Improving Employee Mental Health: Addressing Depression at the Workplace

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Abstract

Background: Depression is a serious mental health challenge in the US. As frontline workers who are responsible for taking care of a myriad of patients daily, health workers are usually exposed to depressive situations which eventually results in them developing the mental health condition. The purpose of the current project was, therefore, to develop an intervention which helps to improve employee mental health in healthcare settings with focus on depression and examine workplace factors which influence depression among employees of the Outpatient Mental Health Clinic in Washington District of Columbia.

Methods: A pre-intervention survey was conducted among 43 employees. The survey used the already validated Patient Health Questionnaire depression scale (PHQ-9) developed by Kroenke et al. (2009) to determine the prevalence of depression. The WHO Healthy Workplace Model developed by Burton and WHO (2010) was also adopted as the conceptual framework in designing an instrument for the workplace determinants of depression. Immediately after the baseline survey, an intervention was developed in the form of already validated depression-related messages adapted from Hartnett et al. (2017) and Agyapong et al. (2017). Using text messaging and emailing platforms, a total of 8 messages were sent to employees twice weekly over a one-month period (October 2021). A post-intervention survey was conducted among the same employees included in the pre-intervention and adopting the same tools. Descriptive and inferential statistics comprising frequency, percentage, and chi-square were adopted in analysing the data with STATA.

Results: The pre-intervention survey showed a reported feelings of depression prevalence of 30.2% among the employees. The post-intervention survey, however, showed that the prevalence of reported feelings of depression among the employees reduced to 12.6%. The surveys also

showed that while the work environment was generally supportive towards achieving desired mental health state, the employees felt they were exposed to workplace hazards.

Conclusion: The intervention designed for this project was effective in reducing reported feelings of depression of among employees from 30.2% to just 12.6%. Given that there is a paucity of empirical literature on workplace depression among employees in hospital settings in the US, the project has been instrumental in contributing immensely to the available literature on employee mental health. For all health professionals in other facilities across the US, the intervention if implemented in such settings, will hopefully improve the levels of workplace related feelings of depression among them, and elevating their perceived supportiveness of the work environment. The overarching implication of this is a major contribution towards efforts at achieving the SDG 3.4 target of promoting mental health and wellbeing of all by the year 2030.

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Introduction

Problem Description

Mental health disorders continue to increase globally each year (World Health Organization [WHO], 2021a). The WHO estimates that over 450 million people experience mental disorders worldwide (WHO, 2019). They are characterized by a combination of abnormal thoughts, emotions, perceptions, behavior, and relations with other conditions which include autism, bipolar disorder, dementia, schizophrenia, and depression and are responsible for 1 out of 5 years lived with disability worldwide (WHO, 2019). Depression contributes to disability occurring within the general population. Of the 450 million people who experience mental disorders, about 264 million are due to depression. Depression is associated with poor concentration, tiredness, feelings of guilt or low self-worth, loss of interest or pleasure, disturbed sleep or appetite, and sadness (WHO, 2019). People who are depressed usually experience multiple physical complaints with no clear physical cause.

Depression can be recurrent or long-lasting and inhibit people’s ability to perform at school or the workplace as well as negatively affect overall daily life. At its peak, depression results in suicide (Formentos et al., 2021; WHO, 2021a) with about 800,000 people committing suicide annually (WHO, 2021b). Depression is a major factor contributing to the global burden of disease and affects people in all societies globally. Comparatively, more females experience depression compared with men. The risk factors of depression entail multifaceted interactions between biological, social, and psychological determinants. Also, life events such as unemployment, loss, and childhood misfortune impact and may facilitate the development of depression (WHO & Calouste Gulbenkian Foundation, 2014).

In the United States of America, depression has been on the ascendency over the past two decades. The National Health Interview Survey posits that in 2019, 18.5% of adults experienced depressive symptoms that were either severe, moderate, or mild for at least two weeks (Villarroel & Terlizzi, 2020). Specifically, 11.5% had mild depressive symptoms, 4.2% had moderate symptoms, and 2.8% had severe symptoms. Exacerbated by the emergence of the novel coronavirus (COVID-19) global pandemic, the prevalence of depression in the US has become over three times greater during COVID-19 than before the pandemic (Ettman et al., 2020).

Mental health conditions including depression, receive less attention compared to other health conditions in the US (Tomlinson & Lund, 2012). This is because patients suffering from these conditions rarely seek help, face stigma in obtaining health care, or simply do not consider themselves to be sick (Nyblade et al., 2019; Parcesepe & Cabassa, 2013). At the workplace, many mental health conditions, most especially depression, go undiagnosed (Brown, 2017). Meanwhile, prevalent undiagnosed depression can be a cause of low productivity (Stander et al., 2016). In this era, sustainable competitive advantage for organizations relies on employee wellbeing.

Available Knowledge

Mental health disorders including depression are among the most worrisome health concerns in the US, especially among working age individuals. Many people with mental health disorders also need care for other physical health conditions including respiratory illness, heart disease, and diabetes (Scott et al., 2016). About 61% of the American population makes up the U.S (United States) labor force (US Department of Labor, Bureau of Labor Statistics, 2021). The labor force is an instrumental location for activities introduced to improve overall mental health wellness among adults. Workplace interventions can identify people at risk for depression and link them to treatment or support systems that ensure reduction and management of depression. By

addressing issues of depression at the workplace, employers can ameliorate healthcare related problems.

A study conducted by the Centers for Disease Control and Prevention (CDC) (2018) showed that poor mental health including depression negatively impact employees' engagement with their work, communication with their coworkers, and overall job performance and productivity. The CDC reports that mental conditions including depression are associated with higher rates of unemployment and disability, and that depression interferes with a person's ability to complete physical job tasks about 20% of the time and reduces cognitive performance about 35% of the time. The CDC (2018) further posited that about 57% of employees who reported moderate depression and 40% of employers reporting severe depression obtained treatment to control depressive symptoms. Even after taking other health risks (e.g., obesity and smoking) into account, employees at elevated risk of depression had the highest healthcare costs during the 3 years after an initial health risk assessment. Workplace health promotion programs according to CDC (2018), proved to be successful, especially when physical and mental health interventions were combined. The workplace was realized as an optimal setting to create a culture of good mental health because structures for effective communication are already available, policies and programs emanate from one principal team, employers can provide motivations to bolster healthy behaviors and social support networks are readily in place.

