



"A systematic review of economic analyses of Non communicable diseases (NCDs) related preventive interventions: A guide for Pacific Island Countries"

Presenter

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Introduction and Background



The World Health Organisation (WHO) defines NCDs as cardiovascular disease, diabetes, chronic obstructive pulmonary disease (COPD), and common cancers.

NCDs are caused by tobacco use, poor diet, physical inactivity, and the harmful use of alcohol.



The rapid rise of non-communicable diseases (NCDs) represents one of the major health challenges to global development. It is estimated that by 2020 over 70% of the global burden of disease will be related to NCDs (especially cancer, diabetes, cardiovascular diseases and chronic respiratory diseases), mental health disorders and injuries.



An example

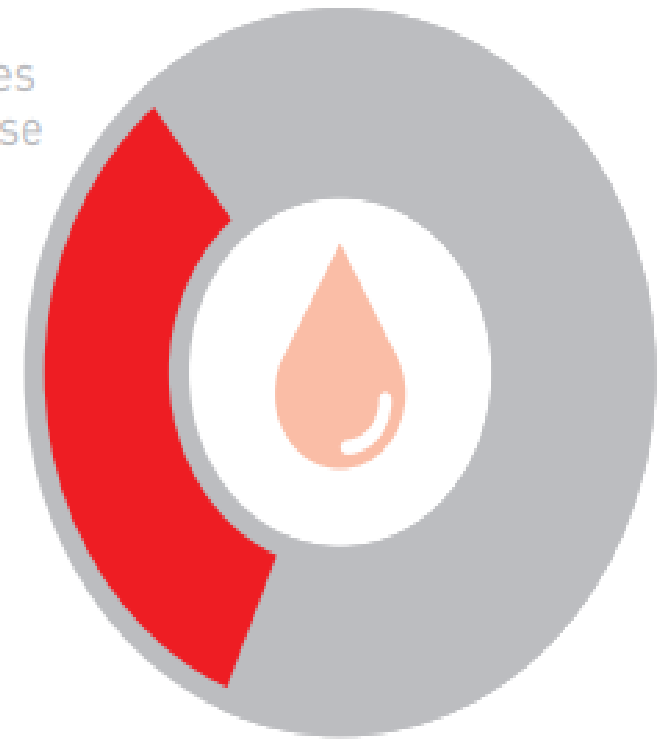
DIABETES IS ON THE RISE



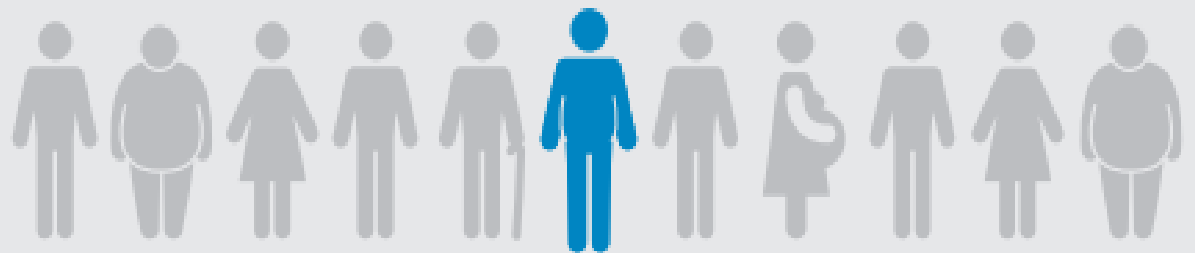
422 MILLION
adults have diabetes

3.7 MILLION
deaths due to diabetes
and high blood glucose

1.5 MILLION
deaths caused
by diabetes



THAT'S **1** PERSON IN **11**



NCDs in Pacific



NCDs are an important health challenge in the Pacific. NCDs are already the leading cause of death in twelve Pacific Island Countries for which data is available, frequently accounting for 70% of all deaths.



Annex One: Pacific Islands Indicators of Non-Communicable Diseases and Risk Factors in 2008

