Impact of Cognitive Behavior Therapy on Psychological Distress, Motivation, and Quality of Life in Individuals Pursuing Smoking Cessation

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Abstract

This study aimed to investigate the effect of cognitive behavior therapy (CBT) on psychological distress, motivation, and quality of life of people with substance use disorders. An experimental pretest-posttest research design was used in this study. Sixty subjects were recruited through purposive sampling from public and private hospitals/clinics in Punjab, Pakistan. To gather data, ASSIST (Alcohol, Smoking, and Substance Involvement Screening Test), CDS (Cigarette Dependency Scale), DASS (Depression Anxiety Stress Scale), MATCH (Motivation and Attitude Towards Changing Health), and WHOQOL-Bref (World Health Organization quality of life-bref) were used. The results demonstrated significant differences between experimental and control groups in pre-posttest analysis. The M (SD) of ASSIST [Pretest score: 20.63 (4.67) and posttest score: 15.53 (4.54)] p<.01 with effect size ηp2 .221. Similarly, CDS [pretest: 32.77(6.58), posttest: 21.63(6.32)] p<.000, ηp2 .538. DASS [pretest: 50.37(7.66), posttest score: 36.70(9.57)], p<.000, ηp2 .723, likewise MATCH [pretest:36.50(5.90) posttest: 31.30(6.82)], p<.01, ηp2 .160 and QOL [Pretest: 78.86(16.02), posttest 102.71(11.96)], p<.000 and ηp2 is 0.559. Further, ASSIST was positively correlated with CDS (p-value <0.01, r=.38) and negatively correlated with motivation (p-value<0.01, r=.25) and QOL (p-value <0.01, r=-.30) of smokers. The effectiveness of CBT in alleviating psychological distress while augmenting motivational levels and quality of life of individuals afflicted with substance use disorders is remarkable; the findings of this study may be applied within counseling and psychotherapy settings to facilitate interventions for those suffering from substance use disorders.

Keywords: Psychological Distress, Quality of Life, Cognitive Behavior Therapy, Smoking Cessation.

Introduction and Background

Substance abuse is injurious to health. Smoking kills the lungs. Smoking causes cancer (Taylor & Treur, 2023). We have heard such statements since our childhood. No doubt, substance use is one of the oldest disorders, which has affected millions of people's lives all over the globe (Okobi et al., 2023). It is often considered the leading cause of death (Webb Hooper et al., 2024). World Health Organization, many other national and international organizations, and government institutes are trying to eradicate this illness but unfortunately fail. If we look at a glance the background or history of smoking behavior, many theories help us to understand why a person smokes; here, one of the significant contributions to understanding this act is Sigmund Freud's

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theory of psychosexual development (Hersi et al., 2024). There he explains that if a person fails to attain oral gratification, then they may be fixated, and ultimately such oral fixation leads to oral sex, drinking, smoking, thumb sucking, fetishism, and many other ailments. Therefore, according to Freud's theory (Sigmund et al., 2001), such smoking acts may occur in the early stages of life; here, in such stages, these are immature, while later on, these acts become mature. Suppose we visualize the behavioral point of view (Watson, 1914) regarding substance abuse here, according to Watson. In that case, such acts are learned acts that a person learns in his society, sometimes for the sake of reward or associate such smoking acts with pleasure or stimulation of mental activity (Aguilera et al., 2021).

Smoking harms the health of individuals who persistently engage in the habit (Le Foll et al., 2022). The unpleasant consequences that arise from smoking, such as disgust, stress, anxiety, and depression. Serve as a trigger for individuals to continue smoking (Hafeez et al., 2023). Additionally, these adverse outcomes also serve as an indicator of their inability to abstain from smoking in the face of pressure and adverse effects (Mangrio et al., 2024). Several barriers can impede the success of substance abuse cessation, like craving, headaches, insomnia, and smoker's friends' company, especially for individuals who smoke while dealing with stress, anxiety, depression, or other psychophysiological illnesses (Darharaj et al., 2023). These concerns can complicate the journey toward quitting substance use, making it even more arduous and demanding (Zhou et al., 2023). Nevertheless, with appropriate support and tailored interventions, individuals with concurrent mood or anxiety disorders can overcome these obstacles and achieve successful substance abuse cessation (Boudreaux et al., 2022).

