education & insurance status

**Education & insurance**
- <HS&NIns: Less than a high school education, & no insurance
- <HS&Ins: Less than a high school education, & insurance
- HS+&NIns: High school education or greater, & no insurance
- HS+&Ins: High school education or greater, & insurance

**KEEP: N=35,000, NHANES N=11,271.** Excludes participants with missing values for self-reported hypertension status, education, & insurance.* Sample size less than 30 or coefficient of variation is not less than 30 percent.

KEEP Data Report, 2005
Figure 3.14
Cardiovascular disease in KEEP participants, by age, gender, & race/ethnicity

KEEP: N=37,153. Excludes participants with missing values for any cardiovascular data.
Figure 3.15
Cardiovascular disease in KEEP participants with & without CKD, by age, gender, & race/ethnicity

KEEP: N=35,490. Excludes participants with missing values for any cardiovascular or CKD data.

CKD Definition
If calculated creatinine clearance by K/DOQI MDRD <60 ml/min/1.73 m² or;
If calculated creatinine clearance by K/DOQI MDRD ≥ 60 ml/min/1.73 m² and microalbuminuria +

Cardiovascular disease
Participant reporting any of the following cardiac events: heart attack, stroke, or PVD
Figure 3.16
Reported risk factors in KEEP participants with or without cardiovascular disease

KEEP: N=32,340. Excludes participants with missing values for any cardiovascular or CKD data, BMI, self-reported diabetes, blood pressure, or smoking.

Cardiovascular disease
Participant reporting any of the following cardiac events: heart attack, stroke, or PVD

Risk factors for CV disease
BMI ≥25 kg/m²
Self-reported diabetes
History of smoking
Anemia (WHO definition)
Elevated blood pressure (JNC 7)
Figure 3.17
Percent of KEEP & NHANES participants with cardiovascular disease, by education & insurance status

Cardiovascular disease: KEEP
Participant reporting any of the following cardiac events: heart attack, stroke, or PVD

NHANES
Participant reporting any of the following cardiac diseases: coronary heart disease, angina/angina pectoris, heart attack, or stroke

Education & insurance
<HS&NIns: Less than a high school education, & no insurance
<HS&Ins: Less than a high school education, & insurance
HS+&NIns: High school education or greater, & no insurance
HS+&Ins: High school education or greater, & insurance

KEEP: N=35,320, NHANES 9,987. Excludes participants with missing values for self-reported cardiovascular disease, education, or insurance. *Sample size less than 30 or coefficient of variation is not less than 30%.

KEEP Data Report, 2005
Figure 3.18
Percent distribution of KEEP & NHANES participants, by BMI category

KEEP: N=36,796, NHANES N=10,132. Excludes participants with missing values for BMI.
Figure 3.19
BMI in KEEP & NHANES participants, by gender

KEEP: N=36,796, NHANES N=10,132. Excludes participants with missing values for BMI.

Body Mass Index Categories
UW: underweight: BMI < 18.5
N: normal: BMI 18.5–24.9
OW: overweight: BMI 25–29.9
OB: obese: BMI 30–39.9
EOB: extremely obese: BMI ≥ 40
Figure 3.20
BMI in KEEP & NHANES participants, by race/ethnicity

KEEP: N=36,796, NHANES N=10,132. Excludes participants with missing values for BMI. Race & Hispanic ethnicity are not mutually exclusive.

Body Mass Index Categories
UW: underweight: BMI<18.5
N: normal: BMI 18.5–24.9
OW: overweight: BMI 25–29.9
OB: obese: BMI 30–39.9
EOB: extremely obese: BMI ≥ 40
Figure 3.21
BMI in KEEP & NHANES participants, by U.S. Census Region

KEEP: N=36,772. Excludes participants with missing values for BMI or region.

Body Mass Index Categories
UW: underweight: BMI<18.5
N: normal: BMI 18.5–24.9
OW: overweight: BMI 25–29.9
OB: obese: BMI 30–39.9
EOB: extremely obese: BMI ≥ 40
Figure 3.22
Percent of KEEP & NHANES participants with a BMI > 40 kg/m², by education & insurance status

Body Mass Index Categories
UW: underweight: BMI < 18.5
N: normal: BMI 18.5–24.9
OW: overweight: BMI 25–29.9
OB: obese: BMI 30–39.9
EOB: extremely obese: BMI ≥ 40

Education & insurance
<HS&NIns: Less than a high school education, & no insurance
<HS&Ins: Less than a high school education, & insurance
HS+&NIns: High school education or greater, & no insurance
HS+&Ins: High school education or greater, & insurance

KEEP: N=35,009, NHANES N=9,959.
Excludes participants with missing values for BMI, education, or insurance.
Figure 3.23
Self-reported diabetes or hypertension in KEEP & NHANES participants, by BMI

KEEP: N=36,060, NHANES N=10,127 for self-reported diabetes & N=9,998 for self-reported hypertension. Excludes participants with missing values for BMI, self-reported diabetes, or self-reported hypertension.

