

# POTENTIALLY INADEQUATE MEDICATION – DETECTED DIFFERENTLY BY PRISCUS, FORTA OR EU(7)-PIM – IS ASSOCIATED WITH REDUCED COGNITIVE FUNCTION IN MULTIMORBID ELDERLY PATIENTS

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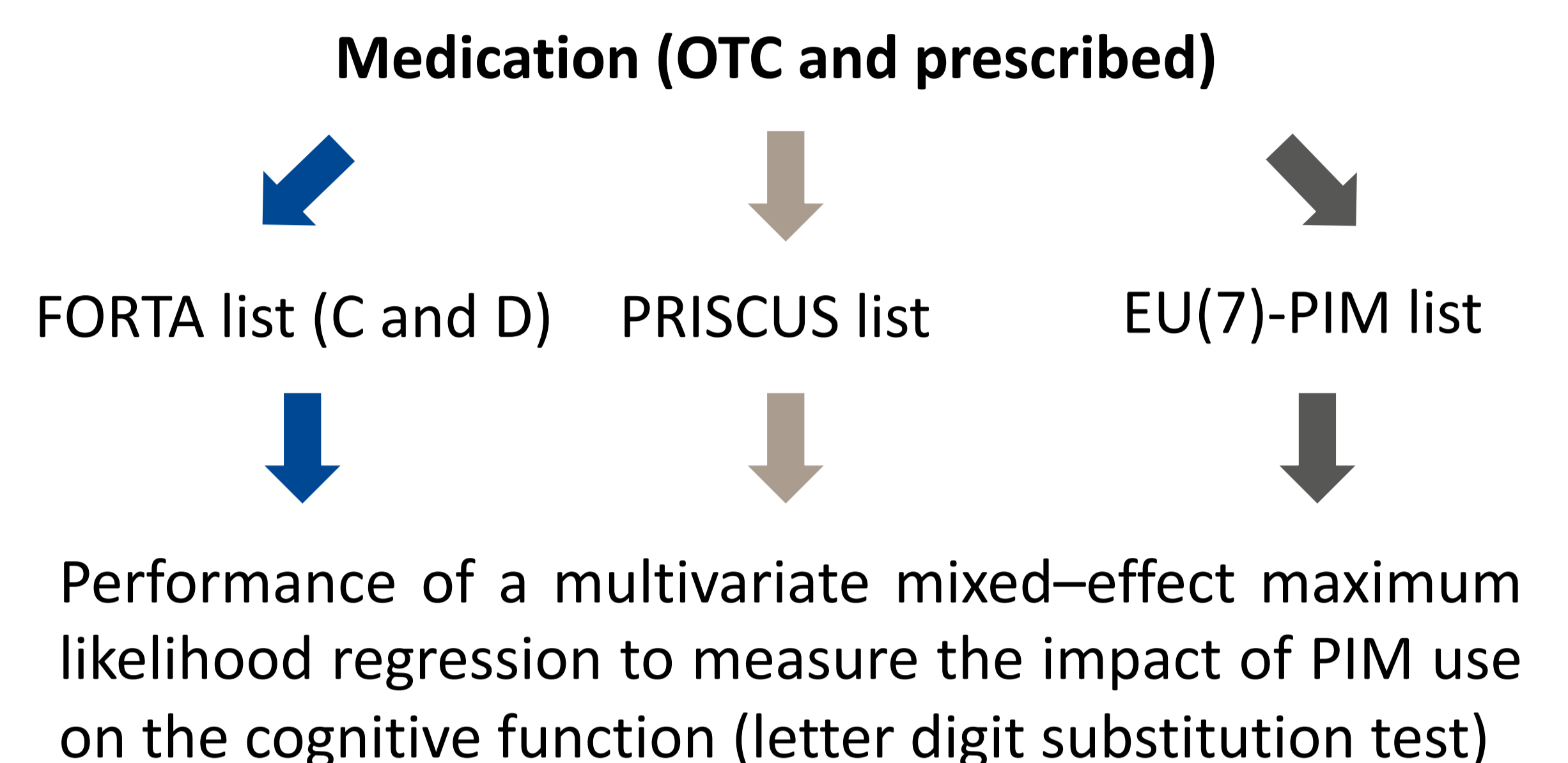
## Background and objective

The population aged 65 and above deals with the problem of multimorbidity associated with increasing use of potentially inappropriate medication (PIM). MultiCare, a longitudinal cohort study, collected data (e.g. socioeconomic status, morbidities, drugs and risk factors) of 3189 multimorbid, elderly (65 - 85 years) patients in primary care in Germany .

