

INTERNATIONAL EVIDENCE-BASED GUIDELINES FOR NON-COMMUNICABLE DISEASES HYPERTENSION AND TYPE 2 DIABETES MELLITUS: A SYSTEMATIC REVIEW



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Background

Reducing risk factors associated with non-communicable diseases (NCDs) is the most effective way to manage the burden attributable to them. Countries of South-East Asia face an increase in hypertension (HT) and type 2 diabetes mellitus (T2DM) prevalence. Several studies report the prevalence of HT to be about 35% (accountable for 1.5 million deaths annually). The prevalence of diabetes in south Asians is four times higher than in any other ethnic groups owing to the individual susceptibility to T2DM. The EU funded project SUNI-SEA (Scaling-Up Non-communicable Diseases Interventions in South-East Asia) evaluates and validates effective and cost-effective scaling-up strategies of evidence-based diabetes and hypertension prevention and management programmes on community levels. As a part of this effort, the described systematic review aims to provide a high-quality summary of recommendations on HT and T2DM based on the best local and international evidence.

Methods

The search for published evidence-based methods in scaling-up NCD interventions and using them for sustainability and global innovative approaches in prevention and management, especially with regard to hypertension and diabetes was executed primarily within the PubMed database. List of key words used for the search comprised words: guideline*, consensus, hypertension, high blood pressure, cardiovascular disease*, type 2 diabetes, non-communicable disease*, europe*, america*, Indonesia, Vietnam and Myanmar. The search was complemented with searching through general web for evidence-based guidelines on hypertension and type 2 diabetes mellitus management in Europe, the United States of America and low and middle-income countries [focusing on Indonesia, Vietnam, Myanmar (IVM)] from October to December 2019. Nine studies were selected in the review, seven concerning HT and five T2DM.

Table 1: Characteristics of reviewed guidelines

Reference number	Study author(s)	Year	Country	Type of Guideline
1	Arnett et al.	2019	United States of America	Primary prevention of cardiovascular disease
2	Williams et al.	2018	Europe	Management of arterial hypertension
3	Whelton et al.	2017	United States of America	High blood pressure in adults
4	Perk et al.	2012	Europe	Cardiovascular disease prevention in clinical practice
5	World Health Organization	2018	World (Myanmar)	Noncommunicable disease interventions
6	Soelistijo et al.	2015	Indonesia	Management and prevention of type 2 diabetes mellitus
7	Vietnam Ministry of Health	2017	Vietnam	Diagnosis and treatment of type 2 diabetes mellitus
8	Indonesian Society of Hypertension	2019	Indonesia	Management of hypertension
9	Vietnam Ministry of Health	2019	Vietnam	Diagnostics, treatment and management of some non-infective diseases

Results

Guidelines from IVM and Europe identified HT at a higher blood pressure (PB) ($\geq 140/80$ mmHg). IVM guidelines recommended commencing drug treatment if lifestyle interventions have not been successful. Five HT guidelines recommended to monitor BP every few months, and the other two guidelines' recommendations on monitoring were based on the patient's current BP levels. All 5 T2DM guidelines recommended to target HbA1c level below 7 – 6.5%, but only IVM guidelines to re-examine the patient every 3 to 6 months. Metformin was recommended as the first choice of medical treatment, if not contraindicated. Amid the guidelines' recommendations were no major variations in the Class of recommendation and Level of evidence (except IVM guidelines where COR and LOE were missing).

Table 2: Comparison of guidelines recommendations – hypertension

Recommendation	1	2	3	4	5	8	9
Diagnosis of HT	$\geq 130/80$	$\geq 140/90$	$\geq 130/80$	$\geq 140/90$	$\geq 140/90$	$\geq 140/90$	$\geq 140/90$
Start medication in grade/stage 1 hypertension when	Estimated 10-year ASCVD risk $\geq 10\%$	Lifestyle interventions have failed or at high CV risk or/with HMOD	Estimated 10-year ASCVD risk $<10\%$ and an SBP ≥ 140 mmHg or a DBP ≥ 90 mmHg	High or very high CVD risk	Lifestyle interventions have failed	Lifestyle interventions have failed	Lifestyle interventions have failed
	I; SBP: A; DBP: C-EO	I; A	I, C-LD	I; C (Strong)	NA	NA	NA
BP measurements/monitoring	Every 3–6 months	Every 3–6 months	HT stage 1: Every 3–6 months, if ASCVD risk $>10\%$ then every month HT stage 2: every month Normal BP: once a year	Several months	Every month until improvement/stabilization of BP	$<120/80$ mmHg – every 5 years 120–129/80–84 mmHg – every 3 years 130–139/85–89 mmHg – yearly	$<130/85$ mmHg – annually 130–139/85–89 mmHg – every 3 months 140–159/90–99 mmHg – weekly 160–179/100–109 mmHg – daily $>180/110$ mmHg – daily
	NA	NA	I, B-R	NA	NA	NA	NA

ASCVD = atherosclerotic cardiovascular disease; HMOD = hypertension-mediated organ damage; DBP = diastolic blood pressure; SBP = systolic blood pressure

Table 3: Comparison of treatment process and pharmacotherapy – type 2 diabetes mellitus

Recommendation	1	4	5	6	7
Target HbA1c level	Recommended $<6.5\%$	Recommended $<7\%$; $<6.5\%$ may be useful	Recommended $<7\%$	Recommended $<7\%$	Recommended $<7\%$ but with other variables
Examination of patient's HbA1C levels each 3–6 months	No recommendation	No recommendation	Recommended	Recommended every 3 months	Recommended at least 2x year
	--	--	NA	E	NA
Metformin as the first choice if not contraindicated	Recommended	Recommended	Recommended	Recommended	Recommended
	Ia; B-R	Ia; B (Strong)	NA	NA	NA

HbA1c = glycated haemoglobin; CVD = cardiovascular disease

Conclusions and recommendations

We observed significant differences among guidelines being used in countries of South-East Asia and those from Europe or USA. Most of those evaluated did not mention important attributes, such as the Class of recommendation or the Level of evidence. Without those, the use of recommendations is feasible, but users might be less willing using them to base clinical decisions in their clinical practice. It is recommended that these guidelines are revised and completed to be used as credible sources in evidence-based medicine manner.