Colosia AD, Palencia R, Khan S. Prevalence of hypertension and obesity in patients with type 2 diabetes mellitus in observational studies: a systematic literature review. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy. 2013

Supplemental Table 1. Initial Search Strategy for PubMed (July-August 2011)

Search No.	Search Terms
DISEASE	
#1	"Diabetes Mellitus, Type 2"[Majr] OR "T2DM"[Title] OR "type 2 diabetes"[Title] Limits: English, Publication Date from 2001
RISK FACTORS, EPIDEMIOLOGY, COMPLICATIONS, TERMS	
#2	#1 AND ("Hypertension"[Majr] OR "hypertension"[Title] OR "blood pressure"[Title] OR "Obesity"[Majr] OR "obesity"[Title] OR "obese"[Title]) Limits: English, Publication Date from 2001
EPIDEMIOLOGY	
#3	#2 AND "Diabetes Mellitus, Type 2/epidemiology"[Majr] AND ("Morbidity"[Mesh] OR "Incidence"[Mesh] OR "Prevalence"[Mesh] OR "morbidity"[Title] OR "incidence"[Title] OR "prevalence"[Title] OR "Hypertension/epidemiology"[Majr] OR "Obesity/epidemiology"[Majr]) Limits: English, Publication Date from 2001
COMPLICATIONS	
#4	#2 AND ("Diabetic Angiopathies"[Majr] OR "vascular"[Title] OR "microvascular"[Title] OR "macrovascular"[Title] OR "coronary artery disease"[Title] OR "heart disease"[Title] OR "Diabetic Retinopathy"[Majr] OR eye*[Title] OR "Diabetic Nephropathies"[Majr] OR polyneuropath*[Title] OR "renal"[Title] OR kidney*[Title] OR "Diabetic Cardiomyopathies"[Majr] OR "cardiovascular"[Title] OR heart attack*[Title] OR myocardial infarction*[Title] OR stroke*[Title] OR "Diabetic Foot"[Majr] OR "diabetic foot"[Title]) Limits: English, Publication Date from 2001
#5	#2 AND ("Diabetes Mellitus, Type 2/complications"[Majr] OR "Diabetes Complications"[Majr]) AND "Review"[Publication Type] Limits: English, Publication Date from 2001
CLINICAL OUTCOMES	
#6	#2 AND "Diabetes Mellitus, Type 2/drug therapy"[Mesh] AND "Clinical Trial"[Publication Type] Limits: English, Publication Date from 2001
#7	#2 AND ("Clinical Trials as Topic"[Majr] OR systematic[sb]) Limits: English, Publication Date from 2001
#8	#2 AND ("Clinical Trial"[Publication Type] OR "Clinical Trials as Topic"[Mesh]) AND ("ACCORD"[Text Word] OR "ADOPT"[Text Word] OR "ADVANCE"[Text Word] OR "DPP"[Text Word] OR "DREAM"[Text Word] OR "DURATION 3"[Text Word] OR "KORA"[Text Word] OR "PROACTIVE"[Text Word] OR "QUARTET"[Text Word] OR "RECORD"[Text Word] OR "UKPDS"[Text Word] OR "VA"[Text Word] OR "VADT"[Text Word] OR "sitagliptin"[Text Word]) Limits: English, Publication Date from 2001
COMBINED SEARCHES WITH LIMITS	
#9	(#3 OR #4 OR #5 OR #6 OR #7 OR #8) Limits: English, Publication Date from 2001
#10	"Animals"[Mesh] NOT "Humans"[Mesh] Limits: English, Publication Date from 2001
#11	"Comment"[Publication Type] OR "Letter"[Publication Type] OR "Editorial"[Publication Type] OR "Case Reports"[Publication Type] Limits: English, Publication Date from 2001
#12	#9 NOT (#10 OR #11) Limits: English, Publication Date from 2001

UPDATED EPIDEMIOLOGY SEARCH FEBRUARY 2012

Supplemental Table 2. Updated Epidemiology Search Strategy for PubMed (February 2012)

Search No.	Search Terms
DISEASE	
#1	"Diabetes Mellitus, Type 2"[Majr] OR "T2DM"[Title] OR "type 2 diabetes"[Title] Limits: English, Publication Date from 2001
RISK FACTORS, EPIDEMIOLOGY TERMS	
#2	#1 AND ("Hypertension"[Majr] OR "hypertension"[Title] OR "blood pressure"[Title] OR "Obesity"[Majr] OR "obesity"[Title] OR "obese"[Title]) Limits: English, Publication Date from 2001
EPIDEMIOLOGY	
#3	#2 AND ("Morbidity"[Mesh] OR "Incidence"[Mesh] OR "Prevalence"[Mesh] OR "morbidity"[Title] OR "incidence"[Title] OR "prevalence"[Title] OR "Hypertension/epidemiology"[Majr] OR "Obesity/epidemiology"[Majr]) Limits: English, Publication Date from 2001
SEARCHES WITH LIMITS	
#4	"Animals"[Mesh] NOT "Humans"[Mesh] Limits: English, Publication Date from 2001
#5	"Comment"[Publication Type] OR "Letter"[Publication Type] OR "Editorial"[Publication Type] OR "Case Reports"[Publication Type] Limits: English, Publication Date from 2001
#6	#3 NOT (#4 OR #5) Limits: English, Publication Date from 2001

Supplemental Table 3. Risk Criteria

Risk of Bias	Low	High	Unclear
Other bias: T2DM Exposure	Health care professional assesses patient or patient records for sufficiently high blood glucose, use of antidiabetic agents, age at diagnosis, or history of T2DM; patients attended a diabetes clinic and are described as having T2DM	Self-reported T2DM	Criteria for T2DM diagnosis not reported and patients were not attendees at a clinic or hospital
Other bias: Hypertension exposure	Health care professional measures blood pressure or queries patient or patient records for use of antihypertensive medications	Self-reported hypertension	History of hypertension without supporting blood pressure measurements or use of antihypertensive medications; Hypertension definition includes self-reported history *or* measures, with no indication of proportion with self-reported history only.
Other bias: Obesity exposure	Health care professional measures patient's weight, height, waist circumference, or waist-to-hip ratio	Self-reported obesity, no details reported on how this was determined	Patient measures body parameters and reports to health care professional; Obesity definition includes self-reported history *or* measures, with no indication of proportion with self-reported history only.

