Can HRM predict mental health crises? Using HR analytics to unpack the link between employment and suicidal thoughts and behaviors

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Abstract

Purpose – The aim of this research is to determine the extent to which the human resource (HR) function can screen and potentially predict suicidal employees and offer preventative mental health assistance.

Design/methodology/approach – Drawing from the 2019 National Survey of Drug Use and Health (N = 56,136), this paper employs multivariate binary logistic regression to model the work-related predictors of suicidal ideation, planning, and attempts.

Findings – The results indicate that known periods of joblessness, the total number of sick days and absenteeism over the last 12 months are significantly associated with various suicidal outcomes while controlling for key psychosocial correlates. The results also indicate that employee assistance programs are associated with a significantly reduced likelihood of suicidal ideation. These findings are consistent with conservation of resources theory.

Research limitations/implications – This research demonstrates preliminarily that the HR function can unobtrusively detect employee mental health crises by collecting data on key predictors.

Originality/value – In the era of COVID-19, employers have a duty of care to safeguard employee mental health. To this end, the authors offer an innovative way through which the HR function can employ predictive analytics to address mental health crises before they result in tragedy.

Keywords Absenteeism, Employee assistance program, Human resource management, Joblessness, Mental illness, Sick days, Suicide

Paper type Research paper

Introduction

Resolving employee mental health crises often requires that employees voluntarily disclose their condition (McDowell and Fossey, 2015). Following the disclosure, an employee with a mental illness can receive accommodations and other forms of organizational assistance (Banks et al., 2007; Brohan et al., 2014; Corbière et al., 2014). However, many employees choose not to disclose their illnesses for various reasons (Granger, 2000; Peterson et al., 2011; Cohen et al., 2016; Burns and Green, 2019; Hastuti and Timming, 2021). Under such circumstances, it can be helpful, and indeed socially responsible (He et al., 2021), for organizations to leverage macro employee data in order to “screen” for mental health crises, especially severe crises associated with suicidal ideation, planning, and behavior. We argue that the use of human resource (HR) analytics (Edwards and Edwards, 2019) can help managers to make a preliminary judgment of whether or not their employees may be suffering from severe psychosocial distress. The aim of this research is thus to examine the work-related
determinants of suicidal outcomes to better understand the extent to which the HR function, through HR analytics, is capable of identifying employees in distress a priori and offering them preventive assistance.

This research is important in light of the fact that suicide accounts for close to 800,000 deaths per year globally, equivalent to around 1.4% of all deaths worldwide, and is listed as the 18th leading cause of death (WHO, 2019). In the United States, an estimated 5.3 m adults have seriously considered suicide, and around half of those report at least one attempt (SAMHSA, 2020). Because the majority of this population is of working age, suicide presents an occupational health challenge that has been largely absent from the HRM agenda. Indeed, coronavirus disease 2019 (COVID-19) may well have worsened the likelihood of suicide (Pokhrel et al., 2021; Zhang et al., 2020), with one study modeling a predicted increase of up to 145% (John et al., 2020). The pandemic has so far strongly negatively impacted employee mental health (Aitken-Fox et al., 2020) by virtue of heightened anxiety surrounding extended quarantines and lockdowns, disease stigma, financial loss and job insecurities (French et al., 2020; Hamouche, 2020).

Although mental health and illness have been widely researched within the context of the workplace (Martin et al., 2015; Elraz, 2018; Hennekam et al., 2020), few studies have specifically investigated the work-related determinants of suicidal thoughts and behaviors. Among the handful of existing studies, suicidality at work has been associated with psychological stressors (Howard and Krannitz, 2017) as well as harsh physical and chrono-biological working conditions. Social mistreatment at work, including bullying, harassment, incivility, social undermining and ostracism, are also widely considered to be precursors of suicidal ideation (Follmer and Follmer, 2021). The extant studies on work-related suicide focus largely on the antecedents of suicidal thoughts and behaviors, mostly with the aim of developing individual (one-on-one) psychological workplace interventions to minimize the risk of suicide. However, the potential of the HR function to serve as an early detector of suicidal thoughts and behaviors remains understudied and misunderstood, hence the present study.

In the next section, we review the relevant literature and articulate our hypotheses. After that, we describe the secondary dataset used and the analytic technique employed. We then report the results of our research, followed by a critical discussion of the key findings.

Literature review and hypotheses

Joblessness as a determinant of suicidal ideation and behavior

The determinants of suicide are often colored by the disciplinary lens through which it is viewed. From a health sciences point of view, suicide is seen as a function of individual choice linked to abnormal psychopathology (Forman et al., 2004) or even behavioral genetics (Mann et al., 2001; Brent and Mann, 2005). Durkheim (1897) proposed a contrasting sociological theory in which suicide is viewed as the impact of the interplay among social conditions, social (dis)integration and social regulation. More recently, economists have focused on various socio-economic determinants to understand suicidal thoughts and behaviors (Chen et al., 2012). From this viewpoint, socio-economic structural factors are seen to interact with individual psycho-pathologies in shaping the decision to commit suicide (Scocco et al., 2000; Osvath et al., 2004), which is typically contextualized in a structural crisis.

