



Article Sustaining the Quality of Life for University Employees with Obesity Using Mindfulness Activities and Work Engagement: A Quasi-Experimental Design

Nor Ba'yah Abdul Kadir ^{1,*}, Rusyda Helma ¹, Wan Nur Khairunnisa Ismail ¹, Siti Jamiaah Abdul Jalil ², Nurul-Azza Abdullah ¹, Arena Che Kasim ¹, Suzana Mohd. Hoesni ¹ and Mohd Rizal Abdul Manaf ³

- ¹ Centre for Research in Psychology and Human Well-Being, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, Bangi 43600, Selangor, Malaysia; rusyda_h@ukm.edu.my (R.H.); nisaismail281@gmail.com (W.N.K.I.); nurulazza@ukm.edu.my (N.-A.A.); arena@ukm.edu.my (A.C.K.); smh@ukm.edu.my (S.M.H.)
- ² Department of Dakwah and Leadership, Faculty of Islamic Studies, Universiti Kebangsan Malaysia, Bangi 43600, Selangor, Malaysia; sitijamiaah82@ukm.edu.my
- ³ Department of Community Health, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Ya'acob Latif, Bandar Tun Razak, Cheras, Kuala Lumpur 56000, Malaysia; mrizal@ppukm.ukm.edu.my
- Correspondence: aknbayah@ukm.edu.my

Abstract: Using an e-calendar, a web-based intervention program, informal mindfulness activities, and work engagement, this study evaluated the sustainability of the quality of life for staff with obesity at a Malaysian public university. The participants were identified through the human resources department of the university. The inclusion criteria required an age of 20-59 years and BMI \geq 25. The exclusion criteria were pregnancy, the use of weight loss pills or supplements that can influence weight, chronic illness, and the use of medication that requires physician monitoring. Thirty-one university staff were assessed for quality of life using a within-subject repeated-measures design. The participants were asked to use the study website for 10 to 15 min/day for 36 weeks. Data was captured by a pretest, posttest, and two follow-up surveys. The results showed an increase in the posttest mean scores for all domains representing the quality of life. As expected, three domains increased at follow-up 1 and were maintained at follow-up 2. This suggests that informal mindfulness practices and work engagement using an e-calendar are practical means to increase and sustain the quality of life of employees. In conclusion, the quality of life among university staff with obesity can be improved using informal mindfulness activities and work engagement, and an e-calendar is another alternative method of practicing mindfulness at home and at the workplace. The implications of this study are also discussed.

Keywords: mindfulness; work engagement; quality of life; overweight; Malaysia

1. Introduction

It is estimated that over 15.5% of Malaysians suffer from chronic diseases [1]. Of this 15.5%, around 4.0% have type-2 diabetes. As the prevalence of type-2 diabetes increased from 15.2% in 2011 to 17.5% in 2015 [2], it is imperative to develop and implement low-cost, effective, therapeutic interventions to help people improve their quality of life without compromising their daily routine and with limited access to long-term treatment [3].

Reports have shown that mindfulness interventions help individuals with chronic medical conditions live fuller, healthier, and more adaptive lives [4]. With mindfulness, "the awareness emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" [5] (p. 145). Mindfulness has been positively related to well-being [6] and life satisfaction [7]. Furthermore, reports have shown that mindfulness may reduce anxiety [8] and depression [9]. A meta-analysis revealed that mindfulness-based programs effectively reduced stress, burnout,



Citation: Kadir, N.B.A.; Helma, R.; Ismail, W.N.K.; Abdul Jalil, S.J.; Abdullah, N.-A.; Che Kasim, A.; Mohd. Hoesni, S.; Manaf, M.R.A. Sustaining the Quality of Life for University Employees with Obesity Using Mindfulness Activities and Work Engagement: A Quasi-Experimental Design. *Sustainability* 2022, 14, 1925. https://doi.org/10.3390/su14031925

Academic Editor: José Carmelo Adsuar Sala

Received: 24 December 2021 Accepted: 7 February 2022 Published: 8 February 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). mental distress, and somatic complaints and improved well-being, compassion, and job satisfaction. These results were maintained through a 12-week follow-up [10]. Furthermore, Mantzios et al. [11] found that mindfulness is negatively associated with fat and sugar consumption. Athanas et al. [12] conducted an interesting study on changes to emotional state, based on individual characteristics, due to the long-term use of a mindfulness and meditation digital app. They showed that mindfulness and meditation could reduce depression and anxiety. However, prolonged app use was associated with a reduced likelihood that emotional states would change from negative to positive. Mindfulness involves formal meditation exercises (e.g., body scans) and informal exercises (e.g., mindful moment practices). Reports suggest that web-based mindfulness programs complement counseling services [13]. For instance, studies that examined the impact of web-based mindfulness programs combined with face-to-face therapy sessions reported improvements in mental health [14]. Additionally, systematic reviews have shown that internet-based interventions significantly reduce anxiety and depression [15]. However, more advanced research is required concerning website use as a form of therapy.

Work engagement is defined as a positive, fulfilling, work-related state of mind characterized by absorption, vigor, and dedication [16]. According to Schaufeli et al., vigor is characterized by high levels of energy and mental resilience while working; dedication is a sense of significance, enthusiasm, and challenge; and absorption is characterized by being fully concentrated so that it is difficult to detach from work. Several studies have reported a positive relationship between work engagement and quality of life [17], well-being [18], and life satisfaction [19]. In addition, Silver et al. [20] found that work engagement was significantly associated with mindfulness. Another study revealed an indirect, positive effect of quality of work and work engagement on psychological well-being through job satisfaction, elucidating a pathway to overall happiness at work [21].