Supplemental Table 4. Bias Assessments

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Agha A, Dillon D, Corbett M, Sreenan S. Target blood pressure for patients with type 2 diabetes is difficult to achieve in the setting of a busy diabetes clinic. Ir J Med Sci. 2003 Oct;172(4):168-70.	"patients with type 2 diabetes attending our [Department of Endocrinology and Diabetes Mellitus] outpatient clinic" "for their annual review"	Low risk	"Hypertension was deemed to be present if the patient had a diagnosis of hypertension or if the mean of the last three recorded blood pressure readings were higher than 130/85 mmHg. Blood pressure measurements were performed by a diabetes nurse specialist with the patient sitting down using a semi-automated device. If the initial blood pressure value was over 130/85 mmHg a second measurement was performed 15 minutes later. The patients' anti-hypertensive therapy was recorded together with the duration of treatment."	Low risk	NA	NA
Aguilar-Salinas CA, Rojas R, Gómez-Pérez FJ, García E, Valles V, Ríos-Torres JM, et al. Prevalence and characteristics of early-onset type 2 diabetes in Mexico. Am J Med. 2002 Nov;113(7):569-74.	"Data are presented from the 14,069 participants from whom [blood] samples were obtained." "Diabetes was diagnosed in known cases if a random plasma glucose level was >200 mg/dL, or if fasting plasma glucose level was ≥126 mg/dL."	Low risk	"blood pressure was measured with the subject in the supine position after a 5-minute rest."	Low risk	"Height and body weight were measured on a calibrated device."	Low risk
Alebiosu CO, Odusan BO. Metabolic syndrome in subjects with type-2 diabetes mellitus. J Natl Med Assoc. 2004 Jun 1;96:817-21.	"Type-2 diabetic subjects were those who: 1) were treated with oral hypoglycemic agents only; 2) were treated with oral hypoglycemic agents only but required insulin during an acute illness; 3) whose diabetic state has been controlled on diet but previously on oral hypoglycemic agents; 4) have diabetes onset after the age of 40 years and a body mass index (BMI) above normal (≥25 kg/m2 in females and ≥27 kg/m2 in males)."	Low risk	"Blood pressure was measured by standard mercury sphygmomanometer after five minutes in supine position and recorded to the nearest 2 mmHg."	Low risk	"consecutive patients with type-2 diabetes…in both the medical outpatient department and the medical wards of the Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State, Nigeria were studied." "BMI was calculated as the ratio of weight (kilograms) to standing height (meters squared; kg/m2); participants with a BMI 30 kg m2 were classified as obese. To calculate waist-to-hip ratio (WHR), waist girth was measured at the umbilicus, and hip girth was measured as the largest diameter around the gluteal muscles."	Low risk
Alwakeel JS, Sulimani R, Al-Asaad H, Al-Harbi A, Tarif N, Al-Suwaida A, et al. Diabetes complications in 1952 type 2 diabetes mellitus patients managed in a single institution in Saudi Arabia. Ann Saudi Med. 2008 Jul-Aug;28(4):260-6.	"From the computer database of the Security Forces Hospital. All patients with the diagnosis of type 2 diabetes who were seen in clinics or admitted to the hospital and followed between January 1989 and January 2004 were extracted."	Low risk	"Hypertension was based on a preexisting history of hypertension and measurement of BP where systolic BP was considered an SBP>130 mm Hg and/or a DBP >80 mm Hg"	Low risk	"Body mass index (BMI) was calculated from the formula weight (kg)/height (m^2), with a value from 25 to >30 considered overweight and a value≥30 considered obese."	Low risk
Babes EB, Babes V, Ofrim D, Toadree A. Prevalence and prognostic significance of silent myocardial ischemia in diabetic patients with and without hypertension. Arch Balk Med Union. 2009 Sep 1;44:210-4.	Appears determined by healthcare professional: "This was a prospective transversal study performed on 196 patients with type 2 diabetes and no history or symptoms for coronary heart disease." "The following information were recorded at baseline: age, sex, duration of diabetes, smoking status, diabetes treatment, body mass index, blood pressure measurement and ambulatory blood pressure monitoring, blood testing for: glycated hemoglobin..."	Low risk	"Hypertension was defined according to JNC VII > 140/90 mmHg. We performed three measurements and we considered median values. Blood pressure monitoring on 24 hours was performed at intervals of 30 minutes by day and 60 minutes by night. Hypertension was defined according to ESH guidelines as median values on 24 hours > 125/80 mmHg."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Bacci S, Rizza S, Prudente S, Spoto B, Powers C, Facciorusso A, et al. The ENPP1 Q121 variant predicts major cardiovascular events in high-risk individuals: evidence for interaction with obesity in diabetic patients. Diabetes. 2011 Mar;60(3):1000-7.	"The study included 340 whites from Italy with type 2 diabetes (according to American Diabetes Association 2003 criteria)..." "All subjects underwent a clinical examination..." "A fasting blood sample (collected between 8:00 A.M. and 9:00 A.M.) was obtained form the prospective study participants..."	Low risk	"All subjects underwent a clinical examination and a standardized interview (at the time of recruitment and at each subsequent timepoint, if applicable)..." "Presence of hypertension was defined as a systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥85 mmHg or both, or the presence of antihypertensive treatment."	Low risk	NA	NA
Bener A, Zirie M, Al-Rikabi A. Genetics, obesity, and environmental risk factors associated with type 2 diabetes. Croat Med J. 2005 Apr 1;46:302-7.	"This was a case-control study, designed to determine the relationship between type 2 diabetes, genetic factors, and life-style risk factors among the adult Qatari population between 25 and 65 years of age." "Persons were classified as diabetics if their venous blood glucose values were ≥7.0 mmol/L or if they were currently taking diabetic medication." "In the present study, most [53.8%] patients with type 2 diabetes mellitus were found to be obese."	Low risk	NA	NA	"Height and weight were measured using standardized methods; the participants wore light clothes and no shoes for this part of the examination. The BMI was calculated as weight in kilograms (with 1 kg subtracted to allow for clothing) divided by height in meters squared."	Low risk
Bianchi C, Penno G, Malloggi L, Barontini R, Corfini M, Giovannitti MG, et al. Non-traditional markers of atherosclerosis potentiate the risk of coronary heart disease in patients with type 2 diabetes and metabolic syndrome. Nutr Metab Cardiovasc Dis. 2008 Jan 1;18:31-8.	"A total of 1610 type 2 diabetic patients attending the Diabetes Clinic at the University Hospital of Pisa (Italy) from January 2001 through to December 2003 were evaluated." "At the time of the visit, a blood sample specimen was taken from each patient for laboratory analysis after 10-12 h overnight fasting..." "Glycated hemoglobin A1c (HbA1c) was assessed by HPLC ..."	Low risk	After collecting information on demography, personal and familial history, and lifestyle, each patient underwent careful physical examination." "...blood pressure was measured with a standard mercury sphygmomanometer with the patient in a recumbent position, and calculated as the mean value from two independent readings."	Low risk	"...each patient underwent careful physical examination. This included measuring body weight, and waist circumference at the level of umbilicus."	Low risk
Bosevski M, Pemovska G, Bosevska G, Georgievska-Ismail L. Clinical role of estimation metabolic syndrome's components in type 2 diabetic population with symptomatic coronary artery disease—a comparison of two criteria. Med Arh. 2010 Aug 27;64:144-6.	Population source not stated but data appear to be based on clinical examinations: "Three hundred and twenty seven (327) pts with type 2 diabetes (T2D) and manifested coronary artery disease (CAD), were randomly included in a survey. Type 2 diabetes was defined based on the criteria of International Diabetes Federation." "The values of fasting venous glucose concentration were evaluated..."	Low risk	"Blood pressure was measured with a standard sphygmomanometer in a sitting position and presented as a mean value of two readings (in mmHg)."	Low risk	"Anthropometric measurements were made with patient wearing lightweight clothing and no shoes. Waist and hip circumferences were measured by a plastic tape meter at the level of the umbilicus and of the major trochanter."	Low risk
Bunnag P, Plengvidhya N, Deerochanawong C, Suwanwalaikorn S, Kosachunhanun N, Benjasuratwong Y, et al. Thailand Diabetes Registry Project: prevalence of hypertension, treatment and control of blood pressure in hypertensive adults with type 2 diabetes. J Med Assoc Thailand. 2006 Aug 1;89:S72-S77.	Patients were identified from a "hospital-based diabetes registry." "Only adults aged 18 years or older with type 2 diabetes were included in the present study."	Low risk	"Blood pressure was measured twice, at least 1 minute apart, by automated blood pressure machine (Omron T4). Mean values of both systolic and diastolic blood pressure were used to define blood pressure levels."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Chan G-C. Type 2 diabetes mellitus with hypertension at primary healthcare level in Malaysia: Are they managed according to guidelines? Singapore Med J. 2005 Mar 1;46:127‑31.	"There are 11 government health clinics providing primary healthcare, including diabetes and hypertension treatment, in the district and all of them were involved in this study." "A total of 517 patients with diabetes mellitus from various ethnic groups were enrolled in this study. All of them had type 2 diabetes mellitus, and four of them were on an adjunctive insulin regimen."	Low risk	"The standard mercury sphygmomanometer (Accoson Works, London, England) was used with an appropriately-sized cuff on the right arm of the patient who was adequately rested for at least five minutes and seated with the arm supported at his/her heart level. The systolic BP (Korotkoff phase 1) and diastolic BP (Korotkoff phase 5) were recorded." "The patients had an average of at least two readings taken two minutes apart, and the reading was rounded to 2 mmHg. Initial elevated blood pressure readings would be confirmed on at least two subsequent visits over one week or more. Patients with suspected white-coat hypertension would be referred for ambulatory blood pressure monitoring."	Low risk	NA	NA
Chen XY, Thomas GN, Chen YK, Chan JC, Wong KS. Atherosclerotic vascular disease rather than metabolic syndrome predicts ischemic stroke in diabetic patients. Cerebrovasc Dis. 2010 Sep 1;30:374‑9.	"All 2,348 consecutive, type 2 diabetic patients, recruited from the diabetes clinic at the Prince of Wales Hospital, were unrelated and gave written informed consent."	Low risk	"Measurement of seated blood pressure and anthropometric (waist circumference and body mass index) and plasma biochemical (lipid and glycemic profiles) parameters taken after an overnight fast were performed as described in detail by Thomas et al. [8] ."	Low risk	NA	NA
Choukem SP, Kengne AP, Dehayem YM, Simo NL, Mbanya JC. Hypertension in people with diabetes in sub-Saharan Africa: revealing the hidden face of the iceberg. Diabetes Res Clin Pract. 2007 Aug;77(2):293‑9.	"Classification of diabetes as type 1 or type 2 was based on clinical arguments of probability. The latest WHO criteria [23] were used as diagnostic tool for the entire study. Control of diabetes was assessed on fasting capillary glucose (FCG) obtained using automated glucometer..."	Low risk	"Blood pressure was measured on the right arm following the British Hypertension Society guidelines [25] using the automated OMRON1 HEM-711 (OMRON Healthcare, Inc., USA). The average of two readings taken 5 min apart was considered."	Low risk	NA	NA
Comaschi M, Coscelli C, Cucinotta D, Malini P, Manzato E, Nicolucci A. Cardiovascular risk factors and metabolic control in type 2 diabetic subjects attending outpatient clinics in Italy: the SFIDA (survey of risk factors in Italian diabetic subjects by AMD) study. Nutr Metab Cardiovasc Dis. 2005 Jun;15(3):204‑11.	"Each DOC [Diabetes Outpatient Clinic] had to recruit, among those attending the center for a routine visit, and using random sampling lists, from 50 to 100 type 2 diabetic patients aged 35-70 years, diagnosed more than six months before the start of the study." "Lastly, blood and urine specimens were collected, in order to determine fasting blood glucose (FBG), HbA1c..."	Low risk	"Participating clinicians had to fill in a data sheet for each patient, containing information about medical history, diabetes micro- and macrovascular complications, clinical status, and the results of an accurate physical exam (BMI kg/m2, waist circumference, blood pressure measured according to ISH/WHO guidelines)."	Low risk	"Participating clinicians had to fill in a data sheet for each patient, containing information about medical history, diabetes micro- and macrovascular complications, clinical status, and the results of an accurate physical exam (BMI kg/m2, waist circumference, blood pressure measured according to ISH/WHO guidelines)."	Low risk
Daousi C, Casson IF, Gill GV, MacFarlane IA, Wilding JP, Pinkney JH. Prevalence of obesity in type 2 diabetes in secondary care: association with cardiovascular risk factors. Postgrad Med J. 2006 Apr;82(966):280‑4.	"The study population comprised 3637 patients identified from the hospital electronic diabetes register. This register includes all routinely collected demographic and clinical data of adult patients who attend the diabetes clinic of a large secondary care hospital for their annual review." Data for T1DM and T2DM were presented separately.	Low risk	NA	NA	"A standard set of information is collected on all patients attending the diabetes clinic." "height, and weight are measured, and body mass index (BMI) is calculated (BMI=w/h^2; w=weight in kg, h=height in m)."	Low risk
Dehout F, Haumont S, Gaham N, Amoussou-Guenou K, Hermans MP. Metabolic syndrome in Bantu subjects with type 2 diabetes from sub-Saharan extraction. Prevalence, gender differences and HOMA hyperbolic product. Diabetes Metab Syndr Clin Res Rev. 2008 Feb 1;2:5-11.	"The study was a cross-sectional analysis of 454 consecutive adult (>18 years) outpatients with T2DM, defined according to the Expert Committee on the Diagnosis and Classification of Diabetes [12]"	Low risk	"All subjects underwent a non-invasive combined assessment of insulin sensitivity and b-cell function…" "The following parameters were also recorded: age, gender, body mass index (BMI), waist circumference…"	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
del Cañizo-Gómez FJ, Moreira-Andrés MN. Cardiovascular risk factors in patients with type 2 diabetes. Do we follow the guidelines? Diabetes Res Clin Pract. 2004 Aug;65(2):125-33.	"in treated type 2 diabetic patients who live in a district of Madrid, Spain, and attendant at our outpatient clinic of Endocrinology for routine follow-up." "In addition to routine ingredients, FPG, HbA1C, HDL-C, LDL-C and TG, were measured in all of the subjects after an overnight fast."	Low risk	"SBP and DBP were measured in all patients after 10 min rest using a standard brachial cuff technique."	Low risk	"The patients weight and height were measured to the nearest 0.1 kg and 0.1 cm, respectively. BMI was calculated as weight divided by square height (kg/m^2)."	Low risk
Dhobi GN, Majid A, Masoodi SR, Bashir MI, Wani AI, Zargar AH. Prevalence of hypertension in patients with new onset type 2 diabetes mellitus. J Indian Med Assoc. 2008 Feb;106(2):92,94-2,98.	"This study was conducted to assess the prevalence of hypertension in patients with newly diagnosed type 2 DM..."	Low risk	"Blood pressure was measured in all subjects according to the recommendations of Seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure."	Low risk	NA	NA
Echouffo-Tcheugui JB, Sargeant LA, Prevost AT, Williams KM, Barling RS, Butler R, et al. How much might cardiovascular disease risk be reduced by intensive therapy in people with screen-detected diabetes? Diabetic Med. 2008 Dec 1;25:1433-9.	"Individuals with a [diabetes] risk score >0.17...were invited for random capillary blood glucose (RBG) and glycated haemoglobin (HbA1c) testing. Participants with a RBG ≥11.1 mmol/l were invited for a standard 75 g oral glucose tolerance test (OGTT). Those with a RBG 5.5– 11.0 mmol/l were invited to return to the practice for a fasting capillary blood glucose (FBG) test. Those with a FBG ≥6.1 mmol/l, or a FBG 5.5–6.0 mmol/l and HbA1c of ≥6.1%, were invited for a standard 75 g OGTT. Diagnosis of diabetes was based on the 1999 World Health Organization criteria."	Low risk	Hypertension definition includes self-report. No indication of percentage of population with only self-reported hypertension. "Blood pressure was calculated as the mean of three measurements performed while sitting after a 10-min rest with an Omron M4® recorder. Hypertension was defined as systolic blood pressure (SBP) ≥135 mmHg or diastolic blood pressure (DBP) ≥85 mmHg, or self-reported history of hypertension, or prescription of antihypertensive therapy.	Unclear risk	NA	NA
El-Hazmi MAF, Warsy AS. Association of hypertension and non-insulin-dependent diabetes mellitus in the Saudi population. Ann Saudi Med. 2001 Dec 11;21:5-8.	"Fasting blood sample was extracted by venipuncture from all adults..." "Each adult individual was given orally a load of 75 g glucose in 200-300 mL of water... A two-hour postglucose load blood sample was taken and immediately analyzed using the glucometer." "The diagnosis of DM was based on WHO criteria as follows: fasting venous blood glucose ~6.7 mmol/L (>120 mgldL) and/or two-hour postglucose load ~10.0 mmol/L (>180 mg/dL). Differentiation between IDDM and NIDDM was made based on age of onset and mode of treatment. For people with IDDM, the disease presented at a younger age (<25 years) and required continuous use of insulin following diagnosis to maintain their glucose level in the normal range."	Low risk	"Systolic and diastolic blood pressure were recorded using the standard method. The recording was made when the individual was in a sitting position ...Two readings of blood pressure were recorded at 3-and 5-minute intervals and the second of the two readings was recorded on the form."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Ezenwaka CE, Nwagbara E, Seales D, Okali F, Hussaini S, Raja B, et al. A comparative study of the prevalence of the metabolic syndrome and its components in type 2 diabetic patients in two Caribbean islands using the new International Diabetes Federation definition. Arch Physiol Biochem. 2007 Oct-Dec;113(4-5):202-10.	"Four hundred and thirteen (166 Tobago, 247 Trinidad) type 2 diabetic patients visiting ten (eight Tobago, two Trinidad) lifestyle disease clinics at primary care settings in Tobago and Trinidad participated in the study. Patients were considered as type 2 diabetic patients if they had been managed on oral hypoglycaemic medication and/or diet/exercise since diagnosis or patients who use insulin in addition to tablets to control hyperglycaemia." "...a fasting blood sample was collected from each patient" [for plasma glucose].	Low risk	"To standardize the protocol, the clinic nurse took the blood pressure of all the patients on arrival after about 10 min rest. The systolic (first phase) and diastolic (fifth phase) blood pressure (sBP, dBP) were taken on the dominant arm in a sitting position using a standard semi-automated sphygmomanometer with adult cuff-size... None of the patients studied required adjustment of the sphygmomanometer cuff, thus the same cuff size was used for all patients."	Low risk	"Consistent with previous studies (Ezenwaka et al., 1997, 2002) waist circumference (cm), at the level of the umbilicus with the patient standing and breathing normally, was obtained by tape measure; weight (kg) using a standard hospital balance and height (m), using a metal rule, were measured (in light clothing, without shoes)."	Low risk
Ezenwaka CE, Offiah NV. Abdominal obesity in type 2 diabetic patients visiting primary healthcare clinics in Trinidad, West Indies. Scand J Prim Health Care. 2002 Sep 1;20:177-82.	"One-hundred-and-ninety type 2 diabetic patients visiting two primary care clinics in Trinidad participated" "A fasting blood sample was taken from each patient and processed for glucose, glycated haemoglobin, insulin and lipid measurements."	Low risk	"After 10 min rest, blood pressures were taken on the dominant arm in a sitting position, using a standard mercury gauge sphygmomanometer."	Low risk	"Weight (kg) was taken with a standard hospital balance, and height (m), in light clothing without shoes, was measured with a metal rule."	Low risk
Ezenwaka CE, Offiah NV. Cardiovascular risk in obese and nonobese patients with type 2 diabetes in the West Indies. J Biomed Sci. 2001 Jul;8(4):314-20.	"The study was conducted between January and April 2000, and 190 patients (64 men, 126 women) with type 2 diabetes constituting over 85% of the diabetic patients visiting outpatient clinics at Arima and Chaguanas within this period participated in the study." "The patients came to the primary health care centers in the morning (7.00–8.00 a.m.) after a 12 to 14-hour overnight fast." "A 10-ml venous blood sample was taken from each patient... (for plasma glucose measurement... glycated hemoglobin; HbA1c)"	Low risk	"After a 10-min rest, systolic (first-phase) and diastolic (fifth-phase) blood pressures (BP) were taken on the dominant arm in a sitting position, using a standard mercury-gauge sphygmomanometer"	Low risk	"Waist circumference (cm) at the level of the umbilicus with the patient standing and breathing normally and hip circumference (cm) at the level of the largest projection of the buttocks were obtained using a tape measure, while weight (kg) was determined with a standard hospital balance and height (m) with a metal rule (all in light clothing, without shoes)."	Low risk
Fasanmade OA, Okubadejo NU. Magnitude and gender distribution of obesity and abdominal adiposity in Nigerians with type 2 diabetes mellitus. Niger J Clin Pract. 2007 Mar;10(1):52-7.	"This study was conducted in the diabetes out-patients clinic of the Lagos university Teaching Hospital, Lagos, Nigeria. Consecutively attending persons with type 2 DM were recruited into the study."	Low risk	NA	NA	"Weight (kilograms) was measured to the nearest O.5 kg in the fasting state (with only light clothing) using an electronic weighing scale, while height (meters) was measured without shoes using a stadiometer. Waist circumference (WC) was measured to the nearest centimeter (cm) at the umbilicus, while hip circumference (HC) was measured (centimeters) at the widest diameter of the hips, using a non-stretch linear tape."	Low risk
Foucan L, Deloumeaux J, Donnet JP, Bangou J, Larifla L, Messerchmitt C, et al. Metabolic syndrome components in Indian migrants with type 2 diabetes. A matched comparative study. Diabetes Metab. 2006 Sep;32(4):337-42.	"Group 1 were Indian subjects who were known T2D taking oral hypoglycaemic treatment or had T2D diagnosed at the time of the initial epidemiological study [6]. Subjects receiving insulin treatment were excluded." [Groups 2 and 3 were nondiabetics.]	Low risk	"Systolic (SBP) and diastolic (DBP) blood pressure were assessed with automated monitors."	Low risk	"WC was taken, with participants standing, above the iliac crests and below the lowest rib margin at minimal respiration. The measurements were made by trained nurses. Body mass index (BMI) was calculated as weight/height^2 (Kg/m^2)."	Low risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Hanefeld M, Koehler C, Gallo S, Benke I, Ott P. Impact of the individual components of the metabolic syndrome and their different combinations on the prevalence of atherosclerotic vascular disease in type 2 diabetes: The Diabetes in Germany (DIG) study. Cardiovasc Diabetol. 2007 Apr 26;6:13.	"Two hundred and thirty eight practices (79 in big cities, 110 in small towns and 49 in rural areas), that represent a cross section of daily practice diabetes care in Germany, took part in the study." "Inclusion criteria were clinical T2DM and age between 35 and 80 years."	Low risk	"Body mass index (BMI) and blood pressure were measured according to a standard protocol and all laboratory measurements were done by local laboratories that held a quality control certification."	Low risk	"Body mass index (BMI) and blood pressure were measured according to a standard protocol and all laboratory measurements were done by local laboratories that held a quality control certification."	Low risk
Hassing LB, Hofer SM, Nilsson SE, Berg S, Pedersen NL, McClearn G, et al. Comorbid type 2 diabetes mellitus and hypertension exacerbates cognitive decline: evidence from a longitudinal study. Age Ageing. 2004 Jul;33(4):355–61.	"Medical records for the period 1985–1998 were ordered from hospitals, outpatient clinics, district physicians, and primary health care centers…" "A physician (co-author Sven E. Nilsson) made a concurrent review of (i) medical records, including reported medical history; (ii) medicine use; and (iii) self-reported information about diseases. An independent 2nd opinion on classification performed by another physician in a 20% subsample produced only marginal amendment." "The conditions of interest for subsequent analyses are ... type 2 diabetes mellitus (diagnosed using the 1980 WHO criteria when diagnostic level for venous whole blood glucose was 6.7 mmol/l [21]"	Low risk	[Review of medical records plus; see T2DM exposure column] "The conditions of interest for subsequent analyses are hypertension (which was diagnosed in cases where either the records contained information of specific hypertension treatment, or in cases with more than one diastolic value of at least 95mmHg or systolic value higher than 160mmHg)..."	Low risk	NA	NA
Hermans MP, Amoussou-Guenou KD, Ahn SA, Rousseau MF. Impact of metabolic syndrome and its severity on microvascular complications in type 2 diabetes. Diabetes Metab Syndr Clin Res Rev. 2010 Sep 20;4:150–4.	"...we analyzed a well-phenotyped T2DM cohort with (MetS (+)) or without MetS (MetS (–))..." "The study design was cross-sectional and included 738 consecutive adult, >90% white Caucasian patients with T2DM defined according to the Expert Committee on the Diagnosis and Classification of Diabetes [7]."	Low risk	"...we analyzed a well-phenotyped T2DM cohort with (MetS (+)) or without MetS (MetS (–))..." "Hypertension prevalence was defined as systolic BP ≥ 140 mm Hg and/or diastolic BP ≥ 90 mm Hg and/or current treatment with BP-lowering drug(s) prescribed for treating high BP."	Low risk	NA	NA
Higgins GT, Khan J, Pearce IA. Glycaemic control and control of risk factors in diabetes patients in an ophthalmology clinic: what lessons have we learned from the UKPDS and DCCT studies? Acta Ophthalmol Scand. 2007 Nov;85(7):772–6.	"We prospectively assessed 44 consecutive diabetes patients attending outpatient clinics at a large teaching hospital for assessment of diabetic retinopathy over a 1-month period." [Data are presented separately for T1DM and T2DM.]	Low risk	"We prospectively assessed 44 consecutive diabetes patients attending outpatient clinics..." "Each patient underwent checks on HbA1c levels, serum cholesterol and blood pressure (BP). A proforma was completed for each patient, recording whether he/she was taking antihypertensive medication…"	Low risk	NA	NA
Hillier TA, Fosse S, Balkau B, Simon D, Eschwege E, Fagot-Campagna A. Weight, the metabolic syndrome, and coronary heart disease in type 2 diabetes: associations among a national French sample of adults with diabetes-the ENTRED study. J Cardiometab Synd. 2006;1(5):318–25.	"Age inclusion criteria for this analysis was 30-79 years because, in France, nearly all diabetes diagnoses in persons younger than 30 is still type I..." "We further classified adults as having T2DM by the following algorithm: (I) adults who filled a prescription for oral hypoglycemic agents-but not insulin (both tracked by the NHIS database for medication dispenses); (2) adults with diabetes onset at age 45 or older as presumed to be T2DM even if using insulin; and (3) adults with diabetes onset between age 30-44 were only classified as T2DM if insulin therapy began 2 or more years after diagnosis."	Low risk	NA	NA	**Self-report:** "ENTRED participants reported their current weight and height, which were used to calculate BMI (kg/m^2). They also reported information about ... medical diagnoses by a physician, including hypertension…"	High risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Hu G, Jousilahti P, Tuomilehto J. Joint effects of history of hypertension at baseline and type 2 diabetes at baseline and during follow-up on the risk of coronary heart disease. Eur Heart J. 2007 Dec;28(24):3059-66.	Some proportion of self-reported T2DM: "A self-administered questionnaire was sent to the participants to be completed at home." "Subjects who reported having diabetes on the questionnaire, or who had had a hospital discharge diagnosis of diabetes, or the approval for free-of-charge medication for diabetes before the baseline survey were classified as having history of diabetes at baseline. Subjects who had the first hospital discharge diagnosis with diabetes, or the approval for free-of-charge medication for diabetes after the baseline survey were classified as having incident diabetes during follow-up."	Unclear risk	Some proportion of self-reported hypertension: Self-report: "ENTRED participants reported their current weight and height, which were used to calculate BMI (kg/m2). They also reported information about ... medical diagnoses by a physician, including hypertension..."Hypertension stage I was defined as systolic blood pressure 140–159 mmHg and/or diastolic blood pressure 90–94 mmHg, or using antihypertensive medicine according to the questionnaire or the approval of special reimbursement for antihypertensive drugs before the baseline survey but blood pressure at the survey examination <160 mmHg systolic and <95 mmHg diastolic. Hypertension stage II was defined as systolic blood pressure ≥160 mmHg and/or diastolic blood pressure ≥95 mmHg."	Unclear risk	NA	NA
Hu G, Sarti C, Jousilahti P, Peltonen M, Qiao Q, Antikainen R, et al. The impact of history of hypertension and type 2 diabetes at baseline on the incidence of stroke and stroke mortality. Stroke. 2005 Dec;36(12):2538-43.	Some proportion of self-reported T2DM: "A self-administered questionnaire was mailed to the participants in advance." "Subjects who reported having diabetes on the questionnaire or had diabetes included among hospital discharge diagnoses or had the approval for free-of-charge medication for diabetes before the baseline survey were classified as having diabetes."	Unclear risk	Some proportion of self-reported hypertension: "A self-administered questionnaire was mailed to the participants in advance." "Hypertension stage I was defined as blood pressure 140 to 159 and/or 90 to 94 mm Hg and without any antihypertensive drugs treatment at baseline. Hypertension stage II was defined as blood pressure 160/95 mm Hg or use of antihypertensive medicine based on the questionnaire or on the approval of special reimbursement for antihypertensive drugs before the baseline survey."	Unclear risk	NA	NA
Ikem RT, Akinola NO, Balogun MO, Ohwovoriole AE, Akinsola A. What does the presence of hypertension portend in the Nigerian with non insulin dependent diabetes mellitus. West Afr J Med. 2001 Apr-Jun;20(2):127-30.	"All consecutive patients seen over a six month period at the medical outpatient department of Obafemi Awolowo University Teaching Hospitals Complex Ile-Ife. and diagnosed NIDDM by the WHO criterial were studied."	Low risk	"Blood pressure was taken at rest in supine position with mercury sphygmomanometer (Cuff size 12cm by 25cm) and patients were considered hypertensive if their blood pressure was > 140/90 mmHg on three consecutive clinic visits or if patients were on treatment for hypertension."	Low risk	"The patients age, sex, height and weight were obtained and recorded and Body Mass Index (BMI) was calculated..."	Low risk
Isezuo SA, Ezunu E. Demographic and clinical correlates of metabolic syndrome in native African type-2 diabetic patients. J Natl Med Assoc. 2005 Apr 1;97:557-63.	"Diabetes mellitus was diagnosed using the World Health Organization (WHO) diagnostic criteria. A diabetic with no record of ketosis and on oral hypoglycemic drugs and/or a diabetic diet was considered to have type-2 diabetes mellitus."	Low risk	"Sitting blood pressure was measured with aneroid mercury sphygmomanometer (Accoson), size 13.5 x 103 cm, using the patient's nondominant arm and after 10 minutes of rest. Three readings were taken, and the average of the last two was taken as the blood pressure. Systolic blood pressure (Korotkoff phase I) of≥140 mmHg and/or diastolic blood pressure (Korotkoff phase V) of ≥90 mmHg or antihypertensive medications were required to make a diagnosis of systemic hypertension.	Low risk	"Anthropometric indices, including weight, height, waist and hip circumferences were measured with patients lightly clothed and without shoes."	Low risk
Janghorbani M, Amini MD. Metabolic syndrome in type 2 diabetes mellitus in Isfahan, Iran: Prevalence and risk factors. Metab Syndr Relat Disord. 2007 Sep 1;5:243-54.	Between 1992 and 2004, a total of 9897 T2DM were registered in the system" [Isfahan Endocrinology and Metabolism Research Centre outpatient clinics].	Low risk	"Blood pressure was measured by standardized protocols, and hypertension was defined based on the criteria of the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7). According to this protocol, systolic and/or diastolic blood pressure 130/85 mmHg and/or the current use of antihypertensive medication in diabetes diagnosed as hypertension."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Jimenez-Corona A, Rojas R, Gomez-Perez FJ, Aguilar-Salinas CA. Early-onset type 2 diabetes in a Mexican survey: results from the National Health and Nutrition Survey 2006. Salud Publica Mex. 2010 Nov 22;52 Suppl 1:S27-S35.	Some proportion self-reported T2DM: "A general structured interview was conducted. A previously standardized questionnaire was used to obtain information on ... personal medical history..." "Diabetes was considered present in previously diagnosed cases or if a fasting plasma glucose was equal or greater than 126 mg/dl. In the early-onset type 2 diabetes group were included cases diagnosed between ages 20 and 40 years."	Unclear risk	"In the same visit, anthropometric and blood pressure measurements were obtained. Systolic (1st-phase) and diastolic (5th-phase) blood pressures were measured to the nearest even digit with a sphygmomanometer with the subject in the supine position after a 5 minutes rest using a mercurial sphygmomanometer." "Blood pressure was measured twice in two different visits if the initial measurement was ≥ 120/80."	Low risk	"In the same visit, anthropometric and blood pressure measurements were obtained...Participants removed their shoes and upper garments. Height was measured to the nearest 0.5 cm using a stadiometer. Body weight was measured on a daily calibrated digital balance and recorded to the nearest 0.1 Kg."	Low risk
Kabakov EN, Norymberg C, Osher E, Koffler M, Tordjman K, Greenman Y, Stern N, et al. Prevalence of hypertension in type 2 diabetes mellitus: impact of the tightening definition of high blood pressure and association with confounding risk factors. J Cardiometab Syndr. 2006 Mar 1;1:95‑101.	3 cohorts from 3 diabetes clinics: "The following criteria were applied for inclusion in this study...unequivocal evidence of diabetes mellitus, absence of evidence suggestive of type I diabetes or diabetes secondary to endocrinopathy"	Low risk	3 cohorts from 3 diabetes clinics: "The following criteria were applied for inclusion in this and clear documentation of pretreatment BP as recorded in the patient's chart by one of the authors participating in this survey. Although retrospective in nature, this analysis is based on a similar practice of BP measurement confirmed by the participating authors, which includes the use of sphygmomanometry following 5 minutes in the sitting position, on three separate occasions, with an average of two measurements recorded for each visit."	Low risk	NA	NA
