

Brief Report

Vocational disability in teachers – influencing factors among a highly burdened sample

Till F. Beutel*, Johanna Adams, Jan Becker, Stephan Letzel and Dirk-Matthias Rose
*Institute of Teachers' Health at the Institute of Occupational, Social, and Environmental Medicine,
University Medical Center Mainz, Mainz, Germany*

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Abstract.

OBJECTIVE: Early retirement caused by invalidity is a major topic of research on teacher's health. The identification of influencing factors is important to implement appropriate prevention strategies. This study analyzes influencing factors on the subjective prognosis of long-term vocational disability in German teaching staff.

METHODS: In this cross-sectional study we analyzed medical records of N = 515 teachers and educational staff who had attended an occupational medical/psychological consultation between 2011 and 2016. The majority were women (73.0%; n = 375), the mean age was 49.6 (SD = 9.1) years. We used a comprehensive set of measures: work-related demands (Wuerzburg Screening) to identify occupational problems, vocational disability (SPE) and depression/anxiety (PHQ-9, GAD-7).

RESULTS: Subjective prognosis of long-term vocational disability was significantly related to age, years of service, several work related strains as well as mental health symptoms. Significant predictors in a multiple logistic regression model were age (OR: 1.06), 'limited vocational capability' (OR: 1.65) and 'being loaded by work' (OR: 1.56).

CONCLUSION: Professionals who are concerned with occupational health management should consider those factors in order to prevent or delay early retirement. Persons who are at high risk for early retirement should receive specific trainings or brief psychotherapeutic interventions.

Keywords: Education sector, work load, mental health, early retirement

1. Introduction

1.1. Retirement for health reasons among teachers

Early retirement among teachers is a highly focused topic in the area of German teachers'

health research. A study from Bavaria - focusing on data from 1996 until 1999 - showed that about 50–60% of retirement cases among Bavarian teachers were caused by disability (Weber, 2003). In 2001 the German legal situation for early retirement in civil servants has changed and monetary deductions have been launched. After 2001 the proportion of retirement for health reasons has decreased clearly (Edgar Schmitz & Peter Jehle, 2013). Since 2005 the proportion of ill health retirement has decreased from 20% (2005) to less than 10% (2012–2014; Claus et al., 2015). Since 2012, rates have been widely stable.

*Address for correspondence: Till F. Beutel, Institute of Teachers' Health at the Institute of Occupational, Social, and Environmental Medicine, University Medical Center Mainz, Kupferbergterrasse 17-19, 55116 Mainz, Germany. Tel.: +49 0 6131 88 448 72; Fax: +49 0 6131 88 448 70; E-mail: till.beutel@unimedizin-mainz.de.

Early retirement decisions are influenced by different factors, which can be seen as so called push factors such as work demands or poor health condition and positive factors (so called pull-factors) such as the wish to have more leisure time (Shultz, Morton, & Weckerle, 1998). In the present paper we focus on push factors. Work-related push factors are for instance organizational changes at work, high work pressure and conflicts at work (Reeuwijk et al., 2013). Previous studies from different countries have reported of female teachers to be significantly more affected by occupational stress (Antoniou, Polychroni, & Vlachakis, 2006; Klassen & Chiu, 2010; Kumar, Wani, & Parrey, 2013; Timms, Graham, & Caltabiano, 2006), especially by classroom stress (Klassen & Chiu, 2010) and to suffer from higher cognitive and emotional demands (DAK-Gesundheit & Leuphana Universität, 2011). Some studies found female teachers to report higher levels of emotional exhaustion (Skaalvik & Skaalvik, 2016). Only few studies report a lack of a gender effect on stress experience (Pithers & Soden, 1998) or mixed results (Skaalvik & Skaalvik, 2016).

