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Research Article

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Prevalence of limb complications in Iranian diabetic patients: A systematic review and meta-analysis

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Abstract

Objective : the aim of the present study was to evaluate the Prevalence of limb complications in Iranian diabetic patients.
Methods: To find references, the international Databases (MEDLINE PubMed interface), Google Scholar, and Web of Science) and domestic databases (SIDs and Magiran) and journals were searched; unlimited searching, in terms of both setting and language, was done until June 30, 2018. following keywords were used to provide a comprehensive context: diabetes, risk factors, diabetes complication, limb complications, Diabetic foot, and prevalence rate and percent.
Results: Based on the results of random effects model, the incidence of limb complications in 861 patients was 36.7% (95% confidence interval [CI]: 34.5, 38.9).
Discussion: Diabetes commonly affects the organs; additionally, the complications of the disease affect the quality of life and cause mortality. Although many of these complications can be somewhat cured and prevented, it is not possible to eliminate them entirely. Therefore, the diagnosis, prevention and treatment of these complications is very important. It is recommended to examine different organs as part of periodic care in patients with diabetes.

Keywords: prevalence, limb complication, diabetes, diabetic foot

Introduction

Chronic complications of diabetes cause premature mortality and disability in individuals suffering from this disease(1). Diabetes is the fifth cause of death in most countries of the world, causing disability, medical costs, and increased mortality(2). Long-term complications of diabetes are considered as medical problems. Several studies have been conducted on the mechanism of the occurrence of these complications and the ways to prevent and treat them in recent years(3). In addition to being a disease per se, diabetes millets also include a series of metabolic diseases caused by insufficiency of insulin secretion, dysfunction, or both; this disease is characterized by drop in blood glucose(4,5). Diabetes is a growing public health concern. The high importance of diabetes is due to its high prevalence and several subsequent complications(6). Diabetes is nowadays considered as one of the most important health-care and socio-economic issues of the world(7). The World Health Organization has declared this disease as epidemic due to the increasing global incidence(8). Diabetes causes major complications in most systems and organs of the body, causing early or late complications of the disease, leading to disability, paralysis, medical costs, and mortality(9). The onset of type 2 diabetes depends on both environmental and hereditary factors(10). The majority of preventive measures are aimed at manipulating environmental factors such as weight gain, inactivity, embryonic complications and fatty diet. Unfortunately, the complications of diabetes are often chronic(11). The prognosis of long-term improvement is very weak.

In this regard, the frequency of abnormalities such as organ dysfunction, stroke and up to 80% of deaths are due to the same complication in the majority of patients(6). the aim of the present study was to evaluate the Prevalence of limb complications in Iranian diabetic patients.

Methods

Eligibility criteria

The methods used for this systematic review were based on the "Cochrane Systematic Study Booklet" and "Appropriate Items for Systematic and Meta-Analysis Study (PRISMA)" tool. Observational studies conducted on general population have been added and studies conducted on specific population have been removed. Results are summarized as reported in the research. The minimum sample size was 25 patients in each study. The Prevalence of limb complications in Iranian diabetic patients was calculated in this study.

Searching strategies and databases

The review of references and resources was done using the Medical Subject Headings (MeSH) and keywords related to the source of information on the incidence of Prevalence of limb complications in Iranian diabetic patients. To find references, the international Databases (MEDLINE PubMed interface), Google Scholar, and Web of Science) and domestic databases (SIDs and Migiran) and journals were searched; unlimited searching, in terms of both setting and language, was done until June 30, 2018. PRESS standard and the Health Sciences Librarian were used for designing the strategy.

MEDLINE application was used to search other databases. In addition, PROSPERO was used to provide a systematic search that was completed recently. To search for headlines and abstracts, boolean (AND, OR, NOT), mesh, coordinate {truncation} * and related words were used; following keywords were used to provide a comprehensive context: diabetes, risk factors, diabetes complication, limb complications, Diabetic foot, and prevalence rate and percent.

Research selection and data extraction

According to the research protocol, two researchers observed the titles and abstracts separately according to the eligibility criteria; in the next step, after the removal of repeated studies, the full text of the paper was studied based on the eligibility criteria and the required information was extracted. Consensus method was used to solve the disagreements between two researchers. The extracted data included the general information (corresponding author, year and place), characteristics of the research (research design, sample size, location, study period, and risk of bias), and characteristics of participants.

Quality control

To assess the quality of the methodology and bias risk, each observation study was evaluated using a tool developed by Hoy et al; this 10-item scale evaluated the quality of the study in two dimensions, including external credentials (items 1 to 4 target populations, sampling frame, sampling method, and minimum indirect neglect) and internal validity (items 5 up to 9 covering methods for data collection, case definition, study tools, and data collection mode and item 10 covering assessing relevant assumptions or analyzes). The risk of abuse was assessed by two researchers separately and possible disparity of ideas was resolved by consensus.

