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Black soot and Lifestyle as Determinants Of Specific Phobia And Obsessive Compulsive Disorders Among Residents of Port Harcourt.

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Abstract

Black Soot is perceived to be public health concerns which cause public health problems that affect the residents of Port Harcourt, Rivers State psychologically. Therefore, the study examined Black Soot and Lifestyle as determinants of Specific Phobia and Obsessive-Compulsive Disorders among residents of Port Harcourt, Rivers State. The major purpose of the study was to examine the relationship between Black Soot and Lifestyle as determinants of Specific Phobia and Obsessive-Compulsive Disorders among residents of Port Harcourt, Rivers State. 120 adult males and females, resident in Port Harcourt, Rivers State, Nigeria participated in the study. The Symptoms Distress Checklist, Black Soot Anxiety Questionnaire, and Lifestyle Scale were instruments used for data collection. The sample comprised 55.8% females and 44.2% males, with age range of 18 to 50 years, mean age of 2.15 and standard deviation of .498. The study made use of correlational design and adopted Pearson Product Moment Correlation Coefficient statistics and significance was accepted at P <.05 significance level. A significant relationship between black soot and specific phobia was found at (Mean = 6.9, 3.2; Std.D = 2.9, 1.4; r = .908, Sig = .000 P<.05). Also, a significant relationship between black Soot and obsessive compulsive Disorder at (Mean = 6.9, 3.2; Std.D = 2.9, 1.4; r = .907, Sig = .000 P<.05). However, a weak relationship between Lifestyle and Specific phobia at (Mean = 6.9, 1.4; Std.D = 2.9, 1.2; r = 359, Sig = .000 P<.05). The study did not find a relationship between Lifestyle and Obsessive Compulsive Disorder at (Mean = 6.9, 1.4; Std.D = 2.9, 1.2; r = .255, -1, Sig = .000 P<.05). It is recommended that residents should undergo routine psychological screening.

Keywords: Black Soot, Lifestyle, Specific Phobia, Obsessive Compulsive Disorders.

Introduction

Observation showed that most residents of Port Harcourt indicated plans to relocate to other cities. Arguably these expressions to relocate may have stemmed from fear or anxiety

over the black soot that has enveloped the entire air space of the city. Agreeably, it could be argued that the residents have developed specific phobia over the consequences of the black soot to their wellbeing.

Hence, specific phobia, according to Phi, (2013) includes all cases in which fear and anxiety are triggered by a specific condition or situation. Data showed that between 5% and 12% of the population worldwide have specific phobia (Phi, 2012). According to the National Institute for Mental Health (2020), specific phobia refers to an intense fear of aversion to specific objects or situations. Arguably, individuals experiencing specific phobia typically anticipate terrifying consequences from coming in contact with the object of fear, which can be anything from an animal to a location, or bodily fluid or a particular situation. Essentially, blacksoot situation in Port Harcourt constitutes a common phobia to the residents of the city.

Another variable of interest to the researchers is Obsessive Compulsive Disorder (OCD). This is a severe and debilitating anxiety induced disorder afflicting about 1 adult in 40, or approximately 2.5% of the population at some time in their lifetime (Regier et al; 2017, Robins et al; 2014, Kolada et al; 2019). A rigorous evaluation of the literature showed that little effort has been exerted in examining the extent to which the experience of black soot triggers obsessive Compulsive Disorder conditions. However, a recent review of black soot as a determinant of obsessive compulsive disorder revealed the profound personal, social and financial costs associated with Obsessive Compulsive Disorder (Mendlowicz & Stein, 2020).

Indeed, certain basic themes run through the thoughts of most people troubled by obsessive thinking (Abramowitzet al; 2008; APA, 2000), with the most common being dirt or contamination (Tolin & Meunier 2008). Agreeably, Black soot is an air pollutant that seems to affect millions of people globally. In Nigeria, particularly Port Harcourt, the activities of artisanal refineries produces black soot which indeed has caused public health problems (Akindejoye, 2018; Yakubu, 2017; Cho, 2016). Also, Kalagbor et. al., affirmed through their study on exposure to heavy metals in black soot sample and carrier risk assessment, that black soot problem does exist in Port Harcourt, Nigeria. Further evidence as presented by the Rivers State Government in 2017 revealed the sources of the black soot as mainly from the refining activities of Port Harcourt-Refining Company (PHRC), illegal

cottage refineries of stolen crudes and the unconventional method of destroying such facilities by the Federal Government agencies (Nkiruka, 2022)