Hamermesh and Soss (1974) postulated that suicide is often the product of individual agony triggered by an economic calculation, assuming that individuals commit suicide when perceived total discounted lifetime utility approaches zero. Hence, in theory, the likelihood of suicide should be inversely related to individual earnings. Unemployment or
joblessness can thus be thought of as an indicator of economic failure, which in turn is associated with an increased risk of suicide (Platt, 1984, 2000). Over the last several decades, a considerable body of literature has emerged illustrating the link between unemployment and the suicide rate (Chen et al., 2012). This literature points to a strong empirical relationship between these two constructs (Neumayer, 2003; Andres, 2005; Watanabe et al., 2006).

Given that work is an important source of meaning for many employees (Budd, 2011), it follows logically that lack of work is associated with meaninglessness and anomie (Besnard, 1988). From this point of view, joblessness ought to be thought of as an antecedent of suicidal thoughts and behaviors. Job loss is a major life event that introduces a sense of crisis and vulnerability and the potential for chronic unemployment (Latack et al., 1995). Even without experiencing chronic unemployment, the impact of job loss on the individual is severe (Latack and Dozier, 1986; Dayaram and McGuire, 2019) and may trigger mental health problems and decrease well-being and self-esteem (Brenner and Bartell, 1983; Latack et al., 1995). These negative attitudes can create a mental health crisis, driving suicidal ideation, planning and attempts (Emler, 2001; Chatard et al., 2009). Therefore, we propose our first set of hypotheses as follows:

$H1a$. Joblessness is associated with a significantly greater likelihood of suicidal ideation. (Model 1)

$H1b$. Joblessness is associated with a significantly greater likelihood of suicidal planning. (Model 2)

$H1c$. Joblessness is associated with a significantly greater likelihood of suicide attempts. (Model 3)

Although joblessness is arguably outside the remit of the HR function, it is the product of an organization’s decision to downsize (or at least not to upsize), hence its inclusion as a predictor in this study. Previous research has shown that downsizing significantly increases the risk of mental health problems in laid off former employees (Andreeva et al., 2017; Brenner et al., 2014). Though HR has no legal obligation to the health and well-being of non-employees, it could at least be argued that it has a moral obligation to follow up with redundant or terminated employees to safeguard their health and safety (Rydell and Wigblad, 2012). In addition, previous joblessness should be known to HR if it is in possession of employees’ job histories.

Aggravating employment factors and conservation of resources theory

Whilst the relationship between suicidality and joblessness is readily accounted for by any number of psychological theories (Van Orden et al., 2010; Chu et al., 2017), a more dynamic conceptual framework is needed to better understand suicidal thoughts and behaviors in the context of the workplace. To this end, conservation of resources theory (Hobfoll, 1989) is highly edifying. This theory posits that employment is one of several life spheres in which individual coping resources can be depleted when the proper support structures are not in place (Hobfoll, 2001; Westman et al., 2004; Halbesleben et al., 2014). Alternatively stated, employees become distressed when the demands of their job exceed the personal and organizational resources they have at their disposal (see also Bakker and Demerouti, 2007). Although, in line with Hobfoll (2001), individual suicidal thoughts and behaviors are also linked to problems outwith the workplace, the theory holds that work and productivity should similarly be affected or impacted, leaving “traces” of evidence for HR to detect through the use of predictive analytics.
The obvious problem with analyzing employment factors that predict suicidal thoughts and behaviors is that they are often hidden from the view of HR managers. Often a crisis manifests itself latently in organizations, regardless of whether it originated from work or home. Research on suicide attempts in the military reveals that suicidal behavior is generally concealed by the victims (Orbach et al., 2007). Although bullying (Nielsen et al., 2015) and violence (Hourani et al., 2018) are precursors of suicidal ideation, many inter-personal conflicts within and outwith the workplace are never reported to HR and victims can conceal their victimhood whilst at work. For this reason, the work-related predictors of suicidal thoughts and behaviors often manifest as observable symptoms such as absenteeism and sick leave.

Several studies delineate the relationship between mental health problems at work and absenteeism (French and Zarkin, 1998; Hilton et al., 2008; Ejebu and Skatun, 2018), which is a potential indicator of depleted individual coping resources (van Woerkom et al., 2016). Researchers have found that higher symptom severity predicts higher absenteeism (French and Zarkin, 1998; de Vries et al., 2018), while other studies suggest that the relationship depends on some contextual features such as the nature of the job (Ejebu and Skatun, 2018) and social class membership (Hilton et al., 2008). Much of the literature focuses on specific mental illnesses such as depression (Souetre et al., 1997; Claxton et al., 1999; van der Werff et al., 2010; Verboom et al., 2011). However, the extant literature, whilst very strong on linking mental illness to absenteeism and sick leave, does not adequately assess its relationship to suicidal thoughts and behaviors specifically.