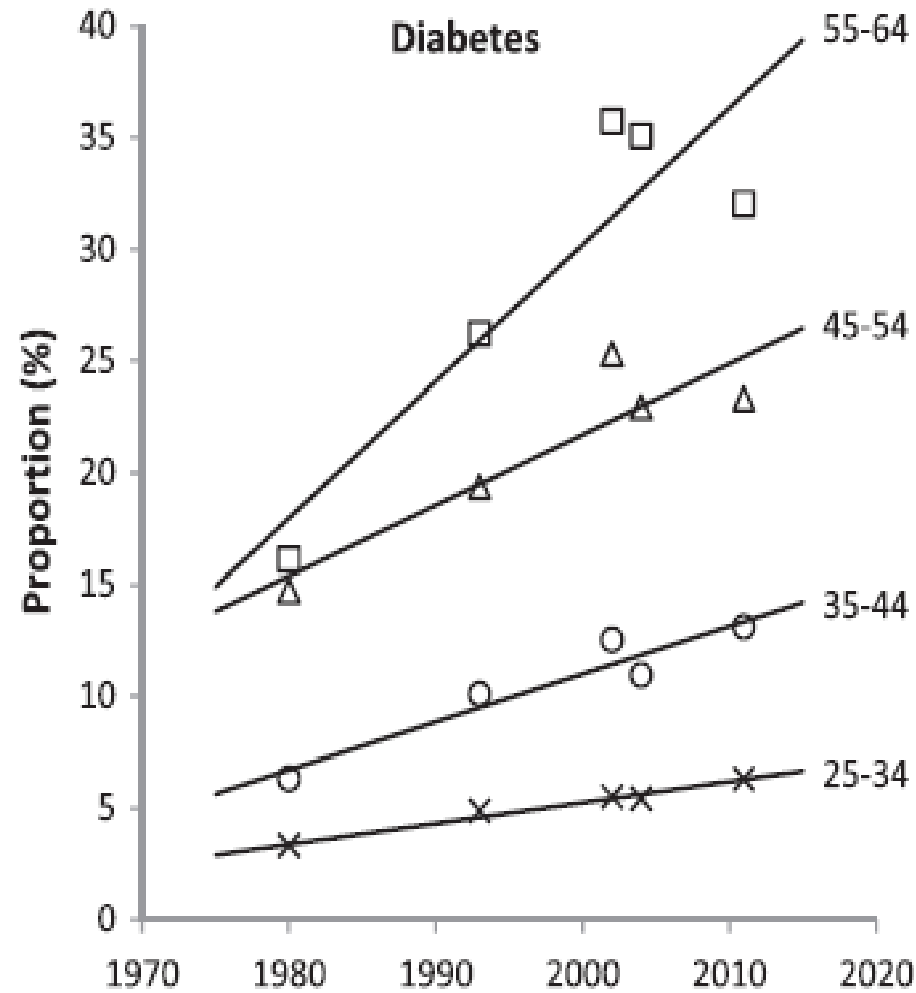
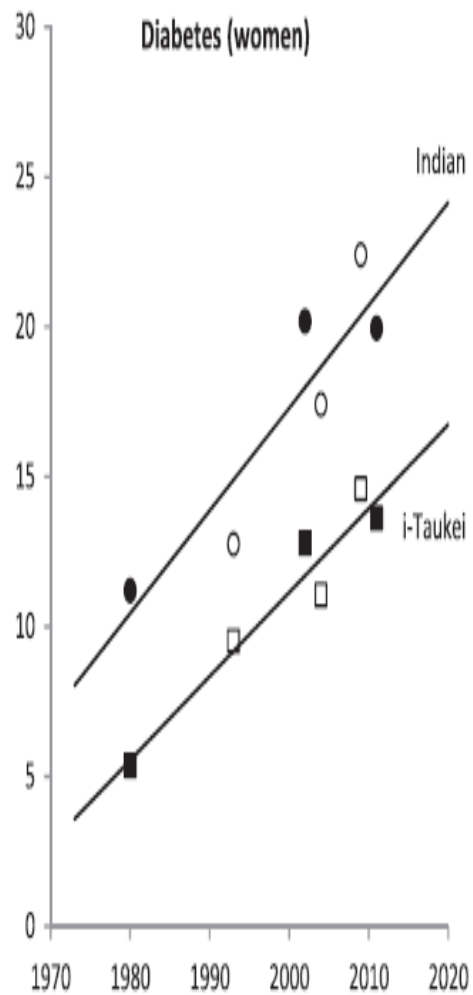
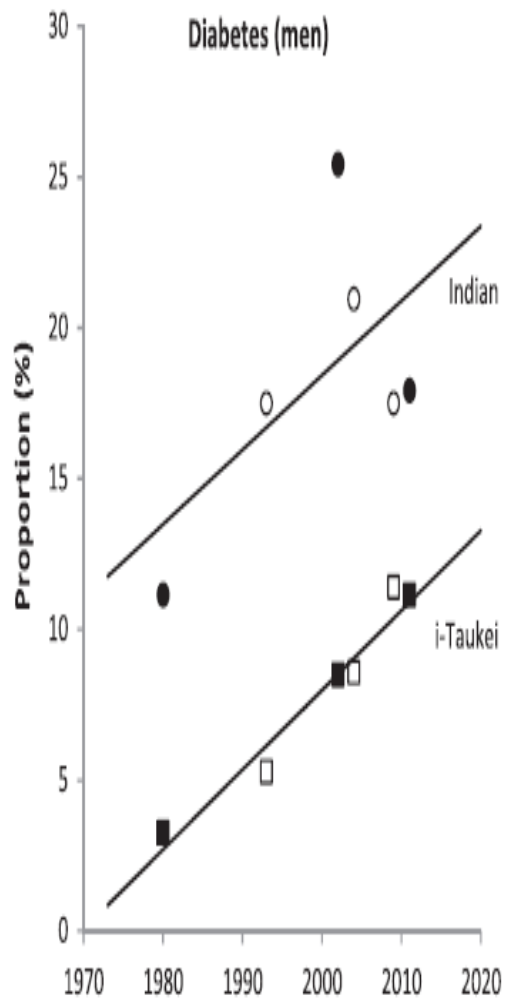
Source: (WHO 2011)

Indicator	Cook Islands	Fiji	Kiribati	Marshall Islands	Micronesia (Federated States)	Nauru	Niue	Samoa	Solomon Islands	Tonga	Tuvalu	Vanuatu
Total population	20,288	860,623	99,546	54,038	111,064	10,255	1,468	183,081	538,148	104,058	9,827	239,651
NCDs as a percentage of all deaths (%)	74	77	69	73	67	70	72	70	60	74	73	70
Current daily smoking total (%)	34	8	67	17	17	47	...	36	28	22	32	12
Physical inactivity (%)	72	...	49	51	65	49	...	49	42	41
Raised blood pressure (%)	41	39	33	32	38	39	...	40	30	40	...	41
Raised blood glucose (%)	20	13	22	26	15	12	...	21	15	17	...	8
Overweight (%)	90	65	80	79	75	92	...	84	65	87	...	62
Obese (%)	63	30	46	45	40	71	...	54	30	57	...	27
Raised cholesterol(%)	58	52	34	44	46	44	...	33	32	48

Proportional mortality: % of total deaths, all ages, 2008

Source: (WHO, Noncommunicable Diseases Country Profiles , 2011)

NCD and other, proportion of total deaths all ages	Samoa	Tonga	Vanuatu
<i>NCD</i>			
Cardiovascular disease	37%	38%	36%
Chronic Respiratory Diseases	7%	7%	6%
Cancers	6%	9%	12%
Diabetes	5%	5%	4%
Other NCDs	15%	15%	13%
<i>Total NCDS</i>	70%	74%	70%
<i>Communicable, maternal, perinatal and nutritional conditions</i>	25%	22%	24%
<i>Injuries</i>	5%	4%	5%



Source: Sophia Lin et al., 2015



NCDs and Costs



Many developing countries will face higher levels of NCDs at earlier stages of economic development, with fewer resources, and with less time to respond effectively compared to their higher-income counterparts. (World Bank, The Growing Danger of Non Communicable Diseases: Acting Now to Reverse Course, 2011).

An estimated \$ 84 billion of economic production would be lost from heart disease, stroke, and diabetes between 2006 and 2015 in the 23 low and middle income countries accounting for around 80 per cent of chronic disease mortality.



Table 2. Estimated cost of diabetes incurred by governments.

	Solomon Islands				Nauru	
	Annual cost		Annual		Annual cost	Annual
	per person		national cost		per person	national cost
	(N = 197)		(N = 45,465)*		(N = 133)	(N = 1,571)*
		(cost in 1000s)				
	SBD	AUD	SBD	AUD	AUD	AUD
Outpatient**	\$119	\$15±2	\$5,410	\$685±81	\$28±3	\$44±5
<i>Solomon Islands = average 6±0.7 visits/person/year</i>						
<i>Nauru = average 9±1.1 visits/person/year</i>						
Inpatient***	\$1,620	\$205±61	\$73,667	\$9,325±2783	\$621±147	\$975±230
<i>Solomon Islands = average 6±2.4 days/person/year</i>						
<i>Nauru = average 9±2.1 days/person/year</i>						
Prescription medications****						
■ Oral hypoglycaemic	\$205	\$26	\$9,314	\$1,179	\$29	\$46,
■ Insulin	\$144	\$18	\$6,569	\$832	\$27	\$42
■ Antihypertensive	\$94	\$12	\$4,291	\$543	\$18	\$28
■ Antibiotic	\$16	\$2	\$706	\$89	\$21	\$31
■ Pain relief / anti-inflammatory	\$20	\$3	\$918	\$116	\$2	\$4
Total cost for prescription medications	\$479	\$61±1.9	\$25,215	\$3,198±86	\$98±2.6	\$153±4
Overall cost incurred by governments	\$2,218	\$281±62	\$100,874	\$12,769±2805 [®]	\$747±148	\$1,173±231 [®]