Quality of life refers to an individual's perception of their position in life, their culture, and the value systems in which they live. It also relates to their goals, expectations, standards, and concerns [22]. Quality of life can also be defined as the extent to which a person receives satisfaction from life [23]. Researchers have identified indicators of quality of life, such as physical, psychological, and social functioning (see [24]). Enhancing quality of life is a concern for those with chronic disease or developmental and other disabilities, those undergoing medical or psychological treatment, and the elderly. A study of 53 overweight or obese women (BMI \geq 25) enrolled in nutritional treatment for weight loss in primary care units and hospitals around Coimbra, Portugal, reported that mindfulness ability was significantly associated with quality of life [25].

Yet another study evaluated the effect of yoga, mindfulness-based cognitive therapy (the experimental group), and cognitive-behavioral therapy (the control group) on quality of life in a randomized, controlled trial on patients taking burnout-induced sick leave [26]. Eighty patients were enrolled in a blind randomized controlled trial. They were administered 20-week intervention programs (three hours per week, with homework four hours per week, for at least seven hours per week over five days). The intervention comprised basic information, group activities, and homework assignments. The results showed that enhanced emotional well-being before and after the homework assignments was associated with better quality of life after the program.

It was necessary to study and evaluate the sustainability of quality of life gained using an e-calendar as an intervention program because the results can be used to address informal mindfulness and work-engagement activities as the most effective way to improve quality of life. According to Querstret [8], "As awareness of the benefits of mindfulnessbased therapy increases, so does the need to improve access to these types of interventions" (p. 1825). This can be achieved by offering web-based intervention. Furthermore, this approach can reduce costs and decrease waitlist times because the participants can complete the activities at home or work and on their own time.

In the first step of this online intervention, a web-based program was developed. It comprised calendar-based activities to study informal mindfulness and work engagement

among university staff with obesity. In the second step, a quasi-experimental design was chosen over a randomized control trial to evaluate the use of the e-calendar, considering natural workplace settings. Hence, the objectives of this study were to examine changes in mean scores at four designated times and to evaluate the effectiveness of group treatment by comparing pretest and post-test scores and follow-ups. To that end, we developed four research questions:

- 1. Is mindfulness associate with work engagement?
- 2. Is mindfulness associate with quality of life?
- 3. Is work engagement associate with quality of life?
- 4. Are there changes in the quality of life at follow-up 2 for university staff with obesity who are practicing informal mindfulness?

2. Materials and Methods

2.1. Research Design

This study used an e-calendar intervention program to promote quality of life for university staff with obesity using informal mindfulness activities and work engagement. University staff were selected because they would have greater stress [27] and therefore increased exposure to incidents and chronic diseases such as diabetes, hypertension, and heart attack [28].

This study reported data for the quantitative e-calendar activity at pretest, post-test, and two follow-up stages. A quasi-experimental design was used, and the participants were subjected to the intervention for 36 weeks. The Consolidated Standards of Reporting Trials 2010 statement was used with extensions concerning randomized pilot and feasibility trials to create the research design and specify its conduct [29]. The study was conducted according to the guidelines specified by the Declaration of Helsinki. It was approved by the Institutional Review Board (or Ethics Committee) of Universiti Kebangsaan Malaysia (reference code UKM PPI.800-1/1/5/JEP-2019-391).

2.2. Sample Size and Statistical Analysis

The sample size was calculated to ensure comprehensive assessment. We used Barcikowski and Robey's formula [30] to determine the single-group repeated-measure design. The calculation showed that for a single-group repeated-measure study with a power set of 80%, an alpha of 0.05, effect size 0.35, and 3 repeated measures, a total sample size of 30 was required. Repeated ANOVAs were performed to evaluate the differences between the pretest, post-test, and follow-up assessments at 3 months and 6 months. The Greenhouse– Geisser correction was used to produce a valid F-ratio when the sphericity assumption was violated [31]. Effect sizes were calculated using partial eta square (η^2), and they were interpreted as follows: partial η^2 values of 0.01, 0.06, and 0.14 were designated small, medium, and large, respectively [32]. Post hoc analyses using the Bonferroni adjustment for multiple comparisons were used to explore pairwise differences (pretest-to-post-test, posttest-to-follow-up-1, and follow-up-1-to-follow-up 2). All the statistical tests were two-tailed. In this study, informal mindfulness activities and work engagement were independent variables (treatment), and quality of life was the dependent variable (outcome).

2.3. Recruitment and Selection

Purposive sampling was used to identify 538 participants (mean 43.4 years old, 64.9% female) from the academic and nonacademic staff at the Universiti Kebangsaan Malaysia (Selangor, Malaysia). These individuals were invited to undergo health screening (e.g., blood tests). The recruitment channels included telephone calls, email invitations, and digital posters around the university campus. Eligibility criteria required contract and permanent employees aged 18–60 years with two or more years of experience as active staff members before retiring as permanent employees. Maternity and sabbatical leave were the exclusion criteria. The description for this study can be found elsewhere [28].

Out of 538 people assessed to participate in the experimental study, only 238 people were eligible (Figure 1). The inclusion criteria required an age of 20–59 years and BMI \geq 25. The exclusion criteria were pregnancy due to body weight changes [33], use of weight loss pills or supplements that can influence weight, chronic illness, and use of medication that requires physician monitoring [34]. Of those 238, only 73 agreed to participate. Mean BMI was 31.7 (range 25.2–52.6) at pretest and 32.4 (range 25.2–52.1) at follow-up 2.



Figure 1. Study diagram.

