BACKGROUND

- It is well documented that diabetes is a prevalent and costly disease.1-3
- Adults with type 2 diabetes mellitus are likely to have other health conditions that may adversely impact their health status and glycemic control.1-3
- Hypertension, obesity, cigarettes smoking, and hyperlipidemia act as independent modifiable contributors to CVD in patients with diabetes.1-3
- Current ADA and IDF standards of medical care aim to reduce the vascular complications through control of glycemia, blood pressure, and blood lipids.4-6
- Individuals with T2DM are known to have poorer quality of life and more depressive symptoms than those without diabetes, yet the impact may be in part due to comorbid conditions.7
- Little attention has been paid to characterizing individuals with T2DM and comorbid hypertension and obesity and understanding their quality of life, compared with individuals with T2DM alone.

METHODS

STUDY DESIGN

- Cross-sectional analysis among SHIELD respondents with T2DM with or without HTN and obesity
- Study to improve early evaluation and management of risk factors leading to Diabetes (SHIELD) is a 5-year population-based study conducted to better understand the risk for the development of diabetes, as well as diabetes disease burden
- Based upon a screening questionnaire mailed to 200,000 nationally representative households (NHS Household Panel), responses from 211,097 adults from 127,420 households were obtained (64% response rate)
- A baseline survey was sent to 22,001 selected individuals derived from the screening respondents. Since 2001, annual SHIELD surveys have captured self-reported information on health status, attitudes, and behaviors, quality of life, and anthropology from this representative sample of the US population
- The SHIELD survey collected information from 14,921 SHIELD respondents (71% response rate) to identify those with the triad conditions (T2DM, HTN, obesity)

STUDY POPULATION

- Respondents were 18 years of age or older
- Self-reported diagnosis of T2DM was based on being "told by a doctor, nurse or other healthcare professional that you have type 2 diabetes"
- Among the T2DM sample, two cohorts were identified:
  - Those reporting comorbid HTN and obesity
  - Those without a self-report of HTN and obesity
- Respondents reported a diagnosis of HTN based on being told by a healthcare professional that they had high blood pressure or HTN
- Obesity was defined as a BMI ≥30 kg/m²
- Respondents had to have a self-reported diagnosis of T2DM and HTN and BMI ≥30 kg/m² to be included in the triad condition group.
- Respondents with a self-reported diagnosis of T2DM and no self-reported diagnosis of HTN and BMI ≥30 kg/m² were classified into the T2DM alone group.

STUDY MEASURES

- HRQOL was assessed using the Short Form-12 (SF-12) - 12-item measure of overall health status with a recall period of 4 weeks
- Scale ranges from 0–100, with norm-based scoring (population mean = 50) for PCS and MCS scores
- Higher scores indicate better QOL
- Depression was assessed using the Patient Health Questionnaire (PHQ-9)
- 9 signs and symptoms of depression from the DSM-IV
- Scores of 0–9 = minimal depression; 10–14 = minor depression; 15–19 = major depression, moderately severe; and ≥20 = major depression, severe
- Comorbid conditions were self-reported based on survey questions of being told by a healthcare professional that they had the condition

STATISTICAL ANALYSES

- Comparisons between the triad condition and the T2DM alone group were conducted using chi-square test for categorical variables and t-tests for continuous variables
- Statistical significance was set a priori (p < 0.05)

RESULTS

Figure 1. SHIELD respondents with T2DM and other comorbid conditions with responses to the SF-12 and PHQ-9

- Respondents with the triad conditions were younger, more often women, and had lower household income and more comorbid conditions, such as dyslipidemia, than respondents with T2DM alone (p < 0.001) (Table 1)
- Respondents with the triad conditions were similar to respondents with T2DM alone in race, education, smoking status, and cardiovascular disease history

Health-related Quality of Life

Figure 2. SF-12 Physical and Mental Component scores for T2DM respondents with and without comorbid HTN and obesity

- Respondents with T2DM + HTN + obesity had significantly lower Physical and Mental Component Summary scores (37.3 and 50.9, respectively) than T2DM alone respondents (46.5 and 53.5, respectively) (Figure 2)
- Depression Figure 3. Patient Health Questionnaire scores for depression for T2DM respondents with and without comorbid HTN and obesity

- A significantly greater proportion of respondents with T2DM + HTN + obesity had mild to severe depression based on the PHQ-9 scores (Figure 3)
- 16.6% of respondents with T2DM + HTN + obesity had moderate to severe depression, compared with 6.1% of respondents with T2DM alone (p < 0.001)
- Mean PHQ-9 scores were significantly higher among T2DM respondents with comorbid HTN and obesity (5.0 versus 2.5, p < 0.001) than among respondents with T2DM alone

LIMITATIONS

- Diagnosis of diabetes, HTN, other comorbid conditions or complications, and weight were self-reported and could not be validated with medical record review or administrative claims data. However, this bias is similar between the groups compared in this study
- Household panels, like the SHIELD study, tend to under-represent the very wealthy and very poor segments of the population and do not include military or institutionalized individuals

SUMMARY

- SHIELD respondents with T2DM, HTN, and obesity reported lower quality of life compared with the T2DM alone group
- Respondents with T2DM and comorbid hypertension and obesity significantly reported quality of life and depressive symptoms of moderate to severe
- Further research is needed to determine whether the poorer quality of life and greater depression in the respondents with T2DM and comorbid HTN and obesity affect self-management of their diabetes and comorbid conditions

REFERENCES

2. Sennema G. Caring 2005;24:1431

LIST OF ABBREVIATIONS

- BMI Body mass index
- CSW Cardiac Vascular disease
- DSM-IV Diagnostic and Statistical Manual of Mental Disorders IV
- IDF International Diabetes Federation
- ICD International Classification of Diseases
- ICD-10 International Classification of Diseases
- MFQ Suicide ideation
- PHQ-9 Patient Health Questionnaire
- PCS Physical Component Summary
- SF-12 Short Form-12
- T2DM Type 2 Diabetes Mellitus