*People with diabetes aged 20–79 years

** *Solomon Islands = number of persons reported 91(46.2%) with minimum cost AUD10 /year and maximum cost AUD243/year. Nauru = number of persons reported 81 (60.9%) with minimum cost AUD12/year and maximum cost AUD288/year.*

*** *Solomon Islands = number of persons reported 15(7.5%) with minimum cost AUD303/year and maximum cost AUD6075/year. Nauru = number of persons reported 20 (15.0%) with minimum cost AUD680/year and maximum cost AUD9520/year.*

**** *Solomon Islands = number of persons reported on oral-anti-diabetic tablets 151 (76.6%); insulin 13 (6.6%); antihypertensive 44 (22.3%); antibiotics 4 (2.0%); pain relief/anti-inflammatory 4 (2%). Nauru = number of persons reported on oral-anti-diabetic tablets 65 (48.9%); insulin 9(6.8%); antihypertensive 31 (23.3%); antibiotics 12(9.0%); pain relief/anti-inflammatory 3(6.8%).*

[®] Approximately 20% of the respective government's annual health care expenditure

SBD = Solomon Islands Dollar; AUD = Australian Dollar

Table 3. Estimated cost of diabetes incurred by people with diabetes.

	Solomon Islands				Nauru	
	Annual cost		Annual		Annual cost	Annual
	per person		national cost		per person	national cost
	(N = 197)		(N = 45,465)*		(N = 133)	(N = 1,571)*
		(cost in 1000s)			(cost in 1000s)	
	SBD	AUD	SBD	AUD	AUD	AUD
Non prescriptive medications cost**	\$81	\$10±2.8	\$3,683	\$466±128	\$33±6	\$52±8
Special diabetic food cost***	\$384	\$49±7	\$17,459	\$2,210±334	\$41±12	\$64±19
Transport cost****	\$315	\$40±10	\$14,322	\$1,813±457	\$36±5.9	\$57±9
Total cost incurred by individuals	\$780	\$99±15	\$35,463	\$4,489±668	\$110±15	\$173±23

*People with diabetes aged 20–79 years

** *Solomon Islands = number of persons reported 11(5.6%) with minimum cost AUD5/year and maximum cost AUD202/year. Nauru = number of persons reported 69 (52.0%) with minimum cost AUD10/year and maximum cost AUD240/year.*

*** *Solomon Islands = number of persons reported 80(40.6%) with minimum cost AUD10/year and maximum cost AUD911/year. Nauru = number of persons reported 13 (9.8%) with minimum cost AUD24/year and maximum cost AUD800/year.*

**** *Solomon Islands = number of persons reported 43(21.8%) with minimum cost AUD10/year and maximum cost AUD253/year. Nauru = number of persons reported 51 (38.3%) with minimum cost AUD16/year and maximum cost AUD200/year.*

Objective of the study



This systematic review is aimed to measure the cost-effectiveness of preventive strategies for NCDs in Pacific countries. This study is also aimed to develop a guideline and also address the effective interventions to prevent NCDs in Pacific countries.



Methods



- Conducted an online search of the following electronic databases: Medline, CINAHL, Scopus, Web of Knowledge, PsychInfo, and Scopus.
- Articles were published in English between 2000 and 2016.
- were peer reviewed journal, were about cost-effectiveness of preventive strategies and programs for NCDs.
- Focused on Randomized Controlled Trial (RCT), Quasi-randomized Controlled Trial (QRCTs), cohort and descriptive study.



Search Terms

Cost Parameters	NCDs parameters	Place	Study design Parameters
('cost benefit analysis' OR 'cost benefit' OR 'cost effectiveness' OR 'cost effectiveness analysis' OR economic)	(NCDs OR "non-communicable diseases") Cancer, Diabetes, cardiovascular, COPD, tobacco, alcohol, diet, foods, nutrition, physical activity, sedentary life	"Pacific"	Quasi experimental Quasi randomized control trial Pre and post study, RCTs, Cohort, descriptive study (quantitative/qualitative survey)



Data extraction sheet

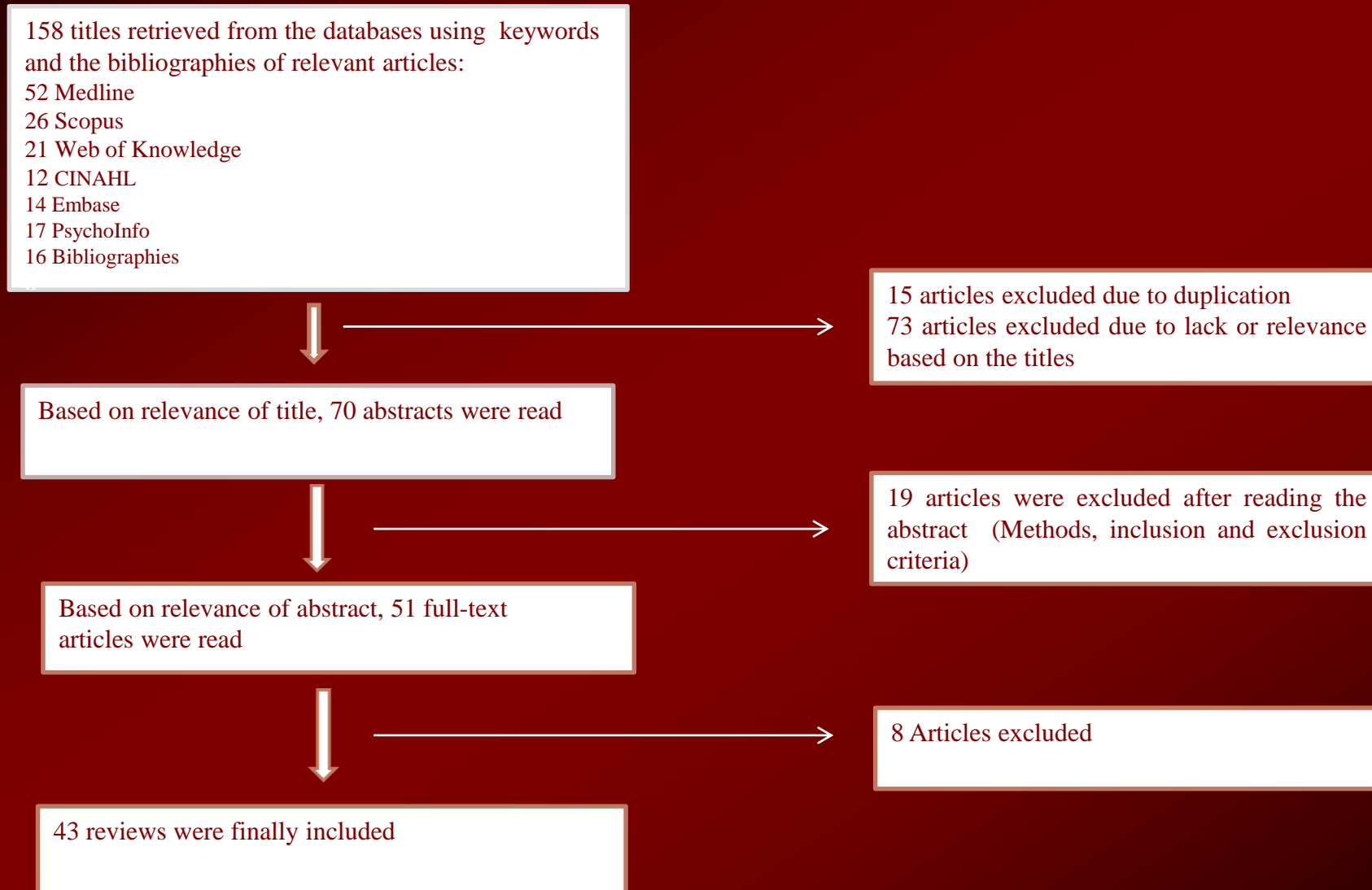
bibliographic details, the country within which the study took place and the year of the studies were conducted, study design and data sources, population characteristics, intervention traits, outcome measures, main results, and limitations raised in the discussion.