Terlizzi and Villarroel (2020) observed in a study that women were more likely to experience symptoms of depression than men. For instance, 21.8% of women experienced depression symptoms in the two weeks preceding the survey, that were either severe, moderate, or mild, and this was higher than the 15% recorded among men. Overall, women had higher probabilities than men to have experienced severe (3.5% and 2.1%, respectively), moderate (4.9%

and 3.4%, respectively), and mild (13.4% and 9.6%, respectively) and forms of depression. While there was no significant trend by age among adults experiencing severe symptoms of depression, the authors observed that adults aged 18–29 years and those 65+ were the most likely to experience mild depression symptoms. A higher proportion of adults 45–64 years of age experienced moderate depression symptoms compared with those who were 30–44 and 65+ years old. Moreover, adults who were 18–29 years old, were as likely to experience moderate depression symptoms as adults who were 45–64 years old.

A study by Bond et al. (2019) for the US Department of Health and Human Services (DHHS) indicated that depression constitutes a major leading cause of work absenteeism and responsible for high work disability insurance claims filling in both public and private sectors. Bond et al. (2019) further argued that depression can be effectively treated, and people can fully recover if treatment interventions are initiated early. Early work-based invention is crucial because it helps mitigate devastating effects of depression and improve work performance (Bond et al., 2019). Besides, early intervention saves employees' employment and prevents consequences of unemployment including alcohol abuse, hopelessness, isolation, decreased self-esteem, increased depression and suicide and long sick leave will reduce employee's likelihood for returning to the same job (Bond et al., 2019).

Elevated levels of stigma associated with psychological distresses like depression and a lack of awareness of the availability of depression treatment options in the workplace also increase employees' odds of failing to engage with care (Bond et al., 2019). The DHHS also opined that companies rarely propose a well-coordinated and collaborative depression intervention (screening, diagnosis, counseling, referrals, and treatment). Instead, Employee Assistance Programs (EAPs) operate under different programs (Bond et al., 2019). EAPs as noted by the DHHS, provide brief

counseling services, which are usually restricted to a maximum of six or fewer sessions, and may be inadequate treatment for several depressed employees.

Text and email messaging are efficient and personal forms of electronic communication, making them ideal for delivering health interventions (Suffoletto, 2016). SMS health interventions have the potential to impact mental health because cell phones and short message service (SMS) are so widely used around the world. According to current research, SMS interventions can effectively support health behaviors and may have advantages over other types of computerized interventions. Program features that improve user engagement and persuasiveness are suggested to mitigate the effect of SMS intervention (Suffoletto, 2016).

In the last decade, there has been a rapid and dramatic increase in the demand for tools and resources to assist individuals in adopting health-promoting behaviors and avoiding health-harming behaviors including those related to mental health and depression to be specific. Traditional health-care delivery models, such as primary care, are incapable of meeting these demands. The average person spends only one hour per year in direct medical contact, but they spend thousands of hours making health-related decisions (Asch, Muller, & Volpp, 2012). Computerized health promotion interventions delivered via modalities such as SMS and email provide an appealing alternative method of assisting individuals with health behaviors. Computerized interventions have several advantages over in-person interventions, including the ability to standardize materials and protocols, deliver programs asynchronously when it is most convenient, remove perceived stigma associated with in-person disclosures of sensitive behaviors, in a person's natural environment where they face threats to behaviors, and interact cost-effectively over time to geographically remote locations (Suffoletto, 2016).

The available knowledge clearly demonstrates high prevalence of employee depression at the workplace in the US. The literature also points to various interventions geared towards addressing depression in the workplace. The challenge, however, as noted from the review is that these interventions are usually not robust and closely intertwined enough to offer comprehensive prevention and treatment/management outcomes to employees. Besides, the literature has not really focused on health staff who are at the forefront of managing the health status of others including their mental health. Development of workplace interventions informed by research could, therefore, offer an important avenue towards comprehensively addressing employee mental health with focus on depression in a health setting.

Rationale

The prevalence of work-related depression in the USA is quite high and worrying. There is a need for interventions that address the overall mental health of employees, but with emphasis on depression. Depression is a mental health condition that can be effectively addressed with meticulously planned interventions. Addressing depression would also mean addressing other associated health challenges that employees experience daily at work.

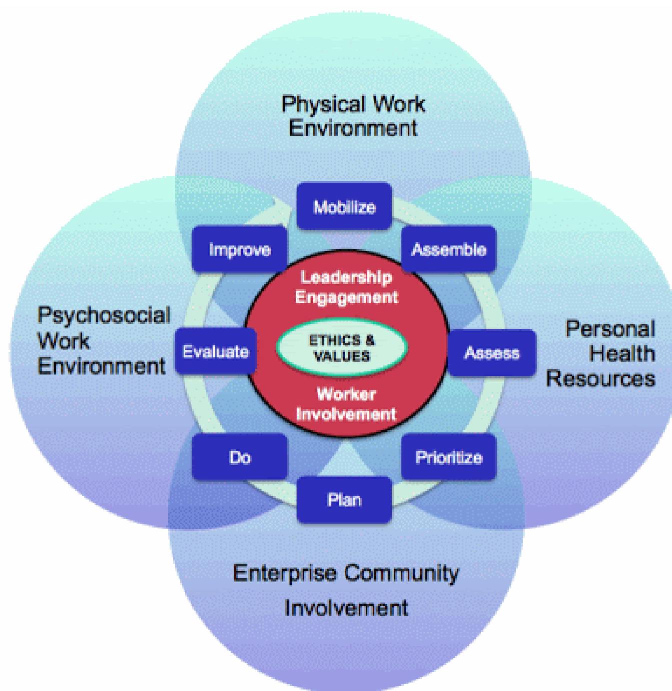
The theoretical framework which guided this project was the WHO Healthy Workplace Model (Burton & WHO, 2010). A healthy workplace was defined as “one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of workers and the sustainability of the workplace by considering the following, based on identified needs: health and safety concerns in the physical work environment; health, safety and well-being concerns in the psychosocial work environment including organization of work and workplace culture; personal health resources in the workplace;

and ways of participating in the community to improve the health of workers, their families and other members of the community" (Burton & WHO, 2010, p. 60).

