HEALTH AND ADDICTIONS/SALUD Y DROGAS
ISSN 1578-5319 - ISSNe 1988-205X

Vol. 24. Núm. 2, 9-26 2024
DOI:https://doi.org/10.21134/738
RECIBIDO: 18/01/2022 ACEPTADO: 03/05/2024

A MULTICOMPONENT NURSING INTERVENTION TO STOP SMOKING INCORPORATING MINDFULNESS AND BRIEF ADVICE

UNA INTERVENCIÓN MULTICOMPONENTE DE ENFERMERÍA PARA DEJAR DE FUMAR: ATENCIÓN PLENA Y CONSEJO BREVE

Diana Aracely Almaraz Castruita
diana.almaraz09@hotmail.com
Centro de Investigación y Desarrollo en Ciencias de la Salud, UANL
http://orcid.org/0000-0001-7860-9594

Marcos Arnoldo Tellez Ramos
marcos.tellezr@gmail.com
Facultad de Psicología, UANL
https://orcid.org/0000-0002-1619-0449

Maria Magdalena Alonso Castilo
magdalenalonso@hotmail.com
Facultad de Enfermería, UANL
https://orcid.org/0000-0002-7197-8116

Arnoldo Tellez Lopez
atellez50@hotmail.com
Facultad de Psicología, UANL
https://orcid.org/0000-0002-2338-3062

Karla Selene López García
kslg2001@hotmail.com
Facultad de Enfermería, UANL
https://orcid.org/0000-0002-9462-7140

Teresa de Jesus Sánchez Jauregui
tesa.64@hotmail.com
https://orcid.org/0000-0002-4159-2562

Pedro Arturo Valdez Tamez
tbe.valdez@gmail.com
Centro de Investigación y Desarrollo en Ciencias de la Salud, UANL
https://orcid.org/0000-0002-0889-8455

Como citar: Almaraz, D.A., Tellez, M.A., Alonso, M.M., Tellez, A., López, K.S., Sánchez, T.J. y Valdez, P.A. (2024). A Multicomponent Nursing Intervention to Stop Smoking Incorporating Mindfulness and Brief Advice. *Health and Addictions / Salud y Drogas, 24*(2), 9-26. https://doi.org/10.21134/738

Abstract

Introduction. This study aimed to assess the effectiveness of a multicomponent nursing intervention using mindfulness and brief advice for the reduction of tobacco use, anxiety, stress, depressive symptoms, and the improvement of self-efficacy. **Method.** This was a quasi-experimental study with 41 participants, and the treatment consisted of an intervention composed of two strategies: the protocol "Programa de Intervención Breve para Adolescentes que Inician el Consumo de Alcohol y otras Drogas" for the brief advice" while the Mindfulness Based Cognitive Therapy program was used for mindfulness. The intervention lasted 10 weekly sessions; participants received phone calls and were given an audio CD to perform the mindfulness practices at home and a work manual to conduct self-records of consumption as well as guidance from reinforcement to help maintain motivation to behavior change. **Results.** The results show that these interventions were effective tools to reduce nicotine dependence (p=.001, d=1.14), the number of cigarettes smoked (p=.001, d=1.60), levels of cotinine in urine (p=.001), stress (p=.001, d=1.42), anxiety (p=.001, d=.90), and depressive symptoms (p=.001, d=.81), and increase self-efficacy (p=.001, d=1.48). **Conclusions**. The findings show that a multicomponent nursing intervention incorporating brief advice and mindfulness can be an effective treatment for people wishing to reduce or cease tobacco consumption.

Keywords

Mindfulness; Brief advice; Smoking cessation; Tobacco addiction; Self-efficacy

Resumen

Introducción. Este estudio tuvo como objetivo evaluar la efectividad de una intervención multicomponente de enfermería utilizando atención plena y consejo breve para la reducción del consumo de tabaco, la ansiedad, el estrés, los síntomas depresivos y la mejora de la autoeficacia. **Método.** El diseño fue cuasiexperimental con 41 participantes, y el tratamiento consistió en una intervención compuesta por dos estrategias: el protocolo "Programa de Intervención Breve para Adolescentes que Inician Consumo de Alcohol y otras Drogas" para el consejo breve, mientras que el programa de Terapia Cognitiva Basada en Mindfulness se utilizó para la atención plena. La intervención tuvo una duración de 10 sesiones semanales con una duración de aproximada de entre 60 y 90 minutos. Los participantes recibieron llamadas telefónicas, y se les entregó un CD de audio para realizar las prácticas de atención plena en casa y un manual de trabajo para realizar auto registros de consumo, así como orientación para ayudar a mantener la motivación al cambio de comportamiento. **Resultados.** Los resultados muestran que estas intervenciones fueron herramientas efectivas para reducir la dependencia a la nicotina (p=.001, d=1.14), el número de cigarrillos fumados (p=.001, d=1.60), los niveles de cotinina en orina (p=.001), el estrés (p=.001, d=1.42), la ansiedad (p=.001, d=.90) y los síntomas depresivos (p=.001, d=.81), y aumentar la autoeficacia (p=.001, d=1.48). **Conclusión.** Los hallazgos muestran que una intervención de enfermería multicomponente que incorpore consejo breve y atención plena puede ser un tratamiento eficaz para las personas que desean reducir o dejar de consumir tabaco.

Palabras clave

Atención plena; Consejo breve; Dejar de fumar; Tabaquismo; Autoeficacia

1. Introduction

Tobacco consumption is the main preventable risk factor for the four main groups of non-communicable diseases (cardiovascular diseases, chronic respiratory diseases, cancer, and diabetes). For this reason, it represents one of the greatest threats to public health that the world has had to face, since currently, its consumption causes more than eight million deaths every year, 1.2 million of which correspond to non-smokers who breathe second-hand smoke (passive smoking) (World Health Organization [WHO], 2022).

According to WHO estimates, mortality attributable to tobacco consumption in the Americas represents 16% of deaths from cardiovascular diseases, 25% from cancer and more than half (46%) from chronic respiratory diseases. Tobacco, either by its consumption or by passive exposure to smoke, kills more than one million people in this region of the world annually. Approximately 80% of the more than one billion smokers in the world live in low or middle-income countries, where the burden of morbidity and mortality associated with tobacco is higher. Therefore, diseases related to tobacco and premature mortality also generate direct pressure on health systems, especially in these countries (Pan American Health Organization [PAHO], 2022).