Indeed, black soot is derived from incomplete combustion of carbon-containing material (Long et al, 2019; Medalia et al, 2019; Watson & Valberg, 2021). It is a powdery mass of fine black particles (Chuang et al, 2011; Kettner & Langmann, 2017; Lewis & Coughlin, 2019). Black soot consists of impure carbon formed after the incomplete combustion of hydrocarbon (Canagatina et al, 2010).

Fundamentally, the main source of black soot is the combustion of fossil-based fuel and biomass burning at the Earth's surface (Glaser et al; 2015). However, other examples of black soot may include coal, charred wood, petroleum coke, cenospheres and tars (Scheepers & Bos, 2019).

Several studies have attempted to establish a relationship between black soot experience and development of certain psychopathologies. Hence, Lu (2018) examined the contribution of air pollution in the development of psychopathological condition and found that pollution largely causes annoyance, anxiety, depression and general dissatisfaction with life. Furthermore, pollution has been linked to substance abuse, self-harm, suicide and crime (Lu, 2018). In the same vein Bernstein (2020) provided evidence to show the relationship of black soot to suicides, depression and autism in children.

Also, Bodisere et al. (2019) examined the relationship between exposure to black soot and specific phobia, depression and psychological wellbeing. They found a positive relationship between exposure to black soot and specific phobia, depression and psychological wellbeing. In another study that examined the association between black soot annoyance, specific phobia and obsessive-compulsive disorder outcomes. Findings showed that specific phobia was approximately 1.23 times greater in those who were highly black soot annoyed (Xiangpu et al, 2022). The findings also revealed approximately 55% higher risk of specific phobia among the residents. For Obsessive Compulsive Disorder, highly annoyed participants had an almost 119% increase risk of obsessive-compulsive disorder (Xiangpu et al, 2022).

In another study, Adizetu and Cluioma (2019) examined the level of awareness of black soot and lifestyle as determinants of mental health disorder among staff and student population

of Nigerian Universities. Findings showed that the participants studied have sparse knowledge of the effects of black soot and life style on mental health of individuals.

Basically, the term lifestyle refers to a complex and dynamic integrated system of preferences and attitudes influenced by socialization process, and translated into social routine decision and action that can be operationalized in terms of a complex system of behaviors, orientations resources and knowledge structures developed through experience that express personal and social identity (Faggiano, 2007; Thirlaway & Upton, 2009). Agreeably, Maciel et al (2007) investigated the association between lifeslye and black soot exposure in precipitating specific phobia and obsessive-compulsive disorder. Their findings indicated that lifestyle and blacksoot were positively associated with both specific phobia and obsessive-compulsive disorder respectively.

Hypotheses

1. Black soot will significantly correlate with specific phobia
2. Black soot will significantly correlate with obsessive compulsive disorder
3. Lifestyle will significantly correlate with specific phobia
4. Lifestyle will significantly correlate with obsessive compulsive disorder

METHOD

Participants

One hundred and twenty (120) participants who are residents of Port Harcourt City participated in the study. They comprised of 53 Males (44%) and 67 females (55.8%) whose ages ranged from 18 - 50 years, with a mean age of 2.15 and standard deviation of 4.98. They were selected using purposive sampling technique.

Instrument

The following instruments were used in the study to obtain data from the participants: Symptoms Distress, Checklist (Derogatis, Lipman & Covi, 1997), Black Soot Anxiety Questionnaire (Diana 2009) and Life style Scale (Felicity et al; 2004), the reliability and validity of the instruments were ascertained and confirmed. Their reliability coefficients were all above 0.72.

Procedure

The instruments were administered to the participants within a space of two weeks. On each day of the administration, the research team waited for the participants to fill the questionnaires and retrieved the same day. On completion, the instruments were scored and analyzed.

Design and Statistics

The study was a survey that adopted a correlational design. The study further made use of Pearson Product Moment Correlation statistics for data analysis.