Tenets of the model include both the content of the issues that should be addressed in a healthy workplace and the process that will ensure success and sustainability of healthy workplace innovations. The content is grouped into four large "avenues of influence". These are the physical work environment, the psychosocial work environment, the personal health resources in the workplace, and enterprise community involvement. These avenues are not mutually exclusive entities. Rather, they overlap and influence one another (Figure 1).

Figure 1

WHO Healthy Workplace Model



Source: Burton and WHO (2010)

By adopting the healthy workplace model, the current project was guided in efficiently identifying the various work-related determinants of mental health and consequently the development of depression by employees. The physical work environment content of the model,

for instance relates to the part of the workplace facility which includes air, structure, chemicals, furniture, machines, and processes and materials present or that can happen (sometimes introducing hazards) at the workplace, and which can affect mental health including depression.

The organization culture and psychosocial work environment includes practices, beliefs, values, and attitudes exhibited at work daily and which have the propensity to affect the mental health of employees leading to depression (Burton & WHO, 2010). Similarly, the personal health resources in the workplace (including a support environment, health services, information, and opportunities) and enterprise community involvement (including activities, expertise, and other resources a health entity engages in or provides to the environment within which it operates) could have implications for the development of depression by the employees depending on their levels of engagement in these activities/exposures. The model then offers the opportunity to integrate an intervention needed to address the identified challenges as a step towards reducing the depression levels among employees.

Rugulies (2019) described a broadened perspective on the psychosocial work environment to include aspects of the job and work environment such as organizational climate or culture, work roles, interpersonal relationships at work, and the design and content of tasks (variety, meaning, scope, repetitiveness, etc.). The concept of psychosocial factors extends also to the extra-organizational environment, such as domestic demands and aspects of the individual such as personality and attitudes, which may influence the development of stress at work. Frequently, the expressions work organization or organizational factors are used interchangeably with psychosocial factors in reference to working conditions which may lead to stress (Rugulies, 2019, p.2).

Specific Aims

Employee and workplace related factors can either aggravate or alleviate the mental health status, especially depression levels of employees (Roberts et al., 2019; Rocheet al., 2016). Understanding the workplace and employee related facilitators and barriers to employee mental health in the US is relevant in improving employee mental health status and organizational performance. The specific aim of this project was to develop and implement a mental health friendly workplace to improve the mental health status of employees using depression as a proxy.

Underpinned by the WHO Healthy Workplace Model and adopting the PHQ–9 scale to conduct a baseline study, a holistic intervention was developed to address depression amongst healthcare staff in the workplace.

Methods

Context

The Outpatient Mental Health Clinic in Washington District of Columbia provides services to approximately 4000 patients. The services offered include psychiatric rehabilitative services, substance abuse and assertive community therapy programs. This project sought to create awareness of employee mental health problems and develop an intervention effective in improving the mental health of all employees at the facility and beyond.

Cost Benefit Analysis/Budget

According to Centers for Disease Control (CDC), depression causes an estimated 200 million lost workdays, each year at the cost of $17 billion to $44 billion to employers (Minor, 2021). Depression influences the rate of absenteeism, cause of disabilities, loss of productivity and climate in the workplace (Minor, 2021). Depression negatively affects the way employees perform at workplace. These include decision making ability and ability to focus, management of time and getting different tasks done. Just like other mental health disorders, when depression in employees is detected earlier and treated effectively, it reduces the severity of the disorder and the impact it will have on productivity and the patients.

Employers need to play an important role by facilitating early detection of depression and other disorders and creating a friendly working atmosphere and access of care to employees diagnosed with depression. Employers also need to start demonstrating compassion towards employees by acknowledging the different stressors that are present at workplace and causes mental illness. Employers should be able to create and educational scheme and an atmosphere that makes employees feels that accessing help in case of mental illness is not a sign of weakness.

It is a rational decision for employers to invest in employee mental health and early detection programs. It is rational for employers to show employees that they care about their wellbeing and identify them as important assets to the organization. Through employee mental health investment, the organization is positively impacted financially by decreasing absenteeism, improving presenteeism, and a happier and more productive employee workforce.

Intervention

To achieve the specific aim of this project, a series of project activities were carried out to establish an intervention.

Pre-Intervention (Baseline) Survey

A baseline survey using the already validated Patient Health Questionnaire depression scale (PHQ-9) developed by Kroenke et al. (2009) was carried out to examine the prevalence of depression in the workplace. To ascertain the workplace determinants of depression at the workplace, the WHO Healthy Workplace Model developed by Burton and WHO (2010) was adopted. Together with the PHQ-9 and background characteristics, a questionnaire was created and administered in the form of Google Forms among the study participants.

Development and implementation of intervention

After the baseline survey was conducted, an intervention was developed based on the findings. Specifically, already validated depression-related messages were adapted from Hartnett et al. (2017) and Agyapong et al. (2017) to constitute the intervention. The intervention had 8 statements as presented in Table 1.

Table 1: Intervention Statements for employees

No	Statements
1.	What lies behind you and what lies before you are tiny matters compared to what lies within you. Have faith in yourself and success can be yours at the work place.
2.	Letting go of resentment at the workplace is a gift you give yourself, and it will ease your professional journey immeasurably. Make peace with everyone at the work place and happiness will be yours.
3.	Pay attention to activities that have a positive impact on your mood especially at work. Note these activities and refer to them when you hit a low point to improve your mood at work.
4.	For today, focus on only what is happening now. Do not entertain negative words, thoughts or actions including those you experience at the workplace.
5.	By taking care of our physical health, our past hurts, and our present-day stresses, we can overcome low mood especially at the workplace.
6.	There are 2 days in the week we should not worry about, yesterday and tomorrow. That leaves today, live for today.
7.	Stumbling blocks can become steppingstones to a better life. You can turn adversities into opportunities.
8.	Your thoughts affect how you feel. Thoughts are not facts. Notice them and watch them come and go.