Tobacco use is an important risk factor for cancer such as lung, oral cavity, larynx, cervix, kidney, and stomach cancer, in addition to coronary heart disease, stroke, and peripheral vascular disease (Centers for Disease Control and Prevention, 2022). Tobacco users who die prematurely deprive their families of income, increase the cost of health care, and hinder economic development (WHO, 2022). Regarding tobacco consumption, there are different reinforcers maintaining this behavior. Lira et al (2020) mentions that consumption depends on situational behaviors, management of affect when smoking, smoking as a measure to modulate cortical activation (stress management), motivation to smoke due to pharmacological or non-pharmacological rewards (the euphoric, sedative, and stimulant effects of nicotine, as well as the powerful urge to relieve cravings caused by abstinence in cases where there is already physiological dependence), and motivation to consume from a cognitive-behavioral perspective, which encompasses consumption expectations. Therefore, most smokers do not smoke because they want to, but because they cannot stop easily.

On the other hand, some authors (Bennasar-Veny et al., 2011; Cayla et al., 2018; Duarte et al., 2012; Yach, 2020) mention that one of the characteristic effects of nicotine dependence is repeated use of smoking to manage stress and emotional disorders. When quitting smoking, smokers reexperience these symptoms of subjective withdrawal, such as depression, tension, irritability, restlessness, intense desire, and concentration issues. Therefore, if adequate therapeutic management of these symptoms is not carried out, people develop a strong dependence on tobacco and may require several attempts and multiple treatments in the long term to achieve lasting abstinence (Domínguez & Pérez, 2014; Mathew et al., 2020; Sadasivam & Chellappa, 2022).

According to the Substance Abuse and Mental Health Services Administration (2020), the evidence of symptoms of withdrawal and craving as perpetuators of smoking, along with the low effectiveness of current treatments, highlight the need to propose innovative treatments to stop smoking. Interventions like brief advice, reinforcement of resistance self-efficacy, orientation materials, relaxation-concentration therapy, and self-monitoring, have been shown to be relatively successful. Organizations such as the WHO and the International Council of Nurses (ICN) in the Framework for Tobacco Control, encourage health professionals, especially nurses, to promote and implement new interventions for the cessation of tobacco use, given the influence these professionals have in the field of health promoting lifestyles (Consejo Internacional de Enfermería, 2018). Moreover, in the context of cognitive behavioral interventions used by nurses in recent decades, there have been developments in mindfulness training, which include the programs Mindfulness-Based Cognitive Therapy by Segal et al., (2007) and Mindfulness-Based Stress Reduction (MBSR) by Kabat-Zinn (2007) both of which are used in numerous programs for health promotion (Bodenlos et al., 2013; Chiesa & Serretti, 2014).

Mindfulness can be understood as attention and full awareness focusing on the present moment, in an active and reflective way (Vallejo, 2019), highlighting a focus on experiences that are being lived in the present moment, intentionally, and accepting them without judgement (Kabat-Zinn, 1990). Besides its use as a physiological and emotional control technique, several studies showed that mindfulness interventions help increase attention, subjective well-being, empathy, and hope in patients with cancer, mental health disorders, and postoperative complications, among others (Vonderlin et al., 2020). It has also shown effectiveness in reducing stress, anxiety, and depression in healthy and sick people (Arch et al., 2013; Breedvelt et al., 2019; Chi et al., 2018; Chiesa & Serretti, 2014).

In the same way, mindfulness has been used as a successful treatment of addictive behaviors such as alcohol, marijuana, and tobacco consumption (Chiesa & Serretti, 2014; Davis et al., 2015; De Souza et al., 2015; Garland & Howard, 2018). However, different authors recommend continuing to use this intervention in different modalities and using additional motivational and support components to increase success rates (Brewer et al., 2019; De Dios et al., 2014; Mermelstein & Garske, 2015). Based on the above, the present study aimed to assess the effectiveness of a multicomponent nursing intervention using mindfulness and brief advice to reduce tobacco use, anxiety, stress, and depressive symptoms, and to improve self-efficacy in adults aged 18 to 59 years old.

2. Method

2.1. Study design

The present study was quasi-experimental, and two measurements were made in a single group: pre-test and post-test.

2.2. Participants

The final sample consisted of 41 adults (see figure 1) of both genders aged 18 to 59 years, recruited through social media networks and flyers placed at strategic points in three university areas of Nuevo León state, Mexico. The sample size was determined with the statistical package nQuery Advisor® 7.0, using a level of significance of .05, statistical power of 90%, and an effect size of 0.5 and greater, in accordance with Cohen's guidelines; a dropout rate of 5% was assumed.

The inclusion criteria used were adults (age range 18 to 59 years), smokers with the intention of quitting or reducing their consumption of cigarettes on a typical day, and who were in the contemplation or preparation stage. The change stage of the participants was identified using the University of Rhode Island Change Assesment (URICA; DiClemente et al., 1991).

Participants who did not complete the intervention, with a medical diagnosis of mental disorder, currently participating in a program to stop smoking and/or consuming another illicit psychoactive substance were excluded.

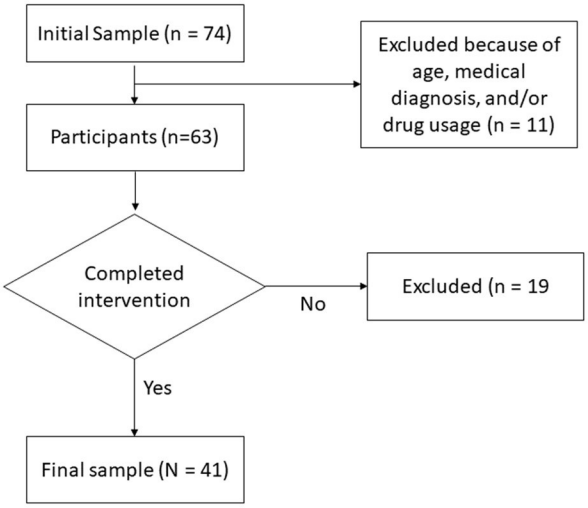

Figure 1. Sampling flowchart

2.3. Instrumentation

Six scales, a sociodemographic and tobacco consumption data card, a history of smoking and unsuccessful attempts to quit, and the Timeline follow-back were included, as well as two measurements of urinary levels of cotinine.

Fagerstrom Test for Nicotine Dependence

The objective of this instrument is to measure nicotine dependence related to cigarette consumption through six questions. This instrument has shown an internal consistency of 0.55 to 0.74, and a reliability test-retest of 0.58 to 0.91 (Meneses et al., 2009), and the present study showed an internal consistency of .61.

Depression Anxiety Stress Scale-21 (DASS-21).

This scale is intended to measure the severity and alteration of symptoms of depression, anxiety, and stress. This instrument was validated in the Mexican population by Gurrola et al (2006), with a Cronbach's alpha of .86 for the whole scale and 46.6% of variance explained for the instrument. For the present study, this scale obtained an internal consistency of .90.