One interesting study (Dai et al., 2022) revealed that individuals who smoke while experiencing tension problems, in comparison to those who smoke without tension issues, displayed higher levels of anxiety sensitivity. Consequently, they face the challenge of simultaneously addressing two sources of distress: their mood or anxiety disorder and the heightened withdrawal symptoms resulting from nicotine cessation (Masud et al., 2023). These dual concerns can complicate the journey toward quitting smoking, making it even more arduous and demanding. Nevertheless, with appropriate support and tailored interventions, individuals with concurrent mood or anxiety disorders can overcome these obstacles and achieve successful smoking cessation (Alqahtani et al., 2023). The primary and most significant aim of the current research is to delve into the efficacy and suitability of Cognitive Behavioral Therapy (CBT) (Rector & Beck, 2012) when it comes to addressing issues related to motivation, psychological distress, and quality of life among individuals who are attempting to quit substance abuse. Breaking a habit that has become deeply ingrained is undoubtedly a challenging task, and it has been observed that a majority of individuals who manage to quit substance abuse eventually relapse within six months, irrespective of any form of treatment they may have undergone (Steinberg et al., 2024). Many individuals mistakenly perceive tobacco products as a means to alleviate stress, often seeking solace in the nicotine they contain. It is not uncommon for people to be well aware of the detrimental effects of smoking and the associated health risks. After all, the ubiquitous warning "Tobacco causes cancer" has become a proverbial phrase that confronts us at every turn - be it on cigarette packets, advertisements, billboards, or even on the internet. However, this knowledge alone does not make it any easier to overcome the addiction, primarily due to the easy accessibility of cigarettes and other tobacco products on almost every street in Pakistan (Hafeez et al., 2023). People from all walks of life grapple with tobacco addiction, regardless of the presence or absence of other risk factors in their lives (Boudreaux et al., 2022).

Pakistan, located in South Asia, stands out as the country with the highest tobacco consumption rates (Masud et al., 2023). There is a scarcity of surveys on tobacco use in Pakistan, and those that do exist tend to focus on a limited and specific population. Moreover, Pakistan, being a developing country and the fifth most populous nation in the world, lacks any evidence-based clinical trials for individuals seeking smoking cessation (Hafeez et al., 2023). However, the

current study aims to bridge this research gap by providing valuable insights. With this in mind, the proposed clinical trial seeks to determine the effectiveness of Cognitive Behavioral Therapy in achieving various positive outcomes. These outcomes include promoting a healthy personality, enhancing coping skills and motivation levels to reduce smoking, enhancing quality of life, and ultimately bolstering a smoker's determination and eagerness to quit the evil of smoking. The primary purpose of this research is to find out how cognitive behavior therapy influences the motivation level, psychological distress, and quality of life among people with smoking cessation. Another objective of this study is to investigate how Cognitive behavioral therapy helps to enhance the motivation level and quality of life and minimize psychological distress among people with smoking cessation.

Methodology

An experimental pretest-posttest research design was used in this study. The study was conducted in different cities in Punjab Pakistan from 1 May 2023 to 15 July 2024. Initially, 60 subjects were recruited through purposive sampling, then randomly assigned into two groups (28 subjects =Experimental, 28=control group). 4 participants left due to some reasons (two persons went out of the city for a job, one met a severe road accident, and one refused to participate in this study. Finally, 56 subjects were left behind for pre-post assessment. These research participants belong to different residential areas (rural/urban) with varied family systems (nuclear/joint), birth order, education, socioeconomic status, education, occupation, marital status, and smoking duration differences. This study employed rigorous inclusion and exclusion criteria, selecting participants aged between 18 and 60 who were willing to undergo lifestyle changes, had a smoking history of 6 months to 5 years, and provided informed consent, while only males who could understand the research instructions were recruited. Conversely, individuals under 18 or over 60, those with prior psychophysiological conditions, participants who experienced trauma during the study, and those unwilling to continue were systematically excluded from this research. This research adhered to stringent ethical standards, ensuring that no copyrighted materials were utilized without appropriate authorization from the respective authors. Furthermore, the ethical review committee of GC University Faisalabad thoroughly evaluated the research proposals before commencement, guaranteeing that participants were fully informed of their rights and that their confidentiality was preserved throughout the study. To gather data ASSIST (Alcohol, Smoking and Substance Involvement Screening Test), CDS (Cigarette Dependency Scale), DASS (Depression Anxiety Stress Scale), MATCH (Motivation and Attitude Towards Changing Health), and WHOQOL-Bref (World Health Organization Quality of Life- Bref) were used. Data were analyzed through SPSS-23 software. The Chi-Square, correlation analysis, and repeated measure ANOVA were used to understand the association and differences between pre-and post-assessment of smoking personals.