Individuals who feel themselves to be a burden and lack belongingness (Joiner, 2005) tend to isolate themselves from the collective, disengage from others and avoid most social interaction (Stinson et al., 2008), further reinforcing individual resource depletion. Since suicidal ideation is represented as a desire to withdraw from playing an essential role (Baumeister, 1990; Kahn, 1990), absenteeism and authorized sickness absences are, in theory, relevant factors that can help HR analysts to detect suicidal ideation, planning and attempts. In a workplace context, an individual who has an intention to commit suicide is likely inclined to avoid interaction with colleagues around the event and will often distance from work. Indeed, one study found that approximately 82% of non-fatal suicide attempts centered around a short-term absence from work (Kinchin and Doran, 2017). Thus, we postulate the next set of hypotheses as follows:

\[ H2a. \] Number of sick days is associated with a significantly greater likelihood of suicidal ideation. (Model 4)

\[ H2b. \] Number of sick days is associated with a significantly greater likelihood of suicidal planning. (Model 5)

\[ H2c. \] Number of sick days is associated with a significantly greater likelihood of suicide attempts. (Model 6)

\[ H3a. \] Absenteeism is associated with a significantly greater likelihood of suicidal ideation. (Model 7)

\[ H3b. \] Absenteeism is associated with a significantly greater likelihood of suicidal planning. (Model 8)

\[ H3c. \] Absenteeism is associated with a significantly greater likelihood of suicide attempts. (Model 9)

Preventive employment factors
Conservation of resources theory posits not only that organizational demands can stretch personal resources thin, but it also hypothesizes that organizations can and should take
pro-active steps to mitigate against individual employee resource depletion. One means through which personal resources can be bolstered is through the provision of an effective employee assistance program (EAP), which can theoretically serve as a preventive measure to reduce the risk of employee suicide. EAPs are designed to help employees in crisis with personal and behavioral problems (Berridge and Cooper, 1994) and are typically offered as a fringe benefit in many large organizations. EAPs were first established to assist employees with alcohol and drug abuse, which are themselves strongly associated with suicidal thoughts and behaviors (Rossow, 2000; Borges and Loera, 2010).

More recently, EAPs have been transformed from a traditional instrument used to identify alcohol and drug abuse to a more comprehensive program that addresses other non-substance abuse issues, such as employees’ mental health and personal and family problems (Luthans and Waldorsee, 1989; Merrick et al., 2011). EAP implementation is essential to support employees experiencing personal as well as professional crises, increase productivity and maintain cost-effective risk management (Csiernik, 2011; Merrick et al., 2011; Waehrer et al., 2016; Joseph and Walker, 2017). Individual resource depletion, coupled with the absence of coping resources, can and often does lead to significant mental health issues. Several studies have found that the implementation of EAPs can be beneficial and helpful for struggling employees, inasmuch as they reduce symptoms of depression and anxiety (Preece et al., 2006; Richmond et al., 2016) and suicidal thoughts (Nakao et al., 2007). A trained nurse can assist an individual in distress through the application of effective therapies, such as cognitive behavioral therapy (Lam et al., 2011). In view of these purported benefits, we argue that EAPs should, according to conservation of resources theory, be negatively associated with suicidal thoughts and behaviors. Therefore, we present:

- **H4a.** The provision of an EAP is associated with a significant reduction in the likelihood of suicidal ideation. (Model 10)
- **H4b.** The provision of an EAP is associated with a significant reduction in the likelihood of suicidal planning. (Model 11)
- **H4c.** The provision of an EAP is associated with a significant reduction in the likelihood of suicide attempts. (Model 12)

Figure 1 illustrates the full set of 12 models simultaneously in an overarching conceptual.

**Mitigating endogeneity**

A key challenge that all mental health researchers face, regardless of disciplinary approach, is isolating relevant statistical effects in the face of any number of sources of potential spuriousness or reverse causality. In the present study, we seek to determine whether the work-related predictors of suicidal ideation, planning and attempts still hold water when simultaneously controlling for relevant psychosocial determinants of suicidality. To mitigate against potential endogeneity in our models, we deductively include the following control variables in our logistic regression analyses: whether the respondent has had mental health treatment in the last year, the respondent’s level of psychological distress (K6 score), income, education, age, gender, whether the respondent has ever served in the armed forces, the respondent’s body mass index and sexual identity/orientation. These contextual socio-economic, demographic and psychological factors are likely correlated in some measure with suicidal behaviors and thoughts (Mortensen et al., 2000; Andrés et al., 2009; Shojaei et al., 2014; Hoffmire et al., 2015). By including them as covariates, we are better able to reduce bias and isolate the work-related determinants of suicidality.
Methods
Sampling and data
This study utilized data from the National Survey on Drug Use and Health (NSDUH, 2019). NSDUH is an open access dataset that provides information about substance use and mental health in the United States. It is conducted by RTI International and sponsored by the Center for Behavioral Health Statistics and Quality (CBHSQ) within the US Substance Abuse and Mental Health Services Administration (SAMHSA). The survey drew a sample of noninstitutionalized civilians located in the United States, including individuals living on military bases and those that are 12 years or older at the time of the survey—although, consistent with our ethics approval, we excluded all minors (i.e. <18 years old) from our study even if they were in paid employment. The total NSDUH 2019 sample size is 56,136 respondents. The sample was selected using a multistage stratified sample design. Fifty states plus the District of Columbia were included in the first level of sampling stratification. Within each state sampling region (SSR), 48 census block groups were selected and divided into smaller geographic areas (or segments). Dwelling units (DUs) were then selected within each segment, and individuals were selected within DUs based on age composition.