Aggregation of data

All eligible studies were included within the systematic review. The heterogeneity of primary studies was assessed by performing I^2 tests. Subgroup analysis was conducted to determine the heterogeneity based on the participants in the study, gender, and age. Meta-analysis was performed using the STAT 14 statistical software.

Results

1. Selecting eligible papers and researches

In the initial search on various databases, a total of 190 articles were reviewed, 145 of which turned out to be repetitive during screening process of title and abstract. 33 articles were removed due to unrelated title; out of the remaining 12 articles, 2 articles met the inclusion criteria. Of the 10 articles that were removed, 3 were reviews, 1 were letters to editors, 2 had no complete text, and 4 had low quality and could not be considered in the research. (Figure 1)

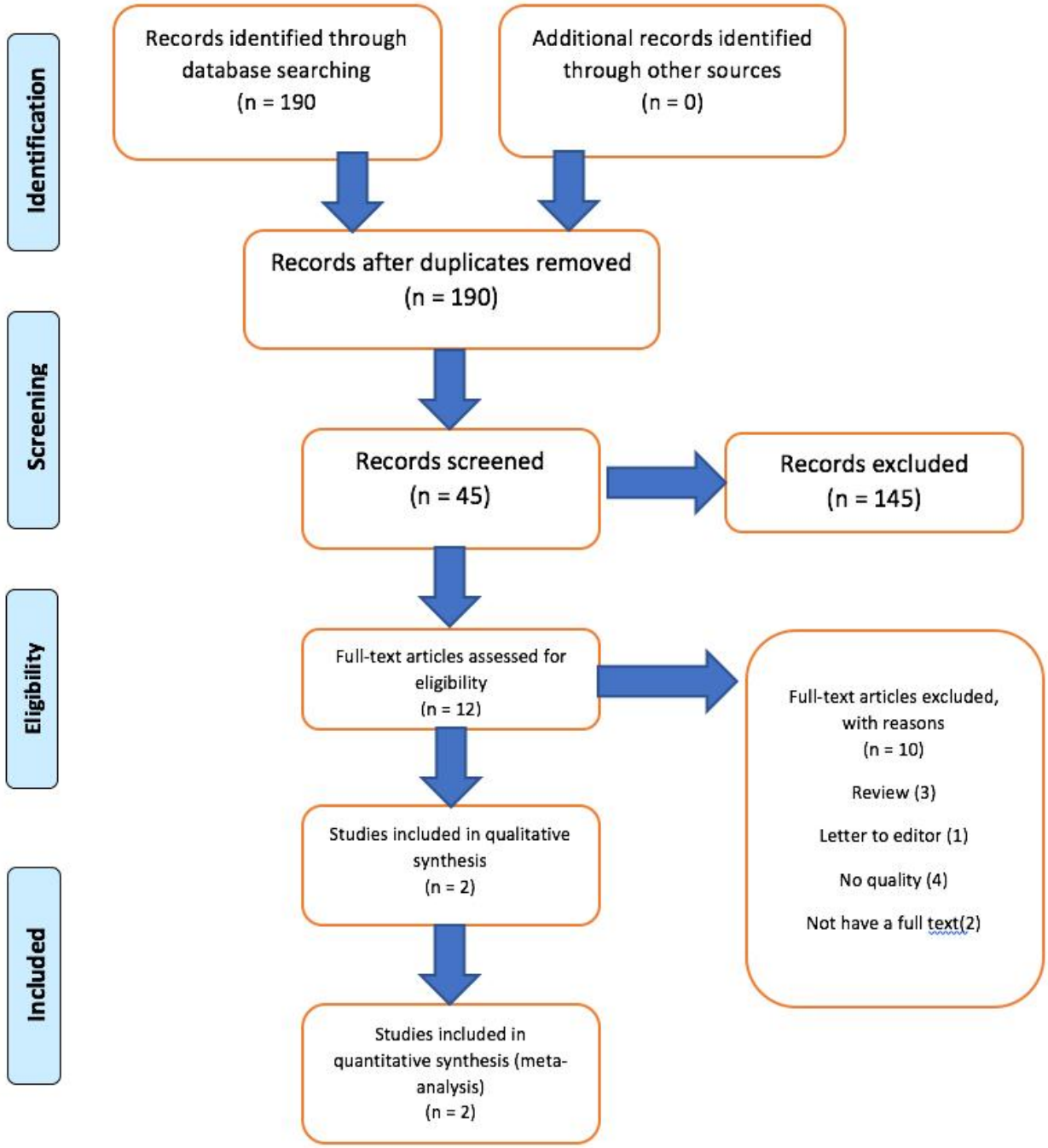

Fig 1 . PRISMA flow chart

2. Characteristics of the researches and papers

The final research was conducted on 861 participants; with an age range of 15 and 80 years old; a cross-sectional design was used in all studies. Research was conducted in only 2 provinces out of 31 provinces of Iran. Of the 2 studies, 1 was from Shahroud and other one was from khuzestan; all of papers were conducted on outpatient cases (n= 2) through random sampling (n = 2). Required data was collected through interview (n = 2) and had a low bias risk (n = 2) (Table 1).

