


VALIDITY OF SELF-REPORTED INFORMATION FROM HEALTH INTERVIEW SURVEYS TO ASSESS THE PREVALENCE OF OVERWEIGHT, HYPERTENSION AND HIGH CHOLESTEROL IN BELGIUM

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ASSESSING THE PREVALENCE OF NCD RISK FACTORS IN BELGIUM


Health Interview Survey (HIS)



- ✓ Large-scale survey
- ✓ Self-reported weight, height
- ✓ Did you suffer from hypertension in the last 12 months?
- ✓ Did you suffer from high cholesterol in the last 12 months?

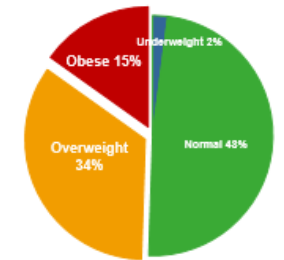
Prevalence of obesity, hypertension & high cholesterol in Belgium

Health Examination Survey (HES)

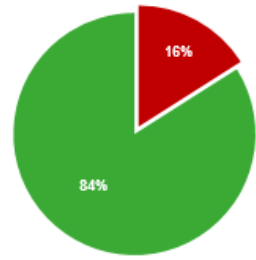


- ✓ Small-scale survey
- ✓ Measured weight, height
- ✓ Measured high blood pressure
- ✓ Measured high serum cholesterol

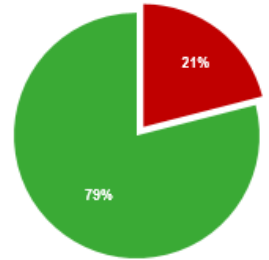
BMI from self-reported height and weight



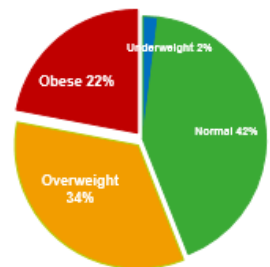
Self-reported hypertension



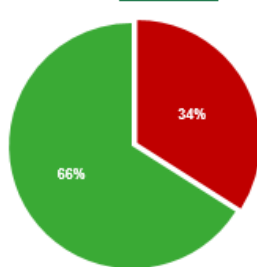
Self-reported high serum cholesterol



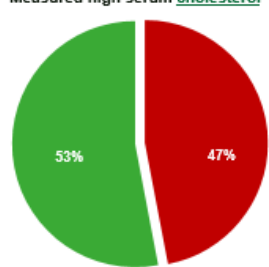
BMI from measured height and weight



Measured hypertension



Measured high serum cholesterol



Background

Material & methods

Results

Conclusions

Merged BHIS and BHES 2018 database (n=1184)

INDICATOR	HIS (SELF-REPORTED)	HES (MEASURED)
BMI	Height (m), weight (kg)	Height (m), weight (kg)
Hypertension	Did you suffer from hypertension in the last 12 months?	Systolic blood pressure >140 mmHg, Diastolic blood pressure >90 mmHg <u>OR</u> Medication use for hypertension
High total serum cholesterol	Did you suffer from high cholesterol in the last 12 months?	Total serum cholesterol > 190 mg/dl

ASSESSING THE AGREEMENT BETWEEN SR AND MEASURED BMI, HYPERTENSION & HIGH CHOLESTEROL

- Intra class correlation coefficient
- Kappa coefficient and confusion matrix
- Sensitivity, specificity
- Stratified by age & gender

CORRECTION FOR MEASUREMENT ERROR BASED ON CALIBRATION REGRESSION

- Multivariate linear and logistic regression
- Training (70%) and test data (30%)