2.4. Intervention

On 20 January 2020, participants were invited to attend a research workshop as an initial study session. They received information about the purpose of the study, signed the informed consent form, and received training on deep breathing, with full attention to their immediate experience and work engagement task. They were also encouraged to be more open and accepting of their own experiences. Subsequently, the participants filled out a questionnaire that recorded demographics and study variables. Their baseline measurements (i.e., BMI, weight, height) were also assessed. At the end of the study, the participants were invited to complete a set of questionnaires, and their weight and height were measured again.

The e-calendar was developed to assess the participants' mindfulness and work engagement (Table 1). Mindfulness comprised awareness, attention, trust, and acceptance, and work engagement involved vigor, dedication, and absorption. Message framing and motivational quotes were used to encourage participants to perform the assigned activities.

Торіс	Behavior
Mindfulness	
Awareness and attention	Mindful seeing, mindful eating, mindful walking, mindful exercise
Acceptance	Acceptance of thoughts and feelings of social anxiety and fear of COVID-19
Patience	Mindful listening and communicating
Trust	Mindful trusting of self and others
Openness	Mindful nonjudgmental attitude
Letting go	Naming negative emotions, mindful forgiving
Gentleness	Two or three positive messages to yourself, read repeatedly
Loving/kindness	Being empathetic
Work engagement	
Vigor	Being energetic and excited, feeling alive and activated
Dedication	Interested in tasks, inspiration
Absorption	The ability to become deeply involved in tasks

Table 1. Topics and practices related to mindfulness and work engagement.

The e-calendar intervention covered daily activities concerning mindfulness and work engagement for 36 weeks (see www.ukm.my/mymind, accessed on 23 December 2021). Activities were conducted in 3-to-5-min slots, 20 working days a month. The present situation was used to create these activities. For instance, during the COVID-19 pandemic, participants were advised to keep calm and stay at home, be active, engage in physical exercise, and think about the benefits of handwashing (Table 2). Motivational quotes were displayed on the website. Email soft reminders were sent to the participants daily at 9.00 a.m. and 3.00 p.m. WhatsApp groups were created to assist participants with technical problems and provide informational and emotional support, especially during the COVID-19 pandemic. Participants could also share their feelings and experiences about practicing mindfulness and work engagements.

Table 2. Examples of statement and practices.

Practice	Example
Mindful seeing	Be present. Spend time outside. Try to hear, feel, and see the conditions around you.
Mindful eating	Drink a cup of coffee or tea and enjoy its aroma.
Mindful walking	Make sure you walk 1000 steps today.
Mindful exercise	Activate yourself. While you are indoors, do light exercises, such as muscle stretching and aerobics.
Acceptance of thoughts and feelings of social anxiety and fear of COVID-19	Watch how you wash your hands. Think about the benefits of washing your hands.
Mindful listening and communicating	Rediscover your favorite music that can lift your spirits.
Mindful trusting and trust in yourself	Do not be afraid to try new things.
Mindful attitude of not judging	Immerse yourself in your feelings. Do not try to change them or punish yourself.
Naming negative emotions, mindful forgiving	Get rid of negative feelings about yourself.
Two or three positive messages to yourself, read repeatedly	Leave yourself positive messages so you can read them again and again.
Empathy	Help others when you need help.
Being "in the zone" or "in the groove"	Do something new or creative.
Concentration and focused attention, resisting distractions	Focus on efforts that lead to your own excellence.
Flexible working hours	Be willing to adapt to new environments.
Less worry about roles, expectations, and competition	When working, focus on the process of your work and not on the result.
Altered sense of time	No matter how busy you are, make time for yourself.
Vigor	At work, I feel bursting with energy.
Dedication	I am proud of the work that I do.
Absorption	I am fully engaged in my work.

2.5. Measures Used in This Study

The Malay version of the World Health Organization's Quality of Life questionnaire (WHOQOL-BREF) was used to measure the quality of life [35]. The 26-item measure has two global questions and four quality of life domains: physical health (7 items, e.g., 'How well are you able to get around?'), psychological (6 items, e.g., 'To what extent do you feel your life is meaningful?'), social relationships (3 items, e.g., 'How satisfied are you with the support you get from your friends?'), and environment (8 items, e.g., 'How satisfied are you with transport?'). Items are answered on a five-point scale, and domain scores range from 4 to 20, with high scores representing a higher QOL. The time frame for the assessment is the past 2 weeks. A higher score indicates a greater quality of life. The values of Cronbach's alpha showed that all domains had acceptable or good internal consistency: physical health

(0.89), psychological (0.82), social relationships (0.83), and environment (0.82). In this study, the quality-of-life ratings were assessed before the intervention (pretest), immediately after completing the final practice (post-test), at follow-up 1, and at follow-up 2.

The Mindful Attention Awareness Scale (MAAS) was used to measure mindfulness [36]. This scale has 15 items with responses on a six-point Likert scale to assess the core characteristic of mindfulness, namely, a receptive state of mind in which attention, informed by a sensitive awareness of what is occurring in the present, is directed at what is taking place. The items include "I could be experiencing some emotion and not be conscious of it until sometime later", "I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there", and "I find it difficult to stay focused on what's happening in the present". A higher score indicates greater attention and awareness. The value of Cronbach's alpha showed acceptable or good internal consistency (0.76).

