

Featured Article

Which types of mental work demands may be associated with reduced risk of dementia?

Francisca S. Then^{a,b,*}, Tobias Luck^{a,b}, Kathrin Heser^c, Annette Ernst^d, Tina Posselt^d, Birgitt Wiese^e, Silke Mamone^e, Christian Brettschneider^f, Hans-Helmut König^f, Siegfried Weyerer^g, Jochen Werle^g, Edelgard Mösch^h, Horst Bickel^h, Angela Fuchsⁱ, Michael Pentzekⁱ, Wolfgang Maier^{c,j}, Martin Scherer^d, Michael Wagner^{e,j,1}, Steffi G. Riedel-Heller^{a,1}, for the AgeCoDe Study Group

^aInstitute of Social Medicine, Occupational Health and Public Health (ISAP), University of Leipzig, Leipzig, Germany

^bLIFE—Leipzig Research Center for Civilization Diseases, Universität Leipzig, Leipzig, Germany

^cDepartment of Psychiatry, University of Bonn, Bonn, Germany

^dDepartment of Primary Medical Care, Center for Psychosocial Medicine, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

^eWork Group Medical Statistics and IT-Infrastructure, Institute for General Practice, Hannover Medical School, Hannover, Germany

^fDepartment of Health Economics and Health Services Research, Hamburg Center for Health Economics, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

^gCentral Institute of Mental Health, Medical Faculty, Mannheim/Heidelberg University, Mannheim, Germany

^hDepartment of Psychiatry, Klinikum rechts der Isar, Technical University of Munich, Munich, Germany

ⁱDepartment of General Practice, Medical Faculty, Heinrich-Heine-University Düsseldorf, Düsseldorf, Germany

^jGerman Center for Neurodegenerative Diseases (DZNE), Bonn, Germany

Abstract

Introduction: Previous studies have demonstrated that an overall high level of mental work demands decreased dementia risk. In our study, we investigated whether this effect is driven by specific mental work demands and whether it is exposure dependent.

Methods: Patients aged 75+ years were recruited from general practitioners and participated in up to seven assessment waves (every 1.5 years) of the longitudinal AgeCoDe study. Analyses of the impact of specific mental work demands on dementia risk were carried out via multivariate regression modeling (n = 2315).

Results: We observed a significantly lower dementia risk in individuals with a higher level of “information processing” (HR, 0.888), “pattern detection” (HR, 0.878), “mathematics” (HR, 0.878), and “creativity” (HR, 0.878). Yet, exposure-dependent effects were only significant for “information processing” and “pattern detection.”

Discussion: Our longitudinal observations suggest that dementia risk may be reduced by some but not all types of mental work demands.

© 2016 the Alzheimer's Association. Published by Elsevier Inc. All rights reserved.

Keywords:

Dementia; Cognitive functioning; Cognitive reserve; Mental demands; Work environment; Risk factors; Longitudinal cohort study

Members of the AgeCoDe Study Group: Heinz-Harald Abholz, Christian Brettschneider, Cadja Bachmann, Horst Bickel, Wolfgang Blank, Hendrik van den Bussche, Sandra Eifflaender-Gorfer, Marion Eisele, Annette Ernst, Angela Fuchs, Kathrin Heser, Frank Jessen, Hanna Kaduszkiewicz, Teresa Kaufeler, Mirjam Köhler, Hans-Helmut König, Alexander Koppa, Carolin Lange, Diana Lubisch, Tobias Luck, Melanie Lupp, Wolfgang Maier, Manfred Mayer, Edelgard Mösch, Michael Pentzek, Tina Posselt, Jana Prokein, Steffi Riedel-Heller, Susanne Röhr, Martin Scherer, Anna Schumacher, Janine Stein, Susanne Steinmann, Franziska Tebarth, Michael Wagner, Klaus Weckbecker, Dagmar Weeg,

Jochen Werle, Siegfried Weyerer, Birgitt Wiese, Steffen Wolfsgruber, Thomas Zimmermann and Hendrik van den Bussche (2002–2011). Principal investigators of the AgeCoDe Study: Wolfgang Maier, Martin Scherer.

¹These authors contributed equally to the work.

*Corresponding author. Tel.: +49-0-341-97-15-475; Fax: +49-0-341-97-245-69.

