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Supplementary Table 1. Direct and indirect effects of SEM variables on the cardiovascular diseases

DV	IV	β coefficient			*p-value*
		Direct	Indirect	Total	
CVD					
	FCS	-2.35×10^{-4} **	-4.18×10^{-5} **	-2.77×10^{-4}	< 0.001
	ABSI	0.48 *	0.19 **	0.66	0.003
	VPAV	-4.79×10^{-5} **	-4.14×10^{-6} **	-5.20×10^{-5}	0.004
	MPAV		-5.25×10^{-6} **	-5.25×10^{-6}	< 0.001
	SBP	2.47×10^{-4} **		2.47×10^{-4}	< 0.001
SBP					
	FCS	-1.25×10^{-1} **	-7.58×10^{-3} **	-1.33×10^{-1}	< 0.001
	ABSI	435.75**	35.81 **	471.56	0.003
	VPAV	-1.67×10^{-2} **		-1.67×10^{-2}	0.004
	MPAV	-2.12×10^{-2} **		-2.12×10^{-2}	< 0.001
DBP					
	FCS	-2.51×10^{-2} **	-2.62×10^{-3} **	-2.77×10^{-2}	< 0.001
	ABSI	144.21**	18.91 **	163.12	< 0.001
	VPAV	-1.32×10^{-2} **		-1.32×10^{-2}	< 0.001
MPAV					
	FCS		9.01×10^{-3} **	9.01×10^{-3}	< 0.001
	ABSI	-560.45		-560.45	0.003
VPAV					
	FCS		2.30×10^{-2} **	-2.30×10^{-2}	< 0.001
	ABSI	-1430.28 **		-1430.28	0.003
ABSI					
	FCS	-1.61×10^{-5} **		-1.61×10^{-5}	< 0.001

Abbreviations: DV, dependent variable; IV, independent variable; CVD, cardiovascular diseases; ABSI, a body shape index; FCS, food consumption score; MPAV, moderate physical activity volume; VPAV, vigorous physical activity volume; SBP, systolic blood pressure; DBP, diastolic blood pressure. * $p < 0.05$; ** $p < 0.001$

Supplementary file: Model description

Our model was constructed by linking the modifiable variables including food insecurity indicator (i.e. food consumption score) with the obesity indicator (body shape index), the hypertension indicators (i.e. SBP, DBP), the physical activity (i.e. VPAV, MPAV), and the outcome health (i.e. CVD). The first dimension measured in our hypothetical model was a body shape index as the mediator variable between the food consumption score and hypertension. This first hypothetical was done in our previous work. The food consumption score was associated, and mediated some part, with the body shape index, and hypertension (i.e. SBP, DBP) [1]. These findings were in line with the previous studies that suggested consumption of high energy dense and poorly nutrient diet associated with low food consumption score (FCS). The high-energy intake leads to the increase of overweightness, and higher prevalence of chronic disease (e.g. hypertension, diabetes, and cardiovascular disease) [2-5].

Further, the cardiovascular disease main risk factors are hypertension, obesity, high blood sugar, and high low-density lipoprotein. The limited data in our study that the Indonesian Family Life Survey do not provide the blood sugar (i.e. fasting plasma glucose) and the low-density lipoprotein (LDL) values. Therefore, we used the blood pressures and body shape index as the indicator of hypertension and obesity, respectively. The final aspect measured in our hypothetical model was the effect of physical activity on the relationship between food insecurity and chronic diseases. The physical activity together with the diet are basic factors associated with the obesity [6-11]. In contrast, the physical activity is not associated with the food insecurity [11-13] and suggested that the increased adiposity level causes in a reduction in physical activity [7]. To determine where the physical activity can counterbalance the risk associated with food insecurity and CVD, we used the SEM to explore the complex direct and indirect factor variables. Hence, we hypothesized our SEM model with the proposing variables, such as food consumption score, body shape index, physical activity, hypertension on cardiovascular disease.

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