Workplace bullying and subsequent health problems

BACKGROUND Cross-sectional studies demonstrate that exposure to bullying in the workplace is positively correlated with self-reported health problems. However, these studies do not provide a basis to draw conclusions on the extent to which bullying leads to increased health problems or whether health problems increase the risk of being bullied. To provide better indications of a causal relationship, knowledge from prospective studies on the association between bullying in the workplace and health outcomes is therefore summarised.

MATERIAL AND METHOD We conducted a systematic literature review of original articles from central literature databases on longitudinal associations between bullying in the workplace and health. Average associations between bullying and health outcomes are calculated using meta-analysis.

RESULTS A consistent finding across the studies is that exposure to bullying is significantly positively related to mental health problems (OR =1.68; 95 % KI 1.35–2.09) and somatic symptoms (OR = 1.77; 95 % KI 1.41–2.22) over time. Mental health problems are also associated with subsequent exposure to bullying (OR = 1.74; 95 % KI 1.44–2.12).

INTERPRETATION Bullying is positively related to mental health problems and somatic symptoms. The association between mental health problems and subsequent bullying indicates a self-reinforcing process between mental health and bullying. The methodological quality of the studies that were conducted is relatively sound. However, based on the existing knowledge base there are no grounds for conclusions regarding an unambiguous causal relationship between bullying and health.

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MAIN MESSAGE

Bullying is a widespread occupational health issue and affects between 5 % and 14 % of Norwegian employees

Exposure to bullying in the workplace is linked to subsequent mental and somatic symptoms

Existing health problems are also linked to an increased risk of exposure to bullying

There is a lack of prospective studies on the mechanisms which explain the relationship between bullying and health problems

In the past 20 years, bullying in the workplace has been brought to public attention through media reports and research findings. The term «bullying» refers to a situation in which a person repeatedly and over time is subjected to negative behaviours by one or several others in the workplace, and in which the person concerned does not manage to defend him/herself against these behaviours (1). Bullying is therefore a matter of prolonged harassment, not of isolated episodes of conflict. Differences in the balance of power between the bully and the victim of bullying may have their basis in both formal positions and informal psychological power relations.

Bullying may manifest itself in numerous different ways, but the research literature commonly distinguishes between direct and indirect bullying (1). The former denotes openly abusive behaviours such as verbal abuse, inappropriate remarks at the victim's expense and unjustified criticism of the person's work performance. Indirect bullying denotes behaviours such as social exclusion and rumours. It is also usual to distinguish between person-related and work-related bullying. Person-related bullying is manifested through behaviours that impinge on an employee's personal integrity. Examples of work-related bullying are being allocated work that is beneath the person's level of competence and withholding of information necessary to perform work assignments.

From a legal standpoint, behaviours that can be considered legitimate within the framework of legislation and foreseeable within a given employment relationship cannot be considered as bullying, even though they may be subjectively experienced as abusive by an employee (2). In most studies a subjective approach is taken – since they are based on the employee's experiences only (3).

In the research literature, bullying has been surveyed using two methodologies. The *exposure method* investigates the respondents' exposure to specific bullying behaviours. *The self-evaluation method* entails asking the respondents whether they think they have been subjected to bullying or not, generally after having presented a definition of the term «bullying». In line with these methods, nationally representative figures show that approximately 14 % of Norwegian employees have been subjected to systematic bullying. A total of 4.6 % have perceived themselves as bullied during the last six months (4).

Given that bullying in the workplace is a prolonged and systematic form of harassment within an important area of life, it is reasonable to assume that it has health-related consequences. This is supported by results from cross-sectional studies that show that exposure to bullying is positively associated with both physical and mental health problems. In a meta-analysis of cross-sectional

