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Prediction of Long-Term Sickness Absence Among Employees with Depressive Complaints

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Abstract *Introduction* To study the properties of a screening instrument in predicting long-term sickness absence among employees with depressive complaints. *Methods* Employees at high risk of future sickness absence were selected by the screening instrument Balansmeter (BM). Depressive complaints were assessed with the depression scale of the Hospital Anxiety and Depression Scale. The total study population consisted of 7,401 employees. Sickness absence was assessed objectively and analyzed at 12 and 18 months of follow-up using company registers on certified sick leave. *Results* The relative risk (RR) for long-term sickness absence, for employees at high risk versus not at high risk, was 3.26 (95% CI 2.54–4.22) in men and 2.55 (1.98–3.35) in women, when the BM was applied in the total study population. The RR of long-term sickness absence of employees with depressive complaints compared with employees without depressive complaints was 3.13 (2.41–4.09) in men and 2.45 (2.00–3.00) in women. The RR of long-term sickness absence for the BM applied in employees with depressive complaints was 5.23 in men and 3.87 in women. When the BM with a cut-off point with a higher sensitivity was applied in employees with depressive complaints, the RR for long-term sickness absence was 4.88 in men and 3.80 in women. *Conclusions* The screening instrument Balansmeter is able to predict long-term sickness absence within employees with depressive complaints. The total prediction of long-term sickness absence proved better in employees with depressive complaints compared with employees of a general working population.

Keywords Prediction · Screening instrument · Sickness absence · Depressive complaints · Employees

Introduction

Sickness absence constitutes a considerable public health problem in Western societies, with important consequences for individuals, their families, workplaces and society [1]. Within most high-income countries mental health complaints are highly prevalent, and one of the leading causes of certified sick leave [2, 3]. Mental health complaints are associated with prolonged sickness absence and permanent work disability [3–7]. In the Netherlands, psychological health complaints accounted for the highest proportion (19%) of total sickness absence days in 2009, due to the high mean number of sickness absence days (approximately 9 weeks) per sickness absence spell [8]. Long-term sickness absence is associated with a reduced probability of returning to work. Especially rehabilitation in case of absenteeism due to psychological complaints remains difficult and does not necessarily lead to work resumption

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[9–12]. Therefore, a preventive strategy aimed at early identification of employees at risk before sickness absence occurs may be more effective. A prerequisite for such a preventive strategy is the ability to identify employees at high risk of long-term sickness absence before sickness absence actually occurs. In previous research, Kant et al. [13] demonstrated that it is possible to identify employees at high risk of future sickness absence using a new developed screening instrument, in Dutch called Balansmeter. Furthermore, in a randomized controlled trial it was demonstrated that early intervention in this group proved successful in preventing future sickness absence [14]. However, both studies were conducted among a general working population with no specific complaints and early interventions therefore included a wide range of treatments commonly used in occupational health care. Recent studies showed that depressive complaints constitute a substantial part of the mental health complaints in the working population [2, 15]. Additionally, Kant et al. [14] found that the majority of mental health complaints consisted of depressive complaints. Characteristic for depressive complaints, is that, besides major depression milder levels of depressive complaints were found to be strongly associated with future long-term sickness absence as well [16, 17]. It was therefore hypothesized that a preventive strategy aimed at a more specific target population—that is employees identified both at high risk of future sickness absence and with depressive complaints—would be even more effective in preventing future long-term sickness absence.

For this specific population the prerequisite also is the ability to predict long-term sickness absence. However, so far little research has been done with respect to screening of future sickness absence in populations with specific complaints. The main aim of the present study therefore was to assess whether the screening instrument Balansmeter (BM) can be used to adequately identify employees at high risk of future sickness absence among employees with depressive complaints. For this assessment, first the sensitivity and specificity were calculated when the BM was applied in the total study population. Employees with depressive complaints were selected by means of the depression scale of the Hospital Anxiety and Depression Scale (HAD-D). Since depressive complaints are known to be associated with long-term sickness absence, the risk of long-term sickness absence of employees with depressive complaints versus employees without depressive complaints was calculated. Subsequently, the predictive properties of the BM within employees with depressive complaints were studied. Finally, the predictive properties were calculated when a cut-off point with a higher sensitivity on the BM was used, to examine the effect of having a lower risk of future sickness absence on the predictive properties of the BM.