Data analysis

A descriptive method has been conducted to analysis the data.

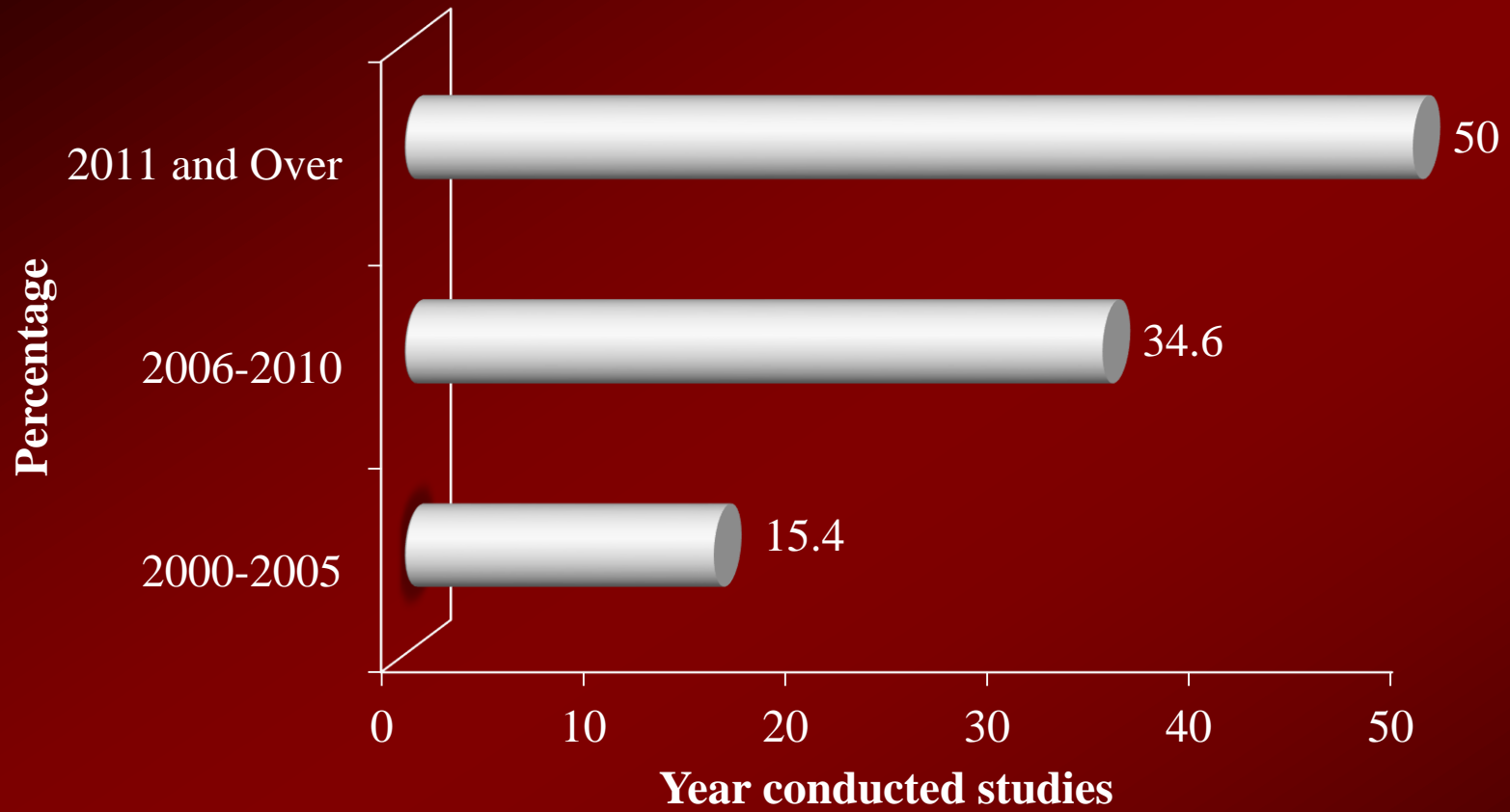


Flow diagram of studies included in the systematic review