Table 1 Studies of correlations between bullying and health-related factors

Author, year (reference)	Country	Number of participants	Time interval (months)	Sample	Probability sample	Health measurement
Brousse, 2008 (5)	France	48	12	Patients (treatment study)	No	Mental health
Eriksen, 2006 (6)	Norway	4 076	15	Nurses	Yes	Mental health
Figueiredo-Ferraz, 2013 (7)	Spain	372	12	Health personnel	No	Mental health
Finne, 2011 (8)	Norway	1 971	24	Employees generally	No	Mental health
Hansen, 2013 (9)	Denmark	1 671	24	Employees generally	No	Sleep problems
Hoobler et al., 2010 (10)	USA	1 418	12	Employees generally	Yes	Mental and somatic health
Høgh, 2005 (11)	Denmark	4 647	60	Employees generally	Yes	Mental health
Høgh, 2011 (12)	Denmark	2 154	12	Healthcare workers	Yes	Mental and somatic health
Johannessen, 2013 (13)	Norway	6 745	36	Employees generally	Yes	Mental health
Kiwimäki, 2003 (14)	Finland	5 431	24	Hospital employees	Yes	Cardiovascular disease and mental health
Kiwimäki, 2004 (15)	Finland	4 791	24	Hospital employees	Yes	Fibromyalgia
Kääriä, 2012 (16)	Finland	5 277	60–84	Public employees	Yes	Chronic neck pain
Lahelma, 2012 (17)	Finland	6 830	60–84	Public employees	Yes	Mental health
Lallukka, 2011 (18)	Finland	7 332	60–84	Public employees	Yes	Sleep problems
Lallukka, 2012 (19)	Finland	6 606	36–60	Public employees	Yes	Use of psychopharmaceuticals
Nielsen, 2012 (20)	Norway	1 775	24	Employees generally	Yes	Mental health
Nielsen, 2012 (21)	Norway	741	6	Offshore employees	Yes	Mental health
Reknes, 2013 (22)	Norway	1 582	12	Nurses	No	Mental health
Rugulies, 2012 (23)	Denmark	5 701	24	Geriatric care employees	Yes	Mental health
Stoetzer, 2009 (24)	Sweden	4 040	36	Employees generally	Yes	Mental health
Tepper, 2000 (25)	USA	362	6	Employees generally	Yes	Mental health

Table 2 Meta-analysis of correlations between bullying, mental health problems and somatic symptoms[1]

				95 % KI				
Correlation	Number of studies	Number	OR	Low	High	Heterogeneity between the studies (Q)	Heterogeneity in per cent (I^2)	Fail-safe N
Bullying – mental health problems	14	47 473	1.68	1.35	2.09	184.41[1]	92.95	628
Mental health problems – bullying	7	18 300	1.74	1.44	2.12	30.36[1]	80.23	237
Bullying – somatic symptoms	5	19 071	1.77	1.41	2.22	10.02[1]	60.06	88

[1] $p < 0.01$

studies an average correlation of 0.34 was found between bullying and mental health problems while a correlation of 0.28 was found between bullying and somatic symptoms (3). These correlations demonstrate that high exposure to bullying is consistently associated with a high degree of health problems.

However, cross-sectional studies provide no information on the causal direction of the associations observed, and therefore do not tell us whether bullying leads to increased health problems or if it is the case that persons with already existing health problems are more exposed to being bullied. For example persons with mental health problems may more easily experience negative events such as bullying, as they may easily behave in a way that triggers aggression in others.

Compared to cross-sectional studies, prospective research designs have the advantage that they provide information on the direction of associations over time. They

First author, year (reference)	Odds ratio	95% KI Low	95% KI High	Z-score	P-value
Finne, 2011 (8)	1,20	1,02	1,42	2,14	0,032
Eriksen, 2006 (6)	0,78	0,69	0,87	- 4,47	0,000
Hoobler, 2010 (10)	2,66	2,14	3,30	8,87	0,000
Høgh, 2005 (11)	1,44	1,30	1,60	6,82	0,000
Høgh, 2011 (12)	1,61	1,38	1,88	6,03	0,000
Johannesen, 2013 (13)	1,80	1,31	2,48	3,61	0,000
Kiwimäki, 2003 (14)	4,20	2,04	8,71	3,86	0,000
Lahelma, 2012 (17)	1,74	1,36	2,22	4,45	0,000
Nielsen, 2012a (20)	1,49	1,06	2,09	2,32	0,020
Nielsen, 2002b (21)	2,47	1,17	5,22	2,37	0,018
Rugulies, 2012 (23)	3,02	2,00	4,54	5,29	0,000
Stoetzer, 2009 (24)	1,60	1,21	2,12	2,29	0,001
Reknes, 2013 (22)	1,14	0,95	1,36	1,38	0,168
Tepper, 2000 (25)	2,06	1,40	3,02	3,70	0,000
Total	**1,68**	**1,35**	**2,09**	**4,70**	**0,000**