Methods

Study Population and Procedure

The study was conducted among employees working at a large banking company in the Netherlands. The screening procedure examined in this study was the basis for a randomized controlled trial (RCT). The RCT aimed to examine the efficacy of a preventive intervention for future sickness absence and major depression [18]. For the current study, data from the screening questionnaires were used. In 2007, a total of 23,973 employees received the screening instrument at their home address. In the invitation letter, employees were asked to provide written informed consent, which covered the usage of the questionnaire data and the company data on sickness absence. Four separate batches were necessary to realize smooth processing of the large amount of questionnaires and to guarantee smooth enrolment of participants in the trial. Screening questionnaires were sent out in February (n = 7,000), March (n = 4,500), September (n = 6,196) and October (n = 6,277) 2007. In total, 9,157 employees (38.2%) responded to the questionnaire. For the analyses, 8,892 questionnaires were suitable and 265 questionnaires were discarded due to technical reasons or because no informed consent was provided. Questionnaires with missing data on the Balansmeter or the HAD-D were excluded (n = 747). Further exclusion criteria for the study were being (fully or partially) absent from work, being pregnant or being on pregnancy/maternity leave, or receiving treatment by a psychologist at the time of completing the questionnaire (n = 744). After exclusion the total study population consisted of 7,401 employees.

Measurements

Risk of Future Sickness Absence

The screening questionnaire, called BM in Dutch, originally developed for employees working in an office work environment, was used to identify employees at high risk of future long-term sickness absence due to any cause. The BM was developed and internally validated on data from the Maastricht Cohort Study on Fatigue at Work in 1998, and externally validated in 2003 on a large sample of employees of the same banking company the current study was conducted at [13]. The BM consists of items representing risk factors for sickness absence, such as demographic factors, work-related factors, and private-situation-related factors, that in many different combinations can determine the risk of future sickness absence. Different cut-off points were used for men and women, since the prediction of sickness absence differed between men and women. In the cohort study in

which the BM was developed, several cut-off points were determined. The original cut-off point (BM-O) resulted in a specificity of 94.7% and sensitivity of 30.3% in women. In men, specificity was 94.3% and sensitivity 49.4%. The low cut-off point of the BM (BM-L) resulted in a specificity of 87.9% and sensitivity of 52.6% in women. In men, specificity was 87.8% and sensitivity was 65.1%.

Depressive Complaints

The Hospital Anxiety and Depression (HAD) scale was used to measure the presence and severity of depressive complaints. The HAD is a 14-item self-report questionnaire, originally developed to indicate the presence and severity of both anxiety (HAD-A) and depression (HAD-D) separately [19, 20]. Both HAD-A and HAD-D consist of 7 items and are scored on a four point Likert scale, resulting in a range of 0–21. In this study only the HAD-D was used. With respect to the cut-off values we used the values suggested by Zigmond et al. [20] and confirmed by a review from Bjelland et al. [21]. A score on the HAD-D of 8 points or higher indicates mild to severe depressive complaints. The cut-off point of 8 represents a sensitivity and specificity of approximately 80% [21].

Demographics and Health-Related Factors

Employees provided information on gender, age, educational level (low, medium or high) and presence of a long-term illness yes/no (defined as having the disease for more than 6 months) through self-report in the screening questionnaire.

Outcome Measure

Sickness Absence

Sickness absence was measured objectively through record linkage on an individual level with the company registers on certified sickness absence from 2 months after the employees received the screening instrument until 20 months of follow-up, resulting in an 18 month follow-up period. A time lag of time 2 months was maintained, which is in line with the development of the Balansmeter [13]. Long-term sickness absence was defined as a sickness absence spell lasting for more than 28 consecutive calendar days. Self-reported sickness absence data were used for exclusion of prevalent cases of sickness absence.

Statistical Analyses

For each of the 7,401 respondents sum scores on the BM were calculated. Based on these sum scores, employees at high risk of future sickness absence (cases, scoring above the cut-off point) and employees not at high risk of future sickness absence (non-cases, scoring below the cut-off point) were identified. Depressive complaints were identified using the questionnaire HAD-D. Employees who scored 8 points or more on HAD-D were defined as having mild to severe depressive complaints (cases). The association between the cases and non-cases and the outcome long-term sickness absence (>28 consecutive calendar days) was examined by calculating relative risks (RR). Analyses were performed for 12 and 18 months of follow-up and were performed for women and men separately, since the prediction of sickness absence by the BM differed for men and women. Gender differences in depressive complaints and sickness absence are often mentioned in the literature as well [22–25].