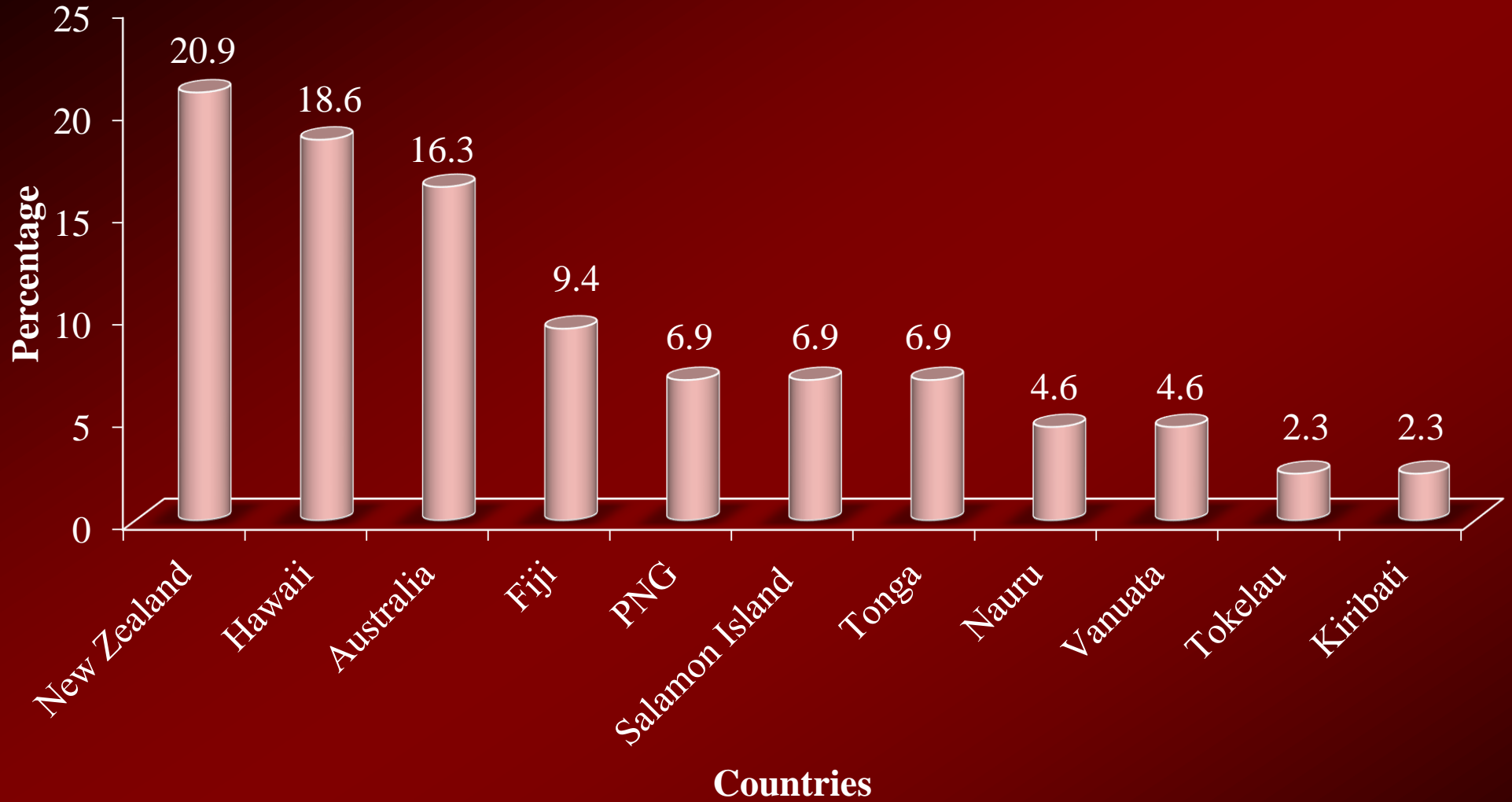
Results





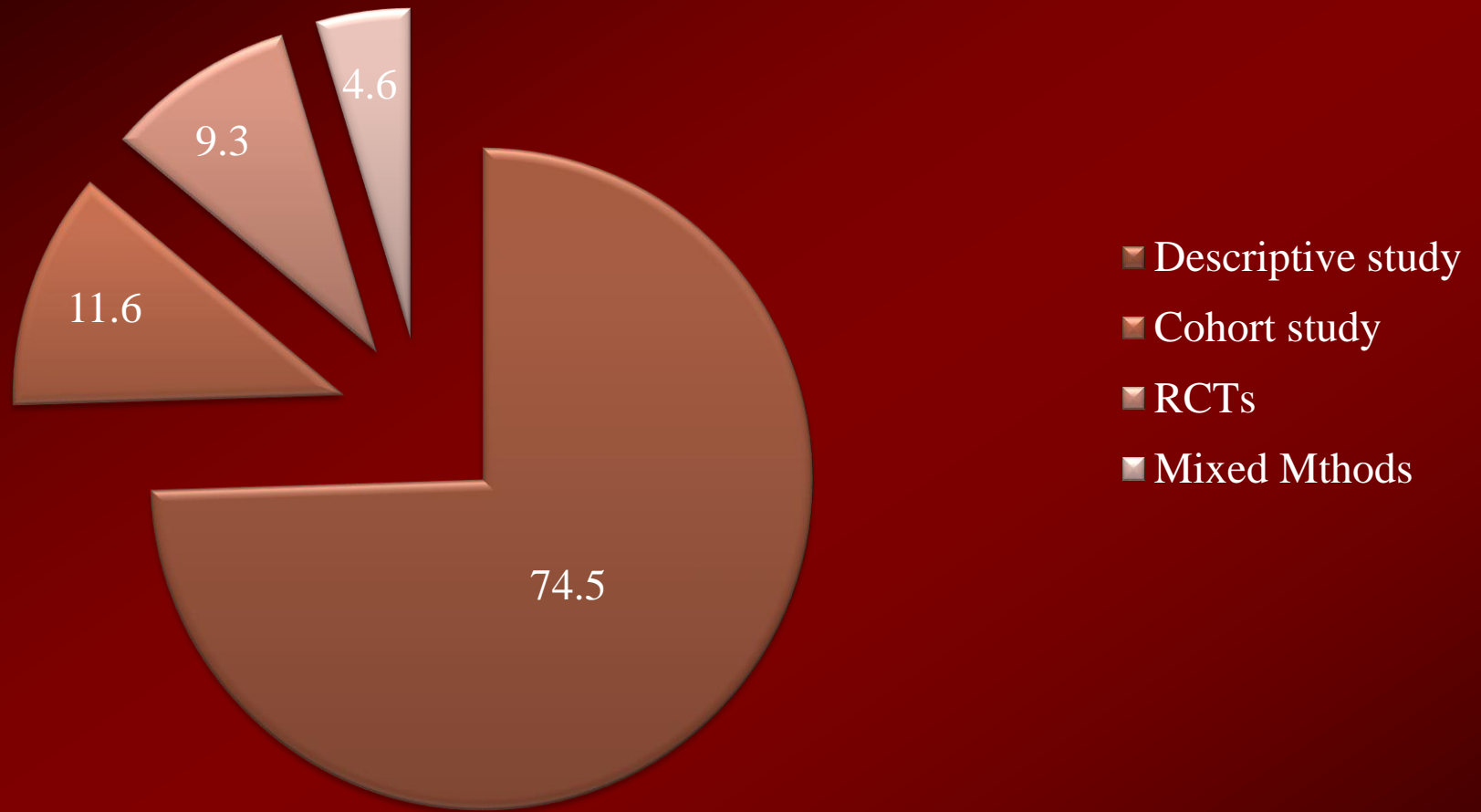
Frequency based on the Year