Situational Confidence Questionnaire (SCQ-39) (Marlatt & Gordon, 1985).

The objective of this questionnaire is to measure the concept of self-efficacy, in relation to one's perception of one's ability to effectively cope with one's main consumption situations, through 39 items. A Spanish version of this tool was adapted for the Mexican population by Ayala et al (1997), who obtained an internal consistency of 0.97. In the present study, this scale had an internal consistency of .95.

Timeline Follow-back (Sobell & Sobell, 1996). This aims to help consumers of psychoactive substances who initiate a treatment to remember their pattern of consumption. Using this method, it is possible to obtain accurate records of consumption, before and after treatment. Several psychometric studies have shown this to be an adequate measuring instrument with alpha ranging from .76 to .89 in the Mexican population.

Patient Global Impression of Change (PGIC) (Guy, 1976).

This scale aims to measure participants' perception of the benefits of receiving an intervention. The participant is asked to rate the degree of change in their general state from the beginning of the intervention on two items with a seven-point scale. The responses in the PGIC have been used to determine the clinical importance of an intervention in diverse populations and symptoms (Hudson et al., 2009).

Urine Cotinine Levels.

Two measurements of participants' cotinine levels in urine were made, before and after applying the intervention. This measurement is a biomarker that quantifies exposure to the components of tobacco smoke. This test is based on qualitative detection of highly specific immunochemical reactions of antigens and antibodies. It is a simple and convenient test for detection of cotinine in human urine at concentrations of 200 ng / ml.

2.4. Procedure

Participants received an intervention composed by two full protocols: the "Programa de Intervención Breve para Adolescentes que Inician el Consumo de Alcohol y otras Drogas" (Martínez et al., 2005) and the Mindfulness Based Cognitive Therapy program by Segal et al (2007). The intervention was performed individually, and scheduled on a weekly frequency, through 10 weeks with a duration of approximately 60 to 90 minutes. The sessions were performed in a private area, within the Center for Research and Development in Health Sciences, of the Autonomous University of Nuevo León (Table 1). Participants also received weekly phone calls to resolve their doubts about mindfulness practices and were reminded of their weekly goal of reduction of consumption and the next appointment. Additionally, they were given an audio CD to perform the mindfulness practices at home and a work manual containing consumer self-records as well as reinforcement guidelines to help maintain the motivation to change behavior. The intervention was developed and implemented by nursing professionals following a protocol previously published in a feasibility study (Castruita et al., 2018).

Table 1. *Description of sessions*

N° Session	Brief advice	Mindfulness
1	Initial measurement; Motivational interview; The general form of work was addressed; CD delivery of mindfulness practices to be carried out at home, as well as a work manual to keep self-registrations and reinforcement guidelines.	
2	LIBARE review; Psychoeducation on thought patterns that caused negative mood states.	Mindfulness exercise: body scan and raisins exercise.
3	LIBARE review; Review of practices and tasks at home; Psychoeducation on the health consequences and benefits of tobacco consumption/quitting.	Exercise of thoughts and feelings; Mindfulness exercise: sitting meditation.
4	LIBARE review; Review of practices and tasks at home; Establishment of reduction goal; Psychoeducation: strategies for non-consumption and avoidance of consumption (negative moods).	Mindfulness Exercise: Listening Meditation, 3-Minute Breathing Space Exercise (ER3M), Mindful Stretching.
5	LIBARE review; Review of practices and tasks at home; Establishment of weekly reduction goal; Inquiry about the current perception of the participant about his consumption and strategies that he would have to use to continue with the advances.	Mindfulness exercise: meditation on sounds and thoughts.
6	LIBARE review; Review of practices and tasks at home; Re-establishment of reduction goal; Work on the interactional pattern of the problem	Mindfulness exercise: meditate on difficulty, ER3M exercise.

7	LIBARE review; Review of practices and tasks at home; Re-establishment of reduction goal; Exercise of advantages and disadvantages of the change.	Mindfulness exercise: meditate on difficulty, ER3M exercise.
8	LIBARE review; Review of practices and tasks at home; Re-establishment of reduction goal.	Mindfulness Exercise: ER3M
9	LIBARE review; Review of practices and tasks at home; Verification of goal compliance; Relapse prevention.	Mindfulness exercise: body scan, retrospective look at the start and end of therapy.
10	Final measurement	

2.5. Statistical Analysis

The statistical data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 21.0 for Windows. Frequencies, percentages, measures of central tendency, and of dispersion were obtained. A distribution analysis of the continuous variables was performed with the Kolmogorov-Smirnov normality test with the Lilliefors correction, and based on the results obtained it was decided to use non-parametric statistics. The Wilcoxon test was used to obtain the differences between the initial and final measurements of the variables in the study, and the Sign Test was used to compare the results of the initial and final urine cotinine level tests.

Additionally, and following the recommendations of the Publications Manual of the American Psychological Association (APA, 2020) and Téllez et al (2015), effect sizes (ES) and confidence intervals (CI) were calculated, in addition to the tests of statistical significance. The cut-off points recommended by Cohen (1992) were used for the effect size: d = 0 -.19 trivial effect, d = .20 -.49 small effect (1/5 of an SD); d = .50 -.79 medium effect (1/2 of a SD), d = .80 large effect (8/10 of a SD), and d = ≥1.10 very large effect. We consider an effect size higher than d = 0.5 as a clinically significant effect (Norman et al., 2003).

2.6. Ethical Considerations

The present study adhered to the provisions of the Regulation of the General Health Law on Health Research (Secretaría de Salud, 1987). Approval for the study was granted by the Commissions of Ethics in Research and Biosafety of the Nursing School with the protocol number FAEN-108. Additionally, participants signed an informed consent that contains: the purpose of the study, the safekeeping of confidential information, privacy and the right to leave the study.

3. Results

Sociodemographic Data

Regarding sociodemographic data, the sample was predominantly male (67.5%), 52.5% worked without another additional activity, 65% had a couple, and 60% indicated that they did not profess any religion (Table 2). The mean age was 31.2 (*SD* = 11.6), and the average age of onset of tobacco use was 14.6 years (*SD* = 2.0). The participants reported a mean of 16.6 (*SD* = 10.8) cigarettes smoked daily, and at the end of the intervention the participants reported an average daily consumption of 1.8 (*SD* = 2.2) cigarettes. Additionally, they reported an average of 2.3 (*SD* = 1.8) failed attempts to quit smoking without success, with a mean of 68.8 (*SD* = 147.4) abstinence days.