Taking a closer look at the medical background of disability cases made clear that mental illnesses were most common. This result has been shown in different German federal states as well as in Scottish and British teachers and seems to be stable across time (Brown, Gilmour, & Macdonald, 2006; Kraft, 2015; Weber, 2003). Attempts to reactivate ill health retirement cases in Rhineland-Palatine remained unsuccessful in over 95% of the cases (Claus et al., 2015). Since the teachers' job is associated with high rates of disability and the reactivation is mostly not promising, it is important to investigate early prevention to avoid disability.

1.2. Subjective prognosis of vocational disability

A reliable prognosis of early retirement can be helpful to intervene at an early stage in order to prevent or delay early retirement. A short instrument for the prediction of early retirement is the Subjective Prognosis of gainful Employment (Mittag & Raspe, 2003). It has shown good predictive validity of early retirement caused by disability in a sample of the employed general population (Mittag, Meyer, Glaser-Moller, Matthis, & Raspe, 2006).

1.3. The present study

The aim of the present study is to identify influencing factors on the subjective prognosis of vocational disability in a sample of German teachers and educational staff being at high risk of vocational disability. To the best of our knowledge this is the first study to analyze a highly burdened sample of teachers towards influencing variables on the subjective prognosis of gainful employment.

We would like to receive answers to the questions (1) how are vocational strain, subjective prognosis of vocational disability and mental symptoms distributed in a sample of burdened teachers? Secondly we would like to analyze the associations between demographic factors, vocational strain and mental symptoms with the subjective prognosis of vocational disability (2). Moreover we want to find out (3) how these variables influence the subjective prognosis of vocational disability when multivariate effects are considered.

2. Study population and methods

2.1. Procedure and study sample

In this cross-sectional study we analyzed the medical records of N=515 clients who had attended an occupational medical/psychological consultation between May 2011 and July 2016. It refers to teachers and educational staff from governmental schools in Rhineland-Palatinate, Germany, who suffer from physical, mental or school-specific (e.g. bullying) problems. The consultation took place at an Institute of Occupational, Social and Environmental Medicine which is specialized on teachers' health. It was conducted by an occupational physician or additionally by a psychologist. The work has been carried out in accordance with the Declaration of Helsinki. Research ethics committee declares this study exempt as data derives from medical records which have been collected routinely and data analysis is conducted retrospectively.

2.2. Measures

The medical records contain a comprehensive set of measures which are filled out routinely by the clients. The self-reported measures contain amongst others demographic items, work-related issues and demands as well as parts of the Patient Health

Questionnaire (PHQ-D, German Version) for mental health aspects.

2.2.1. Work-related demands

Work-related demands include three items from the scale “vocational demands” of the Wuerzburg Screening to identify occupational problems (Würzburger Screening zur Identifikation von beruflichen Problemlagen; Löffler, Wolf, & Gerlich, 2008). The items measure the ‘limitation of vocational capability’, ‘health complaints from work strains’ and ‘being loaded by work’. Three additional items of our measure concern ‘conflicts at work’, ‘satisfaction with work’ and ‘feelings of inequity’.

2.2.2. Mental health

Depression and anxiety were measured by the Patient Health Questionnaire (PHQ-D, German Version; Löwe, Spitzer, Zipfel, & Herzog, 2002). PHQ-9 is the depression module and shows good sensitivity and specificity for major depression (Kroenke, Spitzer, & Williams, 2001). GAD-7 is a well validated tool for the screening of generalized anxiety disorder (GAD-7, Spitzer, Kroenke, Williams, & Lowe, 2006).

2.2.3. Subjective prognosis of vocational disability

The prognosis of vocational disability was assessed by the Brief Scale for Measuring Subjective Prognosis of Gainful Employment (“kurze Skala zur Messung der subjektiven Prognose der Erwerbstätigkeit”, SPE; Mittag & Raspe, 2003). The scales’ reliability and construct validity have been well confirmed (Mittag et al., 2003; Mittag et al., 2006).