Khuwaja AK, Rafique G, White F, Azam SI. Macrovascular complications and their associated factors among persons with type 2 diabetes in Karachi, Pakistan—a multi-center study. J Pak Med Assoc. 2004 Feb;54(2):60‑6.	"All persons with Type 2 diabetes (previously referred to as non-insulin-dependent diabetes) attending these clinics for a follow-up visit during the study period (November 2000-April 2001) were included in the study. However, persons suffering from Type I diabetes (previously encompassed by the term insulin-dependent diabetes), Gestational diabetes (any degree of glucose intolerance with first recognition during pregnancy) or with macrovascular disease(s) prior to diagnosis of Type 2 diabetes, were excluded."	Low risk	"Individuals were classified as hypertensive if they were previously diagnosed and currently on anti-hypertens1ve medication."	Low risk	NA	NA
Kim WY, Kim JE, Choi YJ, Huh KB. Nutritional risk and metabolic syndrome in Korean type 2 diabetes mellitus. Asia Pac J Clin Nutr. 2008a Jul 4;17 Suppl 1:47‑51.	"To document the nutritional risk and the MetS in T2DM, we studied 688 (356 males, 332 females) T2DM patients recruited from DM clinic in the Seoul area."	Low risk	"The MetS was identified according to The National Cholesterol Education Program-Adult Treatment Panel III (NCEP-ATP III) criteria ... blood pressure ≥130/85 mm-Hg..." "People on antihypertensive drug therapy were included in the category with raised blood pressure."	Low risk	Measures appear to be at clinic: "The MetS was identified according to The National Cholesterol Education Program-Adult Treatment Panel III (NCEP-ATP III) criteria ...and by applying the Asia-Pacific waist circumference (≥90 cm for men, and ≥80 cm for women)."	Low risk
Koehler C, Ott P, Benke I, Hanefeld M; DIG Study Group. Comparison of the prevalence of the metabolic syndrome by WHO, AHA/NHLBI, and IDF definitions in a German population with type 2 diabetes: the Diabetes in Germany (DIG) Study. Horm Metab Res. 2007 Sep;39(9):632‑5.	"Two hundred and thirty eight practices (79 in big cities, 110 in small towns and 49 in rural areas), that represent a cross section of daily practice diabetes care in Germany, took part in the study." "Inclusion criteria were clinical T2DM and age between 35 and 80 years."	Low risk	"Body mass index (BMI) and blood pressure were measured according to a standard protocol and all laboratory measurements were done by local laboratories that held a quality control certification."	Low risk	"Body mass index (BMI) and blood pressure were measured according to a standard protocol and all laboratory measurements were done by local laboratories that held a quality control certification."	Low risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Kramer H, Cao G, Dugas L, Luke A, Cooper R, Durazo-Arvizu R. Increasing BMI and waist circumference and prevalence of obesity among adults with Type 2 diabetes: the National Health and Nutrition Examination Surveys. J Diabetes Complications. 2010 Nov-Dec;24(6):368-74.	Large proportion of self-reported diabetes: "Diagnosed diabetes was defined as self-reporting a previous diagnosis of diabetes or sugar diabetes by a physician (or other health care professional for NHANES, 1999–2006). The surveys did not collect information on type of diabetes, but individuals with likely Type 1 diabetes (diagnosed with diabetes prior to age 30 and continuous users of insulin) were excluded..." "... undiagnosed diabetes was defined as a serum glucose value ≥126 mg/dl."	High risk	NA	NA	"Height (m) and weight (kg) were measured by trained staff during the standardized physical exam." "While participants were standing, waist circumference was measured to the nearest 0.1 cm at the high point of the iliac crest using a steel tape."	Low risk
Leitao CB, Canani LH, Kramer CK, Moehlecke M, Pinto LC, Ricardo ED, et al. Blood pressure means rather than nocturnal dipping pattern are related to complications in type 2 diabetic patients. Diabet Med. 2008 Mar;25(3):308-13.	"A cross-sectional study was performed on a cohort of 270 patients with Type 2 DM who have been followed since 1994 in the outpatient clinic at Hospital de Clínicas de Porto Alegre. The inclusion criteria were the diagnosis of Type 2 DM (>30 years of age at onset of DM, no previous episode of ketoacidosis or documented ketonuria and treatment with insulin begun a minimum of 5 years after diagnosis)."	Low risk	"BP measurements were performed 1 week after withdrawal of all anti-hypertensive medications. The mean of two office BP examinations, measured with a mercury sphygmomanometer using the left arm and with the patient in a sitting position, after a 5-min rest, on the same day of ABPM, was considered for the analyses. Hypertension was defined as BP levels at office evaluation ≥140/90 mm Hg on at least two occasions during a 6-month period and on the day of office and ABPM examination. ABPM was performed by oscillometry..."	Low risk	NA	NA
Lu B, Yang Y, Song X, Dong X, Zhang Z, Zhou L, et al. An evaluation of the International Diabetes Federation definition of metabolic syndrome in Chinese patients older than 30 years and diagnosed with type 2 diabetes mellitus. Metabolism. 2006 Aug;55(8):1088-96.	Self-reporting on questionnaire, but reviewed by clinicians; no details about the questions asked. Fasting blood glucose was measured but only means were reported. "Questionnaires were sent to every household in the 20 residential areas and were collected by primary care clinicians and endocrinologists to identify the history of diabetes."	Unclear risk	"Three readings of systolic and diastolic blood pressures of the patients were obtained, and the average of the last 2 measurements was used."	Low risk	The body height and weight of the subjects, wearing light clothing and without their shoes on, were measured on a health scale (Horse Head TS120, Shanghai, China). The body mass index was calculated as the weight in kilograms divided by the square of height in meters. Trained endocrinologists measured waist circumference at the umbilical level in the late exhalation phase while the subjects are standing using a calibrated plastic tape measure to the nearest 0.1 cm. Trained endocrinologists measured hip circumference at the point where the buttocks extended the maximum using a calibrated plastic tape measure to the nearest 0.1 cm. Waist-to-hip ratio was calculated from waist circumference divided by hip circumference.	Low risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Makuyana D, Gomo Z, Munyombwe T, Matenga JA, Hakim JG. Metabolic syndrome disorders in urban black Zimbabweans with type 2 Diabetes mellitus. Cent Afr J Med. 2004 Mar-Apr;50(3-4):24-9.	"Adult diabetics at a tertiary hospital Diabetic Clinic were eligible to participate in the study. Young diabetics were not eligible in order to avoid patients with MODY (maturity-onset diabetes of the young), a subphenotype of type 2 diabetes mellitus. Type 2 diabetes was defined according to the World Health Organization (WHO) criteria in terms of resistance to insulin action and inadequate compensatory insulin secretory response. All patients who were undergoing a combination of diet and/or oral hypoglycaemic treatment for type 2 diabetes mellitus and gave their informed consent were recruited into the study." "Fasting venous blood was withdrawn from the participants...Plasma glucose concentration was determined...glycaeted haemoglobin including the A1c fraction..."	Low risk	"Blood pressure was measured in the sitting position using a mercury sphygmomanometer after a five minute rest. Disappearance of Korotkoff sounds (phase V) was taken as the diastolic blood pressure. Two readings were taken at one and a half minute intervals and the second reading used in the statistical analyses."	Low risk	"Height was measured to the nearest 0.1 cm using a stadiometer with a right angle and weight measurements up to the nearest 0.1 kg were done on a calibrated scale. The BMI was calculated from these parameters (weight in kg divided by height in meters squared)."	Low risk
Marchesini G, Forlani G, Cerrelli F, Manini R, Natale S, Baraldi L, et al. WHO and ATPIII proposals for the definition of the metabolic syndrome in patients with type 2 diabetes. Diabetic Med. 2004 Apr 1;21:383-7.	"In a 2-year period, we consecutively observed 1569 outpatients with Type 2 diabetes (WHO-ADA classification [9])."	Low risk	"Three blood pressure measurements were recorded at 1 min intervals using a mercury sphygmomanometer with the subject sitting, and the average of second and third readings were considered."	Low risk	"Anthropometry was measured by well-trained physicians with specific interests in obesity [11]."	Low risk
Marjani A. Prevalence of obesity among type 2 diabetes mellitus in Gorgan (South East of Caspian Sea), Iran. J Chin Clin Med. 2011 Feb 1;6:85-92.	"We had a study group that included 200 patients of type-2 diabetes mellitus [who were] referred to the Department of Diabetes Center..." "Type-2 diabetes mellitus was defined as non-ketosis diabetes by medical history and current treatment with oral agent..." "Administration of insulin for glycaemic control was considered an exclusion criterion." "A venous sample was collected from all the subjects who came after a 12 h overnight fast. Fasting blood sugar level was measured..."	Low risk	NA	NA	"Weight was then measured, while subjects were minimally clothed without shoes, using digital scales. Height was measured in standing position without shoes using tape meter while shoulder was in normal position." "Waist circumference was measured at the point halfway between the lower border of ribs and the iliac crest in a horizontal plane."	Low risk
Moehlecke M, Leitão CB, Kramer CK, Rodrigues TC, Nickel C, Silveiro SP, et al. Effect of metabolic syndrome and of its individual components on renal function of patients with type 2 diabetes mellitus. Braz J Med Biol Res. 2010 Jul 1;43:687–93.	"A cross-sectional study was conducted on type 2 DM outpatients from three general hospitals in the State of Rio Grande do Sul, Brazil..." "Type 2 DM was diagnosed in patients over 35 years of age and without the use of insulin during the first 5 years after diagnosis." "A clinical and laboratory evaluation was performed as previously reported..."	Low risk	"Patients underwent an interview and clinical examination to identify demographic and anthropometric data. Blood pressure (BP) was measured twice with a mercury sphygmomanometer, using the left arm and with the patient in a sitting position, after a 5-min rest."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Mubarak FM, Froelicher ES, Jaddou HY, Ajlouni KM. Hypertension among 1000 patients with type 2 diabetes attending a national diabetes center in Jordan. Ann Saudi Med. 2008 Sep-Oct;28(5):346-51.	"A quota sample of 1000 patients with type 2 diabetes was drawn from the population of type 2 diabetic patients attending the ambulatory outpatient clinic..." "The most recent biochemical data on HbA were obtained from medical records of participants that included an analysis of HbA1c..."	Low risk	"Blood pressure was measured using standardized sphygmomanometers ...with a cuff circumference of 24-32 cm to cover 80% of the upper arm (for obese patients a larger cuff circumference of 42-50 cm was used). A trained nurse performed the procedures while the subject was in a sitting position with the arm at the level of the heart and after 5 minutes rest." "The structured interview questionnaire was used to gather information ...about history of hypertension, use of antihypertensive medications..."	Low risk	"Anthropometric measurements including weight and height were measured by trained nursing staff. Weight was measured co the nearest 0.5 kg and height was measured to the nearest 0.5 cm."	Low risk
Mulnier HE, Seaman HE, Raleigh VS, Soedamah-Muthu SS, Colhoun HM, Lawrenson RA, et al. Risk of stroke in people with type 2 diabetes in the UK: a study using the General Practice Research Database. Diabetologia. 2006a Dec;49(12):2859-65.	"A cohort study was carried out using data from the General Practice Research Database (GPRD) in patients with Type 2 diabetes…The GPRD provides longitudinal anonymized patient data from general practices across the UK..." "we identified... all individuals aged 35 to 89 on 1 January 1992 (baseline). Patients with type 2 diabetes were identified using an algorithm based on age at diagnosis and type of treatment." Appears to be same research methods as above Mulnier study	Low risk	"All patients with a record of hypertension and/or atrial fibrillation before baseline were identified using appropriate codes."	Unclear risk	"BMI was calculated using available height and weight recordings closest to baseline. Patient records were reviewed to confirm apparent BMIs of <20 kg/m^2 or >50 kg/m^2."	Low risk
Mulnier HE, Seaman HE, Raleigh VS, Soedamah-Muthu SS, Colhoun HM, Lawrenson RA. Mortality in people with type 2 diabetes in the UK. Diabet Med. 2006b May;23(5):516-21.	"A cohort study was carried out using data from the General Practice Research Database (GPRD) in patients with Type 2 diabetes…The GPRD provides longitudinal anonymized patient data from general practices across the UK..." "All subjects present on the database on 1 January 1992 with a code or treatment for diabetes prior to this date were identified." "Patients with Type 1 or Type 2 diabetes were then distinguished using algorithms based on age at diagnosis, type of treatment and age at treatment. Patients with Type 2 diabetes were those who had a diagnosis of diabetes and were treated with diet only or with an oral hypoglycaemic agent, or if treated with insulin were aged 35 years or older at diagnosis. Those treated with insulin only and aged less than 35 years at diagnosis were deemed to have Type 1 diabetes. Those not selected by the Type 1 or Type 2 algorithms were considered indeterminate."	Low risk	NA	NA	"In the diabetes group, BMI was calculated where height and weight recordings were available. The readings closest to baseline were used. Where there was no recording of height or weight within 3 years of baseline, data were considered missing."	Low risk
Nakano S, Ito T, Furuya K, Tsuda S, Konishi K, Nishizawa M, et al. Ambulatory blood pressure level rather than dipper/nondipper status predicts vascular events in type 2 diabetic subjects. Hypertens Res. 2004 Sep;27(9):647-56.	"The study comprised 392 consecutive subjects with type 2 diabetes...who were initially admitted to our hospital from December 1988 to June 1998 and then followed in our outpatient clinic." "Type 2 diabetes was diagnosed according to the criteria of the World Health Organization."	Low risk	"Ambulatory 24-h SBP, DBP and mean arterial pressure (MAP) (oscillometric mode) recordings were performed using an automatic device, ABPM-630 ... under regular hospital conditions as previously described (7). A standard arm cuff was used for all ambulatory BP measurements. The BP measurement device used in this study has been validated previously..."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Nilsson PM, Cederholm J, Zethelius BR, Eliasson BR, Eeg-Olofsson K, Gudbj Rnsdottir S. Trends in blood pressure control in patients with type 2 diabetes: data from the Swedish National Diabetes Register (NDR). Blood Press. 2011 Dec;20(6):348-54.	"This study includes cross-sectional surveys of all female and male type 2 diabetic patients registered in the NDR [National Diabetes Register]" "Annual reporting to the NDR is carried out by trained physicians and nurses via the Internet or via clinical records databases, with information collected during patient visits at hospital outpatient clinics and primary health care centres nationwide." "The definition of type 2 diabetes was treatment with diet only, oral hypoglycaemic agents only, or onset age of diabetes ≥40 years and insulin only or combined with oral agents."	Low risk	"The Swedish standard for BP recording, used in the NDR, is the mean value (mmHg) of two supine readings (Korotkoff 1-5) with a cuff of appropriate size, after at least 5 min of rest. Hypertension was defined as untreated with BP ≥140/90 mmHg or on AHT [antihypertensive treatment]."	Low risk	NA	NA
Ogawa K, Ueda K, Sasaki H, Yamasaki H, Okamoto K, Wakasaki H, et al. History of obesity as a risk factor for both carotid atherosclerosis and microangiopathy. Diabetes Res Clin Pract. 2004 Dec;66 Suppl 1:S165-8.	"We studied 634 patients with type 2 diabetes mellitus, 361 male and 273 female, from our diabetic outpatient clinic. The mean age (S.D.) was 63.0 (11.5) years, the mean duration of diabetes was 16.3 (9.57) years and the mean hemoglobin A1c level was 7.4 (1.28)%."	Low risk	NA	NA	"We collected the following data on the patients from their clinical records: height, body weight, heaviest body weight…"	Low risk
Ogbera AO, Azenabor AO. Hyperuricaemia and the metabolic syndrome in type 2 DM. Diabetol Metab Syndr. 2010 Apr 20;2:24.	"The study population consisted of subjects with DM who were receiving care at the Lagos State University Teaching Hospital (LASUTH), and General Hospital Gbagada." "Inclusion criteria included having type 2 DM."	Low risk	"Case Report forms were interviewer administered to the study subjects in order to obtain information on... Hypertension and medications…" "All the study subjects underwent physical examination which included anthropometric and blood pressure measurements...Blood pressure measurement was done with a mercury sphygmomanometer."	Low risk	"All the study subjects underwent physical examination which included anthropometric and blood pressure measurements. The anthropometric measurements comprised of waist circumference, height and body weight, and the body mass index (BMI) was calculated as weight/height2 (kg/m2). Waist circumference was determined by applying a tape measure to the midpoint between the inferior margin of the last rib and the crest of the ilium."	Low risk
Poljicanin T, Pavlic-Renar I, Metelko Z. Obesity in type 2 diabetes: Prevalence, treatment trends and dilemmas <ORIGINAL> Pretilost u secernoj bolesti tipa 2: Prevalencija, trendovi u lijecenju i dileme. Coll Antropol. 2011 Dec 1;35:829-34.	"Data from outpatients regularly attending the Clinic in 2003 were retrieved from the CroDiab NET, a software developed to improve the quality of diabetes care and record keeping, and to simultaneously create a database for the national diabetes registry" "As the Clinic is a Croatian referral centre for diabetes, data from patients from all over the country were included." "To examine the association between type 2 diabetes and body weight, body mass index (BMI) was determined at initial (BMI 1) and final (BMI 2) examinations in 1,773 consecutive patients with type 2 diabetes"	Low risk	NA	NA	"Medical history, laboratory and physical examination data of all patients visiting the outpatient department of the Vuk Vrhovac University Clinic are incorporated into unique electronic medical records within the database." "To examine the association between type 2 diabetes and body weight, body mass index (BMI) was determined at initial (BMI 1) and final (BMI 2) examinations in 1,773 consecutive patients with type 2 diabetes..." "BMI was calculated as weight (kg) divided by the square of height (m)."	Low risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Puepet FH, Agaba EI, Chuhwak EK. Some metabolic abnormalities in type 2 diabetic patients in Jos, north central Nigeria. Niger J Med. 2003 Oct;12(4):193-7.	"The study was conducted on 75 type 2 DM patients… attending the out-patient diabetes clinic at the Jos University Teaching Hospital.... The WHO Consultation and Expert Committee on the diagnosis and classification of OM criteria 8, 9 were used for diagnosis and classification of type 2 DM." "...fasting blood samples were drawn by venipuncture from each subject... The biochemical parameters plasma glucose..."	Low risk	No description of assessment or source of diagnosis (could be self-report in history)	Unclear risk	NA	NA
Ravera M, Noberasco G, Re M, Filippi A, Gallina AM, Weiss U, et al. Chronic kidney disease and cardiovascular risk in hypertensive type 2 diabetics: a primary care perspective. Nephrol Dial Transplant. 2009 May;24(5):1528-33.	Data were extracted from the Health Search Database; presumably the diagnosis of T2DM was in the database	Low risk	Data were extracted from the Health Search Database (HSD): "...blood pressure (BP) values... were extracted from the HSD for each patient. The number and the various classes of antihypertensive medications were also retrieved for each patient."	Low risk	"Demographic, clinical and laboratory data, namely... body weight, height ...were extracted from the HSD for each patient...Body mass index (BMI) was calculated as body weight (kg)/height (m)2..."	Low risk
Relimpio F, Martinez-Brocca MA, Leal-Cerro A, Losada F, Mangas MA, Pumar A, et al. Variability in the presence of the metabolic syndrome in Type 2 diabetic patients attending a diabetes clinic: Influences of age and gender. Diabetes Res Clin Pract. 2004 Aug 1;65:135-42.	"In this study...in Type 2 diabetic patients attending a diabetes clinic." 'Patients in the study group were treated either with diet and exercise (n = 26, 8.9%), oral hypoglycemic drugs (n = 145, 49.8%) or insulin (n = 120, 41.2%)."	Low risk	Within a list of physical exams and histories: "Hypertension was defined as taking antihypertensive drugs or if resting systolic blood pressure was ≥130mmHg or diastolic blood pressure≥85 mmHg."	Low risk	"Height and weight were measured with the subjects wearing light clothes, without shoes. The body-mass index (BMI) was calculated as weight in kilograms divided by height in square-meters. The waist-to-hip ratio (WHR) was calculated by dividing the waist circumference (at the maximum abdominal circumference) by the hip circumference (at the bitrochanteric level)."	Low risk
Ridderstrale M, Gudbjornsdottir S, Eliasson B, Nilsson PM, Cederholm J. Obesity and cardiovascular risk factors in type 2 diabetes: results from the Swedish National Diabetes Register. J Intern Med. 2006 Mar;259(3):314-22.	"In the present study, we performed a cross-sectional study of 44 042 type 2 diabetic patients registered in the NDR in 2003." "The epidemiological definition of type 2 diabetes was: (i) therapy with diet alone or oral hypoglycaemic agents (OHAs) alone; (ii) insulin in monotherapy or combined with OHAs with an age ≥40 years at onset of diabetes. All patients were18 years of age or older."	Low risk	"Experienced physicians and nurses registered the data..." "The variables, measured in 1997 and 2003 by local methods and devices as recommended by the NDR [National Diabetes Register] and national guidelines, were ... BP [blood pressure]..." "A standard recommendation for BP recordings has been proposed in Sweden, in which the mean value of two readings (Korotkoff 1–5) in the supine position should be recorded using a cuff of appropriate size...endorsed ...NDR. A patient was considered hypertensive when prescribed antihypertensive drugs, or when untreated with a systolic BP ≥140 mmHg or a diastolic BP ≥90 mmHg."	Low risk	"Experienced physicians and nurses registered the data..." "The variables, measured in 1997 and 2003 by local methods and devices as recommended by the NDR [National Diabetes Register] and national guidelines, were ... weight, height..." "Body mass index was calculated as weight height-2 (kg m)-2."	Low risk
Salman RA, Al-Rubeaan KA. Incidence and risk factors of hypertension among Saudi type 2 diabetes adult patients: an 11-year prospective randomized study. J Diabetes Complications. 2009 Mar;23(2):95-101.	"This was a hospital-based prospective ongoing cohort study, involving secondary analysis of existing data for Saudi patients attending the diabetes centre at King Saud University, in Riyadh….Inclusion criteria included >20 years of age with confirmed T2DM." "Before each visit, and after an overnight fast, subjects underwent venous sampling for fasting blood sugar (FBS), glycosylated hemoglobin (HbA1c)..."	Low risk	"At each visit, blood pressure (BP) was measured twice in the right arm in the sitting position following a 5-min rest, by a trained nurse using a mercury sphygmomanometer."	Low risk	"Weight and height were also measured for determining body mass index [BMI; calculated as weight (kg)/height $(m)^2$]"	Low risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Shera AS, Jawad F, Maqsood A, Jamal S, Azfar M, Ahmed U. Prevalence of chronic complications and associated factors in type 2 diabetes. J Pak Med Assoc. 2004 Feb;54(2):54-9.	"Type 2 diabetic patients > 25 years of age presenting to the outpatient clinic of the Diabetic Association of Pakistan (DAP) Karachi, were studied." "All subjects were asked to come for blood sample collection in the morning after an overnight fast of 10 -14 hours... and glycosylated haemoglobin ...were estimated."	Low risk	Among listing of measurements recorded: "Hypertension was defined as the presence of systolic BP >140 mm Hg and diastolic BP of >90 mmHg or a known hypertensive on treatment."	Low risk	NA	NA
Skliros E, Sotiropoulos A, Vasibossis A, Xipnitos C, Chronopoulos I, Razis N, et al. Poor hypertension control in Greek patients with diabetes in rural areas. The VANK study in primary care. Rural Remote Health. 2007 Jul;7(3):583.	[T2DM] "was self-reported and defined as current use of antidiabetic medications."	High risk	"Three sitting BP measurements were taken from each subject, 5 min after rest and 30 min after smoking, on the patient's left arm, with a two-minute interval between them. Average systolic and diastolic BPs were calculated for each subject. Participants with elevated BP measurements were invited to a second clinic visit after 7 14 days to have their BP remeasured. The average BP on the second visit was used as criterion for the diagnosis and control of hypertension."	Low risk	NA	NA
Song SH, Hardisty CA. Early onset type 2 diabetes mellitus: a harbinger for complications in later years--clinical observation from a secondary care cohort. QJM. 2009 Nov;102(11):799-806.	"This was a cross-sectional study using secondary care T2DM population and subjects were identified from hospital diabetes register...Those known to have latent autoimmune diabetes in adult (LADA), maturity onset diabetes of the young (MODY), gestational diabetes and secondary diabetes were excluded. Early and later onset T2DM refer to those whose diabetes was diagnosed below and above the age of 40 years, respectively, as defined by the NICE guideline for T2DM and Joint British Socieities-2 guideline."	Low risk	"The clinical data were routinely entered into this database each time the diabetic subjects were seen at these clinics." Presumably, blood pressure was measured at each visit, but this is not stated and no details are provided on how hypertension diagnosis was obtained.	Unclear risk	NA	NA
Song SH, Hardisty CA. Type 2 diabetes mellitus: a high-risk condition for cardiovascular disease irrespective of the different degrees of obesity. QJM. 2008 Nov;101(11):875-9.	Subjects with T2DM who attended hospital clinics were included in this observational prospective study over a 1-year period.	Low risk	"For each subject, the following demographic data were collected as part of their routine clinical care: ... blood pressure ... "Hypertension, dyslipidaemia (reduced HDL and/or raised triglyceride) and central abdominal obesity were defined using the International Diabetes Federation (IDF) criteria for metabolic syndrome (MetS)." "The diagnostic criteria are ...blood pressure >130/85mm Hg..."	Low risk	For each subject, the following demographic data were collected as part of their routine clinical care: ... weight, BMI, WC..." "Hypertension, dyslipidaemia (reduced HDL and/or raised triglyceride) and central abdominal obesity were defined using the International Diabetes Federation (IDF) criteria for metabolic syndrome (MetS)." "The diagnostic criteria are central abdominal obesity, defined as WC >94cm and >80cm for Caucasian male and female, respectively, or >90 cm and >80cm for Asian male and female, respectively...	Low risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Suh DC, Kim CM, Choi IS, Plauschinat CA, Barone JA. Trends in blood pressure control and treatment among type 2 diabetes with comorbid hypertension in the United States: 1988‐2004. J Hypertens. 2009 Sep;27(9):1908‐16.	"Patients with type 2 diabetes were identified using NHANES, the ongoing stratified multistage probability samples of the noninstitutionalized US population conducted by the National Center for Health Statistics [22]. NHANES is designed to represent the health and nutritional status of patients of all ages, and provides demographic information as well as the physical examination and laboratory results." Self-reported: "The diabetic patients were identified if an individual answered 'yes' to the question 'Have you ever been told by a doctor that you have diabetes or sugar diabetes?' or if an individual reported current use of insulin and/or an oral antidiabetic medication. To ensure that only patients with type 2 diabetes were included in this analysis, patients in whom diabetes was diagnosed before they were 30 years of age or patients who were pregnant were excluded."	High risk	"The presence of comorbid hypertension was determined if a type 2 diabetic patient's average systolic BP (SBP) was 140mmHg or higher or diastolic BP (DBP) was 90mmHg or higher, if an individual answered 'yes' to the question, 'Have you ever been told by a doctor that you have hypertension, also called high blood pressure?', or if an individual was currently receiving antihypertensive medications. Patients who did not have complete BP measurements were excluded (two and 50 individuals were excluded out of NHANES III and NHANES 1999–2004, respectively). BP was measured for the participant in the sitting position after 5 min of rest by a physician at the mobile examination center. The average BP of up to three consecutive measurements was used in this study to have stable values."	Low risk	Height and weight appear to have been measured in physical examination. "NHANES is designed to represent the health and nutritional status of patients of all ages, and provides demographic information as well as the physical examination and laboratory results." "Body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meters.."	Low risk
Tariq M. Metabolic syndrome in type-2 diabetics: An update on the silent epidemic. Rawal Med J. 2010 Jul 1;35:201-4.	"This cross sectional study was conducted at Khyber Teaching hospital, Peshawar for an eight months period from July 2008 to February 2009. We enrolled a total of 200 adult type-2 diabetics above 30 years of age who were admitted to the medical ward for glycaemic control. All type-1 diabetics as well as young type-2 diabetics age <30 years...were excluded from the study." "Diagnosis of DM was confirmed by FBS >110mg/dl on two occasions."	Low risk	"...patients with secondary hypertension…were excluded from the study." "Sitting blood pressure was measured with mercury sphygmomanometer, using the patient's right arm and two readings were taken and the mean was calculated."	Low risk	"Waist circumference was measured at the level of the navel with the person lightly clothed."	Low risk
Taruni N. Prevalence study of metabolic syndrome in newly detected diabetes patients in RIMS. JMS J Med Soc. 2010 Jan 1;24:2‐4.	"One hundred subjects with newly detected diabetes who attended Medicine OPD [Outpatient Department] of RIMS, Imphal during November 2008 to October 2009 were randomly taken for the study." "Subjects were, then, sent for tests for fasting plasma glucose..."	Low risk	NA	NA	"After complete history taking and thorough clinical examination were carried out, waist circumference and blood pressure were measured."	Low risk
Tharkar S, Satyavani K, Viswanathan V. Cost of medical care among type 2 diabetic patients with a co-morbid condition--hypertension in India. Diabetes Res Clin Pract. 2009 Feb;83(2):263-7.	"The study was done between October and December 2007. The recruited subjects were patients admitted into the hospital for treatment of type 2 diabetes." "Diagnosis of diabetes was made based on the WHO criteria [16]."	Low risk	"Diagnosis of hypertension was made if (i) the patients had known and previously diagnosed hypertension and (ii) those patients whose blood pressure values (i.e.) systolic blood pressure 140 mmHg and diastolic blood pressure 90 mmHg based on JNC VII criteria for diagnosis of hypertension [17]."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Thomas MC, Atkins R. Assessment and management of hypertension in patients with type 2 diabetes. Intern Med J. 2009 Mar 1;39:143‐9.	"Briefly, DEMAND investigators were requested to provide clinical data on consecutively presenting adult patients with type 2 diabetes attending the general practitioners (GPs) practice in September 2003, irrespective of the reason for the visit." "Briefly, 500 randomly selected investigators were requested to provide clinical data on 10–15 consecutively presenting adult patients with established type 2 diabetes attending the GPs practice between April and September 2005 (approximately 2 years after the DEMAND study), irrespective of the reason for the visit."	Low risk	DEMAND: "...medication usage, together with details of physical examination on each patient was recorded on a single page clinical report form…BP levels were recorded by the physician with an appropriate cuff after approximately 10-min rest in the sitting position (single recording)."	Low risk	Presumably, height and weight were captured from physical examinations: DEMAND: "...together with details of physical examination on each patient was recorded on a single page clinical report form."	Low risk
Thomas MC, Atkins R. Assessment and management of hypertension in patients with type 2 diabetes. Intern Med J. 2009 Mar 1;39:143‐9.	"The NEFRON study was an incident-driven, clustered–stratified survey of patients with type 2 diabetes in the Australian primary care setting." "Briefly, 500 randomly selected investigators were requested to provide clinical data on 10–15 consecutively presenting adult patients with established type 2 diabetes attending the GPs practice between April and September 2005 (approximately 2 years after the DEMAND study), irrespective of the reason for the visit."	Low risk	NEFRON: "This dataset also captured...medication usage... together with details of physical examination and results from the most recent blood tests and laboratory urinalysis." "For the purpose of analysis, hypertension was defined by the use of any antihypertensive therapy or a systolic BP (SBP) >130 mmHg in an untreated patient. SBP level was dichotomized at >130 mmHg, reflecting the then current targets for the management of BP levels in patients with type 2 diabetes. Patients with a SBP 140 mmHg were said to have poor BP control."	Low risk	Presumably, height and weight were captured from physical examinations: ."NEFRON: "This dataset also captured…details of physical examination…"	Low risk
Torffvit O, Tencer J, Rippe B. The response to antihypertensive therapy is dependent on renal structural changes: a 5-year prospective study of renal biopsy in type 2 diabetic patients with micro-macroalbuminuria. J Diabetes Complications. 2010 Nov;24(6):361‐7.	"The patients had type 2 diabetes according to guidelines by both WHO and ADA, and, in addition, at least 2 years of diabetes with diet or oral treatment from diagnosis of diabetes until start of insulin. Thus, we were confident that type 1 diabetic patients without insulin because of a partial period of restitution of insulin secretion were excluded." "Glycosylated hemoglobin was analyzed..."	Low risk	"BP was investigated with a 24-h, automated, portable BP device (Model 90207, SpaceLab analysis system, Wokingham, UK). The data presented are mean values of 24-h recordings. The monitor was programmed for cuff insufflations every 20 min between 07:00 and 22:00 h and every 30 min from 22:00 to 07:00 h." "Twenty-four-hour ambulatory BP and urine sampling were performed yearly."	Low risk	NA	NA