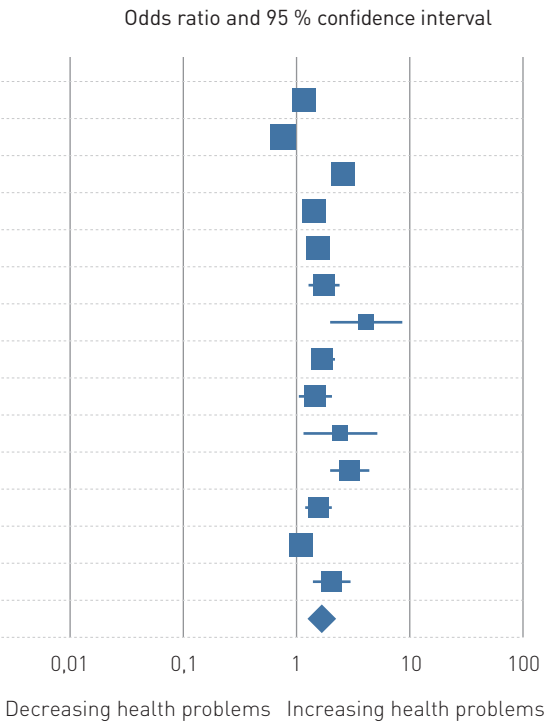

Figure 1 *Forest plot for studies of the correlation between exposure to bullying and subsequent mental health problems*

will therefore give better indications of how exposure to bullying is linked to health problems. The purpose of this article is to summarise results from the research literature on prospective associations between bullying and health problems.

Material and method

The review is based on original articles in the authors' personal literature archive. The archive was established in 1989 and as at 1 December 2013 it contained approximately 750 research articles on workplace-related bullying. The archive is updated weekly and is based on searches using the search words «mobbing», «bullying», «victimization», «harassment», combined with «workplace» and/or «work», in the literature databases PubMed, Web of Science (ISI), PsychInfo and Google Scholar. No historical time limits were set for the searches. The systematic search routine reveals that the archive most probably encompasses all published studies on workplace bullying.

Included in this literature review were studies describing the prospective associations between workplace bullying and health problems. Cross-sectional studies and prospective studies that did not deal with the relevant associations were excluded. The review is restricted to published articles in Scandinavian and international scientific journals. Reading and coding of the studies was performed by the first author. A total of 21 studies met the inclusion criteria (Table 1) (5–25).

Seventeen studies originated in the Nordic countries. The preponderance of Nordic studies is in line with previous literature reviews (3, 26) and reflects the fact that research on bullying has its centre of gravity in Northern Europe. Sixteen studies investigated whether there were associations between bullying and mental health. Other outcome objectives were somatic sym-

First author, year (reference)	Odds ratio	95% KI Low	95% KI High	Z-score	P-value
Finne, 2011 (8)	2,30	1,43	3,70	3,44	0,001
Høgh, 2005 (11)	1,39	1,21	1,49	5,45	0,000
Høgh, 2011 (12)	1,29	1,11	1,50	3,25	0,001
Kiwimäki, 2003 (14)	2,46	1,69	3,58	4,72	0,000
Nielsen, 2012 (20)	2,27	1,74	2,95	6,11	0,000
Nielsen, 2002 (21)	2,51	1,39	4,53	3,06	0,002
Reknes, 2013 (22)	1,52	1,27	1,83	4,53	0,000
Total	**1,74**	**1,44**	**2,12**	**8,58**	**0,000**

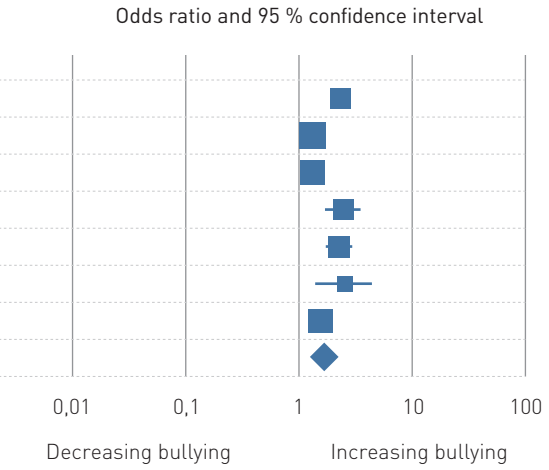

Figure 2 *Forest plot for studies of the correlation between mental health problems and subsequent exposure to bullying*

First author, year (reference)	Odds ratio	95% KI Low	High	Z-score	P-value
Hoobler, 2010 (10)	1,80	1,46	2,22	5,46	0,000
Høgh, 2011 (12)	1,44	1,23	1,68	4,64	0,000
Kiwimäki, 2003 (14)	2,30	1,18	4,50	2,43	0,015
Kiwimäki, 2004 (15)	4,18	1,93	9,06	3,62	0,000
Kääriä, 2013 (16)	1,61	1,14	2,28	2,70	0,007
Total	1,77	1,41	2,22	4,92	0,000