2.3. Statistical analyses

Frequencies and descriptive statistics were calculated for demographic variables, school and employment specifics, work strain and mental health. The relationship between those variables and subjective prognosis of vocational disability was calculated using Chi²-test for nominal/ordinal variables and F-Test for continuous variables. We computed multiple binary logistic regression analyses (method stepwise) with subjective prognosis of vocational disability (0/1) as the dependent variable. Regression analyses were conducted adjusted for potential confounders to check for multivariate effects. Variables were eligible to be entered into the regression model

Table 1
Demographic and work-related characteristics (N = 515)

Variable	N	%	Mean	SD	Range
Age			49.6	9.1	25–65
Sex (male)	139	27			
Family status					
single	90	18.0			
married	267	53.4			
in partnership	48	9.6			
divorced	87	17.4			
widowed	8	1.6			
Occupational group					
teacher	433	87.8			
educational staff	43	8.7			
trainee teacher	17	3.4			
Years of service			20.2	10.1	0.3–41.5

when being significantly associated with subjective prognosis of vocational disability in former analyses.

3. Results

Table 1 presents demographic and work-related characteristics of the sample (N = 515). The majority were women (73.0%; $n = 375$), the mean age was 49.6 (SD = 9.1) years. Most of the clients were regular teachers (87.8%; $n = 433$), others were educational staff or trainee teachers. The average years of service was 20.2 years (SD = 10.1).

3.1. Work-related demands

About 40% considered their vocational capability as very or extremely limited. Almost half of the sample (47.3%) stated that job strains extremely or very strongly contribute to their health complaints and felt very strongly or extremely loaded by work (47.2%). Extreme or severe conflicts with colleagues or superiors were indicated by every fifth client (20.2%). Job satisfaction was low or not at all existent among 52.3% of the subjects. 33.6% (strongly) agreed to feelings of inequity at work.

3.2. Mental health

The severity of depressive symptoms was assessed regarding to the cut off values of the PHQ-9. 17.5% of the clients were classified to have no or minimal depressive symptoms, while approx. 31% and approx. 27% had mild respectively moderate depressive symptoms. Moderately severe depressive symptoms were assessed in about 17%, severe symptoms in more than 7% of the clients.

Table 2
Relationship between subjective vocational disability (0 = low hazard; 3 = high hazard) and demographic variables, work load, mental symptoms

	Subjective vocational disability (scale)				Statistical value	
	0	1	2	3	test statistic	p-value
Age in years (M; SD)	46.9 (9.9)	48.4 (9.7)	50.5 (7.9)	54.8 (5.7)	F-test	<0.001
Years of service (M; SD)	17.8 (10.6)	18.7 (9.8)	20.4 (9.3)	25.3 (9.0)	F-test	<0.001
Sex					Chi ²	0.77
women (%)	33.0	22.0	30.9	15.1		
men (%)	33.3	17.5	33.3	15.8		
Marital status (%)					Chi ²	<0.05
single	41.7	27.8	22.2	8.3		
married	32.7	19.2	35.6	12.5		
in partnership	33.3	21.4	31.0	14.3		
divorced	25.7	18.6	28.6	27.1		
widowed	50.0	33.3	0.0	16.7		
Occupational group (%)					Chi ²	0.15
teacher	32.1	20.2	32.1	15.6		
special teachers	33.3	26.7	30.0	10.0		
trainee teacher	61.5	30.8	7.7	0.0		
Work related strains (%)						
vocational capability limited	29.1	32.9	47.8	56.7	Chi ²	<0.001
health complaints from work strains	33.1	34.6	56.9	71.2	Chi ²	<0.001
loaded by work	24.1	48.1	56.8	69.0	Chi ²	<0.001
conflicts at work	23.1	19.0	19.5	17.2	Chi ²	0.80
dissatisfaction with work	40.4	55.0	56.6	60.7	Chi ²	<0.05
feeling of inequity at work	54.0	56.8	48.7	58.6	Chi ²	0.56
Mental symptoms (M; SD)						
PHQ-9 (depressive symptoms)	8.3 (5.9)	9.9 (5.8)	11.3 (5.3)	12.8 (6.2)	F-test	<0.001
GAD-7 (anxiety symptoms)	7.0 (5.4)	8.1 (4.8)	9.8 (5.5)	11.0 (6.0)	F-test	<0.001

Note: Work related strains: top two categories are summed up and shown in %.