Table 1: Characteristics of final included studies about Prevalence of limb complications in Iranian diabetic patients

ID	Author	Year	N	Mean of age	prevalence	Bias
1	Abbasian[18]	2007	340	50.2	12.6%	Low
2	Cheraghi[19]	2010	521	-	13.4%	low

Meta-analysis Prevalence of limb complications in Iranian diabetic patients :

Based on the results of random effects model, the incidence of limb complications in 861 patients was 36.7% (95% confidence interval [CI]: 34.5, 38.9).

Table 2: Prevalence of limb complications in Iranian diabetic patients

Study	year	ES	95% conf Interval		weight
			low	up	
Abbasian	2007	0.379	0.347	0.411	44.92
cheraghi	2010	0.357	0.328	0.386	55.08
Overall random pooled ES	----------	0.367	0.345	0.389	100

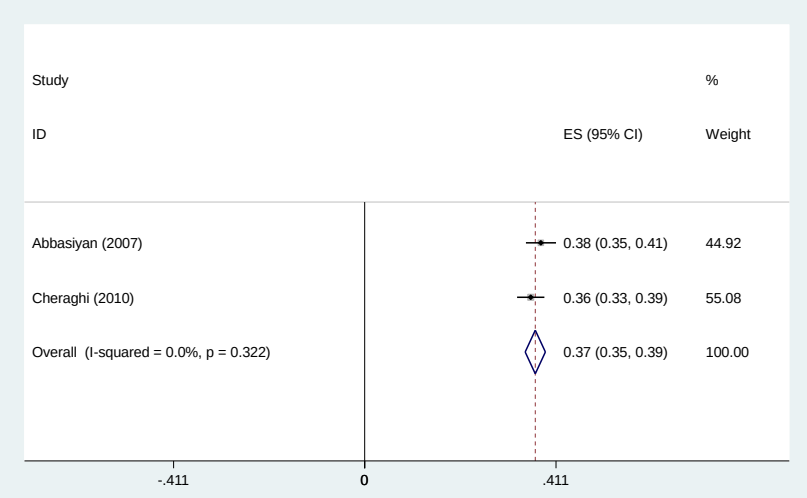

Fig.2 . The incidence of Prevalence of limb complications in Iranian diabetic patientsand its 95% interval for the studied cases according to the year and the city where the study was conducted based on the model of the random effects model. The midpoint of each section of the line estimates the% value and the length of the lines showing the 95% confidence interval in each study.

Discussion

Based on the results of random effects model, the incidence of limb complications in 861 patients was 36.7% (95% confidence interval [CI]: 34.5, 38.9).This disease is highly important due to considerable prevalence and accompanying complications. Diabetes is nowadays one of the most important health and social problems in the world; it is the most common metabolic disease with pathophysiologic changes in the organs; complications caused by this disease impose high costs on individuals, society and the health system(12). Regarding the chronicity of the disease, a number of chronic complications have been reported in various organs that cause mortality in these patients(13). Complications of diabetes are divided into two groups of vascular and non-vascular. Non-vascular complications involve digestive system,

skin, musculoskeletal, connective tissue and infections(14). Chronic complications of diabetes in both types 1 and 2 are related to the duration of the disease, and most of these complications are observed in the second decade after the development of the disease. Chronic complications of diabetes are associated with high blood glucose levels. For this reason, diabetics are more likely to develop complications such as organ dysfunction than normal people(15). The results of formerly conducted studies indicate a relatively high prevalence of risk factors in diabetic patients as well as organ dysfunction(16). It is, therefore, recommended to provide efficient training on risk factors, preventing complications, taking medications, changing the health care system and the consequences of not paying attention to these recommendations for patients. Diabetes commonly affects the organs; additionally, the complications of the disease affect the quality of life and cause mortality(17). Although many of these complications can be somewhat cured and prevented, it is not possible to eliminate them entirely. Therefore, the diagnosis, prevention and treatment of these complications is very important. It is recommended to examine different organs as part of periodic care in patients with diabetes.