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Tseng CH. Body mass index and blood pressure in adult type 2 diabetic patients in Taiwan. Circ J. 2007 Nov;71(11):1749-54.	Self-report regarding type of diabetes: "...well-trained interviewers used a structured questionnaire for telephone survey." ""The information extracted from the questionnaire for this study included the onset age of diabetes...onset symptoms and treatment modality for the distinction between type 1 diabetes mellitus (T1DM) and T2DM," "The classification of T1DM was based on either one of the following two criteria: (1) diabetic ketoacidosis at the onset of diabetes mellitus; or (2) the patients required insulin injection within 1 year of diagnosis of diabetes mellitus. If a patient was not diagnosed as T1DM, he/she was viewed as a patient of T2DM. Patients identified as T1DM and T2DM patients aged <18 years were not included into the present study."	High risk	Self-report: "...well-trained interviewers used a structured questionnaire for telephone survey.." "The information extracted from the questionnaire for this study included... hypertension...The ordinary blood pressure of the patients was also requested. Hypertension was defined by self-reported history and also by reported systolic blood pressure (SBP) ≥140mmHg and/or diastolic blood pressure (DBP) ≥90 mmHg."	High risk	Self-report: "...well-trained interviewers used a structured questionnaire for telephone survey.." "The information extracted from the questionnaire for this study included…body height, body weight…BMI was calculated from the body weight in kg divided by the squared body height in meters."	High risk
Tzeng TF, Hsiao PJ, Hsieh MC, Shin SJ. Association of nephropathy and retinopathy, blood pressure, age in newly diagnosed type 2 diabetes mellitus. Kaohsiung J Med Sci. 2001 Jun;17(6):294-301.	"During the one-year study period, from July 1,1991 to June 30, 1992, we collected data from newly diagnosed type 2 diabetic patients more than 20 years old at the outpatient department at Kaohsiung Medical University Hospital. Diagnosis of diabetes was made according to the 1985 WHO criteria. The WHO criteria cover at least one of the following. First, while not under stress, fasting morning plasma glucose was higher than 140 mg/dl; second, typical hyperglycemic symptoms with random plasma glucose greater than 200 mg/dl; and third, an oral glucose tolerance test showed more than 200mg/dl in the 2nd hour. Patients who visited our outpatient department received blood examinations including fasting plasma glucose or random plasma glucose..." Twenty-two subjects with fasting glucose between 115 and 139 mgldl were suggested to receive oral glucose tolerance test"	Low risk	"When patients were included in this study, we measured following:...blood pressure by a standard mercury sphygmomanometer using a 10 x 22 cm cuff at OPD [outpatient department] after a 10-minute rest in a sitting position, hypertension was defined according to the JNC-V criteria [19]: systolic blood pressure (sBP)≥140 mmHg or diastolic blood pressure ≥90 mmHg, or a history of hypertension and currently receiving treatment..."	Low risk	"When patients were included in this study, we measured following: (1) body height and weight without shoes or outer garments, and their body mass index (BMI) calculated by body weight in kilograms/body length in meter, obesity was defined as a BMI ≥27 for men and ~ 25 kg/m2 for women, according to the National Diabetes Data Group Criteria [18]."	Low risk
Vikram NK, Misra A, Pandey RM, Dudeja V, Sinha S, Ramadevi J, et al. Anthropometry and body composition in northern Asian Indian patients with type 2 diabetes: receiver operating characteristics (ROC) curve analysis of body mass index with percentage body fat as standard. Diabetes Nutr Metab. 2003 Feb;16(1):32-40.	"The study sample consisted of patients of T2DM attending the diabetes clinic and medical outpatients of Department of Medicine. Institutional Ethics Committee approved the study...Patients attending the clinic were interviewed and examined in General Clinical Research Center for a complete assessment including body composition analysis and biochemical investigations..." "A fasting and postprandial venous blood sample was obtained for estimation of blood glucose."	Low risk	"Blood pressure was recorded in sitting position with a standard mercury sphygmomanometer."	Low risk	"Body weight (to the nearest 0.1 kg) and height (to the nearest 0.1 cm) was recorded without shoes while allowing only light indoor clothes. BMI was calculated by using the formula weight (kg)/height (m)2. Waist circumference (WC) was measured midway between iliac crest and lowermost margin of the ribs, and hip circumference was measured at the maximum circumference of buttocks. Mean of three readings of each measurement was taken for the calculation of W-HR."	Low risk