Elevated blood pressure (JNC 7)
DM or CKD:
Systolic: ≥130 mmHg or Diastolic: ≥80 mmHg
No DM or CKD:
Systolic: ≥140 mmHg or Diastolic: ≥90 mm Hg

Body Mass Index Categories
UW: underweight: BMI<18.5
N: normal: BMI 18.5–24.9
OW: overweight: BMI 25–29.9
OB: obese: BMI 30–39.9
EOB: extremely obese: BMI ≥ 40
Figure 3.24
BMI in KEEP & NHANES participants, by measured blood pressure (JNC 7)

KEEP: N=36,449, NHANES N=9,781. Excludes participants with missing values for BMI or blood pressure.

JNC 7 Hypertension
normal
systolic < 120 mmHg &
diastolic < 80 mmHg
prehypertension
systolic 120-139 mmHg or
diastolic 80-89 mmHg
stage 1
systolic 140-159 mmHg or
diastolic 90-99 mmHg
stage 2
systolic ≥160 mmHg or
diastolic ≥100 mm Hg

Body Mass Index Categories
UW: underweight: BMI<18.5
N: normal: BMI 18.5–24.9
OW: overweight: BMI 25–29.9
OB: obese: BMI 30–39.9
EOB: extremely obese: BMI ≥ 40

KEEP Data Report, 2005
Figure 3.25
Percent distribution of KEEP & NHANES participants, by smoking status

KEEP: N=34,730, NHANES N=10,261. Excludes participants with missing values for smoking status.
Figure 3.26
Smoking status in KEEP & NHANES participants, by race/ethnicity

KEEP: N=34,730, NHANES N=10,261. Excludes participants with missing values for smoking status.
Figure 3.27
Percent of KEEP & NHANES participants with a smoking history, by education & insurance status

Education & insurance
<HS&NIns: Less than a high school education, & no insurance
<HS&Ins: Less than a high school education, & insurance
HS+&NIns: High school education or greater, & no insurance
HS+&Ins: High school education or greater, & insurance

KEEP: N=33,442, NHANES N=10,045. Excludes participants with missing values for smoking status, education, or insurance.
Figure 3.28
Self-reported diabetes in KEEP & NHANES participants, by smoking status

KEEP: N=34,357, NHANES N=10,258. Excludes participants with missing values for smoking status & self-reported diabetic status.
Figure 3.29
Self-reported hypertension in KEEP & NHANES participants, by smoking status

KEEP: N=34,418, NHANES N=10,137. Excludes participants with missing values for smoking status or self-reported hypertension.
Figure 3.30
CKD in KEEP & NHANES participants, by smoking status

KEEP: N=33,196, NHANES N=8,702. Excludes participants with missing values for smoking or CKD status.

KEEP Data Report, 2005
Figure 3.31

Self-reported kidney problems in KEEP participants

KEEP: N=37,153. Excludes participants with missing values for self-reported kidney problems.
Figure 3.32
Self-reported kidney problems in KEEP participants, by gender

KEEP: N=37,153. Excludes participants with missing values for self-reported kidney problems.
Figure 3.33

Self-reported kidney problems in KEEP participants, by race/ethnicity

KEEP: N=37,153. Excludes participants with missing values for self-reported kidney problems. Hispanic ethnicity & race are not mutually exclusive.
Figure 3.34
Self-reported kidney problems in KEEP participants, by U.S. Census Region

KEEP: N=37,129. Excludes participants with missing values for self-reported kidney problems or region.
Figure 3.35
CKD in KEEP & NHANES participants, by CKD stage & race/ethnicity

KEEP: N=18,887, NHANES N=1,505 (participants with CKD).

<table>
<thead>
<tr>
<th>CKD Stages</th>
<th>KEEP Data Report, 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1: eGFR ≥ 90, microalbuminuria +</td>
<td>Stage 2: eGFR 60–89, microalbuminuria +</td>
</tr>
<tr>
<td>Stage 3: eGFR 30–59</td>
<td>Stage 4: eGFR 1–29</td>
</tr>
<tr>
<td>Stage 5: eGFR &lt;15 or patient on dialysis</td>
<td></td>
</tr>
</tbody>
</table>

KEEP: N=18,887, NHANES N=1,505 (participants with CKD).
Figure 3.36
CKD in KEEP & NHANES participants, by education & insurance status

CKD Definition
If calculated creatinine clearance by K/DOQI MDRD <60 ml/min/1.73 m² or;
If calculated creatinine clearance by K/DOQI MDRD ≥ 60 ml/min/1.73 m² and microalbuminuria +

Education & insurance
<HS&NIns: Less than a high school education, & no insurance
<HS&Ins: Less than a high school education, & insurance
HS+&NIns: High school education or greater, & no insurance
HS+&Ins: High school education or greater, & insurance

KEEP: N=33,760, NHANES N=9,569. Excludes participants with missing values for CKD status.
Figure 3.37
Microalbuminuria in KEEP participants, by age, race/ethnicity, & presence of CKD warning sign

KEEP: N=16,877 with a warning sign, N=20,276 without a warning sign. Excludes participants with missing values for CKD status or warning signs.