Variable definition and measurement
Drawing from conservation of resources theory (Hobfoll, 1989, 2001; Halbesleben et al., 2014), we developed models to predict suicidal thoughts and behaviors using joblessness, number of sick days, absenteeism and the presence or absence of an EAP as the correlates. Joblessness is defined as the state of being without paid work and was measured by asking respondents to report the amount of time with no job in the past 12 months. We also included measures of number of sick days and absenteeism. Number of sick days is defined as an involuntary absence from work and was measured using the number of days the respondent missed work as a result of injury/illness over the past 30 days. Absenteeism refers to the total number of days the respondent voluntarily skipped work without authorization over the last 30 days. Lastly, the presence or absence of an EAP was measured by asking whether such a program is offered through the respondent’s place of work.

Three dependent variables were predicted: suicidal ideation, suicidal planning and suicide attempts. Suicidal ideation was measured by asking whether the participants...
had seriously thought about killing themselves in the past year (yes/no). Suicidal planning was similarly measured by asking whether the participants had made plans to kill themselves in the past year (yes/no). Lastly, suicide attempts were measured by asking whether the participants had attempted to kill themselves in the past year (yes/no).

We also added a further nine control variables into the models, including age, gender, sexual identity, income, education, US armed forces history, body mass index, mental illness history and psychological distress level. Table 1 provides a summary of the variables, including how each variable was coded and measured.

### Analytic technique

Multivariate binary logistic regression analysis was employed to estimate the models. Logistic regression is a statistical analysis based on maximum likelihood estimation that is suitable when the dependent variables are nominally measured with only two categories (as is the case with all three of our outcome variables in this study). It has been argued that it is preferable to probit models (Pampel, 2020). Unlike ordinary least squares (OLS) regression, logistic regression employs a logit function to model probabilities of a particular outcome given variation across the independent variables, which can be nominal (two-categories), ordinal or scale in measurement. Accordingly, logit functions both explain relationships between variables and predict classification based on the probability of an event occurrence or not. Logistic regression is a non-parametric test, meaning that it makes no assumptions about the shape of the distributions of the predictors. We specified 12 statistical models to test each hypothesis developed in the preceding section.

<table>
<thead>
<tr>
<th>Variable's name</th>
<th>Type of variable</th>
<th>Code</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicidal ideation</td>
<td>D.V</td>
<td>MHSUITHK</td>
<td>RC-SERIOUSLY THOUGHT ABOUT KILLING SELF IN PAST YEAR</td>
</tr>
<tr>
<td>Suicidal plan</td>
<td>D.V</td>
<td>MHSUIPLN</td>
<td>RC-MADE PLANS TO KILL SELF IN PAST YEAR</td>
</tr>
<tr>
<td>Suicide attempts</td>
<td>D.V</td>
<td>MHSUITRY</td>
<td>RC-ATTEMPTed TO KILL SELF IN PAST YEAR</td>
</tr>
<tr>
<td>Joblessness</td>
<td>I.V</td>
<td>WRKNJBPYR</td>
<td>PAST 12 MOS, TIME WITH NO JOB</td>
</tr>
<tr>
<td>Number of sick days</td>
<td>I.V</td>
<td>WRKSICKMO</td>
<td># DAYS MISSED FOR INJURY/ILLNESS PAST 30 DAYS</td>
</tr>
<tr>
<td>Absenteeism</td>
<td>I.V</td>
<td>WKSKIPMO</td>
<td># DAYS SKIPPED WORK PAST 30 DAYS</td>
</tr>
<tr>
<td>Employee assistance program (EAP)</td>
<td>I.V</td>
<td>WKDRGHLHP</td>
<td>ANY ASSISTANCE PROGRAM OFFERED THROUGH WRK</td>
</tr>
<tr>
<td>Mental health treatment</td>
<td>C.V</td>
<td>AMHTXRC3</td>
<td>RC-RCVD ANY MENTAL HEALTH TRT IN PAST YR</td>
</tr>
<tr>
<td>Psychological distress</td>
<td>C.V</td>
<td>K6SCMON</td>
<td>RC-K6 TOTAL SCORE IN THE PAST MONTH</td>
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<td>US armed force</td>
<td>C.V</td>
<td>SERVICE</td>
<td>EVER BEEN IN THE US ARMED FORCED</td>
</tr>
<tr>
<td>Body mass index</td>
<td>C.V</td>
<td>BMI2</td>
<td>RC-BODY MASS INDEX (BMI)</td>
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<td>Sexual identity</td>
<td>C.V</td>
<td>SEXIDENT1</td>
<td>RC-SEXUAL IDENTITY</td>
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<tr>
<td>Gender</td>
<td>C.V</td>
<td>IRSEX</td>
<td>GENDER-IMPUTATION REVISED</td>
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<td>Age</td>
<td>C.V</td>
<td>CATAG6</td>
<td>RC-AGE CATEGORIES (6 LEVELS)</td>
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<td>Education</td>
<td>C.V</td>
<td>EDPHCHC</td>
<td>RC-EDUCATION CATEGORIES</td>
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<tr>
<td>Income</td>
<td>C.V</td>
<td>IRPINC3</td>
<td>RECODE-RESP TOT INCOME-IMPUTATION REVISED</td>
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</tbody>
</table>