	Other bias: T2DM Exposure Was T2DM adequately verified?		**Other bias: Hypertension exposure** Was hypertension adequately verified?		**Other bias: Obesity exposure** Was obesity adequately verified?	
Studies	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias	Support for judgment	Judgment: low, unclear, or high risk of bias
Viswanathan V, Snehalatha C, Kumutha R, Nair BM, Ramachandran A. Impact of Joint National Committee VII recommendations on diabetic microvascular complications. J Assoc Physicians India. 2004 Nov;52:873-6.	"Consecutive patients of type 2 diabetes ... admitted in MV Hospital for Diabetes during a period of 3 months were studied. The selection criteria were type 2 diabetes by the WHO criteria,[6] with availability of all clinical and laboratory data at the time of study and with no history of hypertension and without previous antihypertensive treatment."	Low risk	"All of them had a detailed clinical examination and blood pressure measurements. Blood pressure was determined at the beginning of the study as the mean of three sphygmomanometer readings on three consecutive days taken after a five minutes rest in the sitting position."	Low risk	NA	NA
Wilson C, Gilliland S, Moore K, Acton K. The epidemic of extreme obesity among American Indian and Alaska Native adults with diabetes. Prev Chronic Dis. 2007 Jan;4(1):A06.	Medical records database study. Appears to have used duration of diabetes and treatment type to classify type 2 diabetes: "Of these, 17,674 records were missing data on duration of diabetes and treatment type and were excluded from the analyses."	Low risk	NA	NA	"156,080 records had information necessary to calculate body mass index (BMI). Of these records, 70 had an implausible BMI (<15.0 kg/m2) and were excluded from the analyses, leaving 156,010 records."	Low risk
Wobeto VP, Pinho Pda C, Souza JR, Zaccariotto TR, Zonati Mde F. Haptoglobin genotypes and refractory hypertension in type 2 diabetes mellitus patients. Arq Bras Cardiol. 2011 Oct;97(4):338-45.	"After obtaining approval from the Local Ethics Committee, we collected peripheral blood samples from 120 T2DM patients with at least 10 years of disease followed at the Endocrinology Section of Hospital de Clínicas da UNICAMP in Campinas who had previously been investigated in another study21 in the state of São Paulo, southeastern Brazil." From ref 21 (Wobeto et al. Diabetes Res Clin Pract 2007;77(3):385-8): "Patients were classified as type 1 (n = 147) or type 2 (n = 170). The diagnosis of diabetes was based on clinical features, laboratory data and the guidelines of the American Diabetes Association [11]."	Low risk	"Systemic arterial hypertension was considered to be present if the SBP was >130 mm Hg and/or DPB was >90 mm Hg, and were measured in a medical visit to the Cardiology Section of Hospital de Clínicas da Unicamp. Ambulatory blood pressure monitoring (ABPM) was not performed. Refractory hypertension was considered to be present in patients being treated with three different antihypertensive medications (ideally including one diuretic drug) at effective doses if SBP >130 mm Hg and DPB >80 mm Hg."	Low risk	Obesity definition is with other descriptions of clinical, laboratory, and physical measures. "Obesity was defined as body mass index (BMI) 30 kg/m2."	Low risk
Zoppini G, Verlato G, Leuzinger C, Zamboni C, Brun E, Bonora E, et al. Body mass index and the risk of mortality in type II diabetic patients from Verona. Int J Obes Relat Metab Disord. 2003 Feb;27(2):281-5.	"Briefly, records from diabetes clinics, family physicians, and a drug consumption database were used to identify 7148 type II diabetic patients, alive and resident in the Verona area on 31 December 1986."	Low risk	No description of how hypertension was determined, but data source is medical records: "The present study was carried out on a cohort of 3398 patients attending the diabetes clinic, because only for this subgroup was information on ... hypertension available in the medical records."	Unclear risk	NA	NA
	Count					
	Low risk	70		59		45
	Unclear risk	4		7		0
	High risk	4		1		2
	Total as check	78		67		47