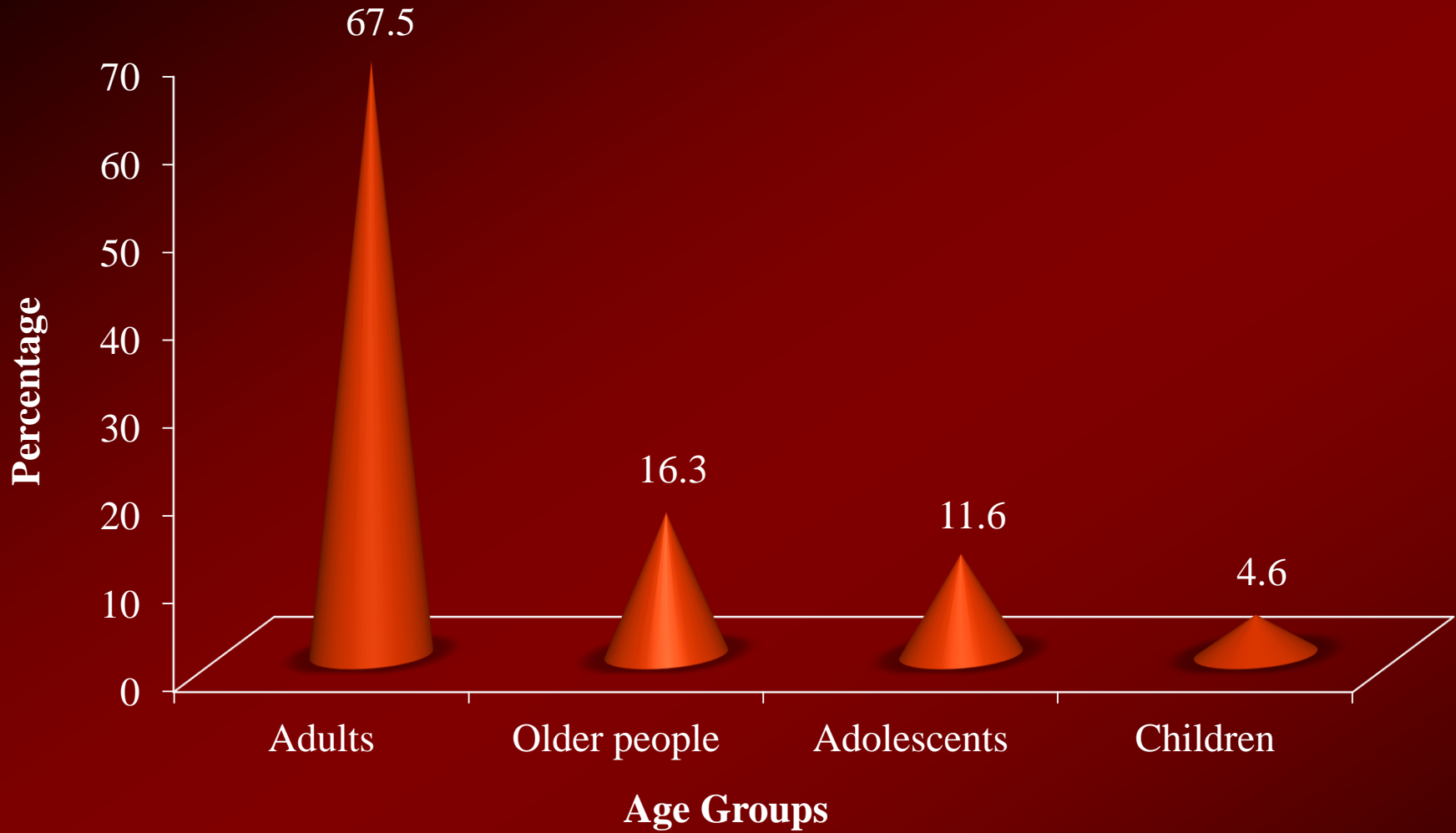
Frequency in terms of countries





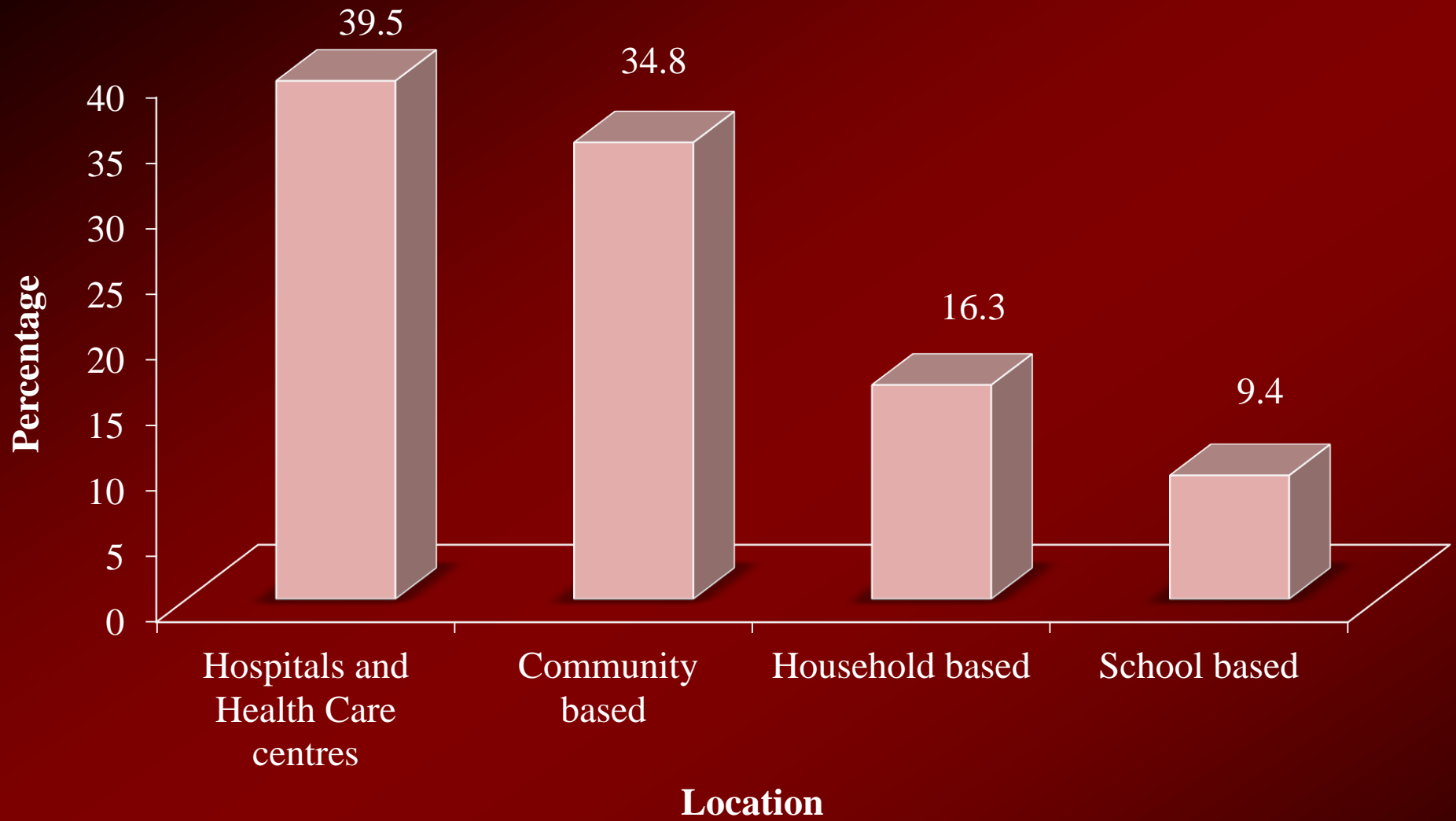
Frequency in terms of the Kind of studies





