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## SUPPLEMENT

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Winds of change: towards new ways of improving public health in Europe

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#### ABSTRACT SUPPLEMENT

*Guest editors: Ivan Erzen, Tit Albreht and Dineke Zeegers Paget*

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**Results:**

We identified four latent groups of sleep and functioning over time among 5148 participants: 1) poor sleep and moderate functioning (6.2%), 2) good sleep and poor functioning (24.6%), good sleep and good functioning (64.0%, reference), and 4) poor sleep and poor functioning (5.3%). Members of the latent group 2, had a notably increased risk of premature exit from paid employment (HR 4.38, 95% CI 3.44–5.57), but the risk was highest for those belonging to the group 4 (HR 8.10, 95% CI 6.00–10.94). Covariates only somewhat contributed to these associations. No excess risk was confirmed for people of the group 1.

**Conclusions:**

These results highlight the advantages of person-orientated methods to pinpoint risk groups that can be missed in studies with variable orientated methods. Thus, people with different risk factor combinations need to be considered in the efforts to prevent premature exit from paid employment.

**Key messages:**

- Poor sleep combined with poor functioning over time is linked to the highest risk of early exit, but also people with good sleep are at an increased risk of early exit, if they have poor functioning.
- Person-orientated methods help pinpoint risk groups that can be missed in studies with more variable orientated methods.

### Job satisfaction and intention to quit among young physicians – evidence from Austria

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**Background:**

In Austria, a shortage of physicians is forecasted to occur within the next 10 years. On the one hand, this is due to the demographic structure in that occupational group, on the other hand, a large number of young physicians having

received their education in Austria do then either choose to pursue a career abroad, or proceed in another occupational line. The present paper aims at investigating the drivers of the last reason mentioned, namely the reasons of young physicians desiring to leave their profession.

**Methods:**

We used a job satisfaction questionnaire together with an inverse intention to quit-scale, which were sent out electronically to all young physicians in training. Being best translated with the US-American interns, this group is called ‘Turnusärzte’ in Austria. In total, 404 young physicians filled in the questionnaire, 44.6% male with an average work experience of two years.

**Results:**

Only 22.8% of all respondents never thought about leaving the profession, while 39.4% are doing so on a regular basis. Using discriminant and regression analysis to explore the factors associated with the intention to quit, four factors were significant and together explain 24.6% in variance: (a) mental strains, (b) (especially administrative) workload (c) hospital hierarchy and (d) working hours. In addition, gender differences are apparent. While a higher (administrative) workload results in more thoughts about leaving the profession for men, the perception of hospital hierarchy is specifically relevant to women. The more hierarchical the current employer is rated, the likelier intention to quit becomes for females.

**Conclusions:**

In order to ensure the security of health care supply, it is important to investigate the reasons for health professionals leaving their profession. The present study helps close this research gap and shows that for Austria extensive reforms concerning the occupational conditions of young physicians are needed.

**Key messages:**

- There is a high proportion of young physicians that want to leave their profession.
- Gender differences can be seen in hierarchy and administrative work.

## 2.I. Vaccination service, delivery and response

### The NAVIDAD multicentre project: attitudes towards compulsory vaccination in Italy

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**Background:**

Vaccine hesitancy is a considerable issue in European Countries and leads to low coverage rates. After a long public debate, in July 2017, Italy turned the Vaccination Plan mandatory to be admitted in schools. to assess vaccine hesitancy and identify possible predictor of vaccine hesitancy.

**Methods:**

The NAVIDAD study was conducted among September 2016 and MAY 2017 in 15 Italian cities. For this project a 63 items questionnaire was administered to 1820 pregnant woman. This paper assessed interviewer’s opinion on mandatory vaccines and how it is influenced by socio-economic framing, willingness to vaccinate the newborn, information sources and confidence in the Italian National Healthcare Service (NHS).

**Results:**

Most women of the sample (81.6%) declared to be in favour of mandatory vaccinations, 13.8% were against them and 4.5% did not answer to the question. Information sources play a key role in determining the opinion on restoration of mandatory vaccine, in particular women who got information from anti-vaccination movements websites are less likely to accept it (OR: 0.35, 95%CI: 0.21-0.58,  $p < 0.001$ ). Women who had confidence in healthcare professional information agreed more on mandatory vaccination than the other (OR: 2.66, 95%CI: 1.62-4.36,  $p < 0.001$ ), who perceive that healthcare professionals have economic interest in child immunization and who declared that healthcare providers inform only on vaccinations benefits not on risks were less likely to agree on compulsory vaccination (OR: 0.66, CI 95%: 0.46-0.96,  $p = 0.03$ ; OR: 0.66, CI 95%: 0.46-0.95,  $p = 0.03$ ).

**Conclusions:**

Information sources and confidence towards health professionals are the main determinants of acceptance of mandatory vaccine restoration. In order to increase the acceptability of the restoration and reduce vaccine hesitancy, these aspects need to be strengthened.