Supplemental Table 5. Studies with Prevalence of Hypertension and/or Obesity: Data are for T2DM Study Populations

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Multiregion (Europe and Africa)								
Hermans et al., 2010[1]	Belgium and Benin	Cross-sectional/ consecutive	> 90% white	738	NR (cross-sectional)	▪ Met S, 66 (10) ▪ No MetS, 66 (14)	34.2	▪ MetS, 13 (8) ▪ No MetS, 13 (9)
Africa								
Choukem et al., 2007[2]	Cameroon	Single center/ consecutive patients	Aged ≥ 15, outpatients; excluded if pregnant of having diabetes secondary to known medical condition	191	NR	59.7 (9.4)	51.3	6.2 (0.4)
Alebiosu and Odusan, 2004[3]	Nigeria	Single center/ consecutive patients	Outpatients or inpatients	218	Sept 1999-Aug 2001	52 (5.8)	41.3	8.5 (7.1)
Fasanmade and Okubadejo, 2007[4]	Nigeria	Single center/ consecutive patients	Outpatients	258	NR	NR (median, 56-57 across genders)	52.3	NR (median, 4-5 across genders)
Ikem et al., 2001[5]	Nigeria	Single center/ consecutive patients	Outpatients; excluded for T1DM, DM related to malnutrition, primary glomerular diseases, or evidence of cardiac decompensation	132	NR	59.5 (9)	47.7	6.9 (6)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Isezuo and Ezunu, 2005[6]	Nigeria	Single center/all patients in 8-month period	Aged 35-80; inpatients or outpatients; no nephrotic syndrome, hepatobiliary disease, or hypothyroidism; not taking lipid-lowering drugs	254	Jan-Aug 2002	52 (11.7)	39.4	6.1 (6.6)
Ogbera and Azenabor, 2010[7]	Nigeria	Cross-sectional, multicenter/all in 3-month period	Receiving care at hospitals; excluded for thiazide diuretic use, use of medications for hyperuricemia or if pregnant	601	Nov 2008-Jan 2009	59.9 (10.3)	56	7 (6.9)
Puepet et al., 2003[8]	Nigeria	Single center/diabetics in 19-month period	Outpatients	75	Aug 2001-Feb 2003	52.3 (8.5)	45.3	6.02 (5.17)
Makuyana et al., 2004[9]	Zimbabwe	Single center/all on diet and/or OADs	Adults attending a tertiary hospital and on diet and/or oral hypoglycemic drugs; excluded "young diabetics"	109	NR (cross-sectional)	55 (9)	70.6	▪ Women, 5.3 (4.5) ▪ Men, 4.2 (4.0) ▪ *P* = 0.224

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Asia								
Chen et al., 2010[10]	China	Single center/ consecutive patients	Han Chinese outpatients in Hong Kong; no stroke or atrial fibrillation at baseline	2,121	1996-2006 (for incident strokes)	55.4 (11.3)	59.8	▪ Nonstroke, 6.6 (6.0) ▪ Stroke, 9.1 (6.7)
Lu et al., 2006[11]	China	Cross-sectional community population/ randomized cluster sampling with consecutive recruitment	Aged > 30, living in Shanghai	1,008	Feb 1-Jul 31, 2004	▪ Women, 66.47 (11.15) ▪ Men, 65.68 (12.13) ▪ *P* = NS	61.4	▪ Women, 7.99 (6.78) ▪ Men, 7.81 (7.76)
Dhobi et al., 2008[12]	India	Single center/NR (6-month period)	Outpatients or inpatients newly diagnosed with T2DM and without insulin treatment, ketonuria, CKD, severe retinopathy, severe concurrent illness, current angina, HF, or pregnancy	500	NR	48.5 (9.7)	54.2	NR (≤ 6 months)
Taruni, 2010[13]	India	Single center/ randomly selected	Outpatients; excluded for chronic renal failure, high BP, chronic liver disease, chronic pancreatitis, alcoholic liver disease, critical illness, impaired thyroid function, COPD, carcinoma, or severe infection	100	Nov 2008-Oct 2009	NR	54	NR (newly diagnosed)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Tharkar et al., 2009[14]	India	Single center/ randomly selected	Hospitalized for treatment of T2DM	443	Oct-Dec 2007	55.1 (11.8)	46.9	NR
Vikram et al., 2003[15]	India	Cross-sectional, single center/NR (4-year period)	Outpatients	380	Jan 1996-Dec 2000	▪ Women, 51.8 (10.3) ▪ Men, 50.6 (11.9)	43.9	▪ Women, 4 ▪ Men, 5
Viswanathan et al., 2004[16]	India	Single center/ consecutive patients	Hospitalized for treatment of T2DM; no history of HTN and no previous antihypertensive treatment	457	1992-2004	53.4 (10.6)	31.5	11.2-12.1, across 4 blood pressure categories
Janghorbani and Amini, 2007[17]	Iran	Single center/ consecutive patients	Registered in clinic system	9,889	NR	At registration: ▪ Women, 50.9 (10.8) ▪ Men, 53.6 (10.9)	57.9	▪ Women, 6.1 (6.2) ▪ Men, 6.8 (6.7)
Marjani, 2011[18]	Iran	Single center/NR	Outpatients; excluded if other serious illness	200	2010	▪ Women, 53.74 (9.54) ▪ Men, 53.51 (9.49)	61	▪ Women, 6.02 (2.16) ▪ Men, 3.95 (1.21)
Kabakov et al., 2006[19]	Israel	Multicenter, retrospective, 3 cohorts/NR	Outpatients	2,227	NR (Cross-sectional)	60.5 (12.2)	47.7	NR
Nakano et al., 2004[20]	Japan	Single center, longitudinal observational/ consecutive patients	Initially hospitalized, followed as outpatients; no history of vascular complications at study entry	364	Dec 1988-Jun 1998	54 (14)	36.3	5-11, across 4 no or vascular event groups
Ogawa et al., 2004[21]	Japan	Single center/NR	Outpatients	634	NR	63.0 (11.5)	43.1	16.3 (9.57)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Mubarak et al., 2008[22]	Jordan	Cross-sectional, single (national) center/all within 7-month period with second follow-up	Outpatients, not pregnant or on hemodialysis	1,000	Jun-Dec 2006	NR	50.5	NR
Kim et al., 2008[23]	Korea	Single center/NR	Outpatients	688	NR	▪ Females, 58.3 (NR, SE 0.5) ▪ Males, 54 (NR, SE 0.6)	48.3	NR
Chan, 2005[24]	Malaysia	Cross-sectional, multicenter/ systematic sampling (every fifth patient with diabetes)	Excluded for new T2DM diagnosis, default of treatment for more than 6 months, critically ill, mental health problems, or communication difficulty)	517	Aug-Oct 2003	▪ 59.0 (10.4)	62.2	7.1 (6)
Khuwaja et al., 2004[25]	Pakistan	Cross-sectional, multicenter/all in 6-month time span	Outpatients; excluded for macrovascular disease prior to T2DM diagnosis and gestational diabetes	672	Nov 2000-Apr 2001	NR	58.5	NR (58.5% had diabetes > 5 years)
Shera et al., 2004[26]	Pakistan	Single center/ random sample of every fifth patient	Age ≥ 25, outpatients; excluded for pregnancy, protuberant belly or umbilical hernia, or UTI	500	NR	55.2 (10.6)	68	7 (NR)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Tariq et al., 2010[27]	Pakistan	Cross-sectional, single center/NR (8-month period)	Aged > 30, admitted to a medical ward for glycemic control; excluded for nephrotic syndrome, renal failure, Cushing syndrome, ascites, secondary HTN, hepatobiliary disease, hypothyroidism, or using lipid-altering drugs	200	Jul 2008-Feb 2009	45.3 (NR)	58.5	4.5 (NR)
Bener et al., 2005[28]	Qatar	Multicenter, case-control/random selection	Aged 25-65, outpatients	338	Feb-Nov 2003	45.5 (8.9)	56.8	NR
Alwakeel et al., 2008[29]	Saudi Arabia	Single center, retrospective medical records review/all patients in time period and with follow-up within 6 months of review	Outpatient or inpatient Excluded patients with diabetes diagnosed with < 6 months of follow-up and gestational or type 1 diabetes	1,952	Jan 1989-Jan 2004	58.39 (14.2)	51.7	10.41 (7.45)
El-Hazmi and Warsy, 2001[30]	Saudi Arabia	Nationwide screening program,/systematic sampling	Adults with T2DM in community	1,286	NR	NR	47.7	NR

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Salman and Al-Rubeaan, 2009[31]	Saudi Arabia	Prospective, single center/ consecutive patients	Aged > 20 attending the diabetes center who were normotensive at baseline	669	Dec 1993-Dec 2004	Based on long-term development of HTN or not: ▪ Non-HTN, 44.0 (10.0) ▪ HTN, 49.0(11.0) ▪ *P* = 0.000	Based on long-term development of HTN or not: ▪ Non-HTN 50.8 ▪ HTN 47.9 ▪ *P* = NS	Based on long-term development of HTN or not: ▪ Non-HTN 11.0 (6.00) ▪ HTN 11.0 (6.00) ▪ *P* = NS
Tseng, 2007[32]	Taiwan	Multicenter (nationwide)/ random selection	Aged ≥ 18 and responded in a telephone survey	89,857	Mar 1995-Apr 2002	62.2 (11.3)	53.9	7.2 (6.5)
Tzeng et al., 2001[33]	Taiwan	Single center/ all in 1-year period	Aged > 20 and T2DM newly diagnosed, outpatients; excluded for acute diabetic complications or diseases that would affect glycemia	148	Jul 1991-Jun 1992	41.5-51.8 across albuminuria groups	45.5	NR (newly diagnosed)
Bunnag et al., 2006[34]	Thailand	Cross-sectional, multicenter/NR	Aged ≥ 18, outpatients	8,884	Apr-Dec 2003	▪ HTN, 62.0 (10.5) ▪ No HTN, 55.2 (12.0) ▪ *P* < 0.001	66.2	▪ HTN, 11.2 (7.7) ▪ No HTN, 8.2 (6.7) *P* <0.001