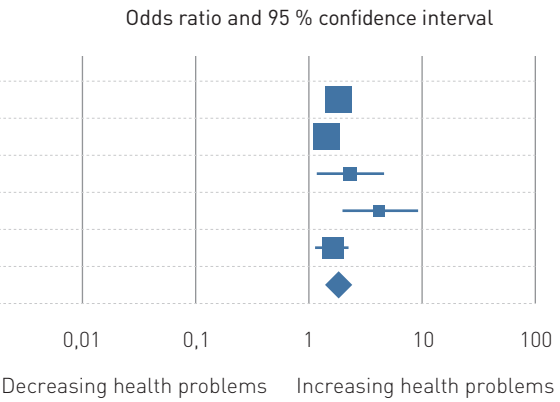

Figure 3 *Forest plot for studies of the correlation between exposure to bullying and subsequent somatic symptoms*

ptoms, sleep problems and use of psychopharmaceuticals. The time interval between the points of examination varied from six to 84 months (median 24 months).

The average size of the sample in the included studies was 3 503 (range 48–7 332). The studies were mainly based on general samples of employees or investigations among health personnel. Based on criteria for probability sampling, i.e. that everyone in a given population has the same probability of participation (27), 16 out of 21 studies employed such a probability sample. In the majority of the studies a self-evaluation method was used to record bullying. All the studies were based on the respondents' self-reported health problems.

Average effect size of the associations between bullying and health, heterogeneity (Q) between the studies and heterogeneity as a percentage (I^2), as well as risk of publication bias (Fail Safe N) were calculated using a meta-analysis weighted for sample size in the software program Comprehensive Meta-Analysis version 2 (28). A significant Q-value indicates that the studies are heterogeneous. Since the studies included are assumed in advance to be heterogeneous with regard to the composition of the sample and use of measuring instruments, the meta-analysis is based on a random effects model (28). Fail Safe N is an estimate of how many unpublished studies with non-significant results will be necessary to increase the p-value of the results from the meta-analysis to > 0.05. Compared to a previous meta-analysis of associations between bullying and health problems (3), the review presented here encompasses a larger number of studies and more health outcomes.

Results

An overview of included studies is given in Table 1 (5–25). The knowledge basis for associations between bullying and the outcomes «sleep problems» and «use of psychopharmaceuticals» is too limited to draw conclusions on; these outcomes are therefore not dealt with further in the presentation of results.

With one exception (6), significant positive associations on follow-up between exposure to bullying at the first measurement point and mental health problems (anxiety and depression) over time were demonstrated in all the studies. 13 of 16 associations were adjusted for degree of stability of mental health problems in the respondents between the measurement points. This therefore indicates that bullying is related to new cases of mental health problems over time.

The association is demonstrated both in general and more occupationally specific populations. For example, a cohort study of 6 745 Norwegian employees showed that bullying was a predictor of subsequent mental health problems (OR = 1.80; 95 % KI = 1.31–2.48) after controlling for existing conditions (13). In a Finnish study of hospital employees it was found that bullying was significantly related to new cases of depression (OR = 4.2; 95 % KI = 2.0–8.6) two years later (14). Of the studies of bullying and mental health problems 14 studies, with altogether 47 473 respondents, could be included in a meta-analysis (Table 2, Figure 1). The weighting for sample size gave the studies a significant average odds ratio of 1.68 (95 % KI = 1.35–2.09). The association is robust, as analysis of publication biases shows that 628 studies with zero correlations are necessary to obtain a non-significant estimate (Fail Safe N = 628).

In seven studies associations were reported between mental health problems at the first measurement point and bullying on follow-up. Six of the studies showed significant associations over time. For example, after having controlled for stability of bullying over time, Finne and colleagues (8) found that anxiety and depression at the first measuring point were predictors of bullying at the follow-up point (OR = 2.3; 95 % KI = 1.43–3.69). A corresponding correlation is also reported in a nationally representative study of Norwegian employees (20), a study of Norwegian nurses (22) and a study of Finnish hospital employees (14). Use of meta-analysis (Table 2, Figure 2) gives these studies (N = 18 300) an odds ratio of 1.74 (95 % KI 1.44–2.12; Fail Safe N = 237) for the longitudinal association between mental health problems and later exposure to bullying.

With regard to somatic symptoms, the studies reviewed show significant associations over time between bullying and general physical symptoms (10, 12), fibromyalgia (15) and chronic neck pains (16). Summarised by meta-analysis (Table 2, Figure 3) the studies yield a significant average odds ratio between exposure to bullying and subsequent somatic symptoms of 1.77 (95 % KI = 1.41–2.22; Fail Safe N = 94).

