Neighbours of People Who use Nyaope are Anxious Too!

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ABSTRACT

Purpose: The purpose of the study was to determine the prevalence and severity of anxiety symptoms among neighbours of people who use nyaope. Nyaope, a very addictive substance with severe consequential social and behavioral impacts, is reported to contribute to mental disorders including anxiety symptoms among family members of users. However, the members of the immediate community are also affected due to various activities associated with nyaope usage.

Methodology: A quantitative design was used to collect data from four hundred and twenty-two (422) adult neighbours of people who use nyaope in six townships of Tshwane Municipality in Gauteng, South Africa. The Generalized Anxiety Disorder (GAD-7) questionnaire that was used to screen for anxiety symptoms had the following four categories: no symptoms, mild, moderate and severe symptoms.

Findings: The participants were comprised of 48,46% males and 51,54% females and their age ranged from 18 to 88 years. The prevalence of anxiety symptoms was 53.62 % (n=222), with the majority presenting mild symptoms (n=112; 27.05%), followed by moderate (n=78; 18.84%) and severe (n=32; 7.73%). The factors associated with anxiety symptoms were age, gender and religion.

Conclusion: Neighbours of people using nyaope have anxiety symptoms that are higher than the general public. The community around nyaope usage is mostly assumed to be disaffected by this, but the study proves otherwise.

Practical Implications: Psycho-social support should be provided to community members living in areas of rife nyaope use.

Contribution to Literature: This study would contribute important literature on how nyaope usage affects the immediate community.

Keywords: *Anxiety, Community, Neighbours, Nyaope, Substance, Symptoms.*

1. INTRODUCTION

Among the increasing prevalence of mental disorders in the world is anxiety disorder, which is one of the two most common mental disorders (Kebogile E Mokwena & Madiga, 2023). Generalized anxiety disorder (GAD) presents as intense worry about everyday situations, which is often referred to as 'unjustified fear', which can also lead to panic attacks or agoraphobia (Indah & Nurmaily, 2022). Anxiety disorder symptoms include fatigue, irritability, insomnia or oversleeping and restlessness (Terlizzi & Villarroel, 2020). Contributory factors include age, gender, psychosocial factors (such as femininity and masculinity) and genetic makeup (Farhane-Medina, Luque, Tabernero, & Castillo-Mayén, 2022; Nivard et al., 2015; Waszczuk, Zavos, Gregory, & Eley, 2016; Zimmermann, Chong, Vechiu, & Papa, 2020). Many people who have anxiety have not been diagnosed and so are not being treated (Showraki, Showraki, & Brown, 2020; Szuhany & Simon, 2022). Although the accurate estimated burden of anxiety disorder in South Africa is still unknown, Mokwena and Madiga (2023) studies have reported estimates of up to 38% (Mkhwanazi & Gibbs, 2021). In this study by Mkhwanazi and Gibbs (2021) anxiety symptoms were associated with violence and poverty.

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Contributory factors of anxiety disorder include low economic status or financial instability, Mwinyi et al. (2017) which results from high unemployment and intense poverty affecting many people in South Africa. Other key factors include crime and violence, where community members are always on edge and anxious about their environment. Age and gender are found to be significantly associated with anxiety symptoms McAusland et al. (2024), and the prevalence is reported to be higher among women (Grenier et al., 2019). Among the risk factors identified are cigarette smoking, alcohol and cannabis consumption, negative life events, avoidance and workplace factors. Protective factors include social support, adaptation and physical activity. Smoking is the most studied risk factor for GAD. Smoking was also found to be a risk factor for agoraphobia and panic disorders (Shafiee et al., 2024; Zimmermann et al., 2020). Other risk factors include psychological, academic, biological, lifestyle, social and financial. It is stated that low family incomes and poverty can predict the development of Generalized Anxiety Disorder during university years (Rudenstine et al., 2021).