Specifically, statements 1,2,3,6, and 7 were adapted from Agyapong et al. (2017), while statement 4,5, and 8 were from Hartnett et al. (2017). The intervention was implemented over a one-month period (October 2021). Using text and email messaging systems, the messages were sent to the employees twice weekly. Thus, one message was sent on Tuesday and the other one was sent on Saturday.

The adaptation of these messages was informed by their relative effectiveness upon implementation. The study by Hartnett et al. was a protocol for the one by Agyapong et al. In their

study, Agyapong et al. (2017. P.1) carried out a single-rater-blinded randomized trial involving 73 patients with major depressive disorder. Patients in the intervention group received supportive text messages for 6 months instead of one month for the current study. The authors concluded by stating, “Our findings suggest that supportive text messages are a potentially useful psychological intervention for depression, especially in underserved population.

Post-Intervention (End-line) survey

Immediately after the rollout of the intervention (November 2021), a post-intervention survey was carried out to ascertain any changes in the prevalence and determinants of depression among employees. The approach adopted for the baseline survey was repeated and the initial cohort included in the survey was recruited again as part of the end-line survey. Four of the initial participants could, however, not participate in the end-line survey. As such, while the baseline survey had 43 participants, the end-line had 39 participants. A group chart on WhatsApp with the 39 participants was created and the participants were encouraged to verbalize any concerns and their impressions regarding the messages. All the 39 participants in the end-line survey verbalized to have read and were satisfied with the messaging tool and the messages.

Measures

To measure the impact of the intervention, findings from the baseline and end-line surveys were compared. Findings from the end-line survey are useful in informing amendments/improvements to the developed intervention. Depression was categorized using a PHQ-9 score of ≥10 (Table 2). Socio-demographic characteristics of the participants in the pre- and post-intervention surveys were also compared. The frequency distribution of major depression and other depression by standard PHQ-9 severity intervals (0–4, 5–9, 10–14, 15–19, & 20–24) as well as the commonly used a cut-off point of ≥10.

Table 2: Personal Health Questionnaire Depression Scale (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? (Circle one number on each line)

How often during the past 2 weeks were you bothered by...	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless………...	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much…………………………………………..	0	1	2	3
4. Feeling tired or having little energy……………	0	1	2	3
5. Poor appetite or overeating…………………..…	0	1	2	3
6. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down……………………………….…	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite –being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself in some way?	0	1	2	3

The scale was measured as Depression Severity: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe. A dichotomous variable of 0=depressed, and 1=Not depressed was then developed as the outcome variable. The depression instrument, background characteristics, and workplace determinants were all put into a questionnaire which was then administered during the pre- and post-intervention surveys (Appendix A).

Analysis

Quantitative data collected from the participants will be entered and cleaned using Epi data software. The data will then be transported into STATA for analysis. Data collected from the PHQ-9, socio-demographic characteristics and workplace determinants of depression were analyzed using frequency, percentage, bar charts, and chi-square analysis.

Results

Background Characteristics of Employees

Table 3 presents results of the background characteristics of employees included in the pre-intervention (baseline) and post-intervention (end-line) surveys. Majority of the employees in both surveys were in their 30s. Female workers constituted 55.8% in the baseline while males formed 53.9% in the end-line survey. Most of them (Pre-intervention [Baseline]: 88.4%; Post-Intervention [End-line]: 66.67%) had postsecondary/higher level of education. The majority (97 %) were Christians. The respondents were psychiatric Nurses, community support workers, and psychiatrists. The comparative majority had worked for 1-5 years in their respective professions as well as in the facility, for 1–5 years.

Table 3: Background characteristics of employees in the pre- and post-intervention surveys

Background Characteristics	Pre-Intervention (N=43) n (%)	Post-Intervention (N=39) n (%)
Age		
<30	6(13.95)	8(20.51)
30-39	22(51.16)	19(48.72)
40-49	12(27.91)	10(25.64)
50+	3(6.98)	2(5.13)
Sex		
Male	19(44.19)	21(53.85)
Female	24(55.81)	18(46.15)
Marital status		
Never Married	16(37.21)	17(43.59)
Married	23(53.49)	21(53.85)
Divorced	3(6.98)	1(2.56)
Widowed	1(2.33)	
Educational level		
No education	1(2.33)	1(2.56)
Postsecondary/higher education	38(88.37)	26(66.67)
Secondary	4(9.30)	12(30.77)
Religion		
Christianity	42(97.67)	28(97.44)

