Reliability of the regional myocardial infarction registry of Saxony-Anhalt (RHESA) and the follow-up (RHESA-Care)

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Background

In the last decades, a declining mortality rate from cardiovascular disease as well as acute myocardial infarction (AMI) has been observed in Germany. However, there are large differences between the federal states according to the mortality and morbidity of AMI. Saxony-Anhalt is one of the federal states with the highest mortality rates for AMI in Germany. In order to investigate the reasons, the regional myocardial infarction registry of Saxony-Anhalt (RHESA) was established in 2013 [1]. An extended baseline survey of RHESA was conducted in 2014 (RHESA-Care) [2]. We receive data based on medical record as well as self-reported data including individual factors via a hospital questionnaire (HQ) in RHESA and a computer assisted telephone interview (CATI) in RHESA-Care. Aim is to quantify the agreement of RHESA and RHESA-Care data. Therefore, we answer following question: Differ the data of the HQ from the data of the CATI?

Results

Tab. 1: Unweighted Kappa and corresponding 95% confidence interval for categorical risk factors, which were measured in HQ and CATI. Analyses 1: contains also the answers: unknown / don’t know. Analyses 2: exclude answers unknown / don’t know.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Analyses 1</th>
<th></th>
<th>Analyses2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Kappa</td>
<td>95%-Cl</td>
<td>N</td>
</tr>
<tr>
<td>Re-infarction</td>
<td>391</td>
<td>0.67</td>
<td>0.56 – 0.76</td>
<td>383</td>
</tr>
<tr>
<td>PCI before MI</td>
<td>391</td>
<td>0.74</td>
<td>0.66 – 0.83</td>
<td>382</td>
</tr>
<tr>
<td>Bypass before MI</td>
<td>391</td>
<td>0.74</td>
<td>0.60 – 0.87</td>
<td>384</td>
</tr>
<tr>
<td>Stroke before MI</td>
<td>390</td>
<td>0.53</td>
<td>0.38 – 0.68</td>
<td>382</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>390</td>
<td>0.32</td>
<td>0.22 – 0.42</td>
<td>359</td>
</tr>
<tr>
<td>Smoking status</td>
<td>390</td>
<td>0.34</td>
<td>0.28 – 0.40</td>
<td>327</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>391</td>
<td>0.81</td>
<td>0.75 – 0.88</td>
<td>384</td>
</tr>
<tr>
<td>Hypertension</td>
<td>392</td>
<td>0.31</td>
<td>0.22 – 0.40</td>
<td>378</td>
</tr>
<tr>
<td>Hypercholesterinemia</td>
<td>389</td>
<td>0.15</td>
<td>0.08 – 0.23</td>
<td>355</td>
</tr>
</tbody>
</table>

For diabetes mellitus we observe the best kappa value, whereas hypertension and smoking status have a poor agreement. After excluding answer options “unknown” and “don’t know” we see better amounts of agreement. The fair/moderate kappa value of smoking was induced by the different categorization in HQ and CATI of never and former smoker. In most cases women have a better agreement then men, in particular for diabetes, PCI and bypass.

Discussion:

The agreement between the information of height from RHESA and RHESA-Care is very good. The mean difference between both surveys was 0.17 cm [CI 95%: -0.27 cm; 0.61 cm]. The 95% limits of agreement were from -6.64 cm to 6.97 cm. In Fig. 1 we see just small differences in variability between women and men.

As a consequence of our results we will advice medical doctors and nurses to make clear distinctions between never and former smoker.

Methods

RHESA:
- population-based registry
- fatal or non-fatal AMI patients
- aged 25 years or more
- Region city of Halle (Saale) and rural district Altmark
- Data collection via HQ

RHESA-Care:
- Cohort of AMI patients
- consent to participate in the registry
- Data collection via CATI (approx. 6 weeks after AMI)

Data:
- Data collection from 10.2014 to 05.2016
- 68.7% men and 67.9 % inhabitants of Halle
- Factors: re-infarction, percutaneous coronary intervention (PCI), bypass surgery, stroke, atrial fibrillation, smoking status, diabetes mellitus, hypertension, and hypercholesterinemia as well as information about height

Statistical analyses:
- Bland Altman plot [3]
- Cohen’s kappa (unweighted) with 95% confidence interval [4]
- SAS 9.4 / R 3.0.3

References:


Fig. 1: Bland Altman plot for information about height of AMI patients in RHESA and RHESA-Care, stratified by sex. Dark blue line: mean difference / light blue line 95% limits of agreement /