The associations between BM, HAD-D and the risk of long-term sickness absence were calculated for four situations:

1. the BM (BM-O) applied in the total study population (n = 7,401);
2. the HAD-D applied in the total study population (n = 7,401);
3. the BM (BM-O) applied in employees with depressive complaints (HAD-D; n = 665) within the total study population;
4. the BM with adapted cut-off point (BM-L), in employees with depressive complaints (HAD-D; n = 665) within the total study population.

To study these associations, data from a RCT were used [18]. The RCT included selection of the study population by screening and an intervention that aimed at prevention of long-term sickness absence. As mentioned above 7,401 employees responded to the screening questionnaire. The study population of the RCT encompassed employees identified at high risk of future sickness absence and with mild to severe depressive complaints. Finally, 139 employees of the 7,401 respondents met the inclusion criteria for participation in the RCT. The intervention group of the RCT (n = 69) had to be taken into account when performing the analyses, since the intervention was expected to have resulted in decreased long-term sickness absence. The intervention group included a relatively small number of employees only, however, recalculations were performed for each of the four situations for participants who received the intervention to minimize the influence of the intervention group on the results of this study. For each situation, the number of employees who were part of the intervention group was calculated among the cases and non-cases of BM (situation 1, 3 and 4) and HAD-D (situation 2), and their proportion of long-term sickness absence was replaced by the proportion of sickness absence of the control group.

Table 1 Descriptive characteristics of the total study population (n = 7,401)

Variable	Women (n = 3,543)	Men (n = 3,858)
Age (18–65); mean (SD)	40.13 (8.68)	45.07 (9.95)
Highest level of education; N (%)[a]		
Low	118 (3.5)	66 (1.8)
Medium	2,174 (64.4)	1,804 (49.1)
High	1,084 (32.1)[f]	1,807 (49.1)[f]
Presence of long-term illness; N (%)[b]	860 (24.8)	886 (23.5)
Employees at high risk of future sickness absence (% scoring above the original cut-off point of the Balansmeter)	3.9	10.1
Depressive complaints (HAD-D) (0–21)[c]		
Continuous score; mean (SD)	2.75 (3.18)	2.87 (3.04)
HAD-D $\geq$ 8; N (%)	312 (8.8)	353 (9.1)
Number of absence days (calendar days); mean (SD)		
0–12[d]	23.81 (46.42)	17.77 (38.23)
0–18[e]	32.62 (62.91)	23.00 (48.77)
Having an executive function; N (%)	477 (13.5)	1061 (27.5)

[a] Categorical variable with N (%) indicating 'yes'

[b] Dichotomous variable (no/yes) with N (%) indicating 'yes'

[c] Scale range

[d] Assessed from baseline until 12 months of follow-up

[e] Assessed from baseline until 18 months of follow-up

[f] Numbers do not add up to 3,858 and 3,543 due to missing values

The intervention and control group of the RCT originated from the same population, and since participants were randomly allocated to the intervention and control group, these groups could be considered comparable. In case the intervention group would not have received an intervention, the proportion of long-term sickness absence was expected to be equal in the intervention and control group.

With regard to the non-cases, they were not part of the RCT and as such all non-cases were included in the present study. However, employees who scored above one of two cut-off points and who reported high scores on the BM or on the HAD-D were referred to an occupational physician. Information on treatment received by these employees was collected. Approximately 2% of these employees received some kind of treatment. Hence, the contrast in sickness absence between cases and non-cases was not likely to be reduced by the treatment. Therefore, all non-cases were included in the study.

For steps 3 and 4, the prediction of long-term sickness absence in employees with depressive complaints was calculated by multiplication of the RR of the BM in employees with depressive complaints by the RR of HAD-D in the total study population. Since no interaction was found between the two both concepts, two different concepts are combined. Therefore, multiplication of RRs is a valid method.

Stata statistical software package 8.0 was used for preparation of the objective sickness absence data. Analyses were performed using SPSS 15.0.

Results

Table 1 presents the descriptive characteristics of the total study population (n = 7,401), for women and men separately. Table 1 shows that although the study was conducted in a single company consisting of white-collar workers, the study sample is a heterogeneous population with respect to age, educational level, presence of long-term illness, depressive complaints, sickness absence and having an executive function.