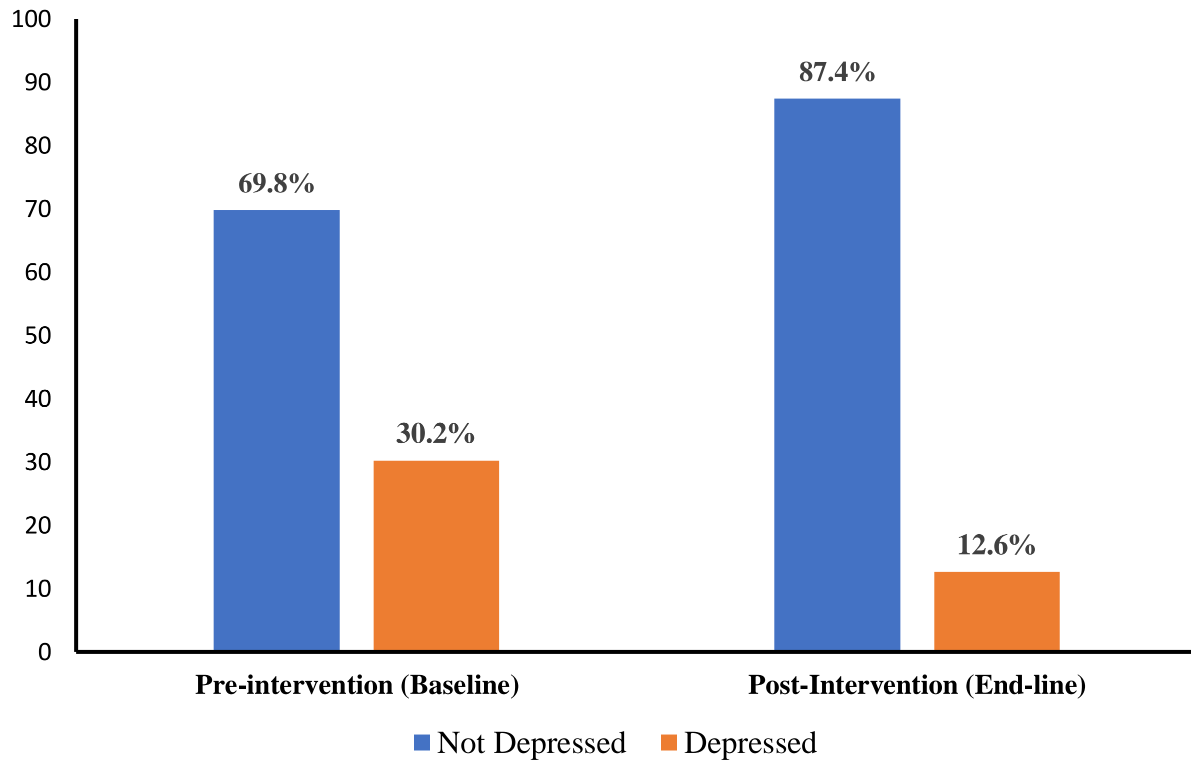
Islamic	1(2.33)	1(2.56)
Occupation		
Psychiatrists	6(13.95)	9(23.08)
Psychiatric Nurses	10(23.26)	7(17.95)
Community support workers	10(23.26)	6(15.38)
IT personnel	4(9.30)	5(12.82)
Other occupations	13(30.23)	12(30.77)
Duration of practice (In years)		
< 1	6(13.95)	6(15.38)
1-5	19(44.19)	18(46.15)
6-10	14(32.56)	10(25.64)
11+	4(9.30)	5(12.82)
Duration at Facility (In years)		
< 1	10(23.26)	10(25.64)
1-5	22(51.16)	16(41.03)
6-10	10(23.26)	10(25.64)
11+	1(2.33)	3(7.69)
Total	**43(100.00)**	**39(100.00)**

Prevalence of Reported feelings of Depression among Employees

Depression was measured using the Personal Health Questionnaire Depression Scale (PHQ-9). Figure 2 presents results of the levels of depression in the pre-intervention and post-intervention surveys. Prior to the intervention, the prevalence of reported feelings of depression among the employees was 30.2%. This, however, declined to just 12.6% post-intervention.

Figure 2

Prevalence of reported feelings of depression among employees in the pre-intervention (baseline) and post-intervention (end-line) surveys



Workplace Determinants of Depression

Table 4 represents the prevalence of work-related determinants of depression among employees in the pre- and post-intervention surveys. In the baseline, 75% of employees agreed "Agree and Strongly agree" that they were always motivated to come to work. The majority (53.49 %) also agreed that the air quality at the workplace is appropriate. Concerning exposure to workplace hazards, 55.82% of the employees were in agreement "Agree and Strongly agree" that they were exposed to harmful chemicals and other environmental hazards at the workplace. Most employees (62.79 %) also reported that the attitudes of their co-workers were positive. More than 55% also felt the attitude of management was positive towards them and promoted the effective

discharge of their duties while 51% agreed that the work-related values at the workplace were appropriate and promoted their mental health. Many employees (65.11 %) were also in agreement that the organization usually took into consideration their mental health.

In the end-line survey, 69.2% of the employees agreed “Agree and Strongly agree” that they were always motivated to come to work. Many of the respondents (61.5%) also agreed that the air quality at the workplace is appropriate. Regarding the exposure of the workers to harmful chemicals and other environmental hazards at their workplace, 58.9% of the employees agreed (“Agree” and “Strongly agree”) that they were exposed to workplace hazards including harmful chemicals and other environmental hazards. Many employees (71.8%) also reported that the attitudes of their co-workers were positive toward them. The majority of the workers (71.8%) were in agreement (“Agree and Strongly agree”) that the attitude of management was positive towards them and promoted the effective discharge of their duties. About 58.97 of employees noted that they find it easier to have access to information at their workplace. Many workers (79.5%) of workers agreed (“Agree and Strongly agree”) that the work-related values at the workplace were appropriate and promoted their mental health while about 61.2% of employees were also in agreement that the organization usually took into consideration their mental health.

Table 4: Prevalence of work-related determinants of depression among employees in the pre-intervention and post-intervention surveys