RESULT

Table 1: Summary Table of correlation between black soot, life style and specific phobia

Source	Mean	SD	r	Sig	N
BSAQ	6.9636	2.96188	.908	000	120
Black Soot	3.2417	1.44138	+1		
BSAQ	6.9636	2.96188	.359	000	120
Lifestyle	1.4172	1.29839	1		

Correlation is significant at 0.01 Level (2 tailed)

The result in table 1 above showed a positive significant relationship between black soot and specific phobia, r.(120)= .908, P-value <0.05.

Also, the result showed a weak sitive significant relationship between black soot and specific phobia, r.(120)= .359, P-value <0.05. Therefore, hypotheses one and two were accepted.

Table 2: Summary table of correlation between black soot, lifestyle and Obsessive-Compulsive Disorder

Source	Mean	SD	R	Sig	N
SCL-90	6.9636	2.96188	.907	000	120
Black Soot	3.2417	1.44138	+1		
SCL-90	6.9636	2.96188	.255	000	120

Also, the result in the table 2 above showed a positive significant relationship between black soot and Obsessive Compulsive Disorder, r.(120)= .907, P-value <0.05. Furthermore, the result showed a weak positive significant relationship, between life style and specific phobia, r.(120)= .359, P-value <0.05. This showed that hypothesis 3 was accepted while hypothesis 4 was rejected.

Discussion And Conclusion

The study examined black soot and life style as determinants of specific phobia and obsessive-compulsive disorder among residents of Port Harcourt, testing four hypotheses. Therefor hypothesis one was accepted. This implies that the more the residents are exposed to black soot, their experience of specific phobia also rises. This result is consistent with the findings of Hicran et al, (2020) Knappe et al, (2019) and Bodiere et al (2019). Their studies showed a positive relationship between exposure to black soot and specific phobia. The result also confirms the positive relationship between the two variables aligning with the findings of Lieh et al (2020) who linked specific phobia to black soot experience.

Also, hypothesis 2 which stated that black soot will significantly correlate with specific phobia was accepted. This implies that the more the residents are exposed to black soot the more their experience of obsessive-compulsive disorder. This result is in consonant with the findings of Knappe et al., (2019) and Xiangpu et al, (2022) which showed a significant relationship between black soot and obsessive-compulsive disorder.

Furthermore, hypothesis 3 was accepted. Lifestyle significantly correlated with specific phobia. This implies that as lifestyle increases slowly and weakly, specific phobia also increases. This is consistent with the findings of xiangpu et al (2022), which found that life style was positively associated with specific phobia.

Finally, hypothesis four (4) was not accepted. The result showed no significant correlation between life style and obsessive-compulsive disorder. This implies that life style does not bring about obsessive-compulsive disorder. This finding is in line with the findings of Maciel et al; (2017) which revealed that life style was associated with obsessive compulsive disorder.

Implication Of The Study

The findings of this study have far reached implications for policy makers and psycho therapists. The study provides empirical evidence of very strong correlation between black soot and specific phobia; black soot and obsessive-compulsive disorder and also life style and specific phobia, but life style did not significantly correlate with obsessive compulsive disorder. Therefore, the implications of this study include expedient and urgent responses from government and policy makers to provide strong regulation that will curb the excesses of artisanal refining; particularly in Port Harcourt with a high number of artisanal outlets and industries whose activities aid in the pollution of the environment.

Also, psychotherapeutic services should be provided for the assessed residents who have developed specific phobia and obsessive-compulsive disorder as a result of black soot experience and lifestyle.

There should be also public advocacy that aim at educating the residents on the dangers of exposure to black soot as a result of illegal or artisanal oil refining.

Conclusion

Based on the findings obtained in this study, it showed that black soot has positive and significant relationship with specific phobia and obsessive-compulsive disorder. Also, life style has a positive and significant relationship with specific phobia but not with obsessive compulsive disorder and these findings will in turn have associated implications on the psychological and physical wellbeing of the residents.

REFERENCES

Bernstein, A. (2020). What Are the Emotional, Mental — And Economic Costs of Air Pollution?