## Aim and objectives

The aim is to compare three different PIM lists and to show the effect of PIM use on the cognitive function in multimorbid elderly patients.

## Methods



## Results

### Descriptive results

Patients used in mean 7.7 (± 3.9) drugs at the same time. We detected 2852 FORTA, 963 PRISCUS and 4311 EU(7)-PIM. Patients used PIM according to FORTA with a prevalence of 55.9%. The median is 1 FORTA PIM with a range of zero to seven PIM per patients. PRISCUS PIM were detected with a prevalence of 24.7% and in median patients used 0 PRISCUS PIM with a range of zero to four. According to EU(7)-PIM list the median of used EU(7)-PIM is 1, with a range of zero to eight PIM. We detected EU(7)-PIM with a prevalence of 70.1%.

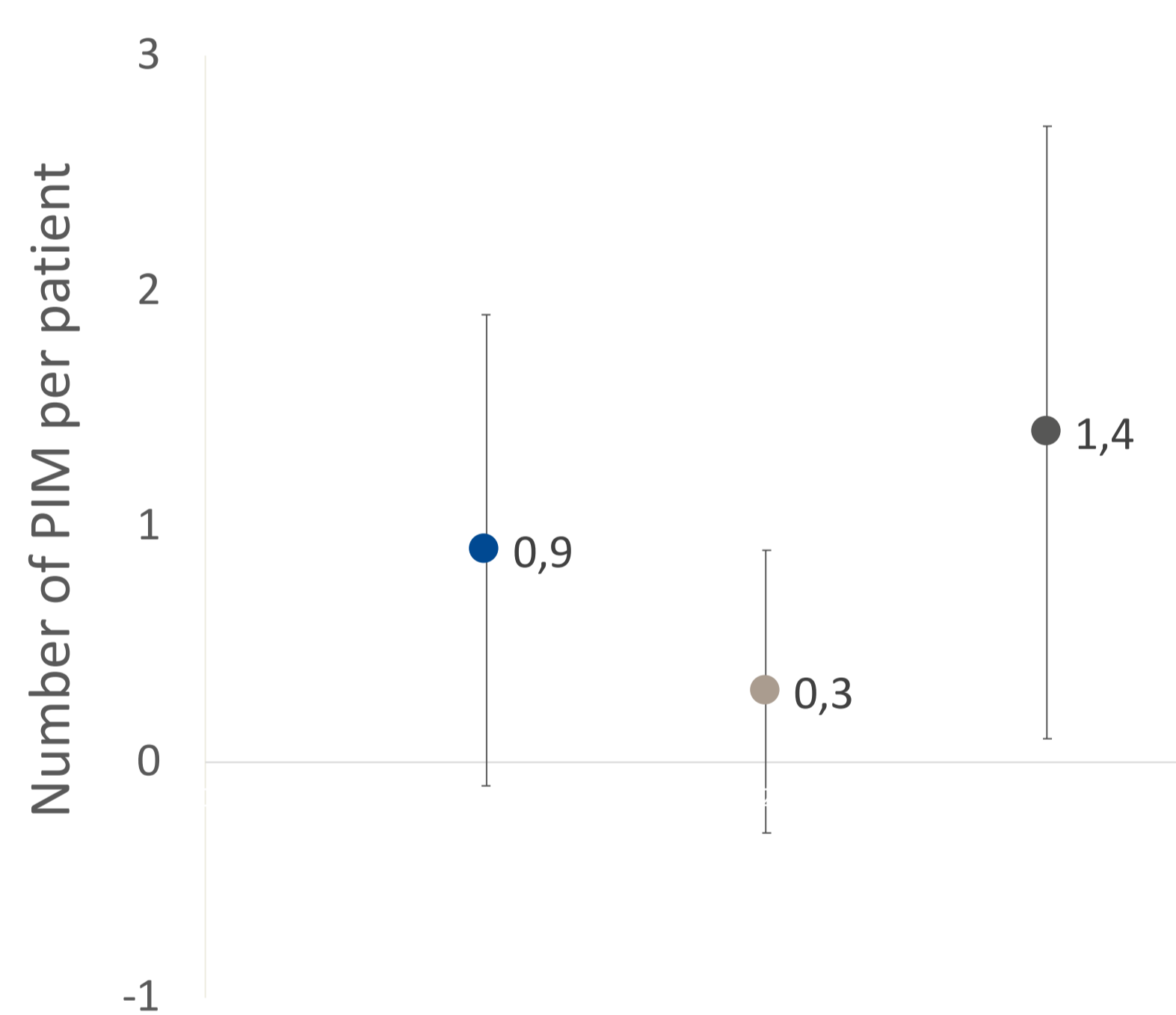


Fig. 1 Mean number of PIM per PIM list with standard deviation (FORTA, PRISCUS, EU(7)-PIM)

### Drugs resulting in inappropriate prescribing

Drugs	FORTA	PRISCUS	EU(7)-PIM
Omeprazole	-	-	448