Results

Table I shows the differences among demographic characteristics were age (18-28 years, 27±51.9 vs 25±48 and 29-40 years, 3±37.5 vs 5±62.5, t=.577, p>.706), education (X^2=.480, p>.731), birth order (X^2=14.500, p=.002), marital status (X^2=4.352, p>.072, family system (X^2=.278, p|>.792) socioeconomic status (X^2= 6.976, p=.031, and residential area (X^2=2.400, p>.196).

Table I: Characteristics of subjects and group-wise and overall comparison of the sample

Variables Characteristics	Category	Overall	Groups		χ2/t	P
			Experimental	Control		
N Allocated		60	30(50.0%)	30 (50.0%)		
N Dropout		4	2(50.0%)	2(50.0%)		
N Final		56	56(50.0%)	56(50.0%)		
Age	18-28 Years	52	27(51.9%)	25(48.1%)	.577	.706
	29-40 Years	8	3(37.5%)	5(62.5%)		
Education	Undergraduate (n %)	50	26(52%)	24(48%)	.480	.731
	Postgraduate (n %)	10	4(40%)	6(60%)		
Birth Order	First (n %)	13	8(61.5%)	5(38.5%)	14.5	.002
	Second (n %)	18	14(77.8%)	4(22.2%)		
	Other (n %)	18	7(38.9%)	11(61.1%)		
	Last (n %)	11	1(9.1%)	10(90.9%)		
Marital Status	Single (n %)	45	26(57.8%)	19(42.2)	4.36	.072
	Married (n %)	15	4(26.7)	11(73.3%)		
Family System	Nuclear (n %)	24	13(54.2%)	11(45.8%)	.28	.792
	Joint (n %)	36	17(47.2%)	19(52.8%)		
Socioeconomic status	Lower (n %)	9	1(11.1%)	8(88.9%)		
	Middle (n %)	47	26(55.3%)	21(44.7%)	6.98	.031
	Upper (n %)	4	3(75.0%)	1(25.0%)		
Residential Area	Rural (n %)	30	12(40%)	18(60%)	2.40	.196
	Urban (n %)	30	18(60%)	12(40%)		

Table 2 elaborates on the association of all under-study variables. The outcomes of this correlation table reveal that smoking individuals with higher scores on the alcohol smoking and substance involvement screening test have a positive correlation with cigarette dependency (p-value <0.01, r=.38) and a negative correlation with Motivation (p-value<0.01, r=-.25) and uality of life (p-value <0.01, r=-.30) of the smokers.

Table 2: Correlation among Alcohol Smoking and Substance Involvement Screening Test, Cigarette Dependency Scale, Depression Anxiety Stress Scale, Motivation and Attitude towards changing health and Quality of life of smoking individuals(n=60)

		N	*M*	*SD*	*1*	*2*	*3*	*3a*	*3b*	*3c*	*4*	*5*	*5a*	*5b*	*5c*	*5d*
1	**ASSIST**	60	20.57	5.29	-											
2	**CDS**	60	32.27	7.70	.380**	-										
3	**DASS**	60	49.10	8.01	-.050	.039	-									
3a	DASS-D	60	13.13	5.08	.479**	.395**	.167	-								
3b	DASS-A	60	12.48	5.16	.586**	.415**	.283*	.770**	-							
3c	DASS-S	60	14.40	5.20	.496**	.410**	.296*	.803**	.794**	-						
4	**MATCH**	60	35.48	6.18	-.255*	-.213	-.029	-.191	-.142	-.160	-					
5	**QOL**	60	78.25	14.63	-.301*	-.240	-.107	-.289*	-.301*	-.287*	.133	-				
5a	QoL-PH	60	24.23	4.84	.065	.045	-.036	.025	.097	.121	-.094	.197	-			
5b	QoL-Psy	60	19.47	4.11	-.084	.021	.051	-.098	.071	-.032	-.050	.125	.726**	-		
5c	QoL-SR	60	11.52	2.18	-.143	-.056	-.070	-.310*	-.172	-.282*	.196	.386**	.605*	.493**	-	
5d	QoL-E	60	25.92	5.51	-.098	-.001	-.080	-.170	-.077	-.126	-.046	.213	.737**	.660**	.582**	-