**Key messages:**

- Mandatory vaccination is generally well accepted and no social determinant can be considered a predictor of acceptability.
- Confidence in health system is a determinant of acceptance of mandatory vaccination.

**Immunization and media coverage in Italy: an eleven-year analysis (2007-17)**

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**Background:**

Italy has recently approved an innovative National Immunization Prevention Plan and a new law on mandatory immunization; this stimulating a lively debate at the scientific, political and societal-level, reflected on the media.

**Methods:**

We applied a model we had previously published to quantitatively and qualitatively assess media coverage of vaccines and immunization-related topics on the national press over an 11-year study period (2007-2017). We retrieved relevant key words and articles, reporting on articles' topic, position, approach to immunization and on other selected indicators' summary statistics, temporal trends and correspondence with key epidemiological and policy events.

**Results:**

We screened 11 year issues of the most read Italian newspaper, "Corriere della Sera". Over the study period the quote "vaccin\*" was mentioned on average 325 times per year; with a 150% increase after the approval of the new law on mandatory immunization in 2017. In the same year, on average, two first-page articles per week were published on the topic. We report a clear association between key events (the AH1N1 influenza pandemic, the "Fluad case", the approval of controversial policies) and their media coverage. 84% of retrieved articles had a positive attitude towards immunization, this decreasing to 79% after the approval of the compulsory immunization law.

**Conclusions:**

Media play a crucial role in channelling health-related information and significantly influence health behaviours. We urge public institutions, health authorities and the scientific community not to underestimate the opportunity to monitor media coverage on key healthcare topics and to convey evidence-based health education messages through the media.

**Key messages:**

- We monitored 11 years of media content on vaccines, reporting interesting findings on temporal trends, approach to immunization and association to key epidemiological and policy events.
- Health authorities should not underestimate the opportunity to monitor media reporting on key healthcare topics and to convey health education messages through traditional and new media.

**Improving Vaccination Services Delivery – Local contributions to global Measles elimination**

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In Portugal, coverage of measles-mumps-rubella (MMR), 1st and 2nd doses have been  $\geq 95\%$  since 2006. However, there is regional and local variation, with areas below the herd immunity threshold, increasing the risk of having pockets of susceptible individuals. Outbreaks of imported measles have occurred in 2017 and 2018. MMR is administered free of charge as part of the National Vaccination Programme (PNV) at ages 2 and 6. PNV is locally managed by local Public Health Units (LPHU) which monitor and evaluate vaccination coverage using MMR coverage as proxy of compliance, while primary health care nurses are responsible for vaccines administration.

In Amadora, we observed a declining trend in vaccination coverage since 2012. According to our vaccination registry, vaccination coverage was below 95% in 5 of 9 primary health care units (78-94%), thus endangering herd immunity. We estimated 2222 susceptible individuals from selected (1998-2008) cohorts, using administrative data.

We implemented an intervention during 2017 on primary health care units aiming for: reduction of susceptible individuals by actively calling unvaccinated children from chosen cohorts; regular monitoring and internal report of MMR coverage to healthcare units; improving communication and involvement of all healthcare workers in vaccination activities; capacitation and training of personnel; and lastly, studying organizational dispositions and differences of service delivery across all health units.

Following intervention, 3 primary healthcare units improved significantly its vaccination coverage. We were able to decrease susceptible individuals in selected cohorts by 28% (to 1599). Difficulties reported included an hard-to-reach and mobile population, perceived lack of resources but also lack of organization in vaccination activities.

With plenty to do, it was possible to implement an intervention with satisfactory results of reducing susceptible individuals by acting on healthcare units.

**Key messages:**

- Acting locally is essential to address pockets of susceptible individuals preventing occurrence of outbreaks from imported cases.
- It is important to monitor regularly coverage and ensure it is above the herd immunity threshold.

**Measles vaccination coverage in young adults in Switzerland 2012&2015 – does awareness play a role?**

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**Background:**

We evaluated the impact of the Swiss national measles elimination strategy (NMES) on vaccination coverage and awareness among young adults.

**Methods:**

We conducted a cross-sectional telephone survey at the beginning and at the end of the NMES. We compared the results of the baseline and endline survey, only considering interviews with matching vaccination record provided (2012: N = 803, 2015: N = 1048). To determine the determinants of complete vaccination, we used weighted multivariate logistic regression.

**Results:**

Vaccination coverage for two doses of measles vaccine in 20 to 29 year-olds increased from 77% (95% CI 73-81%) in 2012 to 88% (95% CI 85-90%) in 2015. Towards the end of the NMES, more participants knew for sure that adults can get measles, 32% (95% CI 28-36%) in 2012, 41% (95% CI 37-45%) in 2015. There was a trend for more participants to be sure that they could get missing vaccinations as adults, 18% (95% CI 14-21%) in 2012, 23% (95% CI 19-26%) in 2015. We found