**Note(s):** D.V: Dependent Variable; I.V: Independent Variable; CV: Control Variable

Table 1: List of variables
Results
Model 1 sought to test the association between joblessness and suicidal ideation. The result showed that joblessness over the past 12 months is significantly positively associated with suicidal thoughts ($B = 0.286$, SE = 0.065, Wald = 19.63, $p < 0.001$, Exp($B$) = 1.33, 95% CI = 1.17–1.51). Thus, the H1a was confirmed. Model 2 examined the relationship between joblessness and suicidal planning. We found that joblessness over the past 12 months is significantly positively associated with suicidal planning as well ($B = 0.375$, SE = 0.10, Wald = 12.98, $p < 0.001$, Exp($B$) = 1.46, 95% CI = 1.19–1.78), indicating that H1b was accepted. Model 3 tests whether joblessness over the past 12 months is significantly positively associated with suicide attempts. The results point to yet another positive relationship ($B = 0.339$, SE = 0.15, Wald = 4.85, $p = 0.028$, Exp($B$) = 1.40, 95% CI = 1.04–1.90). Hence, the statistical analyses confirmed H1c (see Table 2).

Model 4 aimed to test the relationship between number of sick days and suicidal ideation. No significant relationship was found ($p = 0.123$), thus H2a was rejected. Model 5 examined the association between number of sick days and suicidal planning. We found that the relationship was both positive and significant ($B = 0.025$, SE = 0.01, Wald = 5.06, $p = 0.024$, Exp($B$) = 1.03, 95% CI = 1.00–1.05). Thus, the H2b was accepted. Similarly, Model 6 sought to test the association between the number of sick days and suicide attempts. This relationship was also significant and positive ($B = 0.042$, SE = 0.01, Wald = 8.94, $p = 0.003$, Exp($B$) = 1.04, 95% CI = 1.01–1.07). Thus, H2c was confirmed. In short, the analysis indicates that the number of sick days taken is significantly positively associated with suicidal planning and suicide attempts.

Model 7 tested the association between unauthorized absenteeism and suicidal ideation and found a positive relationship ($B = 0.037$, SE = 0.01, Wald = 9.89, $p = 0.002$, Exp($B$) = 1.04, 95% CI = 1.01–1.06). Thus, H3a was accepted. We also sought to test the association between unauthorized absenteeism and suicidal planning (Model 8) and

<table>
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<th>Model</th>
<th>$B$</th>
<th>SE</th>
<th>Wald</th>
<th>Lower</th>
<th>Upper</th>
<th>95% CI for EXP($B$)</th>
<th>Hosmer and Lemeshow test (chi-square)</th>
<th>Cox and snell R-square</th>
<th>Nagelkerke R-square</th>
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<td>Model 1</td>
<td>0.286***</td>
<td>0.065</td>
<td>19.626</td>
<td>1.331</td>
<td>1.173</td>
<td>1.511</td>
<td>55.668***</td>
<td>0.137</td>
<td>0.342</td>
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<td>Model 2</td>
<td>0.375***</td>
<td>0.104</td>
<td>12.98</td>
<td>1.455</td>
<td>1.186</td>
<td>1.784</td>
<td>12.725</td>
<td>0.053</td>
<td>0.299</td>
</tr>
<tr>
<td>Model 3</td>
<td>0.339*</td>
<td>0.154</td>
<td>4.847</td>
<td>1.403</td>
<td>1.038</td>
<td>1.896</td>
<td>11.021</td>
<td>0.024</td>
<td>0.267</td>
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</table>

Table 2. Results and hypotheses H1A, H1B and H1C.

Note(s): *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$
suicide attempts (Model 9). We found that absenteeism is significantly positively associated with both suicidal planning ($B = 0.038$, SE = 0.02, Wald = 5.61, $p = 0.018$, Exp($B$) = 1.04, 95% CI = 1.01–1.07) and suicide attempts ($B = 0.005$, SE = 0.02, Wald = 7.57, $p = 0.006$, Exp($B$) = 1.06, 95% CI = 1.02–1.10). Thus, H3b and H3c were accepted (see Table 3).