Note: P<0.01**, P<0.05*: ASSIST: Alcohol Smoking and Substance Involvement Screening Test; CDS: Cigarette Dependency Scale; DASS: Depression Anxiety Stress Scale; DASS-D: Depression; DASS-A: Anxiety; DASS-S: Stress; MATCH: Motivation and Attitude towards

changing health; QOL: Quality of life; QOL-PH: Physical Health; QOL-Psy: Psychological; QOL-SR: Social Relationship; QOL-E: Environment.

Table III demonstrated a statistically significant mean difference among pre and post-therapeutic analysis of the people with cigarette smoking. The M (SD) of ASSIST [Pretest score: 20.63 (4.67) and posttest score 15.53 (4.54)] p<.01 with effect size ηp2 .221. Similarly, CDS [Pretest: 32.77(6.58) and Posttest: 21.63(6.32)] p<.000, F: 14.8 with ηp2 .538. DASS [Pretest: 50.37(7.66) and posttest score: 36.70(9.57)], p<.000 with ηp2 .723, likewise MATCH [pretest:36.50(5.90) posttest: 31.30(6.82)], p<.01 with ηp2 .160 and quality of life of smoking individuals [Pretest: 78.86(16.02) while posttest 102.71(11.96)], p<.000 and ηp2 is 0.31.

Table 3: Repeated Measure Design of Clinical Scores of ASSIST, CDS, DASS, MATCH, and QOL during pre and Post-test Intervention

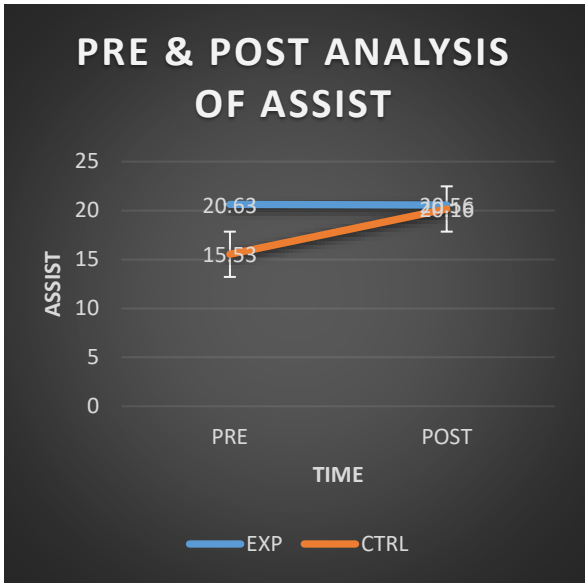
Variables	Groups				Repeated Measure ANOVA						
	Experimental Group		Control Group		Group		Time		Group*Time		
	Pre-test M(SD)	Post- Test M(SD)	Pre-test M(SD)	Post- Test M(SD)	F	P-Value	F	P-Value	F	P-Value	η_p^2
ASSIST	20.63(4.67)	15.53(4.54)	20.56(5.72)	20.16(6.42)	6.36	.015	14.21	.000	9.13	.004	.221
CDS	32.77(6.58)	21.63(6.32)	32.00(8.86)	28.04(8.92)	4.23	.045	61.78	.000	14.08	.000	.538
DASS	40.29(9.82)	26.57(4.29)	40.86(10.49)	40.50(7.99)	16.86	.000	19.69	.000	20.91	.000	.28
DEPRESSION	14.57(3.72)	5.89(1.52)	14.39(3.86)	14.07(4.52)	50.56	.000	35.27	.000	27.87	.000	.34
ANXIETY	12.21(4.34)	9.46(2.87)	12.61(4.26)	12.11(4.13)	1.68	.000	7.38	.009	6.44	.014	.11
STRESS	13.25(3.95)	8.57(1.62)	13.71(3.70)	13.68(3.35)	14.58	.000	13.84	.000	19.33	.000	.26
MATCH	36.50(5.90)	31.30(6.82)	36.44(4.17)	38.12(5.99)	9.11	.004	10.07	.003	28.04	.000	.160
QOL	78.86(16.02)	102.71(11.96)	78.25(13.51)	78.68(12.07)	20.67	.000	26.07	.000	24.26	.000	.31
PHY	22.86(9.04)	38.29(9.42)	22.89(5.71)	22.07(6.01)	24.82	.000	32.51	.000	40.24	.000	.43
PSY	18.46(3.24)	31.21(13.57)	18.96(5.75)	18.21(6.42)	15.46	.000	15.81	.000	20.01	.000	.27
SOC	11.57(2.12)	27.64(14.12)	11.68(2.98)	11.79(7.87)	25.97	.000	26.02	.000	25.34	.000	.32
ENV	25.50(5.67)	30.14(7.88)	25.39(6.14)	25.79(7.93)	2.62	.046	3.85	.055	2.75	.103	.05