Risk factors for CKD
- Self-reported diabetes
- BMI ≥25 kg/m2
- Smoking history
- Anemia (WHO definition)
- Hypertension (JNC 7)

KEEP: N=16,877 with a warning sign, N=20,276 without a warning sign. Excludes participants with missing values for CKD status or warning signs.

Risk factors for CKD
- Self-reported diabetes
- BMI ≥25 kg/m2
- Smoking history
- Anemia (WHO definition)
- Hypertension (JNC 7)
Figure 3.38

Albumin/creatinine ratio greater than the normal limit (30 μg/mg) in KEEP participants, by age, race/ethnicity, & presence of CKD warning sign

KEEP: N=12,747 with a warning sign, N=15,256 without a warning sign. Excludes participants with missing values for CKD status, warning signs, or albumin/creatinine ratio.

Risk factors for CKD
Self-reported diabetes
BMI ≥25 kg/m2
Smoking history
Anemia (WHO definition)
Hypertension (JNC 7)
Figure 3.39
Risk factors in KEEPER & NHANES participants, by U.S. Census Region

KEEP: N=3,283. Excludes participants with missing values for CKD status, self-reported diabetes, self-reported hypertension, BMI, smoking, or region.

KEEP Data Report, 2005
Family history of diabetes, hypertension, or kidney disease in KEEP participants, by self-reported diabetic status

Figure 3.40

KEEP: N=34,141. Excludes participants with missing values for self-reported diabetes or for family history of diabetes, hypertension, or kidney disease.

Glucose greater than the normal limit
- Fasting: >126 mg/dl
- Non-fasting: >139 mg/dl

JNC 7 Hypertension
- Normal: systolic < 120 mmHg & diastolic < 80 mmHg
- Prehypertension: systolic 120-139 mmHg or diastolic 80-89 mmHg
- Stage 1: systolic 140-159 mmHg or diastolic 90-99 mmHg
- Stage 2: systolic ≥160 mmHg or diastolic ≥100 mmHg
Figure 3.41
Family history of diabetes, hypertension, or kidney disease in KEEP & NHANES participants, by measured blood pressure (JNC 7)

KEEP: N=34,142. Excludes participants with missing values for blood pressure or for family history of diabetes, hypertension, or kidney disease.

Glucose greater than the normal limit
Fasting: >126 mg/dl
Non-fasting: >139 mg/dl

JNC 7 Hypertension
normal
systolic < 120 mmHg &
diastolic < 80 mmHg
prehypertension
systolic 120-139 mmHg or
diastolic 80-89 mmHg
stage 1
systolic 140-159 mmHg or
diastolic 90-99 mmHg
stage 2
systolic ≥160 mmHg or
diastolic ≥100 mm Hg
Figure 3.42
KEEP participants with a family member who has had a cardiac event (heart attack or stroke before age 55) or PVD, & who have suffered the same cardiac event as a family member.

KEEP: N=37,153. Excludes participants with missing values for any cardiac event.
Figure 3.43
Family history of diabetes, hypertension, or kidney disease in KEEP participants, by CKD stage

KEEP: N=32,934. Excludes participants with missing values for CKD status or for family history of diabetes, hypertension, or kidney disease.

CKD Definition
If calculated creatinine clearance by K/DOQI MDRD < 60 ml/min/1.73 m² or;
If calculated creatinine clearance by K/DOQI MDRD ≥ 60 ml/min/1.73 m² and microalbuminuria +

CKD Stages
Stage 1: eGFR ≥ 90, microalbuminuria +
Stage 2: eGFR 60–89, microalbuminuria +
Stage 3: eGFR 30–59
Stage 4: eGFR 1–29
Stage 5: eGFR <15 or patient on dialysis
Figure 3.44

KEEP participants who returned their followup forms

KEEP: N=14,441.
Figure 3.45
KEEP participants who returned their followup forms & reason for seeing a doctor about their test results

KEEP: N=8,244.
Figure 3.46
Reasons why KEEP participants do not see a physician after receiving abnormal test results

KEEP: N=3,449.
Figure 3.47

KEEP participants who learn they have anemia, & have a medical intervention

KEEP: N=212.
Figure 3.48
KEEP participants who learn they have diabetes, & have a medical intervention

KEEP: N=741.
Figure 3.49
KEEP participants who learn they have high blood pressure, & have a medical intervention

KEEP: N=1,605.

KEEP Data Report, 2005
Figure 3.50
KEEP participants who report a warning sign for kidney disease, have a positive urine test for microalbuminuria, & see a physician after test results, by race

KEEP: N=2,856.
Figure 3.51
KEEP participants who report a warning sign for kidney disease, have an albumin/creatinine ratio above the normal limit*, & see a physician after test results, by race

KEEP: N=773.