Table 2 presents the predictive properties of the Balansmeter in the total study population and among employees with depressive complaints, for men and women separately, for 18 months of follow-up. In general, relatively more men than women were at high risk of future sickness absence. Besides, a rather low sensitivity and high specificity was calculated in each of the four situations. The latter indicated that most of the employees were correctly defined as being not at high risk.

As presented in Table 2, first, the predictive properties of the BM (BM-O) were examined in the total study

Table 2 Predictive properties, sensitivity and specificity of the Balansmeter (BM-O, BM-L) applied in the total study population and in employees with depressive complaints, for 18 months of follow-up

	Cases (n, %)	Proportion long-term sickness absence in cases (n, %)[a]	Sensitivity (%)	Specificity (%)	Long-term sickness absence (>28 calendar days) Relative risks (95% CI)
Men					
BM (BM-O) in total study population (n = 3,858)	389 (10.1)	68.6 (17.6)	26.8	91.1	3.26 (2.54–4.22)
HAD-D in total population (n = 3,858)	353 (9.1)	61.9 (17.5)	24.0	91.9	3.13 (2.41–4.09)
BM (BM-O) in employees with depressive complaints (HAD-D ≥8) (n = 353)	93 (26.3)	22.7 (24.4)	37.4	75.9	1.67 (1.07–2.68)
BM (BM-L) in employees with depressive complaints (HAD-D ≥8) (n = 353)	132 (37.4)	29.8 (22.6)	48.2	64.9	1.56 (1.00–2.46)
Women					
BM (BM-O) in total study population (n = 3,543)	138 (3.9)	42.6 (30.9)	9.4	96.9	2.55 (1.98–3.35)
HAD-D in total population (n = 3,543)	312 (8.8)	87.1 (27.9)	19.1	92.7	2.45 (2.00–3.00)
BM (BM-O) in employees with depressive complaints (HAD-D ≥8) (n = 312)	48 (15.4)	19.5 (40.6)	22.4	87.3	1.58 (1.09–2.40)
BM (BM-L) in employees with depressive complaints (HAD-D ≥8) (n = 312)	79 (25.3)	30.0 (38.0)	34.5	78.2	1.55 (1.08–2.23)

[a] Due to recalculations proportions with fractional numbers were found

population (n = 7,401). Of the 3,858 men, 389 were identified at high risk of future sickness absence. Of these 389, an estimated number of 68.6 male cases experienced long-term sickness absence. A RR of 3.26 (95% CI 2.54–4.22) was found. For women, 138 of the 3,543 employees were identified at high risk, and of these, 42.6 estimated cases went on long-term sickness absence. A RR of 2.55 (1.98–3.35) was found.

Second, the predictive properties of having depressive complaints compared with having no depressive complaints were studied (HAD-D ≥8 vs. HAD-D <8), since depressive complaints are known to be predictive of future sickness absence. A RR of 3.13 (2.41–4.09) was found for men, and a RR of 2.45 (2.00–3.00) for women.

Third, the RR of long-term sickness absence was examined when the BM-O was applied within employees with depressive complaints. Of the 353 men, 93 cases were identified. 22.7 estimated cases of the 93 cases had long-term sickness absence. Of the 312 women, 48 cases were identified and 19.5 estimated cases went on long-term sickness absence. An additional RR of 1.67 (1.07–2.68) was found in men. This resulted in a total combined RR of long-term sickness of 5.23 (3.13 × 1.67). In women, an additional RR of 1.58 was found, resulting in a total combined RR of 3.87 (2.45 × 1.58).

Fourth, the RR of long-term sickness absence was examined when the BM-L (lower cut-off point) was applied in employees with depressive complaints. In the 353 men, 132 cases were identified and an estimated number of 29.8 of the cases experienced long-term sickness absence. Of the 312 female employees with depressive complaints, 79 cases were identified and 30 of these cases had long-term sickness absence. The additional RR in men was 1.56 (1.00–2.46) and the total combined RR was 4.88 (3.13 × 1.56). For women, the additional RR was 1.55 (1.08–2.23) and the total combined risk was 3.80 (2.45 × 1.55).

The use of the lower cut-off point hardly influenced the RR of the BM-L. However, a decrease in specificity of 11.0% in men and 9.1% in women was observed compared with the specificity when BM-O was applied within employees with depressive complaints.