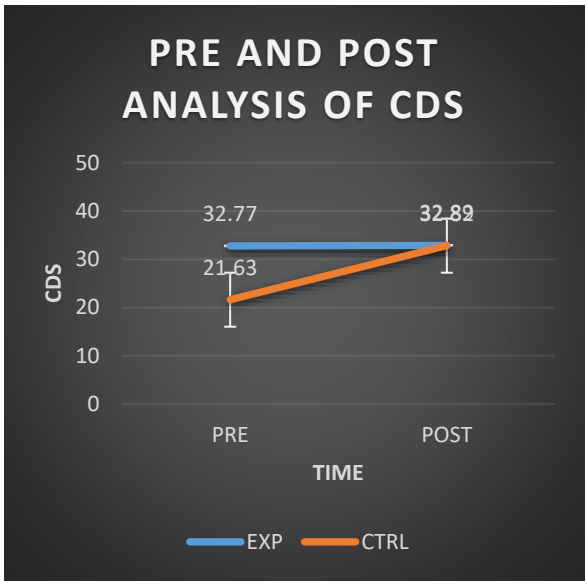
Note: ASSIST: Alcohol Smoking and Substance Involvement Screening Test; CDS: Cigarette Dependency Scale; DASS: Depression Anxiety Stress Scale; DASS-D: Depression; DASS-A: Anxiety; DASS-S: Stress; MATCH: Motivation and Attitude towards changing health; QOL: Quality of life; PHY: Physical Health; PSY: Psychological; SOC: Social Relationship; ENV: Environment; ηp2: Partial Eta Squared; M= Mean, SD= Standard deviation.