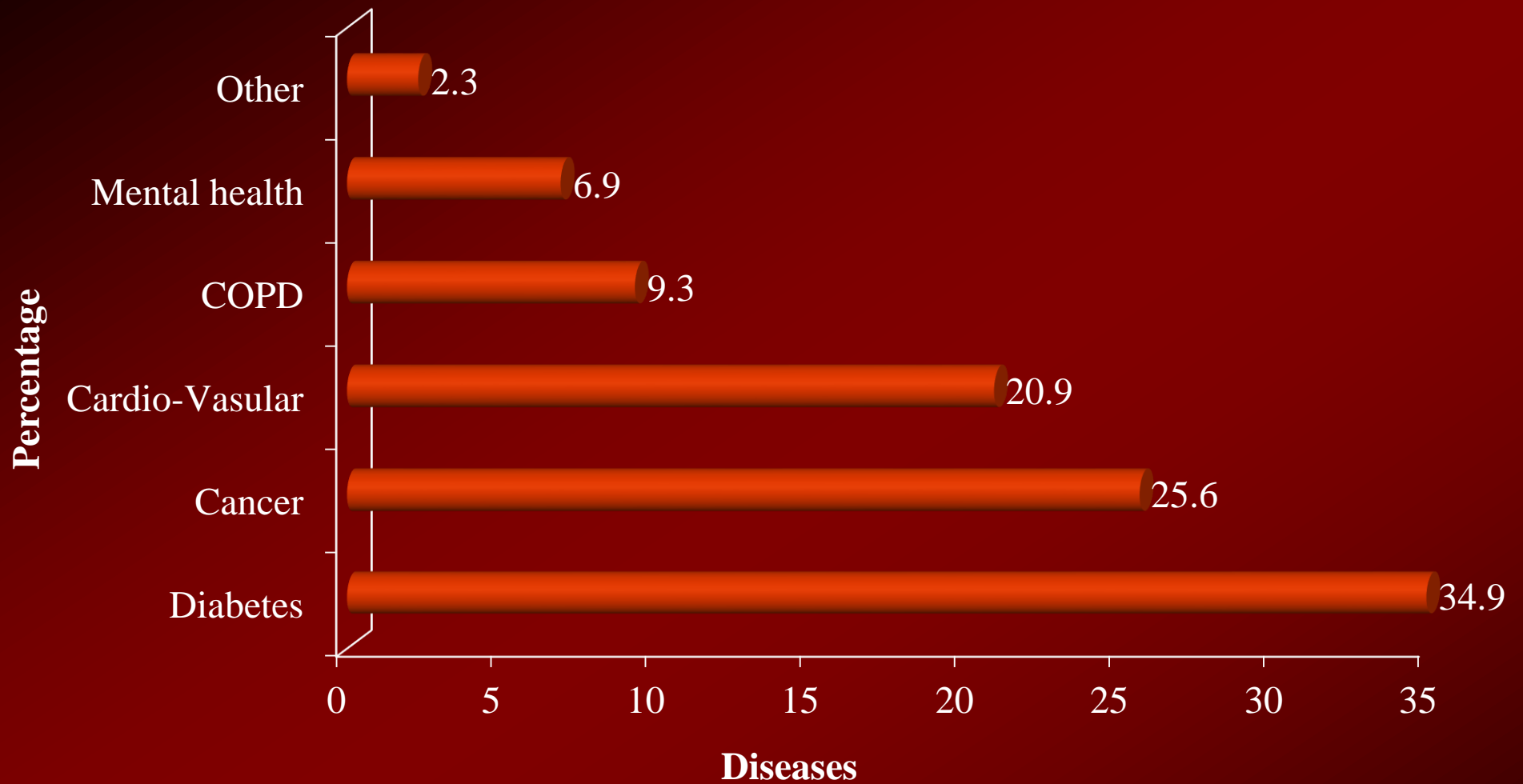
Frequency based on the age group





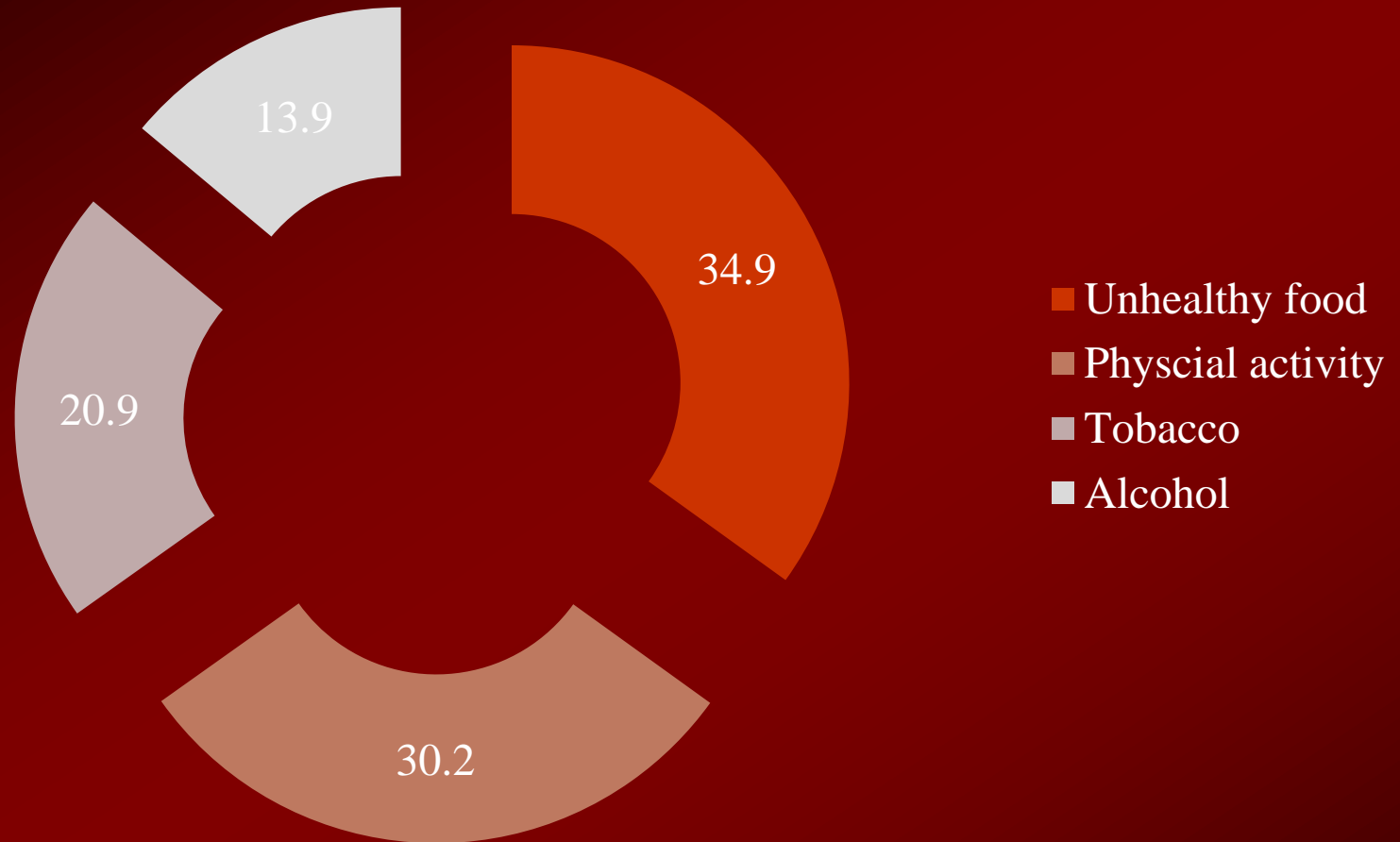
Frequency in terms of Location





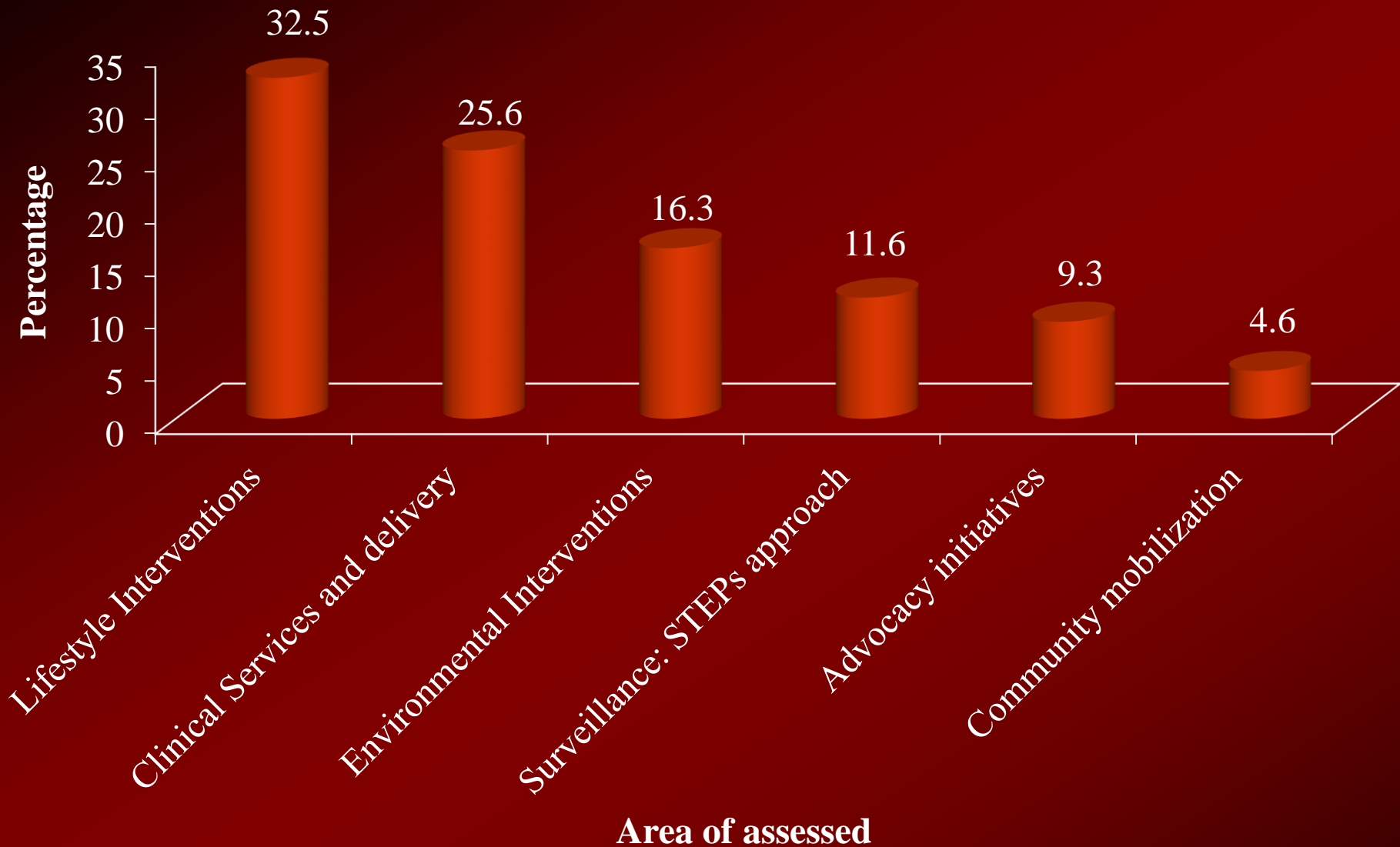
Frequency based on the diseases





Frequency in terms of Risk Factor





Frequency in terms of cost-effectiveness area



For RCT studies:

Intensive lifestyle intervention to prevent NCDs is cost-effective in comparison to other interventions.

Community based interventions such as non-personal interventions for tobacco use, physical inactivity, and unhealthy diet tended to have lower cost effectiveness than many clinical interventions.

Costs were evaluated from a societal perspective, within three broad categories: patient costs, programme costs, and training costs.



Discussion



Improving the data and evidence base on which better decisions can be made would appear to be a strategic priority.

Policy makers should consider the adoption of a prevention strategy focusing on intensive lifestyle changes because they are proven to be either cost-saving or cost-effective.

It is necessary to develop interventions that are effective, feasible and affordable in reducing the major risk factors of chronic diseases. On a population level such interventions include ban on smoking in public places, increasing taxes on tobacco and alcohol, and raising public awareness on benefits of a healthy diet and physical activity.



Thanks for your attention