Analyses were performed for 12 months of follow-up as well, and similar results were found. Although slightly higher RRs were found for 12 months of follow-up, the RRs for men when the BM-O and BM-L were applied within employees with depressive complaints, failed to reach statistical significance (data not shown).

Discussion

Main Findings and Interpretation of Outcomes

Previous research by Kant et al. [13] found that the screening questionnaire Balansmeter proved successful in identifying employees at high risk of future sickness absence. The aim of the present study was to examine if the Balansmeter is able to identify employees at high risk of future sickness absence within a more specific target

population, that is, employees with depressive complaints. The results of this study proved that the BM is able to predict future long-term sickness absence among employees with depressive complaints.

In the first part of the study, the predictive properties of the BM were examined in the total study population, allowing for a direct comparison of the predictive properties of the BM in the present study with the results found in the study of the external validation of the BM. The present study was conducted at the same company in which the external validation study of the BM was carried out in 2003 [13]. However, sickness absence prevalence rates decreased in the Netherlands, from 4.8% in 2003 to 4.3% in 2009. This may have influenced the predictive properties of the screening instrument in a negative way. The results of the present study showed, for both 12 and 18 months of follow-up, slightly lower but nevertheless similar RRs as the study conducted by Kant et al. [13], in which a RR of 3.90 (2.35–6.45) was found in men and of 2.62 (1.44–4.77) was found in women. The sensitivity of BM was higher in the present study (26.8% in men and 9.4% in women) compared with the study from Kant et al. (14.3% in men and 6.1% in women) and the specificity was slightly lower, but remained >90%. Similar to the results of Kant et al. the predictive properties of the BM-O were higher among men than women and relatively more men than women were identified at high risk of sickness absence. This is in line with the development of the BM, in which the predictive properties proved to be better for men than for women. Although the prevalence of sickness absence and the number of long-term sickness absence spells slightly differed between the present study and the study by Kant et al. it was concluded that the predictive properties and the sensitivity and specificity remained intact.

Depressive complaints have been found to be associated with long-term sickness absence [16, 17]. Therefore, in the second part of the study, the predictive properties of having depressive complaints compared with not having depressive complaints were examined. The RRs of long-term sickness absence for employees with depressive complaints (HAD-D $\geq$8 vs. HAD <8) were quite high, a RR of 3.13 (2.41–4.09) was found for men and 2.45 (2.00–3.00) for women. These results confirm the results of our earlier study that was performed in a different study population [17].

Additionally, it was examined if the prediction of long-term sickness absence would improve when the BM was applied within employees with depressive complaints. The RR for long-term sickness absence increased to 5.23 (3.13 $\times$ 1.67) in men and to 3.87 (2.45 $\times$ 1.58) in women. However, the RRs of the BM-O when applied in employees with depressive complaints were lower than the RRs of the BM-O applied in the total population. This may be explained by the fact that depressive complaints are included in the prediction of the risk of future sickness absence by the BM. The HAD-D proved to have good predictive properties itself. Nevertheless, the BM had a substantial surplus value in the prediction of long-term sickness absence.

For 12 months of follow-up, the RRs were slightly higher than the RRs for 18 months of follow-up. However, in male employees with depressive complaints, RRs were slightly lower and not statistically significant. The BM was originally developed to predict long-term sickness absence for 12 months of follow-up, however, the results of this study indicated that a timeframe of 18 months was more appropriate to study long-term sickness absence spells.

Methodological Considerations

The good predictive properties of the BM and HAD-D found in this study can be partly ascribed to the strengths of the study. The study was conducted within one company, but the study population represented a large, heterogeneous population of male and female office workers. The risk of future sickness absence was assessed with the validated screening instrument Balansmeter [13]. Depressive complaints were assessed by HAD-D, which has been found to be an adequate instrument for identification of depressive complaints among employees [15]. Furthermore, outcome assessment was of high quality, since objective sickness absence data were used with one hundred percent coverage. The findings indicated that a follow-up period of at least 18 months was required to identify statistically significant differences in the prediction of future sickness absence among men. In women, RRs were statistically significant for both 12 and 18 months of follow-up. Furthermore, the prediction of sickness absence was performed for sickness absence spells >28 days, which were rather long sickness absence spells. Most employees who went on sick leave had relatively short sickness absence durations, from 1 to 28 days. Therefore, the prediction of total sickness absence duration would probably have been even better.