Work engagement was measured using the Malay version of the Utrecht Work Engagement Scale (UWES-9) [37]. It measures three dimensions of work engagement: vigor (three items), dedication (three items), and absorption (three items) [37]. Persons scoring high on vigor report high energy, are willing to persist and invest effort in their work, and exhibit mental resilience while working. Persons scoring high on dedication are inspired by their work and see their work as important and a source of pride. Persons scoring high on absorption report being engrossed in their work, and they may find it difficult to detach from it [16]. All items are scored on a seven-point scale ranging from 0 (*never*) to 6 (*always*). The values of Cronbach's alpha showed that all domains had acceptable or good internal consistency: vigor (0.94), dedication (0.77), and absorption (0.83).

2.6. Rewards

Group intervention was administered using online surveys at pretest (week 0), posttest (week 12), follow-up 1 (week 24), and follow-up 2 (week 36) to assess the quality of life. The participants' demographics were collected at the pretest and the post-test surveys. Rewards were given only to participants who completed at least 48 activities (80%) in every 12-week period. Because of the COVID-19 crisis and measures to prevent disease, only monetary rewards could be given when participants completed their activities at weeks 12, 24, and 36. Thus, 10 participants received RM 150.00 for completing the daily activities for all 36 weeks. However, all participants received some reward at the end of the study.

3. Results

3.1. Attrition Rate

Attrition refers to a decrease in the number of participants engaged in a study. As expected, the attrition rate was relatively high (57.5%, n = 42) because of workload, pregnancy, medical surgery, and early retirement. Moreover, a few participants were quarantined at home or were hospitalized for several weeks because of COVID-19. The qualitative study to explore participant withdrawal or refusal to participate in this experimental study and other related factors are not reported here.

3.2. Descriptive Analysis

Table 3 lists the minimum and maximum scores, skewness, and kurtosis values for all domains at each time point. All scale scores including mindfulness and work engagement were normally distributed, with skewness and kurtosis values ranging from -0.36 to 1.96. West et al. [38] stated that skewness and kurtosis values should fall between -2 and 2 for data to be considered normally distributed.

Quality of Life Item	Minimum Score	Maximum Score	Skewness	Kurtosis
Pretest				
Domain 1: Physical health	11.43	20.00	0.35	0.25
Domain 2: Psychological	11.33	19.33	-0.17	0.23
Domain 3: Social relationships	10.67	18.67	-0.62	0.66
Domain 4: Environment	11.50	18.50	-0.04	-0.36
Post-test				
Domain 1: Physical health	9.71	20.00	0.08	0.21
Domain 2: Psychological	11.33	20.00	-0.11	-0.57
Domain 3: Social relationships	8.00	20.00	-0.68	1.14
Domain 4: Environment	11.50	20.00	-0.06	-0.31
Follow-up 1				
Domain 1: Physical health	9.71	16.00	-0.70	0.73
Domain 2: Psychological	8.67	18.00	-0.59	1.96
Domain 3: Social relationships	10.67	20.00	-0.26	-0.01
Domain 4: Environment	10.00	20.00	0.20	1.14
Follow-up 2				
Domain 1: Physical health	8.00	20.00	-0.26	0.42
Domain 2: Psychological	9.33	20.00	-0.15	0.74
Domain 3: Social relationships	9.33	20.00	-0.64	-0.06
Domain 4: Environment	10.50	20.00	-0.20	-0.30

Table 3. Minimum, maximum, skewness, and kurtosis distribution: pretest to follow-up 2.

3.3. Correlation Analyses

Tables 4–6 display the relationships of the variables at pretest, post-test, follow-up 1, and follow-up 2. Results showed that mindfulness at pretest was significantly associated with work engagement at follow-up 2. No associations were found between mindfulness at post-test and work engagement at follow-up 1 and follow-up 2. Mindfulness at follow-up 1 was significantly associated with work engagement at pretest, post-test, and follow-up 2. Mindfulness at follow-up 2. Mindfulness at follow-up 2 was significantly associated with work engagement at pretest.

Table 4. Relationships between mindfulness and work engagement at pretest, post-test, and follow-ups.

Mindfulness -	Work Engagement						
	Pretest (0)	Post-Test (12)	Follow-Up 1 (24)	Follow-Up 2 (36)			
Pretest (week 0)	0.473 **	0.265	0.191	0.454 *			
Post-test (12)	0.293	0.177	0.155	0.280			
Follow-up 1 (24)	0.575 **	0.462 **	0.370 *	0.483 **			
Follow-up 2 (36)	0.576 **	0.236	0.204	0.610 **			

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

Table 5. Relationships between mindfulness at pretest, post-test, and follow-ups on quality of life at follow-up 2.

	Quality of Life							
Mindfulness	Physical Health	Psychological	Social Relationships	Environment				
Pretest (week 0)	0.465 **	0.402 *	0.453 *	0.453 *				
Post-test (12)	0.524 **	0.447 *	0.341	0.394 *				
Follow-up 1 (24)	0.655 **	0.567 **	0.596 **	0.699 **				
Follow-up 2 (36)	0.710 **	0.583 **	0.685 **	0.660 **				

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

Further analysis was carried out to see the relationships between mindfulness and quality of life (Table 5). Results showed that mindfulness at pretest, follow-up 1, and follow-up 2 were significantly associated with physical health, psychological, social relationships, and environment at follow-up 2. Mindfulness at post-test was significantly associated with physical health and environment at follow-up 2.

Work Engagement	Quality of Life							
	Physical Health	Psychological	Social Relationships	Environment				
Pretest (week 0)	0.429 *	0.413 *	0.529 **	0.437 *				
Post-test (12)	0.348	0.440 *	0.408 *	0.488 **				
Follow-up 1 (24)	0.407 *	0.485 **	0.379 *	0.441 *				
Follow-up 2 (36)	0.488 **	0.528 **	0.524 **	0.494 **				

Table 6. Relationships between work engagement at pretest, post-test, and follow-ups on quality of life at follow-up 2.