Measured risk factor ~ SR risk factor + age + sex + education

Background

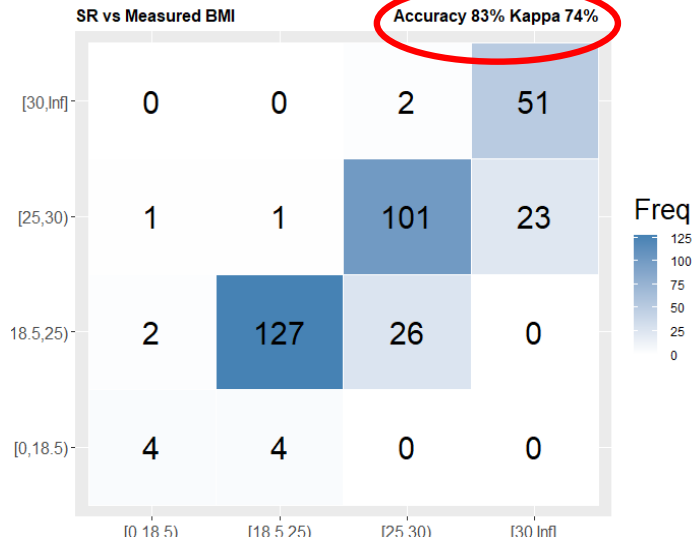
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AGREEMENT BETWEEN SR AND MEASURED DATA

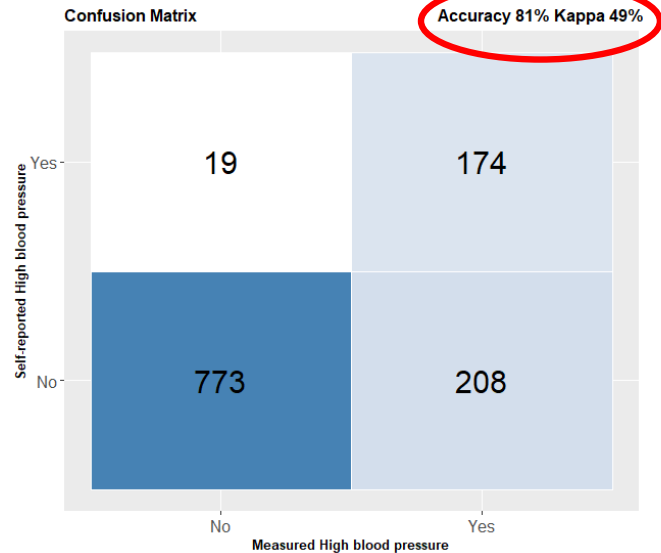
BMI



	Sensitivity	Specificity
Underweight	57%	99%
Normal	96%	87%
Overweight	78%	88%
Obese	69%	99%

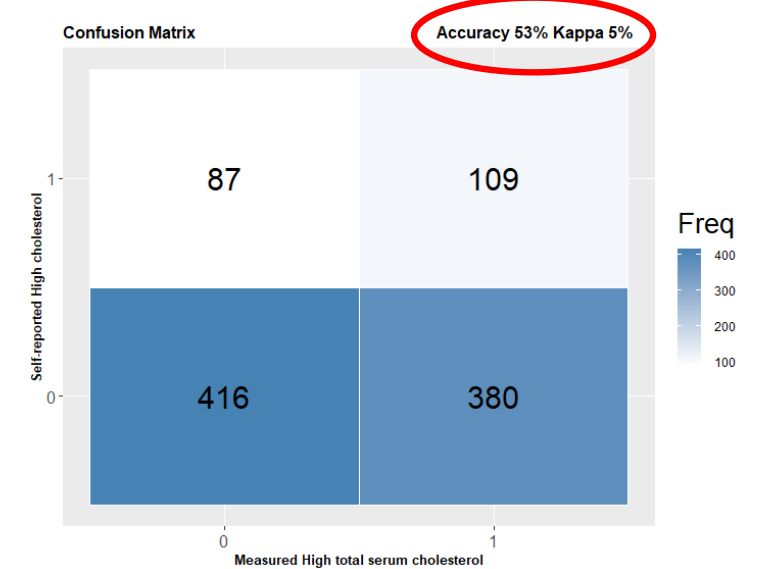
ICC: 0.92 [0.86-0.95]