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Europe								
Dehout et al., 2008[35]	Belgium	Cross-sectional, multicenter/ consecutive patients	Outpatients	454	NR	▪ Belgians, 68.6 (11.2) ▪ Bantus, 56.0 (10.4) ▪ $P < 0.0001$	NR	▪ Belgians, 15.5 (9.5) ▪ Bantus, 9.9 (7.4) ▪ $P < 0.001$
Poljicanin et al., 2011[36]	Croatia	National diabetes registry study/ consecutive patients	Outpatients, all Caucasians	1,773	2003	NR (median, 66)	54.8	11 (NR)
Hu et al., 2007[37]	Finland	6 cross-sectional surveys/random selection	At enrollment, aged 25 to 64, plus 65 to 74 for 1997; no history of CHD or stroke	3,835 (at baseline or during follow-up)	1972, 1977, 1982, 1987, 1992, 1997	NR	51	NR
Hu et al., 2005[38]	Finland	6 cross-sectional surveys/random selection	At enrollment, aged 25 to 64 and 65 to 74 for 1997; no CHD or stroke at baseline	919 (at baseline)	1972, 1977, 1982, 1987, 1992, 1997	46.8-55.3 across HTN subgroups	49.4	NR
Hillier et al., 2006[39]	France	National random sample from health insurance database	Aged 30-79; excluded underweight (BMI < 18.5) patients	2,970	2002	62.0-66.0 across gender and BMI categories	45.4	NR
Hanefeld et al., 2007[40]	Germany	Multicenter/ consecutive patients	Aged 35-80; excluded for MI, stroke, or amputation within 3 months of entry; HF; macroproteinuria; cancer < 5 years before study entry	4,020	NR	61.8 (8.1)	46.8	8.4 (6.8)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Koehler et al., 2007[41]	Germany	Multipractice consecutive patients (same study as Hanefeld et al., 2007)	Aged 35-80; excluded for MI, stroke, or amputation within 3 months of entry; HF; macroproteinuria; cancer < 5 years before study entry	4,020	NR	61.8 (8.1)	46.8	8.4 (6.8)
Skliros et al., 2007[42]	Greece	Cross-sectional, multicenter/NR (3-month period)	Outpatients	221	NR	68.8 (11.5)	44.8	12.4 (6.7)
Agha et al., 2003[43]	Ireland	Single center/ consecutive	Outpatients	108	NR	▪ Hypertensive (n = 72), 62 (13) Normotensive (n = 36), 55 (13)	NR	NR
Bacci et al., 2011[44]	Italy	Prospective longitudinal single center, 1 of 3 cohorts/ consecutively recruited cases in case-control	All were white and all had CAD; excluded only for poor life expectancy due to cancer	330	2001-2008	64 (8)	31.2	NR
Bianchi et al., 2008[45]	Italy	Cross-sectional single center database analysis/NR (2-year period)	All attending diabetes clinic due to complications of diabetes (89% without CVD)	1,610	2001-2003	62 (10)	NR	11.5 (9)
Comaschi et al., 2005[46]	Italy	Cross-sectional, multicenter (nationwide)/ random sampling	Aged 35-70, outpatients diagnosed with T2DM > 6 months before study start	12,222	Nov 2001-Feb 2002	▪ Women, 59.7 (7.2) ▪ Men, 59.0 (7.5)	46.7	▪ Women, 8.8 (7.5) ▪ Men, 8.2 (7.4)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Marchesini et al., 2004[47]	Italy	Single center/ consecutive patients	Outpatients	1,569	NR	NR (median, 67)	45.6	NR
Ravera et al., 2009[48]	Italy	General practitioners' database study/all in 1-year time span	In primary care, all with T2DM, HTN, and serum creatinine levels	7,582	2005	69 (11)	53	NR
Zoppini et al., 2003[49]	Italy	Multicenter medical records study/NR	Outpatients (Verona)	3,398	1986-1996	▪ Aged < 65, 56.5 (7.1) ▪ Aged ≥ 65, 73.1 (5.4)	51.7	▪ Aged < 65, 8.6 (6.0) ▪ Aged ≥ 65, 11.8 (7.0) ▪ *P* <0.001
Bosevski et al., 2010[50]	Macedonia	Survey/random inclusion	All had CAD	327	NR	60.3 (8.3)	32.6	8.6 (6.2)
Babes et al., 2009[51]	Romania	Prospective longitudinal/NR	No CAD; excluded if severe comorbidities, HF, systolic dysfunction, or uninterpretable ECG during stress test, other cardiac diseases, suboptimal or chest pain during stress test	196	NR	NR	NR	NR
del Cañizo-Gómez and Moreira-Andrés, 2004[52]	Spain	Cross-sectional, single center/ consecutive patients	Outpatients (Madrid)	501	Apr-Dec 2002	65.4 (11.9)	56	13.0 (9.8)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Relimpio et al., 2004[53]	Spain	Retrospective, single center/ consecutive patients	Aged > 40, not taking lipid-lowering drugs and having serum triglycerides < 4.51 mmol/L (400 mg/dL); excluded for significant liver disease	291	NR	NR	63.2	NR (diabetes duration range: 3-13 years across 6 age and sex groups)
Hassing et al., 2004[54]	Sweden	Longitudinal registry database study/NR	Twins aged ≥ 80; exclusions included dementia at baseline or MMSE score ≤ 23	38	1991-2000 (waves 1-4)	82.5-84.0 across disease groups	50%-78% female across groups	5.6-7.1
Nilsson et al., 2011[55]	Sweden	Cross-sectional, national diabetes register study/all with T2DM in 2005, 2007, and 2009 with data for variables	Outpatients	▪ 2005, n = 79,185 ▪ 2007, n = 126,137 ▪ 2009, n = 180,369	2005, 2007, 2009	▪ 2005, 66.8 (11) ▪ 2007, 67.0 (10) ▪ 2009, 67.1 (10) ▪ *P* < 0.001	▪ 2005, 43.8% ▪ 2007, 43.4% ▪ 2009, 43.3% ▪ *P* < 0.001	▪ 2005, 8.4 ± 7 ▪ 2007, 8.4 ± 7 ▪ 2009, 8.5 ± 7 ▪ *P* < 0.01
Ridderstrale et al., 2006[56]	Sweden	Cross-sectional national diabetes register study/all in 2003 with data on variables	All aged ≥ 18	44,042	2003	▪ BMI <25, 70.2 (11.8) ▪ BMI 25-29.9, 68.1 (10.9) ▪ BMI ≥ 30, 64.8 (11.0)	▪ BMI <25, 46.3 ▪ BMI 25-29.9, 38.3 ▪ BMI ≥ 30, 49.6	▪ BMI <25, 10.1 (8.4) ▪ BMI 25-29.9, 8.7 (7.2) ▪ BMI ≥ 30, 8.0 (6.8)

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Torffvit et al., 2010[57]	Sweden	Prospective, longitudinal single center/ consecutive patients	Outpatients with microalbuminuria or macroalbuminuria (urine albumin > 100 mg/L) (after excluding for unstable angina pectoris or MI within 3 months, mental retardation, or risk of bleeding)	40	NR	▪ Achieved SBP < 140, 57 (NR) ▪ Not achieved 65 (NR) (NS)	▪ Achieved SBP < 140, 17.4% ▪ Not achieved 23.5% (NS)	NR (Median diabetes duration: ▪ Achieved SBP < 140, 9 years (NR) ▪ Not achieved, 20 years (NR) ▪ ***P* = 0.014**
Daousi et al., 2006[58]	UK	Single center/all in 1-year period	Outpatients	2,721	2002	62.5 (11.8)	46.5	NR
Echouffo-Tcheugui et al., 2008[59]	UK – England	Multiple primary care practices; patients recruited from medical records based on at risk score	Identified by screening clinic patients ages 40-69 at high risk of diabetes	867	2002-2006	NR (median, 62)	39	NR (newly diagnosed)
Higgins et al., 2007[60]	UK	Prospective single center/ consecutive patients	In an ophthalmology clinic in 1 month	33	NR	62 (NR)	NR	14 (NR)
Mulnier et al., 2006[61]	UK	Longitudinal database of general practices/all diagnosed with diabetes by 1 Jan 1992	Aged 35-89; excluded if stroke before baseline	41,799	NR	In 1992: ▪ Women, 68 (NR) ▪ Men, 65 (NR)	46.9	NR

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Mulnier et al., 2006[62]	UK	Longitudinal database of general practices/all diagnosed with diabetes by 1 Jan 1992	Aged 35-90 with T2DM and data on BMI, smoking, and diabetes duration	28,725	Jan 1992-Oct 1999	66 (NR)	45	NR
Song and Hardisty, 2008[63]	UK	Prospective multicenter/all in 1-year period	No exclusions	390	NR	60 (NR)	NR	10 (NR)
Song and Hardisty, 2009[64]	UK	Cross-sectional electronic database study/all meeting criteria in 1-year period	Secondary care population with early onset or typical onset T2DM but not including maturity onset diabetes of the young or latent autoimmune diabetes)	2,733	2008	▪ 39.8-62.4 for early-diagnosis group ▪ 63.7-75.5 for later-diagnosis group	NR	▪ 5.9-28.7 for early-diagnosis group ▪ 6.5-24.7 for later-diagnosis group

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
North America								
Foucan et al., 2006[65]	Guadeloupe	Single center (island-wide)/ consecutive patients	Of Indian origin; excluded if treated with insulin	71	NR	49.8 (10.7)	43.7	NR
Aguilar-Salinas et al., 2002[66]	Mexico	Cross-sectional, national survey of urban population	Aged 20-69, in urban Mexico	993	1992-1993	▪ Early-onset group, 32 (5) ▪ Typical onset group, 54 (8)	▪ Early-onset group, 52% ▪ Typical onset group, 59%	NR
Jimenez-Corona et al., 2010[67]	Mexico	National survey/ multistage, stratified and probabilistic sampling procedure	21.5% diagnosed with T2DM aged ≤ 40	840	2006	▪ ≤ 40, 29.3 (NR) ▪ > 40, 55.7 (NR)	▪ ≤ 40, 54.2 ▪ > 40, 53.0	NR
Kramer et al., 2010[68]	US	Cross-sectional probability samples (NHANES)	Aged ≥ 20 with previously diagnosed T2DM or undiagnosed T2DM (blood glucose ≥ 126 mg/dL) participating in national surveys; excluded if pregnant	4,162 ▪ NHANES II (1976-1980), n = 634 ▪ NHANES III (1988-1994), n = 1,512 ▪ NHANES 1999-2006, n = 2,016	1976-1980, 1988-1994, and 1999-2006	▪ 56.7-61.0 across study periods	46.4%-57.2% female across study periods	NR

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Suh et al., 2009[69]	US	National survey; stratified multistage probability samples of respondents in 1988-1994 and 1999-2004	Age ≥ 30; not pregnant	2,336	2000-2007	▪ 1988-1994, 63.4 (NR) ▪ 1999-2004, 63.0 (NR)	▪ 1988-1994, 60.9 ▪ 1999-2004, 55.7	NR
Wilson et al., 2007[70]	US	Cross-sectional multicenter database study/systematic sample	Alaskan natives and American Indians aged ≥ 18	138,336	1995-2004	▪ 55.6 (13.4) in 1995 ▪ 54.9 (13.8) in 2004	▪ 60.9% in 1995 ▪ 57.6% in 2004	▪ 9.2 (7.6) in 1995 ▪ 8.3 (7.3) in 2004
Oceania								
Thomas and Atkins, 2009[71]	Australia	DEMAND: cross-sectional multicenter/ consecutive patients NEFRON: multicenter/ consecutive patients	In primary care	5,724	2003, 2005	▪ DEMAND, 65.0 (11.9) ▪ NEFRON, 65.5 (12.0)	▪ DEMAND, 46 ▪ NEFRON, 48	▪ DEMAND, 5 (NR) ▪ NEFRON, 6 (NR)
South America								
Leitao et al., 2008[72]	Brazil	Cross-sectional, single center/NR	Outpatients; excluded for creatinine > 132 mcmol/L, other renal diseases, cardiac arrhythmia, or postural hypotension	270	NR	56.4 (9.3)	47	10.1 (6.6)
Moehlecke et al., 2010[73]	Brazil	Cross-sectional multicenter/NR	Outpatients aged > 35; excluded for eGFR < 30 mL/min	842	NR	57.9 (10.1)	62.8	9.2-11.6 across 5 MetS-status groups

Reference	Country	Study Design / Method	T2DM Population	Sample Size of T2DM Population	Dates of Data Collection Period	T2DM Population		
						Mean Age (SD),Years	Percentage Female	Mean Diabetes Duration (SD), Years
Wobeto et al., 2011[74]	Brazil	Cross-sectional single center/NR	Outpatients aged < 76; excluded if pregnant	120	NR	▪ With CVD, 66.0 (6.61) ▪ Without CVD, 62.7 (7.94) ▪ *P* = 0.0319	60.8	▪ With CVD, 19.2 (6.52) ▪ Without CVD, 18.1 (6.41) ▪ *P* = NS
Ezenwaka and Offiah, 2001[75]	Trinidad and Tobago	Multicenter/NR	Outpatients	190	Jan-Apr 2000	53.3-59.3 across gender and obesity-status groups	66.3	6.9-10.9 across gender and obesity-status groups
Ezenwaka and Offiah, 2002[76]	Trinidad and Tobago	Multicenter/NR	Same population as Ezenwaka and Offiah, 2001	190	Jan-Apr 2000 (inferred)	Same population as Ezenwaka and Offiah, 2001	Same population as Ezenwaka and Offiah, 2001	Same population as Ezenwaka and Offiah, 2001
Ezenwaka et al., 2007[77]	Trinidad and Tobago	Multicenter/NR	Outpatients	413	NR	▪ Trinidad, 56.4 (11.0) ▪ Tobago, 65.4 (11.4) ▪ *P* < 0.001	67.1	▪ Trinidad, 9.4 (8.0) ▪ Tobago, 11.1 (9.5) ▪ *P* = NS

BMI, body mass index; BP, blood pressure; CAD, coronary artery disease; CHD, coronary heart disease; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; CVD, cardiovascular disease; DEMAND, Developing Education on Microalbuminuria for Awareness of Renal and Cardiovascular Risk in Diabetes; DM, diabetes mellitus; ECG, electrocardiogram; eGFR, estimated glomerular filtration rate; HF, heart failure; HTN, hypertension; IHD, ischemic heart disease; MetS, metabolic syndrome; MI, myocardial infarction; MMSE, Mini-Mental State Examination; NEFRON, National Evaluation of the Frequency of Renal Impairment Co-existing with Non-insulin-dependent Diabetes; NHANES, National Health and Nutrition Examination Survey; NR, not reported; NS, not significant; OAD, oral antidiabetic drug; SBP, systolic blood pressure; SD, standard deviation; SE, standard error; SEM, standard error of the mean; T1DM, type 1 diabetes mellitus; T2DM, type 2 diabetes mellitus; UK, United Kingdom; US, United States; UTI,urinary tract infection.

[a] Variance type not reported.

References

1. Hermans MP, Amoussou-Guenou KD, Ahn SA, Rousseau MF. Impact of metabolic syndrome and its severity on microvascular complications in type 2 diabetes. *Diabetes Metab Syndr Clin Res Rev.* Sep 20 2010:150-154.

2. Choukem SP, Kengne AP, Dehayem YM, Simo NL, Mbanya JC. Hypertension in people with diabetes in sub-Saharan Africa: revealing the hidden face of the iceberg. *Diabetes research and clinical practice.* Aug 2007;77(2):293-299.

3. Alebiosu CO, Odusan BO. Metabolic syndrome in subjects with type-2 diabetes mellitus. *Journal of the National Medical Association.* Jun 2004;96(6):817-821.

4. Fasanmade OA, Okubadejo NU. Magnitude and gender distribution of obesity and abdominal adiposity in Nigerians with type 2 diabetes mellitus. *Nigerian journal of clinical practice.* Mar 2007;10(1):52-57.

5. Ikem RT, Akinola NO, Balogun MO, Ohwovoriole AE, Akinsola A. What does the presence of hypertension portend in the Nigerian with non insulin dependent diabetes mellitus. *West African journal of medicine.* Apr-Jun 2001;20(2):127-130.

6. Isezuo SA, Ezunu E. Demographic and clinical correlates of metabolic syndrome in Native African type-2 diabetic patients. *Journal of the National Medical Association.* Apr 2005;97(4):557-563.

7. Ogbera AO, Azenabor AO. Hyperuricaemia and the metabolic syndrome in type 2 DM. *Diabetology & metabolic syndrome.* 2010;2:24.

8. Puepet FH, Agaba EI, Chuhwak EK. Some metabolic abnormalities in type 2 diabetic patients in Jos, north central Nigeria. *Nigerian journal of medicine : journal of the National Association of Resident Doctors of Nigeria.* Oct-Dec 2003;12(4):193-197.

9. Makuyana D, Gomo Z, Munyombwe T, Matenga JA, Hakim JG. Metabolic syndrome disorders in urban black Zimbabweans with type 2 Diabetes mellitus. *The Central African journal of medicine.* Mar-Apr 2004;50(3-4):24-29.

10. Chen XY, Thomas GN, Chen YK, Chan JC, Wong KS. Atherosclerotic vascular disease rather than metabolic syndrome predicts ischemic stroke in diabetic patients. *Cerebrovascular diseases.* 2010;30(4):374-379.

11. Lu B, Yang Y, Song X, et al. An evaluation of the International Diabetes Federation definition of metabolic syndrome in Chinese patients older than 30 years and diagnosed with type 2 diabetes mellitus. *Metabolism: clinical and experimental.* Aug 2006;55(8):1088-1096.

12. Dhobi GN, Majid A, Masoodi SR, Bashir MI, Wani AI, Zargar AH. Prevalence of hypertension in patients with new onset type 2 diabetes mellitus. *Journal of the Indian Medical Association.* Feb 2008;106(2):92, 94-98.

13. Taruni N. Prevalence study of metabolic syndrome in newly detected diabetes patients in RIMS. *JMS J Med Soc.* Jan 1 2010;24:2-4.

14. Tharkar S, Satyavani K, Viswanathan V. Cost of medical care among type 2 diabetic patients with a co-morbid condition--hypertension in India. *Diabetes research and clinical practice.* Feb 2009;83(2):263-267.

15. Vikram NK, Misra A, Pandey RM, et al. Anthropometry and body composition in northern Asian Indian patients with type 2 diabetes: receiver operating characteristics (ROC) curve analysis of body mass index with percentage body fat as standard. *Diabetes, nutrition & metabolism.* Feb 2003;16(1):32-40.

16. Viswanathan V, Snehalatha C, Kumutha R, Nair BM, Ramachandran A. Impact of Joint National Committee VII recommendations on diabetic microvascular complications. *The Journal of the Association of Physicians of India.* Nov 2004;52:873-876.