Table 2. *Sociodemographic Data and tobacco consumption*

Variables		*f*	%
Sex			
	Female	13	32.5
	Male	28	67.5
Occupation			
	Student	11	27.5
	Student and employed	7	17.5
	Employed	22	52.5
	Neither studying or working	1	2.5
Relationship status			
	In a relationship	26	65.0
	Single	15	35.0
Religion			
	Catholic	14	32.5
	Christian	3	7.5
	None	24	60.0

Note: f=frequency, %=Percentage, n=41

About the beginning of tobacco consumption, 65% started tobacco consumption out of curiosity, 27.5% indicated that they did it during a party / meeting, and 72.5% smoked for the first time in the company of friends. Regarding some characteristics of the beginning of tobacco consumption, it was found that the majority of participants smoked more frequently when confronted with stress / anxiety / depression (62.5%), 45% had family members who smoked, 85% reported that the cigarette relaxed them, 65% noticed changes in their body such as greater tiredness / agitation and dizziness since they began to smoke, and 67.5% said that they had already tried to quit smoking. Referring to the stage of change, the 90.2% reported being in the preparation stage.

Table 3. Wilcoxon W test for Pretest and Posttest Related Samples.

							95% CI	
	N	X	SD	Z	p	D	UL	LL
Number of cigarettes per occasion	41	16.3	10.8	-5.58	.001	1.60	2.21	0.98
Pretest		1.8	2.2					
Posttest								
Fagestrom								
Pretest	41							
Posttest		32.5	25.1	-3.74	.001	1.14	1.72	0.56
		7.8	9.7					
DASS 21 stress	41							
Pretest								
Posttest		54.1	18.8	-5.30	.001	1.42	1.90	0.93
		30.0	14.9					
DASS 21 anxiety	41							
Pretest		40.9	23.5	-4.65	.001	.90	1.35	0.45
Posttest		23.2	14.6					

DASS 21 depression	41							
Pretest		29.3	26.5 15.0	-4.83	.001	.81	1.26	0.36
Posttest		11.8						
SCQ-39								
Pretest	41	48.7	19.9	-5.51	.001	1.48	0.99	1.97
Posttest		76.1	16.8					

Note. $\bar{X}$= Mean, SD= Standard deviation, Z= Statistic of W of Wilcoxon, p= Value of p, d= Size of the effect, 95% CI = 95% Confidence Interval, LL = Lower limit, UL=Upper limit.

Number of Cigarettes in a Typical Day and Level of Dependence on Tobacco

At the end of the intervention the results showed a statistically and clinically significant reduction with a very large effect size in cigarettes smoked on a typical day, *Z*=-5.58, *p* <.001, *d* = 1.60 [.98, 2.21], and in the index of nicotine dependence (Fagestrom test), *Z* = -3.74, *p* <.001, *d* = 1.14 [0.56, 1.72] (Table 3).

Anxiety, Stress, and Depressive Symptoms

Likewise, a statistically and clinically significant effect was found with a very large effect size, since the score of the stress symptoms scale was reduced (*p* <.001, *d*= 1.42, [.0.93, 1.90]). Similarly, a statistically and clinically significant effect was found with a large effect size in the reduction of anxiety, (*p* <.001, *d* = .90 [0.45, 1.35]), and depression, (*p*<.001, *d* = .81 [0.36, 1.26]). (Table 3)

Self-efficacy

In the posttest measurement, participants showed a statistically and clinically significant improvement in self-efficacy, measured through the SCQ-39, with a very large effect size (*p* <.001, *d*= 1.48 [0.99, 1.97]). (Table 3)

Cotinine in Urine

There was also a significant change (*p* <.001) in the test for cotinine in urine from pretest to posttest, where 70.7% of participants had a positive result at the beginning of the intervention, but at the end of the intervention only 7.3% presented a positive result. (Table 4)

Table 4. *Sign test for Cotinine in Pretest-Posttest Urine.*

	Moment of measurement				*Z*	*p*
	Pretest		Posttest			
	f	*%*	*f*	*%*		
Positive	29	70.7	3	7.3	-4.90	.001
Negative	12	29.3	38	92.7		

Note. n = 41, f = frequency, % = percentage, p = Value of p, Z = statistic of the Sign test

Global Impression of Change

Regarding item number one, “how would you describe the change (if there was one?),” most participants felt much better (92.6%) about their withdrawal syndrome, much better (95.2%) in terms of their need to smoke, much better (68.2%) with reference to emotional symptoms, and much better (80.4%) in quality of life in general. The second item enquires about the degree of change since the beginning of the intervention; most participants

responded that they perceived their change as “much better” (60.9%). Additionally, participants presented an average satisfaction of 9.34 (*SD* = .96) with a 95% CI [9.03, 9.64].

4. Discussion

The main objective of this study was to assess the effectiveness of a multicomponent nursing intervention incorporating both mindfulness and brief advice to reduce tobacco use, anxiety, stress, and depressive symptoms, and increase self-efficacy. The results of this study showed that a ten-session intervention of brief advice in conjunction with mindfulness is an effective tool to reduce nicotine dependence, the number of cigarettes smoked in a typical day, and levels of stress, anxiety, and depression, and to increase self-efficacy scores in adult smokers with the intention of quitting. To increase the effectiveness of the treatment, we followed the recommendations of the National Institute on Alcohol Abuse (2015), which recommends that treatment in cases of addiction to any substance will be more effective when there is a combination of at least two therapeutic techniques in conjunction with active participation by the patient.

Regarding nicotine dependence in the pretest, participants had an average score of 32.5 and an average of 16.3 cigarettes smoked in a typical day, which progressively decreased to an average of dependence on nicotine of 7.8 and an average of 1.8 cigarettes a day, with very large effect sizes. The main objective of this study was tailored to the wishes of the participant, that is, depending on whether he/she only wanted to reduce consumption or to cease tobacco consumption completely. It should be noted that at the beginning of the intervention all 41 participants were habitual smokers, while at the end of the intervention only 19 participants continued with smoking to a lesser extent.

Al-Qashoti et al (2022) conducted a systematic review where they analyzed the causes of the effectiveness of different smoking cessation programs, in which they found that there are Individual, interpersonal, organizational, and environmental factors and policies that can influence the success or failure of smoking cessation, inside the Individual factors they mention that the factors found to be associated with reduced effectiveness include individual withdrawal symptoms, high nicotine dependence rate, change in attitudes and behaviors, stress, number of cigarettes smoked per day, And other individual factors that were found to be associated with effective programs included older age, female gender, knowledge on the benefits of tobacco cessation, health issues, higher education level, religious beliefs, and adherence to treatment. Therefore, the individual and motivational aspects of each individual can be a fundamental factor when deciding if one just wants to decrease or to quit completely. Due to the importance of the above, in the brief advice, the participant’s motivation was examined through a motivational interview conducted by a nursing professional; however, it was also made clear that the participant’s goals were personal and unique decisions, and for this reason we proposed both alternatives, reduction or cessation of tobacco use, in this intervention.