Phenprocoumon	441	-	-
Diclofenac	-	-	390
Ibuprofen	-	-	335
Acetyl salicylic acid (analgesic)	-	-	191
Pantoprazole	-	-	157
Gingko biloba leaves	152	-	-
Glimepiride	144	-	144
Verapamil	116	-	116
Moxonidine	114	-	114
Spirolactone	-	-	107
Tramadol	105	-	105
Theophylline	104	-	104
Acetyl salicylic acid (antiplatelet agent)	100	-	-
Digitoxin	32	-	93
Amitriptyline	80	88	88
Molsidomine	76	-	-
Tilidine	76	-	-
Glibenclamide	69	-	69
Metoclopramide	-	-	67

Fig. 2 Top 20 drugs most commonly resulting in inappropriate prescribing according to FORTA, PRISCUS, EU(7)-PIM

Figure 2 depicts the 20 most common drugs detected as PIM. The most common FORTA PIM are phenprocoumon (13.8%), gingko biloba leaves (4.8%) and glimepiride (4.5%). The most common PRISCUS PIM are amitriptyline (2.8%), acetyldigoxine (1.9%) and nifedipine (1.7%), which are, apart from amitriptyline, not even present in the top 20 list. The most common EU(7)-PIM are omeprazole (14.0%), diclofenac (12.2%) and ibuprofen (10.5%).