Potential bias related to the design of the study (RCT) may have concerned selective attrition with respect to non-response on the screening questionnaire. A non-response analysis was performed to study potential selection bias on the screening questionnaire. The results of this analysis showed no statistically significant differences between the respondents and non-respondents for sickness absence at 12 months of follow-up. Respondents had a mean number of 15.4 (SD 41.8) sickness absence days and non-respondents of 16.3 (SD 42.6) days ($P = 0.101$). For the primary outcome sickness absence, selective withdrawal did not occur, since objective sickness absence data were available for all participants of the study. Besides, only 139 of the

7,401 employees who were included in the present study participated in the RCT. 69 participants were allocated to the intervention group and 70 to the control group. This is only a small part of the total study population. It is therefore not expected that these participants had a big influence on the results. However, in order to try to minimize this effect, sickness absence data of the intervention group were replaced by data from the control group. Despite the random allocation the two groups may have been different. However, these differences would then also have been a random effect. This procedure was believed to be the most optimal way to minimize the influence of the intervention group on the results of the present study.

With respect to the employees who were selected for participation in the RCT, including selection by the BM-L and the HAD-D, a considerable number of employees who scored above one of the cut-off points only demonstrated high scores on BM-L or on HAD-D. From an ethical perspective, it was not permitted to leave these employees alone, since effective treatments for these individual conditions are available. Therefore, these employees were offered consultation with an occupational physician. Only 2% of these employees received some kind of treatment, which was not likely to have reduced the contrast between cases and non-cases. However, if treatment would have influenced sickness absence, it would have reduced the contrast between the groups and would have led to an underestimation of the effects found.

The original cut-off point on the BM (BM-O) identified 6.66% employees of the total study population at high risk of future sickness absence. For BM-L, 13.33% employees of the population on which the BM was developed were identified at high risk. In the present study, 3.9% of the female employees were selected as a case and 10.1% of the male employees. These findings indicate that in the present study population fewer female and more male employees were identified at high risk of future sickness absence.

The BM was originally developed for employees working in an office work environment. It is believed that the screening instrument may be suitable for other companies with an office work environment, because of comparable risk factors and/or (health) complaints. The study may not be representative for companies without an office work environment, since the risk of sickness absence is highly dependent of the context. Recently, new modules of the BM have been developed for employees working in the industry or in health care.

Practical Implications

The aim of the preventive strategy, as described in the introduction, is to identify employees at high risk of sickness absence by a screening instrument and to offer these employees a preventive intervention. In the development of the preventive strategy a single screening step including a test with high specificity was preferred, to avoid wrongfully labeling of employees as being unhealthy and to avoid unnecessary costs when treating wrongly classified employees. The preventive strategy was directed at those employees who would benefit the most.

Screening always implies a certain amount of misclassification. Due to the choice of a high specificity, the sensitivity of the screening instrument was rather low. Therefore, the effect of using a cut-off point on the BM with higher sensitivity (BM-L) was examined on the prediction of long-term sickness absence. When the BM-L was applied in employees with depressive complaints, the number of cases increased, the RRs were similar with the RRs of the BM-O, but the specificity decreased from 75.9 to 64.9% in men and from 87.3 to 78.2% in women. The use of the lower cut-off point resulted in more employees selected at high risk of sickness absence by the BM, but who will eventually not go on sick leave. The consequences of misclassification should always be considered when using cut-off points in screening instrument. In our study, treatment of employees who will not go on sick leave will not have harmful effects, since treatment will most likely exist of some kind of psychological treatment, aimed at employees with relatively mild (health) complaints. However, there is a risk of labeling, but again this concerns relatively mild (health) complaints. In contrast, not treating employees who actually are at high risk of sickness absence and who have depressive complaints is not expected to have adverse consequences as well, since as mentioned before, employees with relatively mild complaints were selected. Besides, adequate care from the occupational health services is available. In case of sickness absence employees receive socio-medical counseling according to the nationwide guidelines, in case employees ask for help they receive consultation with an occupational physician. For our study, no serious consequences are to be expected from using a lower cut-off point on the BM. For application of the BM in different companies and settings, the use of alternative cut-off points should be considered while taking into account the consequences of misclassification.

Implication for Future Research

The Balansmeter proved to be able to adequately identify employees at high risk of future sickness absence within employees with depressive complaints. The availability of an effective screening instrument fulfils an important prerequisite for the use of a preventive strategy. Future research should examine if specific interventions for this specific target population are effective in the prevention/reduction of long-term sickness absence.

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