HYPERTENSION



Sensitivity	Specificity
45.5%	99%

HIGH CHOLESTEROL



Sensitivity	Specificity
22%	83%

Background

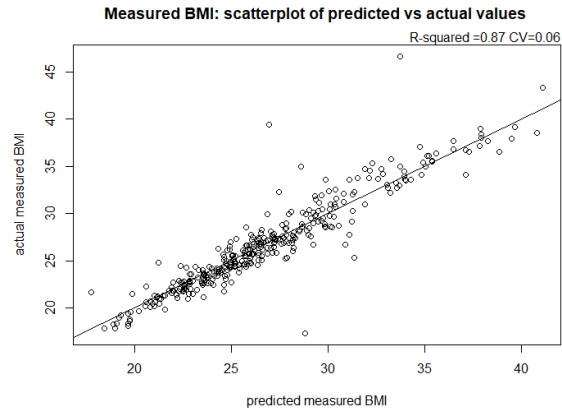
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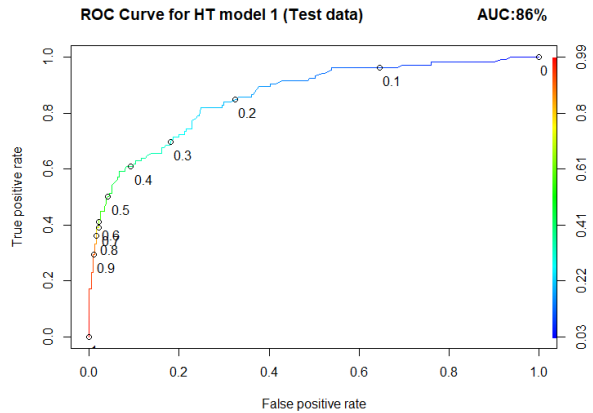
MODEL ACCURACY

BMI



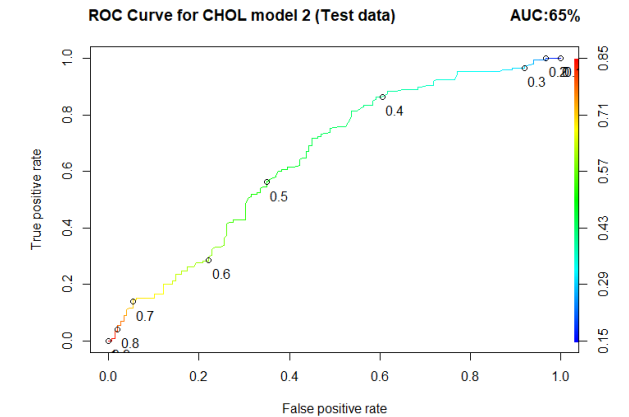
R-squared: **87%** CV: 6% RMSE: 1.73

HYPERTENSION



Pseudo R-squared: 37% AUC: **86%**

HIGH CHOLESTEROL



Pseudo R-squared: 8% AUC: **65%**

	Sensitivity		Specificity	
	SR	Pred.	SR	Pred.
Underweight	57%	14%	99%	99%
Normal	96%	86%	87%	94%
Overweight	78%	86%	88%	84%
Obese	69%	81%	99%	97%

Using predicted values instead of SR data yields higher estimates

Overweight: **+8%** relative increase

Obesity: **+12%**

Hypertension: **+24%**

Cholesterol: **+36%**

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- With SR data, the prevalence of obesity, hypertension and high cholesterol is severely underestimated in Belgium and requires a correction for measurement error
- Using the predicted values from regression models based on the SR risk factor, age, sex and education, yields higher risk factor prevalence estimates
- Further analysis will be conducted using Multiple imputation for measurement-error (MIME) corrections

Thank you for your attention!

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