### Overlap of FORTA, PRISCUS and EU(7)-PIM list

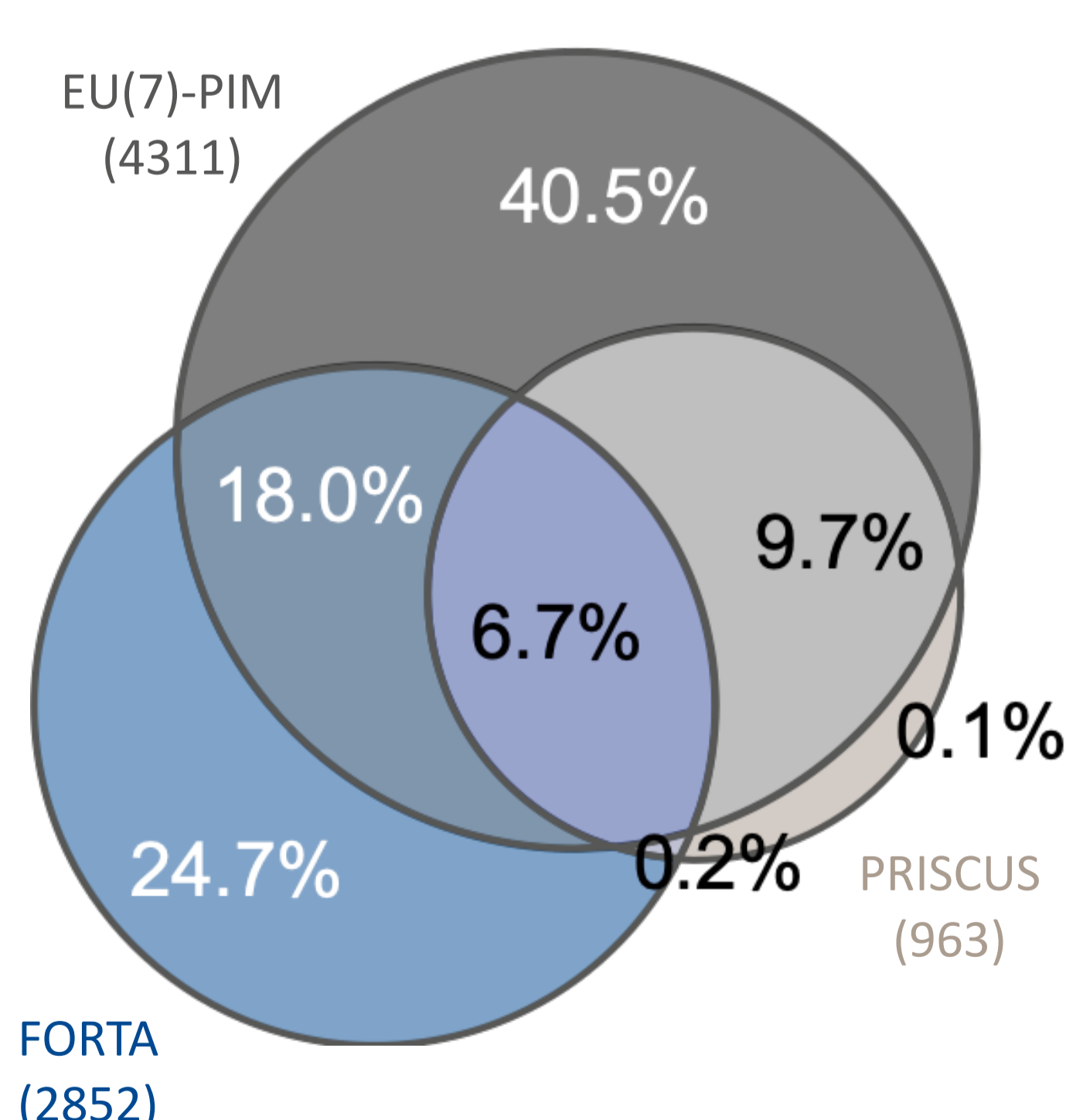


Fig. 3 Venn diagram showing the overlap between FORTA, PRISCUS and EU(7)-PIM lists in terms of potentially inappropriate medication

Figure 3 illustrates the overlap between the three different PIM lists. 384 (6.7%) of the detected potentially inappropriate medications were identified within all three lists. Nearly all PRISCUS-PIM (n = 963) were also detected by EU(7)-PIM (97,9 %). An overlap between two lists was detected in 24.7% (EU(7)-PIM and FORTA PIM)—and 6.9% (FORTA and PRISCUS PIM).

### Letter Digit Substitution Test

Patients using PIM according to all three lists, achieved significantly poorer values in letter digit substitution test. Comparing FORTA, PRISCUS and EU(7)-PIM list (Fig. 4). We determined that FORTA showed the cognitive decline the most. This association was detected with a correlation coefficient of - 0.72 for PRISCUS PIM, - 0.60 for FORTA PIM and - 0.44 for EU(7)-PIM.