Model 10 assesses the association between the provision of an EAP and suicidal ideation. We found that the relationship was negative and significant ($B = -0.139$, SE = 0.06, Wald = 5.45, $p = 0.020$, Exp($B$) = 0.87, 95% CI = 0.76–0.98); thus, H4a was confirmed. However, we did not find any significant results for model 11 ($p = 0.270$) and model 12 ($p = 0.299$). Hence, H4b and H4c were rejected (see Table 4).

Table 5 summarizes the 12 hypotheses tested in this study and reports whether each was confirmed or disconfirmed.

### Discussion and conclusions

Mental health crises are devastating when they culminate in suicide. Fortunately, as we have shown, the likelihood that an individual employee might engage in suicidal ideation, planning and attempts can be detected fairly unobtrusively from one’s workplace behavior. Nine out of our twelve models delivered a statistically significant effect, although the effect sizes varied. To summarize, joblessness is strongly associated with all three suicidal outcomes. Moreover, consistent with conservation of resources theory, it was found, among existing employees,

<table>
<thead>
<tr>
<th>B</th>
<th>SE</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>Lower</th>
<th>Upper</th>
<th>Hosmer and Lemeshow test (chi-square)</th>
<th>Model summary</th>
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<td>0.012</td>
<td>0.008</td>
<td>2.385</td>
<td>0.997</td>
<td>1.027</td>
<td>51.638***</td>
<td>0.137</td>
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<tr>
<td>Model 5</td>
<td>0.025*</td>
<td>0.011</td>
<td>5.06</td>
<td>1.025</td>
<td>1.003</td>
<td>16.158*</td>
<td>0.053</td>
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<td>Model 6</td>
<td>0.042**</td>
<td>0.014</td>
<td>8.94</td>
<td>1.043</td>
<td>1.014</td>
<td>8.634</td>
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<td>Model 7</td>
<td>0.037**</td>
<td>0.012</td>
<td>9.89</td>
<td>1.038</td>
<td>1.014</td>
<td>56.874***</td>
<td>0.136</td>
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<tr>
<td>Model 8</td>
<td>0.038*</td>
<td>0.016</td>
<td>5.614</td>
<td>1.038</td>
<td>1.007</td>
<td>14.253</td>
<td>0.052</td>
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<tr>
<td>Model 9</td>
<td>0.055**</td>
<td>0.02</td>
<td>7.571</td>
<td>1.056</td>
<td>1.016</td>
<td>12.034</td>
<td>0.024</td>
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<table>
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<tr>
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<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
<th>Model 8</th>
<th>Model 9</th>
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<td>Mental health treatment</td>
<td>0.682***</td>
<td>0.871***</td>
<td>1.041***</td>
<td>0.673***</td>
<td>0.851***</td>
<td>1.040***</td>
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<td>Psychological distress</td>
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<td>0.201***</td>
<td>0.189***</td>
<td>0.22***</td>
<td>0.199***</td>
<td>0.188***</td>
</tr>
<tr>
<td>Income</td>
<td>-0.601**</td>
<td>-0.101**</td>
<td>-0.079</td>
<td>-0.06**</td>
<td>-0.097**</td>
<td>-0.081</td>
</tr>
<tr>
<td>Education</td>
<td>0.068*</td>
<td>-0.058</td>
<td>-0.212*</td>
<td>0.072*</td>
<td>-0.045</td>
<td>-0.198*</td>
</tr>
<tr>
<td>Age</td>
<td>-0.23***</td>
<td>-0.246***</td>
<td>-0.406***</td>
<td>-0.233***</td>
<td>-0.253***</td>
<td>-0.427***</td>
</tr>
<tr>
<td>Gender</td>
<td>0.157**</td>
<td>0.097</td>
<td>0.083</td>
<td>0.156**</td>
<td>0.087</td>
<td>0.089</td>
</tr>
<tr>
<td>U.S. armed forced</td>
<td>0.353*</td>
<td>0.821***</td>
<td>0.595</td>
<td>0.34*</td>
<td>0.803***</td>
<td>0.580</td>
</tr>
<tr>
<td>Body Mass index</td>
<td>0.008</td>
<td>0.007</td>
<td>0.011</td>
<td>0.008</td>
<td>0.008</td>
<td>0.011</td>
</tr>
<tr>
<td>Sexual identity</td>
<td>-0.594***</td>
<td>-0.739***</td>
<td>-0.436**</td>
<td>-0.603***</td>
<td>-0.772***</td>
<td>-0.483***</td>
</tr>
</tbody>
</table>

**Note(s):** *p < 0.05; **p < 0.01; ***p < 0.001

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HR analytics and Suicide

Table 3. Results and hypotheses H2A, H2B, H2C, H3A, H3B and H3C
### Table 4. Results and hypotheses 4A, 4B and 4C