On the other hand, similar studies have found that mindfulness is an effective tool in the reduction/abandonment of tobacco consumption; however, these studies did not report effect sizes of the clinical effects, which is relevant because the t-test is regularly used in the analysis of the results, which is sensitive to the size of the sample, so that reporting the effect size is essential to measure the degree of attribution of change due to the intervention, as shown in the present study (Brewer, 2019; De Souza et al., 2015; Elwafi et al., 2013; Incagli et al., 2020). Li et al (2017) mentioned that mind-body practices such as mindfulness can modify the risk mechanisms that underlie addictive behaviors, cravings for consumption, and relapses. Mindfulness practices can increase metacognitive awareness of the automatic processes associated with craving for consumption, the search for and use of addictive substances, as well as attention to the triggers and the presence of impulses, which allows an interruption of the cycle of cognitive, affective, and psychophysiological mechanisms through the use of learned positive coping strategies (Garland et al., 2014a; Witkiewitz et al., 2014). With reference to

the above, research on the neurobiology of psychoactive substance abuse disorders, including nicotine addiction, indicates that chronic use of drugs is associated with a deficit in cognitive control that is dependent on the prefrontal lobe, which in turn, can damage the affective and inhibitory pathways (Kong et al., 2020; Kroon et al., 2022; Wakim et al., 2022).

Neuroimaging research suggests that the practice of mindfulness can modify and improve the mechanisms of cognitive control of automatic behaviors, also known as descending neuronal activity; therefore, they could help reduce reactivity towards nicotine and, consequently, help one stop smoking (Boness & Witkiewitz, 2022; Incagl et al., 2020; Quaglia et al., 2019).

Regarding the results for stress, anxiety, and depressive symptoms, the present investigation showed statistically and clinically significant results with large effect sizes on the means of stress (54.1 vs. 30.0), anxiety (40.9 vs. 23.2), and depressive symptoms (29.3 vs. 11.8) from pretest to posttest. Concerning this, authors mentioned that the states of anxiety, irritability, stress, and/or depression are linked to episodes of relapses, which need to be handled with the utmost importance at the time of initiating a treatment to stop smoking (González-González et al., 2012; Hoz et al., 2014; Wills et al., 2022).

Due to the above, it was of vital importance for the present investigation to teach the modulation of negative affective states through mindfulness and to improve self-efficacy, which could allow individuals not to react precipitously to stress or feel impelled to use cigarettes, by cultivating an awareness of the present moment's experience and by strengthening self-efficacy (Garland et al., 2014b). In addition, as Garland et al (2014a) and Kabat-Zinn and Hanh (2009) mention, the practice of mindfulness improves the management of stress, anxiety, and depressive symptoms, and reduces the use of addictive substances precipitated by these factors. Additionally, and in accordance with the present research, other studies showed positive results in the reduction of these symptoms (Arch et al., 2013; Strohmaier et al., 2021; Tang et al., 2013; Vøllestad et al., 2011).

With reference to self-efficacy, in the present study it was reinforced through the brief advice, which formed a solid base under the theoretical framework of Bandura (1977), and a statistical and clinically significant improvement was found. Different authors indicated that brief advice is a resource that should be included in all therapies for cessation of tobacco use in health services because its use has been shown to increase tobacco use abstinence rates by improving patients' self-efficacy to confront risky situations (Caponnetto et al., 2020; van Schayck et al., 2020).

Low self-efficacy has been related to high levels of nicotine dependence (Ma et al., 2020), so in this study it was decided to address self-efficacy through brief advice as a tool to provide effective cognitive and behavioral coping strategies. The results of this research agree with several studies, which have shown that brief advice is effective in the reduction and abandonment of tobacco use (Caponnetto et al., 2020; van Schayck et al., 2020), since it improves the use of coping strategies in high-risk situations, decreases the likelihood of relapse, and helps to maintain cessation behavior (Hébert et al., 2020; Martínez-Vispo et al., 2019).

Concerning the results presented in the test of cotinine in urine, as far as we know there are no studies that performed a similar intervention where this biological marker was used as a reference for the decrease in tobacco consumption. These results are relevant since the reduction in smoking was not only demonstrated by subjective measurements such as pencil and paper instruments, but objective evidence that a change in cotinine concentrations (a metabolite of nicotine) in the body, which represents an actual objective decrease in the number of cigarettes smoked.

4.1. Limitations

Finally, these results should be taken with caution because of the following limitations: the lack of a control group and follow-up.

4.2. Conclusions

Based on the findings of the study, we conclude that a multicomponent nursing intervention incorporating the application of brief advice and mindfulness is an effective therapeutic procedure to decrease or cease tobacco consumption, and reduce symptoms of anxiety, stress, and depression, and promote self-efficacy. For this reason, we recommend implementing this therapeutic strategy in public and private health institutions that offer treatment for tobacco addiction. This intervention could also be very useful for the nurses, as its application is cheap and can be easily learned. It can be used as a therapeutic tool in the first level care of the patient with the desire to quit smoking, significantly improving the success rates, so that it can help the patient to continue treatment in spite of the withdrawal syndrome, which often causes abandonment of the treatments. Additionally, more research is needed to explore the efficacy of this intervention in other types of addictions such as alcoholism, illegal drugs, among others.

5. References

Al-Qashoti, M. R., Aljassim, R., Sherbash, M. A. M., Alhussaini, N. W. Z., & Al-Jayyousi, G. F. (2022). Tobacco cessation programs and factors associated with their effectiveness in the Middle East: A systematic review. *Tobacco Induced Diseases*, *20*, 84. https://doi.org/10.18332/tid/153972

American Psychological Association. (2020). *Publication manual (OFFICIAL) 7th edition of the American psychological association*. American Psychological Association.