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

Table 6 displays the relationships between work engagement and quality of life. Results showed that work engagement at pretest, follow-up 1, and follow-up 2 was significantly associated with all four domains of quality of life at follow-up 2. Work engagement at post-test was significantly associated with three domains of quality of life at follow-up 2.

Table 7 shows the mean scores for quality of life at the four main points (pretest, post-test, follow-up 1, follow-up 2). The repeated ANOVAs clearly showed a statistically significant pretest-to-post-test increase in the physical health domain (Wilks' lambda = 0.55, p < 0.001). Post hoc comparisons using the Bonferroni correction showed that the mean pretest score for the physical health domain (M = 15.00; SD = 2.07) was significantly different from the mean post-test score for the physical health domain (M = 15.13; SD = 2.77). However, there was a statistically significant decrease in physical health scores for follow-up 1 and follow-up 2 (Wilks' lambda = 0.75, p < 0.001).

Table 7. Pretest, post-test, and two follow-up scores for participants' quality of life (n = 31).

Measure of Quality of Life	Pretest		Post	Post-Test		Follow-Up 1		Follow-Up 2		Repeated Measures ANOVA		
	М	SD	М	SD	M	SD	M	SD	F	df	Sig.	η^2
Domain 1: Physical health	15.00	2.07	15.13	1.76	15.10	1.90	14.74	1.74	6.68	3	0.001	0.18
Domain 2: Psychological	15.35	2.33	15.74	2.31	16.09	2.77	15.66	2.11	5.44	3	0.002	0.15
Domain 3: Social relationships	13.79	1.54	14.37	1.86	15.52	2.32	15.52	2.13	1.81	3	0.150	0.06
Domain 4: Environment	15.01	2.82	15.42	2.51	15.74	2.78	15.72	2.39	3.23	3	0.026	0.10

There was a statistically significant pretest-to-post-test increase in the psychological domain (Wilks' lambda = 0.67, p < 0.001). Post hoc comparisons using the Bonferroni correction showed that the mean pretest psychological domain score (M = 15.35; SD = 2.33) was significantly different from the mean post-test psychological domain score (M = 15.74; SD = 2.31). Surprisingly, there was a post-test and follow-up-1 increase in the psychological domain, but it dropped at follow-up 2 (Wilks' lambda = 0.65, p < 0.001).

There was no significant increase in the pretest-to-post-test social relationships domain (Wilks' Lambda = 0.67, p = 0.150). Post hoc comparisons using the Bonferroni correction showed that the mean pretest social relationships domain score (M = 13.79; SD = 1.54) did not differ from the mean post-test social relationships domain score (M = 14.37; SD = 1.86). Results showed an increase at the post-test and follow-up 1 for the social relationships domain, which was maintained at follow-up 2 (Wilks' Lambda = 0.65, p < 0.001).

There was a statistically significant pretest-to-post-test increase in the environment domain (Wilks' lambda = 0.67, p < 0.001). Post hoc comparisons using the Bonferroni correction showed that the mean pretest environment domain score (M = 15.01; SD = 2.82) was significantly different from the mean post-test environment domain score (M = 15.42; SD = 2.51). Results also showed that the increase in the environment domain at the post-test and follow-up 1 was maintained at follow-up 2 (see Table 7 for details).

4. Discussion

To the best of the authors' knowledge, this is the first study in Malaysia that evaluates the use of an e-calendar and a web-based intervention program for university staff with obesity. The results showed that, as mindfulness practice increases, work engagement and quality of life increase as well. This suggests that university staff with high mindfulness may be able to concentrate their attention on current tasks and experience a higher level of work engagement even in times of crisis. This also suggests that mindfulness encourages employees to focus more on their tasks by improving their attention and awareness. During our study, almost all academic staff were working from home, and rotational work schedules were implemented for nonacademic staff. Bloom suggested that almost 51% of employees could maintain at least 80% efficiency when working from home [39]. These strategies may help academic and nonacademic staff pay attention and concentrate on their jobs, increasing and maintaining their quality of life. These findings also suggest that informal mindfulness may support work engagement by enhancing the quality of internal awareness [40].

As expected, no relationships were found between mindfulness and work engagement at post-test. These results showed that post-test data which were collected during the peak of the COVID-19 pandemic could not be used to predict work engagement because of the interference of various factors that may have interrupted the "focus on the present" task. Another possible reason is that the participants had no time to engage in informal mindfulness activities, particularly female participants when they needed to perform traditional duties as stay-at-home parents (e.g., household chores, monitoring children's online learning at home) [41]. In addition, a few participants were infected with COVID-19. These findings help us understand more about the relationships between mindfulness and work engagement, particularly in times of crisis.

Not surprisingly, the results showed there was a reduction in the scores for the physical health and environment domains at both follow-ups. Deterioration in physical health, for instance, can be explained in terms of the lack of outdoor physical activities in our e-calendar intervention program. In addition, the result can also be explained in terms of social restriction that could increase sedentary behavior and more time spent using screens, using mobile devices, and playing games, reducing physical activity and thus affecting the quality of life [42]. In line with Schneider et al. [43], we suggest that informal mindfulness activities might be more successful if interventions to improve physical health are added to the e-calendar. Moreover, it is impossible to increase the psychological quality of life in times of crisis (for further details, see [44]). Feeling anxious and afraid of COVID-19 is very likely to have a negative effect on mindfulness and attention.