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>p-value</th>
<th>Confirmed or disconfirmed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1a</strong>: Joblessness is associated with a significantly greater likelihood of suicidal ideation</td>
<td>p &lt; 0.001</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H1b</strong>: Joblessness is associated with a significantly greater likelihood of suicidal planning</td>
<td>p &lt; 0.001</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H1c</strong>: Joblessness is associated with a significantly greater likelihood of suicide attempts</td>
<td>p &lt; 0.05</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H2a</strong>: Number of sick days is associated with a significantly greater likelihood of suicidal ideation</td>
<td>Not significant</td>
<td>Hypothesis disconfirmed</td>
</tr>
<tr>
<td><strong>H2b</strong>: Number of sick days is associated with a significantly greater likelihood of suicidal planning</td>
<td>p &lt; 0.05</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H2c</strong>: Number of sick days is associated with a significantly greater likelihood of suicide attempts</td>
<td>p &lt; 0.01</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H3a</strong>: Absenteeism is associated with a significantly greater likelihood of suicidal ideation</td>
<td>p &lt; 0.01</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H3b</strong>: Absenteeism is associated with a significantly greater likelihood of suicidal planning</td>
<td>p &lt; 0.05</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H3c</strong>: Absenteeism is associated with a significantly greater likelihood of suicide attempts</td>
<td>p &lt; 0.01</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H4a</strong>: The provision of an employee assistance program is associated with a significant reduction in the likelihood of suicidal ideation</td>
<td>p &lt; 0.05</td>
<td>Hypothesis confirmed</td>
</tr>
<tr>
<td><strong>H4b</strong>: The provision of an employee assistance program is associated with a significant reduction in the likelihood of suicide planning</td>
<td>Not significant</td>
<td>Hypothesis disconfirmed</td>
</tr>
<tr>
<td><strong>H4c</strong>: The provision of an employee assistance program is associated with a significant reduction in the likelihood of suicide attempts</td>
<td>Not significant</td>
<td>Hypothesis disconfirmed</td>
</tr>
</tbody>
</table>

Table 5. Hypothesis summary Table
that sick leave and unauthorized absenteeism are associated with a significantly higher probability of engaging in some variation of suicidal thoughts and behaviors, including ideation, planning and attempts. The association between taking authorized sick leave and suicidal ideation was not, however, significant. In terms of workplace interventions aimed at bolstering individual coping resources, it was found that EAPs are associated with significantly reduced suicidal ideation, but not planning or attempts.

**Theoretical implications**

Our findings contribute to several academic HRM debates. First, our study illustrates the versatility and utility of conservation of resources theory (Hobfoll, 1989, 2001) as a useful framework for thinking about HR’s role in protecting occupational health and safety (Fan et al., 2020). More specifically, it shows that occupational health is much more than simply reacting to accidents in the workplace and includes prognostication of potential psychiatric injuries. Similarly, our study builds on the complex relationship between HR practices and mental health crises, thus contributing to extant research linking mental disabilities and workplace treatment. Pertaining to the debates on the conflicted priorities of HRM (Van Buren et al., 2011), our study also presents evidence that HR managers may have a moral and ethical obligation to contribute to CSR activities, including the health and well-being of current and former employees.

The research also has important implications for the study of HRM in times of crisis (Wang et al., 2009; Farndale et al., 2019). The COVID-19 pandemic has dramatically and demonstrably aggravated the mental health of many employees (Timming et al., 2021), some of whom are struggling like never before to strike a healthy work–life balance (Schieman et al., 2021). Thus, COVID-19 has created new and previously unexplored challenges and responsibilities for the HR function. Instead of reacting post hoc to these challenges, our study suggests that HR managers should take a more proactive stance in obviating problems before they arise. The use of HR analytics enables them to do so.

**Practical implications**

Overall, our empirical findings point to at least three major conclusions, each of which can be seen as a practical implication of the research.

First, it seems that employers, through the data typically retained by the HR function, can potentially screen for suicidal thoughts and behaviors by paying attention to periods of joblessness leading up to employment (e.g. gaps in one’s CV) and repeated work absences, whether authorized (e.g. in the event of formal sick leave) or unauthorized (e.g., in the event of absenteeism and skipping work). Any disengagement from the workplace should be an automated “red flag” that triggers a referral to a health specialist. HR information systems (HRIS) can thus be readily programed to notify HR business partners (HRBPs) and line managers of potentially distressed employees and this information can be triangulated with whether the line manager perceives any recent behavioral issues with the employee in question. Although some “red flags” may turn out to be false alarms, if such a system is able to identify and save even one employee from suicide, it will be justifiable, especially given the low costs associated with such automated notifications that simply query the line manager as to whether the employee’s behavior has been of concern recently. Obviously, any implementation of a “red flag” system must be situated in the context of individual privacy legislation (Heikkinen et al., 2006). Line managers, in particular, must be trained on the importance of maintaining personal health information confidential, and the responsibility for this training typically falls upon HR and occupational health. Insofar as personal health information is properly safeguarded, a “red flag” system has, we posit, the potential to save lives and bolster personal resources.
Second, our findings cast a dark shadow over the value of EAPs. Although they were found to be significantly associated with reduced suicidal ideation in employees, they had no impact on where it counts most: suicide planning and attempts. In other words, it seems that EAPs can shape thoughts, but perhaps not behaviors. However, this finding should be interpreted rather cautiously, given that our measurement was a simple binary, asking whether or not the employer offers an EAP. The measurement says nothing about the quality of the EAP, which would seem to be an important factor in evaluating its effectiveness in reducing suicidal thoughts and actions at, or associated with, the workplace. Consistent with conservation of resources theory, EAPs can at least reduce suicidal ideation by bolstering personal resources and providing no-cost counseling to potentially distressed employees — and their families. This finding, in and of itself, suggests that employers should perhaps continue to invest in these services as they have been shown to be effective in the past.