Arch, J. J., Ayers, C. R., Baker, A., Almklov, E., Dean, D. J., & Craske, M. G. (2013). Randomized clinical trial of adapted mindfulness-based stress reduction versus group cognitive behavioral therapy for heterogeneous anxiety disorders. *Behaviour Research and Therapy*, *51*(4–5), 185–196. https://doi.org/10.1016/j.brat.2013.01.003

Ayala, H. E., Echeverría, L., Sobell, M. B., & Sobell, L. C. (1997). Auto Control Dirigido: Intervenciones Breves para Bebedores Excesivos. *Revista Mexicana de Psicología*, *14*(2), 113–127. https://www.researchgate.net/profile/Linda-Sobell/publication/289068823_Directed_self_control_Brief_interventions_for_problem_drinkers_in_Mexico/links/56ac012108aeaa696f2a022f/Directed-self-control-Brief-interventions-for-problem-drinkers-in-Mexico.pdf

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037//0033-295x.84.2.191

Bennasar-Veny, M., Pericas Beltrán, J., González Torrente, S., Segui González, P., Aguiló Pons, A., & Tauler Riera, P. (2011). Self-perceived factors associated with smoking cessation among primary health care nurses: a qualitative study. *Revista Latino-Americana de Enfermagem*, *19*, 1437–1444. https://doi.org/10.1590/S0104-11692011000600022

Bodenlos, J. S., Noonan, M., & Wells, S. Y. (2013). Mindfulness and alcohol problems in college students: the mediating effects of stress. *Journal of American College Health: J of ACH*, *61*(6), 371–378. https://doi.org/10.1080/07448481.2013.805714

Boness, C. L., & Witkiewitz, K. (2022). Precision medicine in alcohol use disorder: Mapping etiologic and maintenance mechanisms to mechanisms of behavior change to improve patient outcomes. *Experimental and Clinical Psychopharmacology*. https://doi.org/10.1037/pha0000613

Breedvelt, J. J. F., Amanvermez, Y., Harrer, M., Karyotaki, E., Gilbody, S., Bockting, C. L. H., Cuijpers, P., & Ebert, D. D. (2019). The effects of meditation, yoga, and mindfulness on depression, anxiety, and stress in tertiary education students: A meta-analysis. *Frontiers in Psychiatry*, *10*, 193. https://doi.org/10.3389/fpsyt.2019.00193

Brewer, J. (2019). Mindfulness training for addictions: has neuroscience revealed a brain hack by which awareness subverts the addictive process? *Current Opinion in Psychology*, *28*, 198–203. https://doi.org/10.1016/j.copsyc.2019.01.014

Caponnetto, P., Maglia, M., Floresta, D., Ledda, C., Vitale, E., Polosa, R., & Rapisarda, V. (2020). A randomized controlled trial to compare group motivational interviewing to very brief advice for the effectiveness of a workplace smoking cessation counseling intervention. *Journal of Addictive Diseases*, *38*(4), 465–474. https://doi.org/10.1080/10550887.2020.1782564

Castruita, D. A. A., Castillo, M. M. A., García, K. S. L., Meza, M. V. G., & Carvajal, R. R. (2018). Intervención breve multicomponente de enfermería para reducir el consumo de tabaco: un estudio de factibilidad/Brief multi-component nursing intervention to reduce tobacco consumption: a feasibility study/Intervenção breve de enfermagem. *Journal Health Npeps*, *3*(1), 67–87. https://periodicos.unemat.br/index.php/jhnpeps/article/view/2764

Cayla, M. O., Armstrong, K., & Rutherford, H. J. (2018). The potential utility for massage therapy during pregnancy to decrease stress and tobacco use. *International Journal of Therapeutic Massage & Bodywork*, *11*(3). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6087659/

Centers for Disease Control and Prevention. (2022). *TobaccoFree Basic information*. Centers for Disease Control and Prevention. https://www.cdc.gov/tobacco/basic_information/index.htm?s_cid=osh-stu-home-nav-003

Chi, X., Bo, A., Liu, T., Zhang, P., & Chi, I. (2018). Effects of mindfulness-based stress reduction on depression in adolescents and young adults: A systematic review and meta-analysis. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.01034

Chiesa, A., & Serretti, A. (2014). Are mindfulness-based interventions effective for substance use disorders? A systematic review of the evidence. *Substance Use & Misuse*, *49*(5), 492–512. https://doi.org/10.3109/10826084.2013.770027

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159. https://www2.psych.ubc.ca/~schaller/528Readings/Cohen1992.pdf

Consejo Internacional de Enfermería. (2018). *La salud es un derecho humano Acceso, inversión y crecimiento económico*. Suiza: Consejo Internacional de Enfermería. https://2018.icnvoicetolead.com/wp-content/uploads/2017/04/ICN_Guidence_Pack_2018_ES_Low-Res.pdf

Davis, J. M., Manley, A. R., Goldberg, S. B., Stankevitz, K. A., & Smith, S. S. (2015). Mindfulness training for smokers via web-based video instruction with phone support: a prospective observational study. *BMC Complementary and Alternative Medicine*, *15*(1), 95. https://doi.org/10.1186/s12906-015-0618-3

de Dios, M. A., Herman, D. S., Britton, W. B., Hagerty, C. E., Anderson, B. J., & Stein, M. D. (2012). Motivational and mindfulness intervention for young adult female marijuana users. *Journal of Substance Abuse Treatment*, *42*(1), 56–64. https://doi.org/10.1016/j.jsat.2011.08.001

de Souza, I. C. W., de Barros, V. V., Gomide, H. P., Miranda, T. C. M., Menezes, V. de P., Kozasa, E. H., & Noto, A. R. (2015). Mindfulness-based interventions for the treatment of smoking: a systematic literature review. *Journal of Alternative and Complementary Medicine (New York, N.Y.)*, *21*(3), 129–140. https://doi.org/10.1089/acm.2013.0471

Diclemente, C. C., Prochaska, J. O., Fairhurst, S. K., Velicer, W. F., & Velásquez, M. M. (1991). The process of smoking cessation: An analysis of precontemplation, contemplation, and preparation stages of changes. *Journal of Consulting and Clinical Psychology*, *59*, 295–304. https://www.researchgate.net/profile/Mary-Velasquez/publication/232478210_The_Process_of_Smoking_Cessation_An_Analysis_of_Precontemplation_Contemplation_and_Preparation_Stages_of_Change/links/0fcfd50b5f8c5742b5000000/The-Process-of-Smoking-Cessation-An-Analysis-of-Precontemplation-Contemplation-and-Preparation-Stages-of-Change.pdf

Domínguez, R. M. Y., & Pérez, Y. V. (2014). Ansiedad, depresión y vulnerabilidad al estrés ante el diagnóstico reciente de diabetes mellitus tipo 2. (Spanish).*Gaceta Médica Espirituana*, *16*(3), 24-31. http://scielo.sld.cu/scielo.php?pid=s1608-89212014000300009&script=sci_arttext&tlng=en