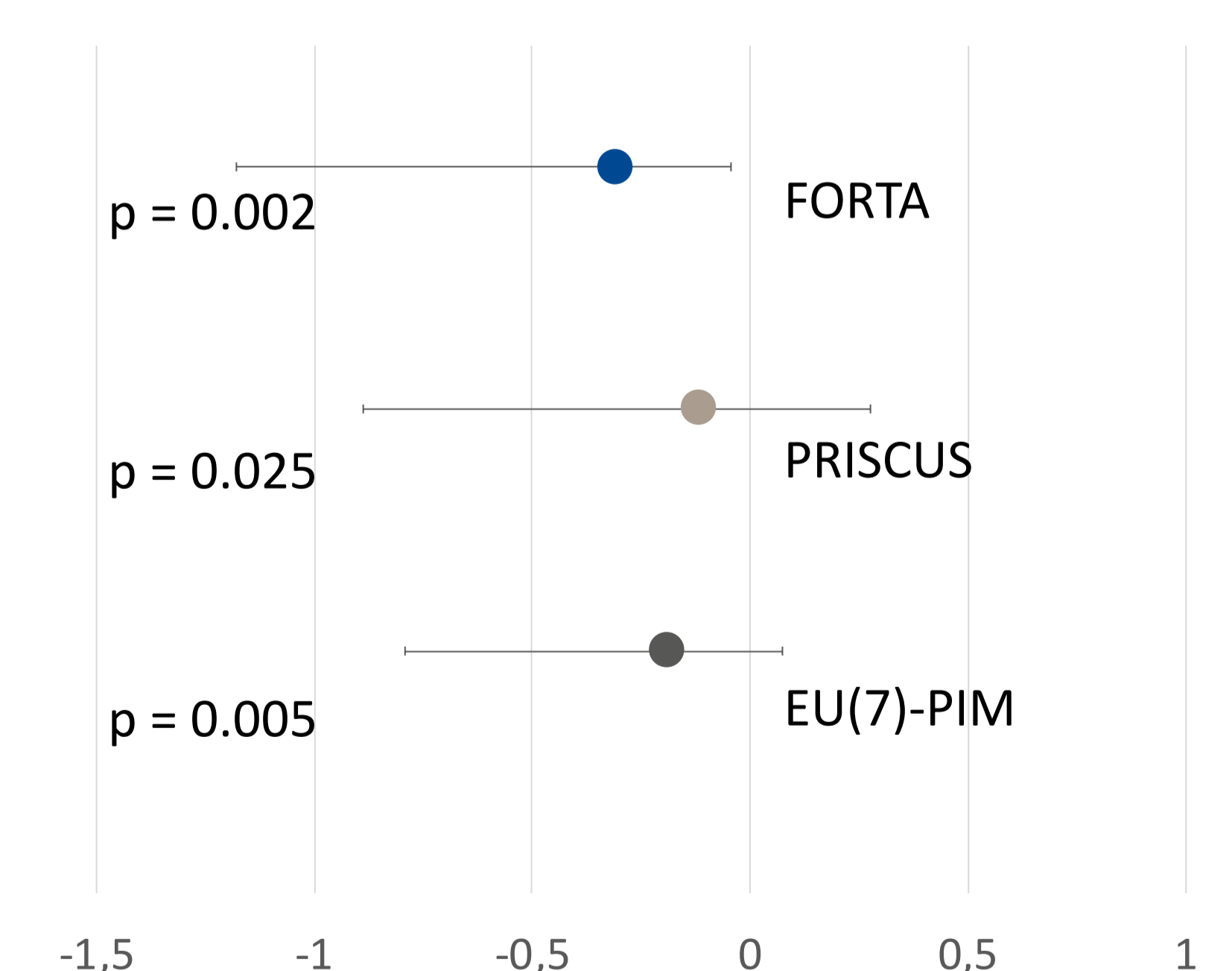


Fig. 4 The impact of FORTA, PRISCUS, EU(7)-PIM use on cognitive skills measured by letter digit substitution test (correlation coefficient with 95% confidence interval)

## Conclusion

The connection of decreased cognitive function and the use of PIM underline the importance to reduce the amount of PIM in multimorbid elderly patients. Moreover, it is important to know that there are valid tools to identify potentially inappropriate medication in elderly people, in order to improve the medication safety.

## Acknowledgments

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