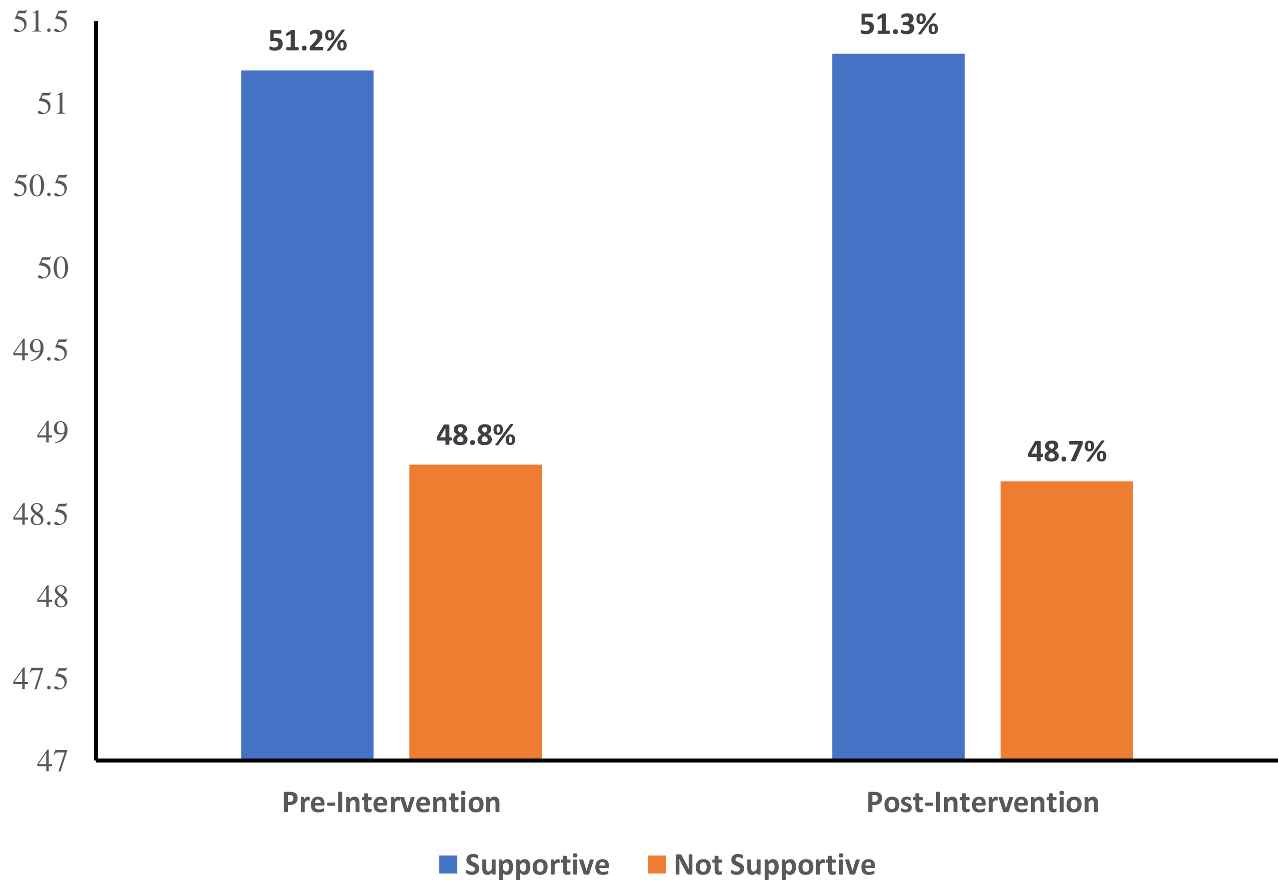
Workplace factors	Pre-Intervention (Baseline) Survey (N=43)				Post-Intervention (End-line) Survey (N=39)			
	Strongly Disagree	Disagree	Agree	Strongly agree	Strongly Disagree	Disagree	Agree	Strongly agree
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)
Always motivated to come to work	4(9.30)	11 (25.58)	18(41.86)	10 (23.26)	1(2.56)	11(28.21)	18(46.15)	9(23.08)
Air quality at the workplace is appropriate for you	6(13.95)	7(16.28)	23(53.49)	7(16.28)	2(5.13)	9 (23.08)	24(61.54)	4(10.26)
Exposed to harmful chemicals and other environmental hazards at the work place	10(23.26)	9(20.93)	14(32.56)	10(23.26)	8(20.51)	8(20.51)	18(46.15)	5(12.82)
The furniture you work with is appropriate for your health and posture	4(9.30)	9(20.93)	20(46.51)	10(23.26)	4(10.26)	12(30.77)	20(51.28)	3(7.69)
The attitudes of your co-workers are positive towards you	2(4.65)	4(9.30)	27(62.79)	10(23.26)	1(2.56)	4(10.26)	28(71.79)	6(15.38)
The attitude of management is positive towards you and promotes the effective discharge of your duties	3(6.98)	8(18.60)	24(55.81)	8(18.60)	2(5.13)	9(23.08)	23(58.97)	5(12.82)
Work-related values at the workplace are appropriate and promote your mental health	4(9.30)	9(20.93)	22(51.16)	8(18.60)	1(2.56)	7(17.95)	28(71.79)	3(7.69)
Strong and positive support environment at the workplace	2(4.65)	8(18.60)	23(53.49)	10(23.26)	2(5.13)	6(15.38)	25(64.10)	6(15.38)

Access to information is easy at your workplace	2(4.65)	11(25.58)	22(51.16)	8(18.60)	3(7.69)	7(17.95)	23(58.97)	6(15.38)
Access to opportunities for personal development abound at the workplace	3(6.98)	9(20.93)	20(46.51)	11(25.58)	3(7.69)	13(33.33)	18(46.15)	5(12.82)
Interpersonal relationships (with co-workers) at the workplace are healthy	3(6.98)	5(11.63)	26(60.47)	9(20.93)	2(5.13)	8(20.51)	22(56.41)	7(17.95)
Trust your co-workers when it comes to sharing your mental health needs with them?	8(18.60)	9(20.93)	20(46.51)	6(13.95)	4(10.26)	17(43.59)	13(33.33)	5(12.82)
The design and content of tasks are friendly at your workplace	2(4.65)	3(6.98)	32(74.42)	6(13.95)	0(00.00)	11(28.21)	24(61.54)	4(10.26)
Feeling that the organization takes into consideration your mental health	5(11.63)	10(23.26)	20(46.51)	8(18.60)	0(00.00)	15(38.46)	21(53.85)	3(7.69)
Always comfortable to share your mental health needs with management of your workplace	7(16.28)	16(37.21)	16(37.21)	4(9.30)	4(10.26)	18(46.15)	12(30.77)	5(12.82)
Availability and access to personal health resources at the workplace	2(4.65)	11(25.58)	23(53.49)	7(16.28)	2(5.13)	13(33.33)	20(51.28)	4(10.26)

Figure 3 presents results on the supportiveness of the work environment, derived as an index variable derived from the workplace-related variables in the pre- and post-intervention surveys. In the pre-intervention survey, 51.2% intimated that the work environment was supportive in safeguarding their mental health. This increased marginally to 51.3% in the post-intervention survey.

Figure 3

Supportiveness of the work environment in the pre- and post-intervention surveys



Appendix B presents a bivariable analysis for the relationship between workplace determinants and depression among employees. In the pre-intervention survey, about 54% of workers who disagreed to the statement that they were always motivated to come to work were those who verbalized feelings of depression. Similarly, about 62% of employees who reported not being comfortable to share their mental health needs with management of their workplace also reported being feelings of depression. The majority (80.00%) of the employees who had healthy interpersonal relationships with their co-workers at the workplace and strong and positive support environment at the workplace did not report any feelings of depression.