Duarte, C., Varela, M., Salazar, I., Lerma, L., & Tamayo, J. (2012). Motivaciones y Recursos para el Consumo de Sustancias Psicoactivas en Universitarios. *Hacia La Promoción de La Salud*, *17*, 92–104. http://www.scielo.org.co/scielo.php?pid=s0121-75772012000100007&script=sci_arttext

Elwafi, H. M., Witkiewitz, K., Mallik, S., Thornhill, T. A., 4th, & Brewer, J. A. (2013). Mindfulness training for smoking cessation: moderation of the relationship between craving and cigarette use. *Drug and Alcohol Dependence*, *130*(1–3), 222–229. https://doi.org/10.1016/j.drugalcdep.2012.11.015

Garland, E. L., & Howard, M. O. (2018). Mindfulness-based treatment of addiction: current state of the field and envisioning the next wave of research. *Addiction Science & Clinical Practice*, *13*(1). https://doi.org/10.1186/s13722-018-0115-3

Garland, E. L., Froeliger, B., & Howard, M. O. (2014a). Effects of Mindfulness-Oriented Recovery Enhancement on reward responsiveness and opioid cue-reactivity. *Psychopharmacology*, *231*(16), 3229–3238. https://doi.org/10.1007/s00213-014-3504-7

Garland, E. L., Manusov, E. G., Froeliger, B., Kelly, A., Williams, J. M., & Howard, M. O. (2014b). Mindfulness-oriented recovery enhancement for chronic pain and prescription opioid misuse: results from an early-stage randomized controlled trial. *Journal of Consulting and Clinical Psychology*, *82*(3), 448–459. https://doi.org/10.1037/a0035798

González-González, A., García, F. J., Torres, C. S., González-Forteza, C., Tapia, A. J., Medina-Mora, M. E., & Mejía, H. F. V. (2012). Depresión y consumo de alcohol y tabaco en estudiantes de bachillerato y licenciatura. *Salud mental, 35*(1), 51-55. https://www.medigraphic.com/pdfs/salmen/sam-2012/sam121h.pdf

Gurrola, G., Balcáza, R. P., Bonilla, M., & Virseda, J. (2006). Estrucura factorial y consistencia interna de la Escala de Ansiedad, Depresión y Estrés (DASS-21) en una muestra no clínica. *Psicología y Ciencia Social*, *8*(02), 3–7. https://www.redalyc.org/pdf/314/31480201.pdf

Guy, W. (1976). *En: ECDEU Assessment Manual for Psychpharmacology, revised. Rochville: National Institute of Mental Health*.

Hébert, E. T., Ra, C. K., Alexander, A. C., Helt, A., Moisiuc, R., Kendzor, D. E., Vidrine, D. J., Funk-Lawler, R. K., & Businelle, M. S. (2020). A mobile just-in-time adaptive intervention for smoking cessation: Pilot randomized controlled trial. *Journal of Medical Internet Research*, *22*(3), e16907. https://doi.org/10.2196/16907

Hoz, E. V., Poch, F. V., Ferrer, J. J., Caparrós, B. C., Guerra, I. P., & Canals, M. C. (2014). Dimensiones psicopatológicas asociadas al consumo de tabaco en población universitaria. *Anales de Psicología/Annals of Psychology*, *20*(1), 33–46. https://doi.org/10.6018/analesps

Hudson, J. I., Arnold, L. M., Bradley, L. A., Choy, E. H. S., Mease, P. J., Wang, F., Ahl, J., & Wohlreich, M. M. (2009). What makes patients with fibromyalgia feel better? Correlations between Patient Global Impression of Improvement and changes in clinical symptoms and function: a pooled analysis of 4 randomized placebo-controlled trials of duloxetine. *The Journal of Rheumatology*, *36*(11), 2517–2522. https://doi.org/10.3899/jrheum.090139

Incagli, F., Tarantino, V., Crescentini, C., & Vallesi, A. (2020). The effects of 8-week mindfulness-based stress reduction program on cognitive control: An EEG study. *Mindfulness*, *11*(3), 756–770. https://doi.org/10.1007/s12671-019-01288-3

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness*. Delacorte.

Kabat-Zinn, J., & Hanh, T. N. (2009). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Dell Publishing.

Kong, L., Zeng, C., Yuan, F., Liu, S., Wang, D., Jiang, C., Zhan, Z., Qian, Z., & Zhu, X. (2020). Dysfunction of the prefrontal cortex in betel-quid-dependent chewers. *Frontiers in Psychiatry*, *11*, 558367. https://doi.org/10.3389/fpsyt.2020.558367

Kroon, E., Kuhns, L., & Cousijn, J. (2022). Context dependent differences in working memory related brain activity in heavy cannabis users. *Psychopharmacology*, *239*(5), 1373–1385. https://doi.org/10.1007/s00213-021-05956-y

Li, W., Howard, M. O., Garland, E. L., McGovern, P., & Lazar, M. (2017). Mindfulness treatment for substance misuse: A systematic review and meta-analysis. *Journal of Substance Abuse Treatment*, *75*, 62–96. https://doi.org/10.1016/j.jsat.2017.01.008

Lira M., J., Valdez P., E., Pérez G., M.Á., Pech P., D. & Arriaga R., J.C.P. (2020). Asociación entre consumo de tabaco, factores emocionales y motivos para fumar en universitarios. *Enseñanza e Investigación en Psicología, 2*(1), 47-59 https://revistacneipne.org/index.php/cneip/article/view/63

Ma, H., Li, X., Zhang, M., Liu, H., Jin, Q., Qiao, K., & Akbar, A. (2020). Relationships among smoking abstinence self-efficacy, trait coping style and nicotine dependence of smokers in Beijing. *Tobacco Induced Diseases*, *18*(September). https://doi.org/10.18332/tid/125401

Marlatt, G. A., & Gordon, J. R. (1985). *Determinants of relapse: Implications for the maintenance of behavior change. Behavioral Medicine: Changing Health Lifestyles* (Vol. 1). Brunner/Mazel.