Regarding to the cut off values of the GAD-7 (anxiety symptoms), the severity was minimal in about 28%, mild in about 29%, moderate in approx. 24% and severe in almost 19% of the clients (see Table 2). We did not find significant ($p > 0.05$) gender differences concerning mental health.

Work-related strains and mental symptoms were highly associated with each other ranging between Spearman's $\rho = 0.30$ and 0.51 .

3.3. Subjective prognosis of vocational disability

The ability to work until statutory retirement age was indicated as unsecure by almost one third (29.7%). A further third (34.5%) stated rather not or not at all to have the ability to work until statutory retirement age. Approximately another third (35.8%) was (rather) sure to be able to work until statutory retirement. Almost half of the sample (49.3%) saw their ability to work permanently at risk due to health status. Almost 19% had thoughts to make an application for early retirement. No significant sex differences were found in all work-related strains ($p > 0.05$).

Prognosis of vocational disability can be categorized from low hazard ("0") to high hazard ("3"). The distribution in the sample was as follows: low hazard ("0") in about 33%, "1" in almost 21%, "2" in 30.9% and high hazard ("3") in about 15%. The average age raised significantly ($p < 0.001$) from about 47 years within low hazard ("0") to almost 55 years within high hazard ("3") (see Table 2). Also the marital status reached significance ($p < 0.05$) dependent on the hazard. No significant differences were found towards sex and occupational group. The average years of service were between approx. 18 years (low hazard, "0") and about 25 years (high hazard, "3"; $p < 0.001$). Three work-related strains were highly significant concerning subjective prognosis of vocational disability. The share of clients with very strong and extreme 'limited vocational capability' raised significantly from about 29% within low hazard ("0") to almost 57% with high hazard ("3"; $p < 0.001$). The same applies to 'health complaints from work strains' (33% to 71%; $p < 0.001$) and 'loaded by work' (24% to 69%; $p < 0.001$). Dissatisfaction with work was also associated with a higher hazard ($p < 0.05$). No significant differences were found concerning

Table 3
Significant predictor variables for subjective prognosis of vocational disability (SPE)

SPE	OR	95% CI	p-value
Age	1.06	1.03–1.09	$P < 0.001$
Limited vocational capability	1.65	1.26–2.15	$p < 0.001$
Being loaded by work	1.56	1.21–2.00	$p < 0.001$

Note: Age was analyzed continuously. Explained variance in this multiple binary-logistic regression model was 26.5% (Nagelkerkes R^2).

conflicts at work and feelings of inequity at work ($p > 0.05$).

Depressive and anxiety symptoms also increased significantly with subjective prognosis of vocational disability. PHQ-9 score increased ($p < 0.001$) from $M = 8.3$ (low hazard) to $M = 12.8$ (high hazard), GAD-7 score from $M = 7.0$ to $M = 11.0$ ($p < 0.001$).

In order to identify the influence of different factors on subjective prognosis of vocational disability – under consideration of multivariate effects – we carried out a multiple logistic regression analysis. In this regression model ‘age’ (Odds Ratio (OR): 1.06, $p < 0.001$), ‘limited vocational capability’ (OR: 1.65; $p < 0.001$) and ‘being loaded by work’ (OR: 1.56; $p < 0.001$) were significant predictor variables (see Table 3). Those variables explained 26.5% (Nagelkerkes R^2) of the variance. Other former significant variables (e.g. mental health status) did not have incremental explanation of variance and were therefore not included in the regression model.