17. Janghorbani M, Amini M. Metabolic syndrome in type 2 diabetes mellitus in isfahan, iran: prevalence and risk factors. *Metabolic syndrome and related disorders.* Sep 2007;5(3):243-254.

18. Marjani A. Prevalence of obesity among type 2 diabetes mellitus in Gorgan (South East of Caspian Sea), Iran. *J Chin Clin Med.* Feb 1 2011;6:85-92.

19. Kabakov E, Norymberg C, Osher E, et al. Prevalence of hypertension in type 2 diabetes mellitus: impact of the tightening definition of high blood pressure and association with confounding risk factors. *Journal of the cardiometabolic syndrome.* Spring 2006;1(2):95-101.

20. Nakano S, Ito T, Furuya K, et al. Ambulatory blood pressure level rather than dipper/nondipper status predicts vascular events in type 2 diabetic subjects. *Hypertension research : official journal of the Japanese Society of Hypertension.* Sep 2004;27(9):647-656.

21. Ogawa K, Ueda K, Sasaki H, et al. History of obesity as a risk factor for both carotid atherosclerosis and microangiopathy. *Diabetes research and clinical practice.* Dec 2004;66 Suppl 1:S165-168.

22. Mubarak FM, Froelicher ES, Jaddou HY, Ajlouni KM. Hypertension among 1000 patients with type 2 diabetes attending a national diabetes center in Jordan. *Annals of Saudi medicine.* Sep-Oct 2008;28(5):346-351.

23. Kim WY, Kim JE, Choi YJ, Huh KB. Nutritional risk and metabolic syndrome in Korean type 2 diabetes mellitus. *Asia Pacific journal of clinical nutrition.* 2008;17 Suppl 1:47-51.

24. Chan GC. Type 2 diabetes mellitus with hypertension at primary healthcare level in Malaysia: are they managed according to guidelines? *Singapore medical journal.* Mar 2005;46(3):127-131.

25. Khuwaja AK, Rafique G, White F, Azam SI. Macrovascular complications and their associated factors among persons with type 2 diabetes in Karachi, Pakistan--a multi-center study. *JPMA. The Journal of the Pakistan Medical Association.* Feb 2004;54(2):60-66.

26. Shera AS, Jawad F, Maqsood A, Jamal S, Azfar M, Ahmed U. Prevalence of chronic complications and associated factors in type 2 diabetes. *JPMA. The Journal of the Pakistan Medical Association.* Feb 2004;54(2):54-59.

27. Tariq M. Metabolic syndrome in type-2 diabetics: an update on the silent epidemic. *Rawal Med J.* Jul 1 2010;35:201-204.

28. Bener A, Zirie M, Al-Rikabi A. Genetics, obesity, and environmental risk factors associated with type 2 diabetes. *Croatian medical journal.* Apr 2005;46(2):302-307.

29. Alwakeel JS, Sulimani R, Al-Asaad H, et al. Diabetes complications in 1952 type 2 diabetes mellitus patients managed in a single institution in Saudi Arabia. *Annals of Saudi medicine.* Jul-Aug 2008;28(4):260-266.

30. El-Hazmi MA, Warsy AS. Association of hypertension and non-insulin-dependent diabetes mellitus in the Saudi population. *Annals of Saudi medicine.* Jan-Mar 2001;21(1-2):5-8.

31. Salman RA, Al-Rubeaan KA. Incidence and risk factors of hypertension among Saudi type 2 diabetes adult patients: an 11-year prospective randomized study. *Journal of diabetes and its complications.* Mar-Apr 2009;23(2):95-101.

32. Tseng CH. Body mass index and blood pressure in adult type 2 diabetic patients in Taiwan. *Circulation journal : official journal of the Japanese Circulation Society.* Nov 2007;71(11):1749-1754.

33. Tzeng TF, Hsiao PJ, Hsieh MC, Shin SJ. Association of nephropathy and retinopathy, blood pressure, age in newly diagnosed type 2 diabetes mellitus. *The Kaohsiung journal of medical sciences.* Jun 2001;17(6):294-301.

34. Bunnag P, Plengvidhya N, Deerochanawong C, et al. Thailand diabetes registry project: prevalence of hypertension, treatment and control of blood pressure in hypertensive adults with type 2 diabetes. *Journal of the Medical Association of Thailand = Chotmaihet thangphaet.* Aug 2006;89 Suppl 1:S72-77.

35. Dehout F, Haumont S, Gaham N, Amoussou-Guenou K, Hermans MP. Metabolic syndrome in Bantu subjects with type 2 diabetes from sub-Saharan extraction: prevalence, gender differences and HOMA hyperbolic product. *Diabetes Metab Syndr Clin Res Rev.* Feb 1 2008;2:5-11.

36. Poljicanin T, Pavlic-Renar I, Metelko Z. Obesity in type 2 diabetes: prevalence, treatment trends and dilemmas. *Collegium antropologicum.* Sep 2011;35(3):829-834.

37. Hu G, Jousilahti P, Tuomilehto J. Joint effects of history of hypertension at baseline and type 2 diabetes at baseline and during follow-up on the risk of coronary heart disease. *European heart journal.* Dec 2007;28(24):3059-3066.

38. Hu G, Sarti C, Jousilahti P, et al. The impact of history of hypertension and type 2 diabetes at baseline on the incidence of stroke and stroke mortality. *Stroke; a journal of cerebral circulation.* Dec 2005;36(12):2538-2543.

39. Hillier TA, Fosse S, Balkau B, Simon D, Eschwege E, Fagot-Campagna A. Weight, the metabolic syndrome, and coronary heart disease in type 2 diabetes: associations among a national French sample of adults with diabetes-the ENTRED study. *Journal of the cardiometabolic syndrome.* Fall 2006;1(5):318-325.

40. Hanefeld M, Koehler C, Gallo S, Benke I, Ott P. Impact of the individual components of the metabolic syndrome and their different combinations on the prevalence of atherosclerotic vascular disease in type 2 diabetes: the Diabetes in Germany (DIG) study. *Cardiovascular diabetology.* 2007;6:13.

41. Koehler C, Ott P, Benke I, Hanefeld M, Group DIGS. Comparison of the prevalence of the metabolic syndrome by WHO, AHA/NHLBI, and IDF definitions in a German population with type 2 diabetes: the Diabetes in Germany (DIG) Study. *Hormone and metabolic research = Hormon- und Stoffwechselforschung = Hormones et metabolisme.* Sep 2007;39(9):632-635.

42. Skliros E, Sotiropoulos A, Vasibossis A, et al. Poor hypertension control in Greek patients with diabetes in rural areas. The VANK study in primary care. *Rural and remote health.* Jul-Sep 2007;7(3):583.

43. Agha A, Dillon D, Corbett M, Sreenan S. Target blood pressure for patients with type 2 diabetes is difficult to achieve in the setting of a busy diabetes clinic. *Irish journal of medical science.* Oct-Dec 2003;172(4):168-170.

44. Bacci S, Rizza S, Prudente S, et al. The ENPP1 Q121 variant predicts major cardiovascular events in high-risk individuals: evidence for interaction with obesity in diabetic patients. *Diabetes.* Mar 2011;60(3):1000-1007.

45. Bianchi C, Penno G, Malloggi L, et al. Non-traditional markers of atherosclerosis potentiate the risk of coronary heart disease in patients with type 2 diabetes and metabolic syndrome. *Nutrition, metabolism, and cardiovascular diseases : NMCD.* Jan 2008;18(1):31-38.

46. Comaschi M, Coscelli C, Cucinotta D, et al. Cardiovascular risk factors and metabolic control in type 2 diabetic subjects attending outpatient clinics in Italy: the SFIDA (survey of risk factors in Italian diabetic subjects by AMD) study. *Nutrition, metabolism, and cardiovascular diseases : NMCD.* Jun 2005;15(3):204-211.

47. Marchesini G, Forlani G, Cerrelli F, et al. WHO and ATPIII proposals for the definition of the metabolic syndrome in patients with Type 2 diabetes. *Diabetic medicine : a journal of the British Diabetic Association.* Apr 2004;21(4):383-387.

48. Ravera M, Noberasco G, Re M, et al. Chronic kidney disease and cardiovascular risk in hypertensive type 2 diabetics: a primary care perspective. *Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association.* May 2009;24(5):1528-1533.

49. Zoppini G, Verlato G, Leuzinger C, et al. Body mass index and the risk of mortality in type II diabetic patients from Verona. *International journal of obesity and related metabolic disorders : journal of the International Association for the Study of Obesity.* Feb 2003;27(2):281-285.

50. Bosevski M, Pemovska G, Bosevska G, Georgievska-Ismail L. Clinical role of estimation metabolic syndrome's components in type 2 diabetic population with symptomatic coronary artery disease--a comparison of two criteria. *Medicinski arhiv.* 2010;64(3):144-146.

51. Babes EB, Babes V, Ofrim D, Toadree A. Prevalence and prognostic significance of silent myocardial ischemia in diabetic patients with and without hypertension. *Arch Balk Med Union.* Sep 1 2009;44:210-214.

52. del Canizo-Gomez FJ, Moreira-Andres MN. Cardiovascular risk factors in patients with type 2 diabetes. Do we follow the guidelines? *Diabetes research and clinical practice.* Aug 2004;65(2):125-133.

53. Relimpio F, Martinez-Brocca MA, Leal-Cerro A, et al. Variability in the presence of the metabolic syndrome in Type 2 diabetic patients attending a diabetes clinic. Influences of age and gender. *Diabetes research and clinical practice.* Aug 2004;65(2):135-142.

54. Hassing LB, Hofer SM, Nilsson SE, et al. Comorbid type 2 diabetes mellitus and hypertension exacerbates cognitive decline: evidence from a longitudinal study. *Age and ageing.* Jul 2004;33(4):355-361.

55. Nilsson PM, Cederholm J, Zethelius BR, Eliasson BR, Eeg-Olofsson K, Gudbj Rnsdottir S. Trends in blood pressure control in patients with type 2 diabetes: data from the Swedish National Diabetes Register (NDR). *Blood pressure.* Dec 2011;20(6):348-354.

56. Ridderstrale M, Gudbjornsdottir S, Eliasson B, Nilsson PM, Cederholm J, Steering Committee of the Swedish National Diabetes R. Obesity and cardiovascular risk factors in type 2 diabetes: results from the Swedish National Diabetes Register. *Journal of internal medicine.* Mar 2006;259(3):314-322.

57. Torffvit O, Tencer J, Rippe B. The response to antihypertensive therapy is dependent on renal structural changes. A 5-year prospective study of renal biopsy in type 2 diabetic patients with micro-macroalbuminuria. *Journal of diabetes and its complications.* Nov-Dec 2010;24(6):361-367.

58. Daousi C, Casson IF, Gill GV, MacFarlane IA, Wilding JP, Pinkney JH. Prevalence of obesity in type 2 diabetes in secondary care: association with cardiovascular risk factors. *Postgraduate medical journal.* Apr 2006;82(966):280-284.

59. Echouffo-Tcheugui JB, Sargeant LA, Prevost AT, et al. How much might cardiovascular disease risk be reduced by intensive therapy in people with screen-detected diabetes? *Diabetic medicine : a journal of the British Diabetic Association.* Dec 2008;25(12):1433-1439.

60. Higgins GT, Khan J, Pearce IA. Glycaemic control and control of risk factors in diabetes patients in an ophthalmology clinic: what lessons have we learned from the UKPDS and DCCT studies? *Acta ophthalmologica Scandinavica.* Nov 2007;85(7):772-776.

61. Mulnier HE, Seaman HE, Raleigh VS, et al. Risk of stroke in people with type 2 diabetes in the UK: a study using the General Practice Research Database. *Diabetologia.* Dec 2006;49(12):2859-2865.

62. Mulnier HE, Seaman HE, Raleigh VS, Soedamah-Muthu SS, Colhoun HM, Lawrenson RA. Mortality in people with type 2 diabetes in the UK. *Diabetic medicine : a journal of the British Diabetic Association.* May 2006;23(5):516-521.

63. Song SH, Hardisty CA. Type 2 diabetes mellitus: a high-risk condition for cardiovascular disease irrespective of the different degrees of obesity. *QJM : monthly journal of the Association of Physicians.* Nov 2008;101(11):875-879.

64. Song SH, Hardisty CA. Early onset type 2 diabetes mellitus: a harbinger for complications in later years--clinical observation from a secondary care cohort. *QJM : monthly journal of the Association of Physicians.* Nov 2009;102(11):799-806.

65. Foucan L, Deloumeaux J, Donnet JP, et al. Metabolic syndrome components in Indian migrants with type 2 diabetes. A matched comparative study. *Diabetes & metabolism.* Sep 2006;32(4):337-342.

66. Aguilar-Salinas CA, Rojas R, Gomez-Perez FJ, et al. Prevalence and characteristics of early-onset type 2 diabetes in Mexico. *The American journal of medicine.* Nov 2002;113(7):569-574.

67. Jimenez-Corona A, Rojas R, Gomez-Perez FJ, Aguilar-Salinas CA. Early-onset type 2 diabetes in a Mexican survey: results from the National Health and Nutrition Survey 2006. *Salud publica de Mexico.* 2010;52 Suppl 1:S27-35.

68. Kramer H, Cao G, Dugas L, Luke A, Cooper R, Durazo-Arvizu R. Increasing BMI and waist circumference and prevalence of obesity among adults with Type 2 diabetes: the National Health and Nutrition Examination Surveys. *Journal of diabetes and its complications.* Nov-Dec 2010;24(6):368-374.

69. Suh DC, Kim CM, Choi IS, Plauschinat CA, Barone JA. Trends in blood pressure control and treatment among type 2 diabetes with comorbid hypertension in the United States: 1988-2004. *Journal of hypertension.* Sep 2009;27(9):1908-1916.

70. Wilson C, Gilliland S, Moore K, Acton K. The epidemic of extreme obesity among American Indian and Alaska Native adults with diabetes. *Preventing chronic disease.* Jan 2007;4(1):A06.

71. Thomas MC, Atkins R. Assessment and management of hypertension in patients with type 2 diabetes. *Internal medicine journal.* Mar 2009;39(3):143-149.

72. Leitao CB, Canani LH, Kramer CK, et al. Blood pressure means rather than nocturnal dipping pattern are related to complications in Type 2 diabetic patients. *Diabetic medicine : a journal of the British Diabetic Association.* Mar 2008;25(3):308-313.

73. Moehlecke M, Leitao CB, Kramer CK, et al. Effect of metabolic syndrome and of its individual components on renal function of patients with type 2 diabetes mellitus. *Brazilian journal of medical and biological research = Revista brasileira de pesquisas medicas e biologicas / Sociedade Brasileira de Biofisica ... [et al.].* Jul 2010;43(7):687-693.

74. Wobeto VP, Pinho Pda C, Souza JR, Zaccariotto TR, Zonati Mde F. Haptoglobin genotypes and refractory hypertension in type 2 diabetes mellitus patients. *Arquivos brasileiros de cardiologia.* Oct 2011;97(4):338-345.

75. Ezenwaka CE, Offiah NV. Cardiovascular risk in obese and nonobese patients with type 2 diabetes in the West Indies. *Journal of biomedical science.* Jul-Aug 2001;8(4):314-320.

76. Ezenwaka CE, Offiah NV. Abdominal obesity in type 2 diabetic patients visiting primary healthcare clinics in Trinidad, West Indies. *Scandinavian journal of primary health care.* Sep 2002;20(3):177-182.

77. Ezenwaka CE, Nwagbara E, Seales D, et al. A comparative study of the prevalence of the metabolic syndrome and its components in type 2 diabetic patients in two Caribbean islands using the new International Diabetes Federation definition. *Archives of physiology and biochemistry.* Oct-Dec 2007;113(4-5):202-210.