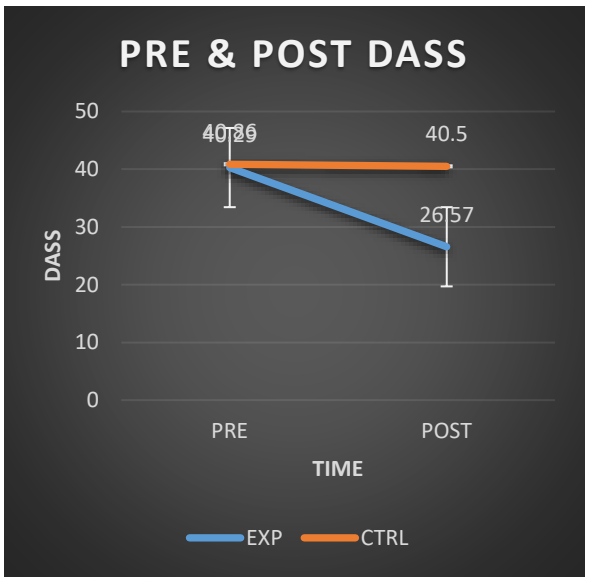
Discussion

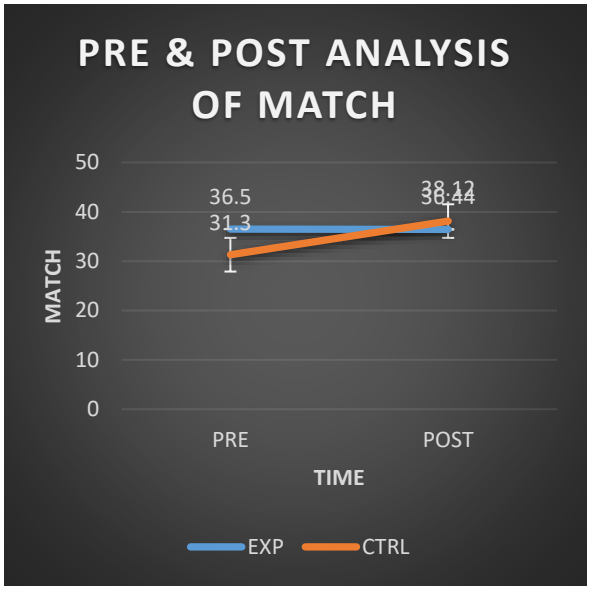
The results of the study demonstrated a considerable discrepancy before and after the cognitive behavior therapeutic intervention on people with smoking addiction. The finding of the study shows that cognitive behavior therapy influences the motivation level, psychological distress, and quality of life of smokers. The outcomes of the research reveal that smoking individuals with higher scores on the Alcohol Smoking and Substance Involvement Screening Test have a positive correlation with Cigarette Dependency (p-value <0.01, r=.38) and a negative correlation with Motivation (p-value<0.01, r=-.25) and Quality of life (p-value <0.01, r=-.30) of the smokers. Furthermore, the study describes a statistically significant mean difference among pre- and post-therapeutic analyses of people with cigarette smoking. The Mean (Standard Deviation) of Alcohol Smoking and Substance Involvement Screening Test (ASSIST) [Pretest score: 20.63 (4.67) and posttest score 15.53 (4.54)] p<.01 with effect size ηp2 .221. Similarly, the Cigarette dependency scale (CDS) [Pretest: 32.77(6.58) and Posttest: 21.63(6.32)] p<.000, F: 14.8 with ηp2 .538. Depression Anxiety Stress Scale (DASS) [Pretest: 50.37(7.66) and posttest score: 36.70(9.57)], p<.000 with ηp2 .723, likewise Motivation and Attitude towards changing health (MATCH) [pretest:36.50(5.90) posttest: 31.30(6.82)], p<.01 with ηp2 .160 and quality of life of smoking individuals [Pretest: 78.86(16.02) while posttest 102.71(11.96)], p<.000 and ηp2 is 0.31. Darharaj et al. (2023) explores the association between emotional dysregulation of patients craving for substance use, and the role of psychological distress mediating between them.

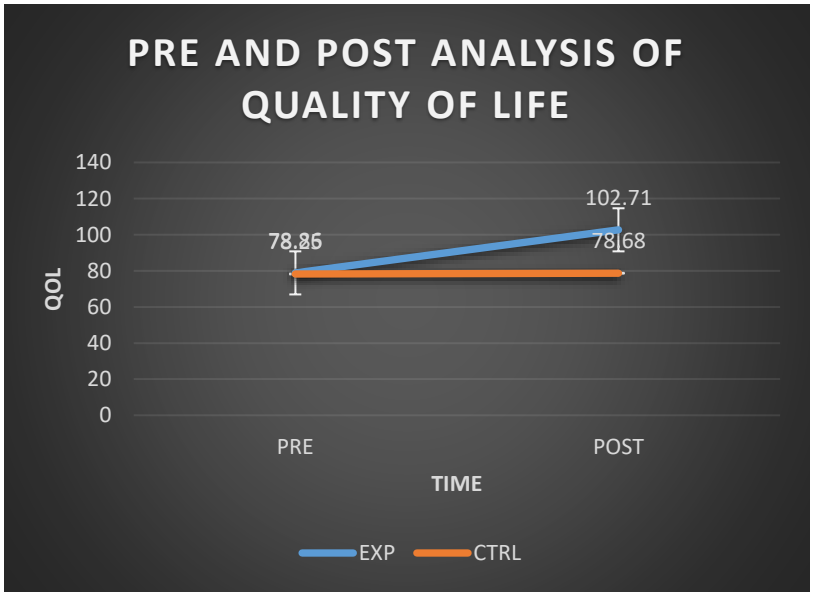
Figure 1: Pre- and post-analysis of assist, CDS, DASS, Match, QOL after CBT