Martínez, K., Salazar, M., Ruiz, G., Barrientos, C. V., & Ayala, V. H. (2005). *Programa de intervención breve para adolescentes que inician el consumo de alcohol y otras drogas. Manual del terapeuta*. CONADIC. https://raulmartindelcampo.wordpress.com/wp-content/uploads/2016/11/manual-consumo-adolescentes.pdf

Martínez-Vispo, C., Rodríguez-Cano, R., López-Durán, A., Senra, C., Fernández Del Río, E., & Becoña, E. (2019). Cognitive-behavioral treatment with behavioral activation for smoking cessation: Randomized controlled trial. *PloS One*, *14*(4), e0214252. https://doi.org/10.1371/journal.pone.0214252

Mathew, A. R., Yang, E., Avery, E. F., Crane, M. M., Lange-Maia, B. S., & Lynch, E. B. (2020). Trauma exposure, PTSD symptoms, and tobacco use: Does church attendance buffer negative effects? *Journal of Community Psychology*, *48*(7), 2364–2374. https://doi.org/10.1002/jcop.22420

Meneses, I., Zuardi, A., Loureiro, S., & Crippa, J. (2009). Psychometric properties of the Fagerström test for nicotine dependence. *Journal Brasileiro de Pneumologia*, *35*(1), 73–82. https://doi.org/10.1590/S1806-37132009000100011

Mermelstein, L. C., & Garske, J. P. (2015). A brief mindfulness intervention for college student binge drinkers: A pilot study. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, *29*(2), 259–269. https://doi.org/10.1037/adb0000040

National Institute on Alcohol Abuse. (2015). *Informe sobre Tabaco Alert: Cigarettes and Other Tobacco Products*. Drugabuse.gov. http://www.drugabuse.gov/publications/drugfacts/cigaretts-other-tobacco-products

Norman, G. R., Sloan, J. A., & Wyrwich, K. W. (2003). Interpretation of changes in health-related quality of life: the remarkable universality of half a standard deviation. *Medical Care*, *41*(5), 582–592. https://doi.org/10.1097/01.MLR.0000062554.74615.4C

Pan American Health Organization. (2022). *Informe sobre el control del tabaco en la Región de las Américas 2022*. Paho.org. https://iris.paho.org/bitstream/handle/10665.2/56263/OPSNMHRF220023_spa.pdf?sequence=5&isAllowed=y

Quaglia, J. T., Zeidan, F., Grossenbacher, P. G., Freeman, S. P., Braun, S. E., Martelli, A., Goodman, R. J., & Brown, K. W. (2019). Brief mindfulness training enhances cognitive control in socioemotional contexts: Behavioral and neural evidence. *PloS One*, *14*(7), e0219862. https://doi.org/10.1371/journal.pone.0219862

Sadasivam, P., & Chellappa, L. R. (2022). Academic stress and tobacco abuse among the clinical dental students in chennai city. *Journal of Coastal Life Medicine*, *10*, 428–435. https://www.jclmm.com/index.php/journal/article/view/88

Secretaría de Salud (1987). *Reglamento de la Ley General de Salud en material de Investigación para la Salud*. Gob.Mx. http://www.salud.gob.mx/unidades/cdi/nom/compi/rlgsmis.html

Segal, Z., Williams, M., & Teasdale, J. (2007). *Terapia cognitiva basada en el mindfulness para la depresión*. Kairos.

Sobell, L. C., & Sobell, M. B. (1996). *Timeline FollowBack: user's guide. Addiction Research Foundation= Fondation de la recherche sur la toxicomanie*. https://doi.org/10.1016/0376-8716(96)01263-X

Strohmaier, S., Jones, F. W., & Cane, J. E. (2021). Effects of length of mindfulness practice on mindfulness, depression, anxiety, and stress: A randomized controlled experiment. *Mindfulness*, *12*(1), 198–214. https://doi.org/10.1007/s12671-020-01512-5

Substance Abuse and Mental Health Services Administration. (2020). *Alcohol, tobacco, and other drugs: Challenging myths, assessing theories, individualizing interventions*.

Tang, Y., Tang, R., & Posner, M. I. (2013). Brief meditation training induces smoking reduction. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(34), 13971–13975. https://doi.org/10.1073/pnas.1311887110

Téllez, A., García, C. H., & Corral-Verdugo, V. (2015). Effect size, confidence intervals and statistical power in psychological research. *Psychology in Russia: State of the Art*, *8*(3), 27–47. https://cyberleninka.ru/article/n/effect-size-confidence-intervals-and-statistical-power-in-psychological-research

Vallejo, Z. (2019). Desarrollando la atención y autorregulación por medio del Mindfulness (Bachelor's thesis, Universidad Casa Grande. Facultad de Ecología Humana, Educación y Desarrollo). http://dspace.casagrande.edu.ec:8080/bitstream/ucasagrande/2168/2/Tesis2344VALd.pdf

van Schayck, O. C. P., Bindels, L., Nijs, A., van Engelen, B., van den Bosch, A., Muller, I. S., & Spigt, M. (2020). The experience of general practitioners with Very Brief Advice in the treatment of tobacco addiction. *NPJ Primary Care Respiratory Medicine*, *30*(1), 40. https://doi.org/10.1038/s41533-020-00200-0

Vøllestad, J., Sivertsen, B., & Nielsen, G. H. (2011). Mindfulness-based stress reduction for patients with anxiety disorders: evaluation in a randomized controlled trial. *Behaviour Research and Therapy*, *49*(4), 281–288. https://doi.org/10.1016/j.brat.2011.01.007

Vonderlin, R., Biermann, M., Bohus, M., & Lyssenko, L. (2020). Mindfulness-based programs in the workplace: A meta-analysis of randomized controlled trials. *Mindfulness*, *11*(7), 1579–1598. https://doi.org/10.1007/s12671-020-01328-3

Wakim, K.-M., Freedman, E. G., Tivarus, M. E., Heinecke, A., & Foxe, J. J. (2022). Assessing combinatorial effects of HIV infection and former cocaine dependence on cognitive control processes: A functional neuroimaging study of response inhibition. *Neuropharmacology*, *203*(108815), 108815. https://doi.org/10.1016/j.neuropharm.2021.108815

Wills, L., Ables, J. L., Braunscheidel, K. M., Caligiuri, S. P. B., Elayouby, K. S., Fillinger, C., Ishikawa, M., Moen, J. K., & Kenny, P. J. (2022). Neurobiological mechanisms of nicotine reward and aversion. *Pharmacological Reviews*, *74*(1), 271–310. https://doi.org/10.1124/pharmrev.121.000299

Witkiewitz, K., Bowen, S., Harrop, E. N., Douglas, H., Enkema, M., & Sedgwick, C. (2014). Mindfulness-based treatment to prevent addictive behavior relapse: theoretical models and hypothesized mechanisms of change. *Substance Use & Misuse*, *49*(5), 513–524. https://doi.org/10.3109/10826084.2014.891845

World Health Organization. (2022). *Tabaco*. Who.int. https://www.who.int/es/news-room/fact-sheets/detail/tobacco

Yach, D. (2020). Tobacco use patterns in five countries during the COVID-19 lockdown. *Nicotine & Tobacco Research: Official Journal of the Society for Research on Nicotine and Tobacco*, *22*(9), 1671–1672. https://doi.org/10.1093/ntr/ntaa097