References

1. Peters AL, Buschur EO, Buse JB, Cohan P, Diner JC, Hirsch IB. Euglycemic diabetic ketoacidosis: a potential complication of treatment with sodium–glucose cotransporter 2 inhibition. Diabetes care. 2015 Sep 1;38(9):1687-93.
2. Gibbons CH, Freeman R. Treatment-induced neuropathy of diabetes: an acute, iatrogenic complication of diabetes. Brain. 2014 Nov 10;138(1):43-52.
3. Hardt PD, Ewald N. Exocrine pancreatic insufficiency in diabetes mellitus: a complication of diabetic neuropathy or a different type of diabetes?. Experimental diabetes research. 2011 Aug 1;2011.
4. Zhuo X, Zhang P, Hoerger TJ. Lifetime direct medical costs of treating type 2 diabetes and diabetic complications. American journal of preventive medicine. 2013 Sep 1;45(3):253-61.
5. Salarzaei M, Saravani S, Heydari M, Aali H, Malekzadegan A, Soofi D, Movaghar ER, Mir S, Parooei F. Prevalence of urinary tract infection in children with nephrotic syndrome. International Journal of Pharmaceutical Sciences and Research. 2017 Jul 1;8(7):1346-50.
6. Laiteerapong N, Karter AJ, Liu JY, Moffet HH, Sudore R, Schillinger D, John PM, Huang ES. Correlates of quality of life in older adults with diabetes: the diabetes & aging study. Diabetes care. 2011 Aug 1;34(8):1749-53.
7. Abadi AJ, Saravani S, Aali H, Movaghar E, Far RE, Salarzaei M, Abadi R. Investigating the Epidemiology of Patients with Intracranial Hemorrhage Caused by Head Trauma at the Khatamolanbia Hospital in Zahedan. International Journal of Advanced Biotechnology and Research. 2016;7(4):1803-11.
8. Malandrino N, Wu WC, Taveira TH, Whitlatch HB, Smith RJ. Association between red blood cell distribution width and macrovascular and microvascular complications in diabetes. Diabetologia. 2012 Jan 1;55(1):226-35.
9. Bell DS. Heart failure: the frequent, forgotten, and often fatal complication of diabetes. Diabetes care. 2003 Aug 1;26(8):2433-41.
10. Malekzadegan, Aali H. “The Study of Success rate of CPR in 0-14 years Trauma Children who admitted to the Emergency of Khatam-Alanbia Hospital Zahedan , Iran 2016.” (2017).
11. Berger M, Mönks D, Wanner C, Lindner TH. Diabetic nephropathy: an inherited disease or just a diabetic complication?. Kidney and Blood Pressure Research. 2003;26(3):143-54.
12. Kilpatrick ES, Rigby AS, Atkin SL. Insulin resistance, the metabolic syndrome, and complication risk in type 1 diabetes:“double diabetes” in the Diabetes Control and Complications Trial. Diabetes care. 2007 Mar 1;30(3):707-12.
13. Trujillo-Santos AJ. Diabetic muscle infarction: an underdiagnosed complication of long-standing diabetes. Diabetes care. 2003 Jan 1;26(1):211-5.
14. Chang-Chen KJ, Mullur R, Bernal-Mizrachi E. β-cell failure as a complication of diabetes. Reviews in Endocrine and Metabolic Disorders. 2008 Dec 1;9(4):329.
15. Geerlings SE, Stolk RP, Camps MJ, Netten PM, Hoekstra JB, Bouter KP, Bravenboer BE, Collet JT, Jansz AR, Hoepelman AI.

Asymptomatic bacteriuria may be considered a complication in women with diabetes. Diabetes Mellitus Women Asymptomatic Bacteriuria Utrecht Study Group. Diabetes care. 2000 Jun 1;23(6):744-9.
16. Tilling LM, Darawil K, Britton M. Falls as a complication of diabetes mellitus in older people. Journal of Diabetes and its Complications. 2006 May 1;20(3):158-62.
17. Okamoto M, Suzuki T, Fujiki M, Nobori S, Ushigome H, Sakamoto S, Yoshimura N. The consequences for live kidney donors with preexisting glucose intolerance without diabetic complication: analysis at a single Japanese center. Transplantation. 2010 Jun 15;89(11):1391-5.
18. AbbasianM,DelvarianM,HoseynzadeS,Piraste N. Diabetes complications in patients referred to diabetes clinic in Shahrood.The 9th Iranian Nutrition Congress 2006 Sep 4. Tabriz university of medical sciences.
19. CheraghiZ,Amuri N, DustiiraniA,Biaraf S.Prevalence of Type 2 Diabetes Complications in Diabetic Patients Covered by Diabetes Unit in Shadegan City Health Center in 2009.

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