Conclusion

This research study has the following general recommendations. The number of sessions and the availability of a trained therapist in villages, especially addiction centers should be availed round the clock for psycho-education and counseling of the client to minimize the chances of relapse. Moreover, a proper reward system should motivate people with smoking cessation. Addicted persons should receive occupational therapy so that they may become a suitable member of the society. We cannot eradicate any evil until we should work on its production. When things are not assessable or readily available to any person or not produced, then one day will come when nobody will use it due to its reach/non-availability, therefore if we are sincere in demolishing such ailments from our society then we should take some strict measures to stop it, otherwise, I think it's useless to print cancerous foot or jaw on the outside of cigarette envelop or by counseling to a small group of people. In light of the efficacy of cognitive-behavioral therapy in alleviating psychological distress while simultaneously augmenting motivational levels and the overall quality of life in individuals afflicted with substance use disorders, the findings of this study may be applied within counseling and psychotherapy settings to facilitate interventions for those suffering from substance use disorders.

References

- Aguilera, R., Corringham, T., Gershunov, A., & Benmarhnia, T. (2021). Wildfire smoke impacts respiratory health more than fine particles from other sources: Observational evidence from Southern California. *Nature Communications*, *12*(1), 1493. https://doi.org/10.1038/s41467-021-21708-0
- Alqahtani, J. S., Aldhahir, A. M., Alanazi, Z., Alsulami, E. Z., Alsulaimani, M. A., Alqarni, A. A., Alqahtani, A. S., AlAyadi, A. Y., Alnasser, M., AlDraiwiesh, I. A., Alghamdi, S. M., Almarkhan, H. M., Alsulayyim, A. S., AlRabeeah, S. M., & AlAhmari, M. D. (2023). Impact of Smoking Status and Nicotine Dependence on Academic Performance of Health Sciences Students. *Substance Abuse and Rehabilitation*, *14*, 13–24. https://doi.org/10.2147/SAR.S393062
- Armoon, B., Bayat, A.-H., Bayani, A., Mohammadi, R., Ahounbar, E., & Fakhri, Y. (2023). Quality of life and its associated factors among patients with substance use disorders: A systematic review and meta-analysis. *Journal of Substance Use*, *28*(4), 479–488. https://doi.org/10.1080/14659891.2022.2069612
- Boudreaux, E. D., O'Hea, E., Wang, B., Quinn, E., Bergman, A. L., Bock, B. C., Becker, B. M., & Mohamed, H. (2022). Modeling Health Event Impact on Smoking Cessation. *Journal of Smoking Cessation*, *2022*, e14. https://doi.org/10.1155/2022/2923656
- Dai, X., Gil, G. F., Reitsma, M. B., Ahmad, N. S., Anderson, J. A., Bisignano, C., Carr, S., Feldman, R., Hay, S. I., He, J., Iannucci, V., Lawlor, H. R., Malloy, M. J., Marczak, L. B., McLaughlin, S. A., Morikawa, L., Mullany, E. C., Nicholson, S. I., O'Connell, E. M., Gakidou, E. (2022). Health effects associated with smoking: A Burden of Proof study. *Nature Medicine*, *28*(10), 2045–2055. https://doi.org/10.1038/s41591-022-01978-x
- Darharaj, M., Hekmati, I., Mohammad Ghezel Ayagh, F., Ahmadi, A., Eskin, M., & Abdollahpour Ranjbar, H. (2023). Emotional Dysregulation and Craving in Patients with Substance Use Disorder: The Mediating Role of Psychological Distress. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-023-01031-z
- Hafeez, A., Dangel, W. J., Ostroff, S. M., Kiani, A. G., Glenn, S. D., Abbas, J., Afzal, M. S., Afzal, S., Ahmad, S., Ahmed, A., Ahmed, H., Ali, L., Ali, M., Ali, Z., Arshad, M., Ashraf, T., Bhutta, Z. A., Bibi, S., Butt, Z. A., & Mokdad, A. H. (2023). The state of health in Pakistan and its provinces and territories, 1990–2019: A systematic analysis for the Global

Burden of Disease Study 2019. *The Lancet Global Health*, *11*(2), e229–e243. https://doi.org/10.1016/S2214-109X(22)00497-1