Canagaratna, M. R., Onasch, T. B., Wood, E. C., Herndon, S. C., Jayne, J. T., Cross, E. S. (2010). Evolution of vehicle exhaust particles in the atmosphere. *J Air Waste Manag Assoc 60*(10):1192–203. 10.3155/1047-3289.60.10.1192

Cassee, F. R., Heroux, M. E., Gerlofs-Nijland, M. E. & Kelly, F. J. (2013). Particulate matter beyond mass: recent health evidence on the role of fractions, chemical constituents and sources of emission. Inhal Toxicol 25(14):802–12.10.3109/08958378.2013.850127

China's environmental protection (1993). Challenges and countermeasures. China Popul Today 10(5):16–9.

China, S., Mazzoleni, C., Gorkowski, K., Aiken, A. C. & Dubey, M. K. (2013). Morphology and mixing state of individual freshly emitted wildfire carbonaceous particles. Nat Commun 4:2122. 10.1038/ncomms3122

Chuang, H. C., Jones, T., Chen, Y., Bell, J., Wenger, J. & BeruBe, K. (2011). Characterisation of airborne particles and associated organic components produced from incense burning. Anal Bioanal Chem 401(10):3095–102. 10.1007/s00216-011-5209-7

Clark, H., Coll-Seck, A. M., Banerjee, A., Peterson, S., Dalglish, S. L., Ameratunga, S. (2020). A future for the world's children? A WHO–UNICEF–Lancet Commission. Lancet. 395(10224):605–58.

Doll, R. (1975). Pott and the path to prevention. Arch Geschwulstforsch 45(6):521–31.

Glaser, B., Dreyer, A., Bock, M., Fiedler, S., Mehring, M. & Heitmann, T. (2015). Source apportionment of organic pollutants of a highway-traffic-influenced urban area in Bayreuth (Germany) using biomarker and stable carbon isotope signatures. Environ Sci Technol 39(11):3911–7. 10.1021/es050002p

Hollander, E., Kwon, J. H., Stein, D. J., Broatch, J., Rowland, C. T. & Himelein, C. A. (2016). Obsessive-compulsive and spectrum disorders: overview and quality of life issues. *J Clin Psychiatry 8*:3–6.

Kalkbrenner, A. E., Daniels, J. L., Chen, J. C., Poole, C., Emmch, M. (2010) Perinatal exposure to hazardous air pollutants and autism spectrum disorders at age 8. Epidemiology 21: 631–641.

Kettner, H., & Langmann, R. (2017). (Air pollution by soot]. Offentl Gesundheitswes 32(7):346–8.

Kessler, R. C., Adler, L. A., Barkley, R., Biederman, J., Conners, C. K., Faraone, S. V. ().Patterns and predictors of attention-deficit/hyperactivity disorder persistence into adulthood: Results from the National Comorbidity Survey Replication. Biol. Psychiat., 57(11), 1442–1451.

Kolada, J. L., & Bland, R. C., (2019). Newman SC. Obsessive-compulsive disorder. Acta Psychiatr Scand; Suppl 376:24–35.

Lewis, G. P. & Coughlin, L. (2019). Lung "soot" accumulation in man. Atmos Environ 7(12):1249–55. 10.1016/0004-6981(73)90134-0

Liu, S., Xia, X., Zhai, Y., Wang, R., Liu, T. & Zhang, S. (2011). Black carbon (BC) in urban and surrounding rural soils of Beijing, China: spatial distribution and relationship with polycyclic aromatic hydrocarbons (PAHs). Chemosphere 82(2):223–8.10.1016/j.chemosphere.2010.10.017

Long, C. M., Nascarella, M. A. & Valberg, P. A. (2019). Carbon black vs. black carbon and other airborne materials containing elemental carbon: physical and chemical distinctions. Environ Pollut 181:271–86. 10.1016/j.envpol.2013.06.009

Lu, J. G., Lee, J. J., Gino, F., & Galinsky, A. D. (2018). Polluted Morality: Air Pollution Predicts Criminal Activity and Unethical Behavior. Psychological Science, 29(3), 340–355 3 https://doi.org/10.1177/0956797617735807

Medalia, A. I., Rivin, D. & Sanders, D. R. (2019). A comparison of carbon black with soot. Sci Total Environ 31(1):1–22. 10.1016/0048-9697(83)90053-0

Mendlowicz, M. V. & Stein, M. B. (2020). Quality of life in individuals with anxiety disorders. Am J Psychiatry;157:669–82.