E-mail address: francisca.then@medizin.uni-leipzig.de

1. Introduction

Dementia is a devastating disease not only for the individuals themselves but also for their families and health care systems [1]. Lifestyle factors may lower dementia risk [2,3]. In particular, highly demanding lifestyle factors, such as “complex environments,” seem to train cognitive abilities to be more resistant to cognitive decline and dementia [4]. A highly demanding environment may even build up a “cognitive reserve”, which helps to keep up a good cognitive functioning despite an already evolving dementia pathology [5]. Theories presume that we need to use our cognitive abilities to keep them—a “use it or lose it” concept introduced by Swaab (1991). The concept emphasizes that neurons need to be activated to maintain their proper functioning [6]. The activation of neurons seems to enhance synaptic plasticity and memory functioning [7]. Although a number of research studies investigated theoretical propositions on demanding environments and their effect on cognitive functioning, we still lack a clearer understanding of what environmental demands actually contribute to a lower dementia risk.

Evidence on mental demands in the work environment suggests that some types of mental demands may be particularly effective in reducing dementia risk [8]. For instance, research by Andel et al. (2005), Kroger et al. (2008), and Dekhtyar et al. (2015) pointed out that high-work complexity with people (and data) is associated with a lower dementia risk [9–11]. Moreover, a study by Karp et al. [12] showed that high levels in some work activities like “analyzing” were associated with a 50% lower dementia risk, whereas other work activities like “instructing” or “computing” did not seem to influence dementia risk at all. Thus far, only very few studies have investigated the effect of specific mental work demands. The aim of the present study was to provide evidence on the impact of a broad variety of specific mental work demands (MWDs) on dementia risk.

The main hypothesis of the present study was that a high level of every type of mental work demand reduces dementia risk. However, available evidence already suggested that not all MWDs have the same protective potential. As evidence is scarce, we decided not only to conduct hypothesis testing but also to take a data-driven approach using a standardized occupational classification system and exploring the factor structure of all MWD. The data-driven approach helps to better understand the impact of MWD on dementia risk because it investigates factors that have not yet received attention, reveals previously unknown patterns, and identifies specific factors that substantially contribute to differences in risk. Moreover, as previous studies analyzed the impact of MWD either on dementia risk (e.g., [9]) or on dementia onset (e.g., [10]), we decided to investigate effects on both, dementia risk, and the time of onset of dementia. We believe that both aspects provide important information on the impact of MWD. In addition, as most of the theories

mentioned above implicitly imply that longer exposure to mentally demanding environments would lead to greater benefits, we analyzed exposure-dependent impacts by adjusting the identified MWD for the number of years that the individual was exposed to them.

2. Methods

2.1. Study design

Data were derived from the Study on Ageing, Cognition and Dementia in Primary Care Patients (AgeCoDe), a multi-centered, population-based longitudinal cohort study. The study design is described in detail elsewhere [13]. Briefly, in 2003–2004, 6619 dementia-free primary care patients aged 75 years and older in six German cities were selected to participate in the study. Exclusion criteria were not being a regular patient to their general practitioner, severe illness deemed to be fatal within 3 months, insufficient German language capacities, deafness, blindness, and inability to consent. Of the selected individuals, 1775 refused to participate, and 1517 could not be contacted. Altogether 3327 participants were recruited. Participants took part in a baseline assessment and up to six follow-up assessments at an average interval of 1.5 years. We conducted personal interviews with the participant, as well as standardized interviews with surrogates. In addition, we obtained health information from the participant’s general practitioner. For purpose of analyses, 91 (2.7%) participants had to be excluded because of incomplete dementia assessment, 857 (25.8%) because of incomplete occupational information, and 17 (0.5%) because of incomplete covariate information. Furthermore, 26 (0.8%) participants had to be excluded as their occupations could not be matched to corresponding occupational codes, and 21 (0.6%) were excluded as the occupational classification system did not provide data for their occupation (O*NET). The final sample for analyses comprised a total of 2315 (69.6%) participants (see Fig. 1).

2.2. Standard protocol approval and patient consents

All study participants provided written informed consent before study participation. The study was approved by the ethics committees of all the participating research centers and was carried out in accordance with *The Code of Ethics of the World Medical Association (Declaration of Helsinki)* for experiments involving humans.

2.3. Cognitive functioning and dementia

Baseline and subsequent follow-up assessments were performed in participants’ homes by trained physicians and psychologists. Cognitive functioning and dementia was assessed with the *Structured Interview for Diagnosis of Dementia of Alzheimer type, Multi-infarct Dementia, and Dementia of other Etiology according to the Diagnostic and Statistical Manual of Mental Disorders, 3rd*

Download English Version:

<https://daneshyari.com/en/article/5622465>

Download Persian Version:

<https://daneshyari.com/article/5622465>

[Daneshyari.com](https://daneshyari.com)