- Hersi, M., Beck, A., Hamel, C., Esmaeilisaraji, L., Pussegoda, K., Austin, B., Ahmadzai, N., Pratt, M., Thuku, M., Yazdi, F., Bennett, A., Shaver, N., Vyas, N., Skidmore, B., Hutton, B., Manuel, D., Morrow, M., Pakhale, S., Presseau, J., … Stevens, A. (2024). Effectiveness of smoking cessation interventions among adults: An overview of systematic reviews. *Systematic Reviews*, *13*(1), 179. https://doi.org/10.1186/s13643-024-02570-9
- Le Foll, B., Piper, M. E., Fowler, C. D., Tonstad, S., Bierut, L., Lu, L., Jha, P., & Hall, W. D. (2022). Tobacco and nicotine use. *Nature Reviews Disease Primers*, *8*(1), 1–16. https://doi.org/10.1038/s41572-022-00346-w
- Mangrio, F. A., Uthis, P., Rojnawee, S., & Matthews, A. K. (2024). Prevalence, Risk Factors, and Intervention Approaches Related to Adolescent Smoking in Pakistan: A Scoping Review. *Journal of the Dow University of Health Sciences (JDUHS)*, *18*(2), Article 2.
- Masud, H., Sekalala, S., Gill, P., & Oyebode, O. (2023). Critical analysis of tobacco taxation policies in Pakistan after two decades of FCTC: Policy gaps and lessons for low- and middle-income countries. *Tobacco Induced Diseases*, *21*, 156. https://doi.org/10.18332/tid/173389
- Okobi, O. E., Salawu, M. A., Nikravesh, E., Umeozor, I. V., Sanusi, I. A., Ojo, S. A., Oaikhena, I., Ezeani, E. I., Uzoh, P. A., Umeh, C. C., Awoyemi, E. O., Okobi, E. K., Evbayekha, E. O., Okobi, T. J., Odoma, V. A., & Izundu, I. C. (2023). Approaches to Smoking Cessation. *Journal of Advances in Medicine and Medical Research*, *35*(13), Article 13. https://doi.org/10.9734/jammr/2023/v35i135047
- Rector, N. A., & Beck, A. T. (2012). Cognitive Behavioral Therapy for Schizophrenia: An Empirical Review: Neil A. Rector, PhD and Aaron T. Beck, MD (2001). Reprinted from the J Nerv Ment Dis 189:278–287. *The Journal of Nervous and Mental Disease*, *200*(10), 832. https://doi.org/10.1097/NMD.0b013e31826dd9af
- Sigmund, K., Hauert, C., & Nowak, M. A. (2001). Reward and punishment. *Proceedings of the National Academy of Sciences*, *98*(19), 10757–10762. https://doi.org/10.1073/pnas.161155698
- Steinberg, M. L., Rosen, R. L., Ganz, O., Wackowski, O. A., Jeong, M., & Delnevo, C. D. (2024). Communicating the benefits of quitting smoking on mental health increases motivation to quit in people with anxiety and/or depression. *Addictive Behaviors*, *149*, 107903. https://doi.org/10.1016/j.addbeh.2023.107903
- Taylor, G. M. J., & Treur, J. L. (2023). An application of the stress-diathesis model: A review about the association between smoking tobacco, smoking cessation, and mental health. *International Journal of Clinical and Health Psychology*, *23*(1), 100335. https://doi.org/10.1016/j.ijchp.2022.100335
- Watson, J. B. (1914). *Behavior*. H. Holt and Company.
- Webb Hooper, M., Lee, D. J., Simmons, V. N., Brandon, K. O., Antoni, M. H., Asfar, T., Koru-Sengul, T., & Brandon, T. H. (2024). Cognitive behavioral therapy versus general health education for smoking cessation: A randomized controlled trial among diverse treatment seekers. *Psychology of Addictive Behaviors*, *38*(1), 124–133. https://doi.org/10.1037/adb0000928
- Zhou, L., Guo, K., Deng, X., Shang, X., E, F., Xu, M., Wu, Y., Wang, Y., Liang, S., Yang, K., & Li, X. (2023). Effects of different combined behavioral and pharmacological interventions on smoking cessation: A network meta-analysis of 103 randomized controlled trials. *Journal of Public Health*. https://doi.org/10.1007/s10389-023-02160-4