Third, the fact that our logistic regression models, though statistically significant (in the main), are characterized by fairly modest effect sizes impresses, we argue, the vital importance of pro-actively convincing employees to voluntarily disclose mental health problems. The literature on this matter is very clear: individuals who seek help for mental illness can reduce symptomology and the likelihood of suicide (Nakao et al., 2007; Richmond et al., 2016). Thus, in addition to screening for work absences, HR departments should also actively campaign for a reduction in the perceived stigma of mental illness (Brohan et al., 2014). By combating the stigmatization of mental illnesses, the HRBP and the line manager together can encourage distressed employees to seek help pro-actively. HR policies should enable a simple and confidential reporting method by which the employees can disclose a mental illness without fear of stigma or victimization.

Limitations

Although we took pro-active steps to mitigate against endogeneity in our models, it is nevertheless the case that we are not making any claims of causative relationships. This may be seen as a limitation from the point of view of our academic understanding of the determinants of suicidal thoughts and behaviors in the workplace, but, for all practical purposes, the evidence that we present of statistically significant associations is, in our view, a good first step. Any academic analysis of, for example, whether absenteeism causes suicidal ideation or whether suicidal ideation causes absenteeism is of less practical consequence than the fact that both factors are positively associated with one another. Given the extreme importance of the predicted outcome and the fact that it is literally a matter of life and death, the predictive validity of our analysis is of the utmost importance. In sum, whatever the relationship between the two constructs, what is important is that they can be used by HR to predict suicidal thoughts and behaviors.

A couple of other limitations are worth noting. Since we employed a secondary data set, we were limited in terms of the number and types of variables that we could include in our regressions. Consequently, it is possible that our models suffer from statistical under control. This is particularly the case with regard to our work-related variables. The NSDUH was designed to research health and well-being primarily; as such, it lacks key employment variables, for example, job satisfaction, work-related stress and employee autonomy, all of which are perhaps likely related to our outcome variables of interest.

A final limitation has already been alluded to. Specifically, the nature of the relationships among our variables is still misunderstood, including causality and directionality. Key questions that remain unanswered include what is the causal sequence of events leading to suicidal thoughts and behaviors, what factors can strengthen or weaken these relationships and how do contextual boundary conditions affect the relationships?
Directions for future research

These limitations segue into a series of directions for future research. Specifically, future studies should involve the collection of new primary data using a survey instrument that includes a greater number of work- and employment-related variables. As useful as the NSDUH is a dataset, it was not designed with HR analytics in mind. Moreover, though further quantitative research is needed to evaluate potential moderating and mediating effects, we would argue that what is needed, more than any other study design, is a deep qualitative treatment of these processes. In-depth narrative data can bolster predictive analytics by providing a rich causal understanding of the relationships among work, identity and suicidality. Finally, future research should look more closely at the effectiveness of EAPs, particularly in relation to preventing suicidal thoughts and behaviors. Within that context, future studies should investigate which types of treatments are most effective in bolstering individual coping resources, and they should seek to measure EAPs more comprehensively than a simple binary (yes/no) variable. To the extent that existing mental health treatment protocols are failing to affect behaviors, further evaluative research is needed to identify alternatives that are more effective.

Conclusions

This study asked whether the HR function can play a role in predicting suicidal thoughts and behaviors in times of crisis. We hypothesized and subsequently confirmed that joblessness is associated with increased suicidal ideation, planning and behavior. Drawing from conservation of resources theory (Hobfoll, 1989, 2001), we further hypothesized and overwhelmingly confirmed that both sickness absence and absenteeism are associated with increased suicidal thoughts and behaviors. Finally, we hypothesized that EAPs are associated with reduced suicidal thoughts and behaviors, only to find that such programs had the expected effect on ideation, but not on behaviors. Our research thus provides proof of concept that HR analytics can fairly unobtrusively predict, and therefore prevent, suicidality in the workplace.

References


He, J., Mao, Y., Morrison, A.M. and Coca-Stefaniak, J.A. (2021), “On being warm and friendly: the effect of socially responsible human resource management on employee fears of the threats of...


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