Michael, P., Ronald, S., Nigel, H., Andy, B., Ed, S. & Michael, V. (2009). McGrath Hill Education, UK: McGrath Hill Companies Inc. p 790

National Institute of Mental Health, (2020). www.nimh.nih.gov. Retrieved 16 November 2020. Niessner, R. (2014). The many faces of soot: characterization of soot nanoparticles produced by engines. Angew Chem Int Ed Engl 53(46):12366–79. 10.1002/anie.201402812

Nkiruka, N. (2022, March, 11). Black Soot in Rivers State, the worst air-polluted state in the country. Vanguard Media Limited, Nigeria.

Parent, M. E., Siemiatycki, J. & Fritschi, L. (2006). Workplace exposures and oesophageal cancer. Occup Environ Med 57(5):325–34. 10.1136/oem.57.5.325

Phil, B. (2013). Psychiatric and mental health nursing: the craft of caring. London: Arnold. ISBN 978-0-340-81026-2. Archived from the original on 27 May 2013. Retrieved 17 December 2010.

Regier, D. A., Boyd, J. H., Burke, J. D., Jr, R. D., Myers, J. K., Kramer, M. (2018). One-month prevalence of mental disorders in the United States. Based on five Epidemiologic Catchment Area sites. Arch Gen Psychiatry;45:977–86.

Robins, L. N., Helzer, J. E., Weissman, M. M., Orvaschel, H., Gruenberg, E., Burke, J. D. (2014). Lifetime prevalence of specific psychiatric disorders in three sites. Arch Gen Psychiatry;41:949–98.

Ronald, J. C. (2010). Abnormal Psychology. 7th Edition. Worth Publishers, New York, USA. ISBN-13 978-1-4292-1631-9 ISBN-10 1-4292-1631-X

Roth, A., & Fonagy, P. (2015). What works for whom? A critical review of psychotherapy research (2nd ed.). New York: Guilford Press.

Scher, C. D., Steidtmann, D., Luxton, D., & Ingram, R. E. (2016). Specific phobia: A common problem, rarely treated. In T. G. Plante (Ed.), Mental disorders of the new millennium, Vol. 1: Behavioral issues. Westport, CT: Praeger Publishers.

UNICEF. (2016). Clear the air for children. The impact of air pollution on children. New York, NY: UNICEF Division of Data, Research and Policy.

U.S. Department of Health & Human Services (2017). "Phobias".www.mentalhealth.gov. Archived from the original on. Retrieved 1 December 2017.

Victor, D. G., Ramanathan, V. & Zaelke, D. (2015). Air pollution: harmful soot spurs climate - policy action. Nature 517(7532):21. 10.1038/517021b

Volk, H. E., Hertz-Picciotto, I., Delwiche, L., Lurmann, F. & McConnell, R. (2012). Residential proximity to freeways and in the CHARGE study. Environ Health Perspect 119: 873 – 877.

Watson, A. Y. & Valberg, P. A. (2021). Carbon black and soot: two different substances. AIHAJ 62(2):218–28. 10.1080/15298660108984625

Wang, R., Tao, S., Shen, H., Huang, Y., Chen, H., Balkanski, Y. (2014). Trend in global black carbon emissions from 1960 to 2007. Environ Sci Technol 48(12):6780–7. 10.1021/es5021422

Wang, Q., Schwarz, J. P., Cao, J., Gao, R., Fahey, D. W., Hu, T. (2014). Black carbon aerosol characterization in a remote area of Qinghai-Tibetan Plateau, Western China. Sci Total Environ 47(9–480):151–8. 10.1016/j.scitotenv.2014.01.098

Windham, G. C., Zhang, L., Gunier, R., Croen, L. A. & Grether, J. K. (2016). Autism spectrum disorders in relation to distribution of hazardous air pollutants in the San Francisco Bay Area. Environ Health Perspect 114: 1438–1444.

WHO. (2016). 7 million premature deaths annually linked to air pollution. http://www.who.int/mediacentre/news/releases/2014/airpollution/en.

Zhan, C., Cao, J., Han, Y., Huang, S., Tu, X., Wang, P. (2013). Spatial distributions and sequestrations of organic carbon and black carbon in soils from the Chinese Loess Plateau. Sci Total Environ 465:255–66. 10.1016/j.scitotenv.2012.10.113