Interestingly, the quality of life in the social relationships domain showed no change from pretest to post-test, and this was maintained through both follow-ups. This is in contrast with previous studies that showed that the quality of life at the peak of the COVID-19 pandemic was high [45]. Perhaps other factors influenced the quality of life during the COVID-19 pandemic, such as anxiety and fear [45]. The critical contribution of the quality-of-life approach in this context is that all its components focus on one sustainable goal: improving social relationships.

The quality of life in the environment domain showed a significant change from pretest to post-test and it was maintained through both follow-ups. This finding can be explained in terms of informal mindfulness practices to promote social sustainability at the organization in relation to work ethics, job performance, and interpersonal relationships with peers [46]. Mindfulness, for instance, may improve work ethic when mindful employees are aware, nonjudgmental, and less likely to be involved in unethical behavior [47]. Studies have shown that mindful employees are more competent in solving complex problems that require creative thinking and nonhabitual responses [48]. Pratscher et al. [49] suggested that mindfulness is a major element in nurturing interpersonal relationships with peers. All these may help to reduce stress and encourage more work engagement.

4.1. Limitations

This study has several limitations. First, there were exclusion criteria such as employees with BMI > 25 and pregnancy, limiting the generalizability of the findings. Second, the lack of a control group limits our ability to make a comparison between groups. Third, the e-calendar is a brief intervention program that adapted versions of other e-calendar programs; it is yet to be validated. Fourth, there might be recall bias regarding the post-test and follow-up stages, combined with social desirability bias. Fifth, the sample size is small, so all the results should be interpreted with caution. Finally, no data was collected on assessments after the intervention, so any on-going benefit or harm is unknown.

4.2. Implications of the Study

This study has several implications for exploring the quality of life through informal mindfulness activities and work engagement. First, it extends previous research on the effects of informal mindfulness practice on quality of life by providing the first evidence of using an e-calendar to promote mindfulness in daily life. Second, this study may be useful for improving the physical health, psychological, and the environment aspects of quality of life among university staff with obesity.

5. Conclusions

This study suggests that employing informal mindfulness using an e-calendar might enhance the quality of life of workers. This result clarified the possibility of using the e-calendar in daily life, either at home or in the workplace. A mindful lifestyle can be practiced continuously so that quality of life can be improved. The brief and straightforward activities offered by the e-calendar helped the participants improve their awareness and attention. At the same time, benefits were manifested through better quality of life during the pandemic crisis. This e-calendar can be used as another method to enhance the quality of life among Malaysian academic institutions, and it should be made widely available to university staff, as quality of life is a priority.

Author Contributions: Conceptualization, N.B.A.K. and M.R.A.M.; methodology, N.B.A.K. and M.R.A.M.; validation, R.H., M.R.A.M. and W.N.K.I.; formal analysis, N.B.A.K., R.H. and W.N.K.I.; investigation, S.M.H., A.C.K. and S.J.A.J.; resources, N.B.A.K. and M.R.A.M.; writing—original draft preparation, N.B.A.K.; writing—review and editing, M.R.A.M., R.H., N.-A.A., S.M.H., S.J.A.J. and A.C.K.; supervision, N.B.A.K., S.M.H. and R.H. All authors have read and agreed to the published version of the manuscript.

Funding: Centre of IDEA-UKM, Universiti Kebangsaan Malaysia, grant number DCP-2018-005/2. The APC was funded by Universiti Kebangsaan Malaysia.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of UNIVER-SITI KEBANGSAAN MALAYSIA (reference code: UKM PPI.800-1/1/5/JEP-2019-391 and date of approval: 1 July 2019).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: MDPI Research Data Policies at https://www.mdpi.com/ethics (accessed on 23 December 2021).

Acknowledgments: We thank all participants for their commitment and contributions to this intervention program.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Amal, N.M.; Paramesarvathy, R.; Tee, G.H.; Gurpreet, K.; Karuthan, C. Prevalence of chronic illness and health seeking behaviour in Malaysian population: Results from the Third National Health Morbidity Survey (NHMS III) 2006. *Med. J. Malays.* 2011, 66, 36–41.
- Ismail, H.; Omar, M.A.; Saminathan, T.A.; Muhammad Yusof, M.F.; Mohd Zaki, N.A.; Lim, K.K. Prevalence of Undiagnosed Type 2 Diabetes Mellitus and Its Associated Factors Among the Malaysian Population: The 2015 National Health and Morbidity Survey, Malaysia. *Glob. J. Health Sci.* 2018, 10, 153. [CrossRef]
- 3. Hill, J.O.; Thompson, H.; Wyatt, H. Weight maintenance: What's missing? J. Am. Diet. Assoc. 2005, 105, 63–66. [CrossRef]