In the post-intervention survey, there was no significant association between work-related determinants and depression. However, it was noted about 60.0% of workers who disagreed with the statement that access to information is easy at your workplace reported feelings of depression. The majority (85.3%) of the employees who had healthy interpersonal relationships with their co-workers at the workplace did not report any feelings of depression. Similarly, most employees (82.4%) who agreed that work-related values at the workplace were appropriate and promote their mental health did not report feelings of depression.

Discussion

Summary

Depression is a serious mental health challenge in the US. It is a result of a complex interaction of biological, psycho-social, and psychological factors. People who have gone through unfavorable life events including unpleasant working environments have high probabilities of developing depression (WHO, 2021). Depression, in turn, leads to stress and dysfunction and aggravates the affected person's life. As frontline workers who are responsible for taking care of a myriad of patients daily, health workers are usually exposed to depressive situations which eventually results in them developing the mental health condition. Once that happens, interventions are required to reduce the prevalence and toll of the depressive symptoms among them.

The purpose of the current project was to develop an intervention which helps to improve employee mental health in healthcare settings with focus on depression and examine workplace factors which influence depression among employees. Using the already validated Patient Health Questionnaire depression scale (PHQ-9) developed by Kroenke et al. (2009) and adopting the WHO Healthy Workplace Model developed by Burton and WHO (2010), a pre-intervention survey was conducted among employees of the Outpatient Mental Health Clinic in Washington District of Columbia. The survey showed a reported feelings of depression prevalence of 30.2% among the employees. This prevalence was far more than the average depression levels in the USA as reported by the WHO (2017). The survey also showed that while the work environment was generally supportive towards achieving desired mental health state, the employees felt they were exposed to workplace hazards.

To address the high level of reported feelings of depression observed in the baseline survey, an intervention was developed in the form of already validated depression-related messages adapted from Hartnett et al. (2017) and Agyapong et al. (2017). Using text messaging and email platforms, the messages were sent to employees over a one-month period within regular intervals.

Immediately after the intervention, a post-intervention (end-line) survey was carried out to assess its impact in reducing the levels of depression among the employees. The employees included in the baseline survey were the participants in the end-line survey as well. The post-intervention survey showed that the prevalence of depression among the employees had reduced to 12.6%. The post-survey also indicated a marginal increase in the perceived supportiveness of the work environment towards safeguarding their mental health. Chi-square analyses conducted, however, showed no statistically significant relationship between depression and the workplace determinants. Further tests of the intervention over longer durations and pre- and post-intervention surveys among higher numbers could, however, improve these associations.

Interpretation

The intervention demonstrated perceived improvements in mental health status through a decline in reported feelings of depression among the employees surveyed. The overall percentage change in the prevalence of between the pre- and post-intervention surveys was 17.6% which is quite significant considering the short duration within which it was carried out. Employee perception of the supportiveness of the work environment also increased, though marginally, in the post-intervention survey. This is a further indication of the effectiveness of the intervention. The study by Hartnett et al. (2017) and Agyapong et al. (2017) was carried out for a longer period compared to this study. They deployed supportive messages for 6 months and suggested that the text messages were a potential psychological intervention for depression in underserved

population. The findings from this project following the deployment of messages for a period of one month showed a decrease in reported feelings of depression from 30.2% to 12.6%. This means that if the project was to expand for a period of 6 months, the results could have been more positive.

Limitations

There were some limitations of the study which are worth noting. First of all, the small sample sizes used affected the significance of statistical analyses conducted. All the workplace determinants, therefore, had no statistically significant relationship with the outcome variable (depression). The intervention was carried out within one month. This to the duration of just one month between the pre- and post-intervention surveys. Given that the duration of the intervention were about three months for instance, the level of depression experienced in the post-survey could have gone further down as sustainable change usually takes time to happen. Four participants in the pre-intervention survey were lost during the follow-up survey. This could have affected the quality of comparison done in the results.

Conclusion

The intervention designed for this project was effective in reducing reported feelings of depression of among employees. Following the pre-intervention and post-intervention survey, we realized that the prevalence of depression among employees declined from 30.2% to just 12.6%. Given that there is a paucity of empirical literature on workplace depression among employees in hospital settings in the US, the project has been instrumental in contributing immensely to the available literature on employee mental health.

For all health professionals in other facilities across the US, the intervention if implemented in such settings, will hopefully improve the levels of workplace related feelings of depression among them, and elevating their perceived supportiveness of the work environment. The

overarching implication of this is a major contribution towards efforts at achieving the SDG 3.4 target of promoting mental health and wellbeing of all by the year 2030. The organization where the project was carried out has been experiencing a decrease in productivity. The initiation of this project was timely and caught the attention of the organization's administrators. The findings from this project were presented to the administrators including the Chief Executive Officer (CEO) of the organization. The CEO reported that she is following up with the Quality Improvement committee within the organization to work with the psychiatric department and other members of the interdisciplinary team in forming a more effective Employee Assistance Program.

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Appendices

Appendix A: Questionnaire

Improving Employee Mental Health: Addressing Depression at the Workplace

Section A: Background characteristics of respondents

1. How old are you?	………………
2. Sex	1 Female 2 Male
3. What is your religion?	1 Christianity 2 slam 3 African Traditionalist 4 Other [Specify]…………………
4. Marital status	1 Never married 2 Married 3 Divorced 4 Widowed
5. What is your highest level of education?	1 None 2 Elementary/primary education 3 Secondary education 4 Postsecondary / higher education
6. What is your main occupation?	1. Medical Doctor 2. Nurse 3. Midwife 4. Lab. Scientist 5. Other (Specify)………….
7. How long have you practiced in your current occupation?	………………

8. How long have you worked in the current facility?	………………

Section B: Prevalence of depression among employees (Personal Health Questionnaire Depression Scale (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? (circle one number on each line)

How often during the past 2 were you bothered by...	Not at all	Several days	More than half the days	Nearly every day
10. Little interest or pleasure in doing things	0	1	2	3
11. Feeling down, depressed, or hopeless………..	0	1	2	3
12. Trouble falling or staying asleep, or sleeping too much………………………………………	0	1	2	3
13. Feeling tired or having little energy……………	0	1	2	3
14. Poor appetite or overeating…………………..…	0	1	2	3
15. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down…………………………….…	0	1	2	3
16. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
17. Moving or speaking so slowly that other people could have noticed. Or the opposite –being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3