4. Discussion

The focus of the present study was to identify influencing factors that contribute to the prognosis of long-term vocational disability in a sample of teachers and educational staff from governmental schools.

Work-related strains were highly common, about half of the sample indicated to have work strain in very strong or extreme form, mostly concerning dissatisfaction with work, health complaints from work strains and being loaded by work. Depressive and anxiety symptoms were also highly prevalent. Overall, the sample can be considered as highly burdened. Interestingly differences between men and women were not found in terms of aforementioned variables. Moreover we did not find gender differences in the subjective prognosis of vocational disability. In previous studies gender differences were typically reported with female teachers to be more burdened

(Antoniou et al., 2006; Klassen & Chiu, 2010; Kumar et al., 2013; Timms et al., 2006). We might not have found significant sex differences as we have analyzed a highly loaded sample where men and women might be more assimilate.

Subjective prognosis of long-term vocational disability ranged between low and high hazard. Unadjusted for other variables, relevant factors were age, years of service and work-related strains as well as depressive and anxiety symptoms. We found age, vocational capability and being loaded by work to be significant predictors in a multiple logistic regression model. Other former significant predictors did not have incremental explanation of variance. We assume limited working capacity and being loaded by work to be constructs in which mental symptoms are partly included as we found work strains and mental symptoms to be highly associated with each other. This association has been reported in previous research as well (Löffler, Wolf, Gerlich, & Vogel, 2007). For that reason these aspects might not have had additional explanation of variance. Age was an additional factor with incremental explanation of variance. Previous studies have shown a decrease of work ability with increasing age (Fernandes, Pereira, Bem-Haja, Amaral, & Silva, 2013; Ilmarinen, Tuomi, & Klockars, 1997; Monteiro, Ilmarinen, & Rodrigues Correa Filho, 2006) respectively a higher variability (Padula, da Silva Valente, Moraes, Chiavegato, & Cabral, 2012).

4.1. Limitations and strengths

A central strength of this work lies in the relatively large sample out of a highly burdened collective, which has not been investigated towards influencing factors on the subjective prognosis of vocational disability. Given the cross-sectional design of the study, associations between work strain and mental health with subjective prognosis of vocational disability cannot clearly be interpreted in terms of causality. Moreover as this is not a longitudinal study we are not able to state about real life decisions of the clients in terms of early retirement. Nevertheless the application of well validated instruments and their relationships may give first insights into the underlying circumstances.

4.2. Implications

One of our implications refers to further research methodology. Retirement decisions in teachers can

only be fully understood by conducting longitudinal studies. This study only gives some insights into influencing factors. A longitudinal study would be able to analyze the emergence, pathways and the relationship between work strain, mental health and early retirement decisions more precisely.

However we found being loaded by work and limited vocational capability as relevant factors towards one's subjective prognosis of long-term vocational disability. For that reason we want to encourage professionals that are concerned with occupational health management (e.g. occupational physicians/psychologists) to consider those factors as they may strongly contribute to early retirement decision in teaching staff. Occupational health examinations for individuals or risk assessments for groups can be ways to take those two variables into account. Early retirement among teachers causes high individual and economical damage. For that reason persons who are at high risk for early retirement should get specific prevention in order to delay or prevent early retirement. This could be specific trainings or a psychotherapeutic short intervention that includes an occupational psychological approach, as mental health seems to be associated with feelings of being loaded and vocationally limited.

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The authors ensure that the work has been carried out in accordance with the Declaration of Helsinki.

Authors' contributions

Till F. Beutel is the principal author who conceptualized the work, calculated the statistics and wrote essential parts of the manuscript including introduction, methods, results and discussion. Johanna Adams supplemented important parts to introduction and discussion. She brought new ideas and revised the manuscript. Jan Becker supported to shorten the manuscript and revised it. Stephan Letzel and Dirk-Matthias Rose revised the manuscript.

Conflict of interest

The authors declare no conflicts of interest.

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