- 4. Greeson, J.M. Mindfulness research update: 2008. Complement. Health Pract. Rev. 2009, 14, 10–18. [CrossRef]
- Kabat-Zinn, J. Mindfulness-based interventions in context: Past, present, and future. *Clin. Psychol. Sci. Pract.* 2003, 10, 144–156. [CrossRef]
- Fendel, J.C.; Aeschbach, V.M.; Göritz, A.S.; Schmidt, S.A. Mindfulness program to improve resident physicians' personal and work-related well-being: A feasibility study. *Mindfulness* 2020, 11, 1511–1519. [CrossRef]
- Kappen, G.; Karremans, J.C.; Burk, W.J. Effects of a short online mindfulness intervention on relationship satisfaction and partner acceptance: The moderating role of trait mindfulness. *Mindfulness* 2019, 10, 2186–2199. [CrossRef]
- 8. Querstret, D.; Cropley, M.; Fife-Schaw, C. The effects of an online mindfulness intervention on perceived stress, depression and anxiety in a non-clinical sample: A randomised waitlist control trial. *Mindfulness* **2018**, *9*, 1825–1836. [CrossRef]
- Freudenthaler, L.; Turba, J.D.; Tran, U.S. Emotion regulation mediates the associations of mindfulness on symptoms of depression and anxiety in the general population. *Mindfulness* 2017, *8*, 1339–1344. [CrossRef]
- Vonderlin, R.; Biermann, M.; Bohus, M.; Lyssenko, L. Mindfulness-based programs in the workplace: A meta-analysis of randomised controlled trials. *Mindfulness* 2020, 11, 1579–1598. [CrossRef]
- Mantzios, M.; Egan, H.; Hussain, M.; Keyte, R.; Bahia, H. Mindfulness, self-compassion, and mindful eating in relation to fat and sugar consumption: An exploratory investigation. *Eat. Weight Disord. Stud. Anorex. Bulim. Obes.* 2018, 23, 833–840. [CrossRef]
- Athanas, A.; McCorrison, J.; Campistron, J.; Bender, N.; Price, J.; Smalley, S.; Schork, N.J. Characterising emotional state transitions during prolonged use of a mindfulness and meditation app: Observational study. *JMIR Ment. Health* 2021, 8, e19832. [CrossRef]
- Bailey, N.W.; Nguyen, J.; Bialylew, E.; Corin, S.E.; Gilbertson, T.; Chambers, R.; Fitzgerald, P.B. Effect on well-being from an online mindfulness intervention: "Mindful in May". *Mindfulness* 2018, *9*, 1637–1647. [CrossRef]
- 14. Krusche, A.; Cyhlarova, E.; Williams, J.M.G. Mindfulness online: An evaluation of the feasibility of a web-based mindfulness course for stress, anxiety and depression. *BMJ Open* **2013**, *3*, e003498. [CrossRef]
- Sevilla-Llewellyn-Jones, J.; Santesteban-Echarri, O.; Pryor, I.; McGorry, P.; Alvarez-Jimenez, M. Web-based mindfulness interventions for mental health treatment: Systematic review and meta-analysis. *JMIR Ment. Health* 2018, *5*, e10278. [CrossRef]
- 16. Schaufeli, W.B.; Bakker, A.B.; Salanova, M. The measurement of work engagement with a short questionnaire: A cross-national study. *Educ. Psychol. Meas.* **2006**, *66*, 701–716. [CrossRef]
- Wardani, L.M.I.; Anwar, M.S. The role of quality of work life as mediator: Psychological capital and work engagement. *Humanit.* Soc. Sci. Rev. 2019, 7, 447–463.
- Rusu, P.P.; Colomeischi, A.A. Positivity ratio and well-being among teachers. The mediating role of work engagement. *Front. Psychol.* 2020, 11, 1608. [CrossRef]
- 19. Liu, T.; Zeng, X.; Chen, M.; Lan, T. The harder you work, the higher your satisfaction with life? The influence of police work engagement on life satisfaction: A moderated mediation model. *Front. Psychol.* **2019**, *10*, 826. [CrossRef]
- Silver, J.; Caleshu, C.; Casson-Parkin, S.; Ormond, K. Mindfulness among genetic counselors is associated with increased empathy and work engagement and decreased burnout and compassion fatigue. J. Genet. Couns. 2018, 27, 1175–1186. [CrossRef]
- Niadianti, E.; Sunaryo, H.; Asiyah, S. Mediation role of job satisfaction on the effect of quality of work life and work engagement on psychological well-being: Case study on start up companies in Malang. *Bp. Int. Res. Crit. Inst. BIRCI J. Humanit. Soc. Sci.* 2021, 4, 8961–8970.
- 22. World Health Organization. Available online: https://www.who.int/tools/whoqol (accessed on 5 October 2021).
- 23. Kolotkin, R.L.; Andersen, J.R. A systematic review of reviews: Exploring the relationship between obesity, weight loss and health-related quality of life. *Clin. Obes.* 2017, *7*, 273–289. [CrossRef]
- Palmeira, L.; Cunha, M.; Pinto-Gouveia, J. Processes of change in quality of life, weight self-stigma, body mass index and emotional eating after an acceptance-, mindfulness-and compassion-based group intervention (Kg-Free) for women with overweight and obesity. J. Health Psychol. 2019, 24, 1056–1069. [CrossRef]
- 25. Chiesa, A.; Malinowski, P. Mindfulness-based approaches: Are they all the same? J. Clin. Psychol. 2011, 67, 404–424. [CrossRef]
- 26. Grensman, A.; Acharya, B.D.; Wändell, P.; Nilsson, G.H.; Falkenberg, T.; Sundin, Ö.; Werner, S. Effect of traditional yoga, mindfulness–based cognitive therapy, and cognitive behavioural therapy, on health-related quality of life: A randomised controlled trial on patients on sick leave because of burnout. *BMC Complement. Altern. Med.* **2018**, *18*, 80. [CrossRef]
- Manaf, M.R.A.; Shaharuddin, M.A.A.; Nawi, A.M.; Tauhid, N.M.; Othman, H.; Rahman, M.R.A.; Yusoff, H.M.; Safian, N.; Ng, P.Y.; Manaf, Z.A.; et al. Perceived symptoms of depression, anxiety and stress amongst staff in a Malaysian public university: A worker survey. *Int. J. Environ. Res. Public Health* 2021, 18, 11874. [CrossRef]
- 28. Eldridge, S.M.; Chan, C.L.; Campbell, M.J.; Bond, C.M.; Hopewell, S.; Thabane, L.; Lancaster, G.A. CONSORT 2010 statement: Extension to randomised pilot and feasibility trials. *Br. Med. J.* **2016**, *355*, i5239. [CrossRef]
- 29. Barcikowski, R.S.; Robey, R.R. Sample size selection in single group repeated measures analysis. In Proceedings of the 69th Paper
- Presented at the Annual Meeting of the American Educational Research Association, Chicago, IL, USA, 31 March–4 April 1985.
- 30. Field, A.P. Discovering Statistics Using IBM SPSS Statistics, 5th ed.; SAGE Publications: Thousand Oaks, CA, USA, 2018.
- 31. Tabanick, B.G.; Fidell, L.S. Using Multivariate Statistics; Pearson: London, UK, 2018.
- Manaf, M.R.A.; Nawi, A.M.; Tauhid, N.M.; Othman, H.; Rahman, M.R.A.; Yusoff, H.M.; Ng, P.Y.; Manaf, Z.A.; Kadir, N.B.A.K.; Yanasegaeran, K.; et al. Prevalence of metabolic syndrome and its associated risk factors among staffs in a Malaysian public university. Sci. Rep. 2021, 11, 8132. [CrossRef]