18. Thoughts that you would be better off dead, or of hurting yourself in some way?	0	1	2	3

Section C: Work-related determinants of depression among employees
Circle one number on each line corresponding to your level of disagreement to the following issues at your workplace

Workplace factors	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly agree**
1. You are always motivated to come to work	0	1	2	3
2. Air quality at the workplace is appropriate for you	0	1	2	3
3. You are not exposed to harmful chemicals and other environmental hazards at the work place	0	1	2	3
4. The furniture you work with is appropriate for your health and posture	0	1	2	3
5. The attitudes of your co-workers are positive towards you	0	1	2	3
6. The attitude of management is positive towards you and promotes the effective discharge of your duties	0	1	2	3
7. Work-related values at the workplace are appropriate and promote your mental health	0	1	2	3
8. There is a strong and positive support environment at the workplace	0	1	2	3
9. Access to information is easy at your workplace	0	1	2	3
10. Access to opportunities for personal development abound at the workplace	0	1	2	3

11. Interpersonal relationships (with co-workers) at the workplace are healthy	0	1	2	3
12. You trust your co-workers when it comes to sharing your mental health needs with them?	0	1	2	3
13. The design and content of tasks are friendly at your workplace	0	1	2	3
14. There is ready availability and access to personal health resources at the workplace	0	1	2	3
15. You have a feeling that the organization takes into consideration your mental health	0	1	2	3
16. You are always comfortable to share your mental health needs with management of your workplace	0	1	2	3

Appendix B: Bivariable relationship between workplace determinants and depression

Workplace determinants	Pre-Intervention Survey (N=43)				Post-Intervention Survey (N=39)			
	Not depressed n(%)	Depressed n(%)	Chi-Square	p-value	Not depressed n(%)	Depressed n(%)	Chi-Square	p-value
Always motivated to come to work			2.95	0.086			0.3123	0.576
Disagree Agree	8 (26.67) 22 (73.33)	7 (53.85) 6 (46.15)			11(32.35) 23(67.65)	1(20.00) 4(80.00)		
Air quality at the workplace is appropriate for you			0.60	0.439			0.1907	0.662
Disagree Agree	8 (26.67) 22 (73.33)	5 (38.46) 8 (61.54)			10(29.41) 24(70.59)	1(20.00) 4(80.00)		
Exposed to harmful chemicals and other environmental hazards at the workplace			0.03	0.864			1.0479	0.306
Disagree Agree	13 (43.33) 17 (56.67)	6 (46.15) 7 (53.85)			15(44.12) 19(55.88)	1(20.00) 4(80.00)		
The furniture you work with is appropriate for your health and posture			1.95	0.163			0.0025	0.960
Disagree Agree	11 (36.67) 19 (63.33)	2 (15.38) 11 (84.62)			14(41.18) 20(58.82)	2(40.00) 3(60.00)		
The attitudes of your co-workers are positive towards you			3.02	0.082			0.8434	0.358
Disagree Agree	6 (20.00) 24 (80.00)	0 (0.00) 13 (100.00)			5(14.71) 29(85.29)	0(0.00) 5(100)		
The attitude of management is positive towards you and promotes the effective discharge of your duties			0.60	0.439			0.1907	0.662
Disagree Agree	8 (26.67) 22 (73.33)	5 (38.46) 8 (61.54)			10(29.41) 24(70.59)	1(20.00) 4(80.00)		

Work-related values at the workplace are appropriate and promote your mental health			0.061	0.804			1.3358	0.248
Disagree Agree	8 (26.67) 22 (73.33)	3 (23.08) 10 (76.92)			6(17.65) 28(82.35)	2(40.00) 3(60.00)		
Strong and positive support environment at the workplace			0.60	0.443			0.0009	0.976
Disagree Agree	6 (20.00) 24 (80.00)	4 (30.77) 9 (69.23)			7(20.59) 27(79.41)	1(20.00) 4(80.00)		
Access to information is easy at your workplace			0.45	0.501			3.5511	0.060
Disagree Agree	10 (33.33) 20 (66.67)	3 (23.08) 10 (76.92)			7(20.59) 27(79.41)	3(60.00) 2(40.00)		
Access to opportunities for personal development abound at the workplace			0.22	0.642			0.0025	0.960
Disagree Agree	9 (30.00) 21 (70.00)	3 (23.08) 10 (76.92)			14(41.18) 20(58.82)	2(40.00) 3(60.00)		
Interpersonal relationships (with co-workers) at the workplace are healthy			0.13	0.721			0.6202	0.431
Disagree Agree	6 (20.00) 24 (80.00)	2 (15.38) 11 (84.62)			8(23.53) 26(76.47)	2(40.00) 3(60.00)		
Trust your co-workers when it comes to sharing your mental health needs with them?			0.34	0.559			0.4424	0.506
Disagree Agree	11 (36.67) 19 (63.33)	6 (46.15) 7 (53.85)			19(55.88) 15(44.12)	2(20.00) 3(60.00)		
The design and content of tasks are friendly at your workplace			0.28	0.596			0.1907	0.662
Disagree Agree	4 (13.33) 26 (86.67)	1 (7.69) 12 (92.31)			10(29.41) 24(70.59)	1(20.00) 4(80.00)		
Feeling that the organization takes into consideration your mental health			1.04	0.307			0.0057	0.940
Disagree Agree	9 (30.00) 21 (70.00)	6 (46.15) 7 (53.85)			13(38.24) 21(38.24)	2(40.00) 3(60.00)		

Always comfortable to share your mental health needs with management of your workplace			0.46	0.486			0.6281	0.428
Disagree Agree	15 (50.00) 15 (50.00)	8 (61.54) 5 (38.46)			20(58.82) 14(41.18)	2(40.00) 3(60.00)		
Availability and access to personal health resources at the workplace			0.003	0.960			0.0057	0.940
Disagree Agree	9 (30.00) 21 (70.00)	4 (30.77) 9 (69.23)			13(38.24) 21(61.76)	2(40.00) 3(60.00)		

Thank you for participating in this study