Associations between somatic symptoms and subsequent exposure to bullying have only been investigated in two studies, the results of which are contradictory. In a study of 2 154 Danish health workers, a weak but significant correlation (r = 0.07) was found between general physical symptoms and subsequent bullying (12). In a Finnish study Kiwimäki et al. (14) found that cardiovascular disease was not a predictor of later exposure to bullying (OR=1.31; 95 % KI = 0.88–1.94).

Discussion

The present review and meta-analysis show that bullying is significantly associated with subsequent mental health problems and somatic symptoms, while mental health problems are also significantly associated with subsequent exposure to bullying. Analyses of publication biases indicate that the associations are robust.

One explanation for how exposure to bullying is related to mental health problems is that bullying works through cognitive factors,

such as attributions and interpretations. This means that the effect of bullying on health is conditional on how the victim experiences, evaluates and understands the exposure to bullying. This explanation is underpinned by a prospective study which found that the correlation between bullying and subsequent mental health problems was associated with the subjective experience of being bullied, and not exclusively with the fact of being subjected to bullying behaviours (20).

At the same time there are cross-sectional studies that indicate that cognitive factors have limited significance for health problems where the exposure to bullying behaviours is of high intensity (29, 30), which therefore indicates that the degree of severity of the bullying is nevertheless the main factor that impacts on targets' health problems.

Research on justice in the workplace shows that associations between perceived injustice and mental health require that *both* unjust treatment and procedural injustice in the form of inadequate intervention by the employer are experienced (31). Therefore an alternative explanation is that the association between bullying and subsequent mental health problems is attributable to a combination of exposure to bullying and unsatisfactory handling of the conflict situation at the management level.

The results indicate that bullying can also be manifested in subsequent somatic symptoms. It should be highlighted that an important shortcoming of the existing literature is that few studies exist which have investigated the extent to which somatic symptoms predict later exposure to bullying. Another weakness is that there are no prospective studies that demonstrate how exposure to bullying may result in somatic symptoms. However, based on research that shows associations between depression and somatic symptoms (32), a theoretical explanation may be that bullying is indirectly related to somatic symptoms through mental health.

An important finding of the review is the positive correlation between mental health problems and subsequent exposure to bullying. However, the results provide no indication of the extent to which persons with mental health problems are at a genuinely increased risk of being bullied, or whether on the other hand it is the case that mental health problems make it easier for them to perceive themselves as bullied. This mutual relationship between bullying and mental health may indicate that bullying and health problems constitute a self-reinforcing process, a vicious circle (14).

Methodological quality

The majority of the studies in the review are based on large probability samples from general occupational populations or specific sectors such as healthcare workers and employees in the oil industry. The fact that the correlations between bullying and health problems are consistent across occupational groups indicates that the findings can be generalised. Significant relationships with health over both shorter (6 months) and longer (5–7 years) periods indicate that possible health problems occur at an early stage and are long-lasting.

On the other hand we do not know how these correlations develop over time. With one exception (12), existing studies are based on only two measurement points. To investigate the dynamic between bullying and health problems, studies that have a minimum of three measurement points are needed. There is also a lack of longitudinal research on moderating and mediating variables explaining when and how bullying is related to health problems. This should be followed up in further research.

Another weakness of the existing studies is that they are based on self-reported data for both bullying and outcomes. It is therefore reasonable to assume that subjective individual factors such as personality traits and emotional states may influence the results. A challenge for future research is therefore to obtain objective data in the form of registry data or clinical assessments.

Although prospective study designs have the advantage that they indicate the direction of a relationship over time, they nevertheless do not provide the basis for a final conclusion regarding actual causal factors. In addition, such designs will not be able to exclude the effect of third variables such as premorbid personality and previous negative life events, among which may be exposure to childhood bullying. Building on the existing knowledge basis, it can therefore not be ruled out that the established effects are wholly or partly attributable to confounding factors.

To be able to control for third variables and establish causal relationships, experimental study designs are called for. Although experimental manipulation of bullying entails ethical challenges, research on social exclusion shows that experimental studies are possible (33).

Conclusion

In theoretical models, bullying is emphasised as a key risk factor for subsequent health problems (34, 35). These models are supported by this literature review in that bullying is related to both somatic and mental health symptoms over time. Significant associations in studies with both short and long time intervals indicate that bullying is associated with increased health problems irrespective of the time perspective.

Cumulatively the review indicates that exposure to bullying may result in various lasting health problems. At the same time, mental health problems seem to be related to subsequent exposure to bullying. Due to the limitations of prospective questionnaire studies, the existing knowledge basis does not provide grounds to form a conclusion with regard to unambiguous causal relationships between bullying and health problems.

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