- Nartea, R.; Mitoiu, B.I.; Nica, A.S. Correlation between pregnancy related weight gain, postpartum weight loss and obesity: A prospective study. J. Med. Life 2019, 12, 178–183.
- 34. Schroeder, R.; Garrison Jr, J.M.; Johnson, M.S. Treatment of adult obesity with bariatric surgery. Am. Fam. Phys. 2011, 84, 805–814.
- Cheung, Y.B.; Yeo, K.K.; Chong, K.J.; Khoo, E.Y.; Wee, H.L. Reliability and validity of the English, Chinese-and Malay-language versions of the World Health Organization quality of life (WHOQOL-BREF) questionnaire in Singapore. *Ann. Acad. Med.* 2017, 46, 461–469.
- 36. Zainal, N.Z.; Nor-Aziyan, Y.; Subramaniam, P. Psychometric properties of the Malay-translated Mindfulness, Attention and Awareness Scale (MAAS) in a group of nursing students in Malaysia. *Malays. J. Psychiatry* **2015**, *24*, MJP–01–04–15.
- Yew, T.S.; Sidek, M.Y.; Jalil, R.A.; Arifin, W.N. Confirmatory factor analysis of the Malay version of Utrecht Work Engagement Scale (UWES-M). Int. J. Public Health Clin. Sci. 2017, 4, 77–86.
- 38. West, S.G.; Finch, J.F.; Curran, P.J. Structural equation models with nonnormal variables. In *Structural Equation Modeling: Concepts, Issues, and Applications*; Hoyle, R.H., Ed.; Sage: Thousand Oaks, CA, USA, 1995; pp. 56–75.
- Bloom, N. How working from home works out. *Stanf. Inst. Econ. Policy Res.* 2020, 1–8. Available online: https://api.includere.co/ uploads/Stanford%20Research-How%20working%20from%20home%20works%20out%20-%20June%202020.pdf (accessed on 5 October 2021).
- 40. Wenham, C.; Smith, J.; Davies, S.E.; Feng, H.; Grépin, K.A.; Harman, S.; Herten-Crabb, A.; Morgan, R. Women are most affected by pandemics—lessons from past outbreaks. *Nature* **2020**, *583*, 194–198. [CrossRef]
- 41. Brown, K.W.; Ryan, R.M. The benefits of being present: Mindfulness and its role in psychological well-being. *J. Personal. Soc. Psychol.* 2003, *84*, 822–848. [CrossRef]
- 42. Dominski, F.H.; Brandt, R. Do the benefits of exercise in indoor and outdoor environments during the COVID-19 pandemic outweigh the risks of infection? *Sport Sci. Health* **2020**, *16*, 583–588. [CrossRef]
- Schneider, J.; Malinowski, P.; Watson, P.M.; Lattimore, P. The role of mindfulness in physical activity: A systematic review. *Obes. Rev.* 2019, 20, 448–463. [CrossRef]
- 44. Al Dhaheri, A.S.; Bataineh, M.A.F.; Mohamad, M.N.; Ajab, A.; Al Marzouqi, A.; Jarrar, A.H.; Habib-Mourad, C.; Abu Jamous, D.O.; Ali, H.I.; Hasan, H.; et al. Impact of COVID-19 on mental health and quality of life: Is there any effect? A cross-sectional study of the MENA region. *PLoS ONE* 2021, *16*, e0249107. [CrossRef]
- 45. Petrovič, F.; Murgaš, F.; Králik, R. Happiness in Czechia during the COVID-19 Pandemic. Sustainability 2021, 13, 10826. [CrossRef]
- 46. Dhandra, T.K.; Park, H.J. Mindfulness and gender differences in ethical beliefs. Soc. Responsib. J. 2018, 14, 274–286. [CrossRef]
- 47. Wan, M.; Zivnuska, S.; Valle, M. Examining mindfulness and its relationship to unethical behaviors. *Manag. Res. Rev.* 2020, 43, 1477–1497. [CrossRef]
- 48. Sajjad, A.; Shahbaz, W. Mindfulness and social sustainability: An integrative review. Soc. Indic. Res. 2020, 150, 73–94. [CrossRef]
- 49. Pratscher, S.D.; Rose, A.J.; Markovitz, L.; Bettencourt, A. Interpersonal mindfulness: Investigating mindfulness in interpersonal interactions, co-rumination, and friendship quality. *Mindfulness* **2018**, *9*, 1206–1215. [CrossRef]