Anxiety disorder is often misunderstood, and in some religious and spiritual circles, it is understood to be a spirit or demon possession (Mauda, Mokwena, & Sodi, 2023). Misinterpretation of symptoms may contribute to delayed access to treatment by individuals in religious settings. Anxiety disorder often occurs with both depression and substance abuse, Solati and Hasanpour-Dehkordi (2017) suggesting a high prevalence of anxiety disorder among South Africans due to the scourge of substance abuse like alcohol, cannabis, drugs including 'nyaope' (a mixture of heroin, cannabis and other addictive substances), thus a public health concern (Masombuka & Qalinge, 2020; Mokwena, 2016). However, not only does substance abuse affect the individual, but it affects the people around the person who abuses substances, such as family, relatives, co-workers and neighbours. To this effect, a South African study to quantify generalised anxiety symptoms among family members of nyaope users reported a prevalence of 73% (Mokwena & Madiga, 2023).

Nyaope has become a commonly misused substance among young South Africans from disadvantaged community backgrounds (Bala & Kang'ethe, 2021; Sekhotha et al., 2023). It has become a serious public health concern due to its numerous adverse effects on the user, their family and the entire community (Masombuka & Mathibela, 2022; Motsepe, 2022). Nyaope is made up of a combination of illicit substances such as cocaine, heroin, cannabis, antiretroviral drugs and rat poison (Mthembi, 2020; Ratshisusu, Simani, Blackard, & Selabe, 2024). Nyaope use is linked with numerous societal ills like petty crime where users steal to support their habit (Honour & Detectives, 2014). Users normally loiter around shopping malls or crowded areas, soliciting money, insisting on washing car windows, etc. Mostly, users affect their family as they steal items from their homes and then proceed into the neighbourhoods to do the same (Mokwena, 2016). They also experience deteriorating health because of neglecting their hygiene through lack of bathing and wearing dirty clothes (Sibusiso, Setwaba, Nel, & Govender, 2022). Users physically experience body pains, forcing them to seek the next fix or even increase the dose (Mokwena & Huma, 2014). The physical and societal experiences of a nyaope user may lead them to internalizing problems which may result in mental health issues such as anxiety and depression (Fernandes & Mokwena, 2020). Consequently, the users and general members of the community are affected by social ills due to the use of nyaope use in their community.

The aim of this study was to determine the prevalence and severity of anxiety symptoms among neighbours of people who use nyaope.

2. METHODOLOGY

A quantitative cross-sectional design was used to collect data from four hundred and twenty-two (422) adult neighbours of nyaope users who live in the six townships in Tshwane Municipality. Quantitative questionnaires were used to collect demographic information and screen for anxiety symptoms and severity.

2.1. Study Population

The study population consisted of adult neighbours of nyaope users who live in six townships of Tshwane Municipality. Male and female individuals, 18 years and older, willing to participate were recruited. The recruitment was focused on individuals who were not previously clinically diagnosed with anxiety disorder, regardless of other risk or predisposing factors.

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2.2. Recruitment

The residents of Mamelodi, Soshanguve, Atteridgeville, Hammanskraal, Mabopane and Ga-Rankuwa were recruited among neighbours in the vicinity of nyaope users, malls, churches and community clubs. They were invited by researchers, assisted by the other field workers to participate in the research study. Nyaope use is reported to be rife in Tshwane townships, Madiga and Mokwena (2022) hence the population selection. The purpose of the research and objectives were explained to the community members, and they were then asked to indicate if they had neighbours who use nyaope. When they indicated that they had nyaope users as neighbours, they were then invited to participate in the study. All the participants in the study had to provide consent. Those living with a nyaope user within the family or were under 18 years of age and previously diagnosed with anxiety disorder were excluded from the study.

2.3. Sampling

Purposive sampling was used to include community members who are 18 years or older and who met the inclusion criteria.

2.4. Sample Size

Using the Raosoft sample size calculator for an unknown population size, a 95% confidence interval, a 5% margin of error, and a 50% response distribution, a minimum sample size of 377 was calculated. The total sample size reached was 422.

2.5. Data Collection Tools

The Generalized anxiety disorder (GAD-7) was used to screen for anxiety symptoms and quantitative questionnaires developed by the researcher were used for socio-demographic data. The data tools in IsiZulu, Setswana or Sesotho, which are the common native languages in the study research settings, were made available and used by the participants who did not opt for the English language version. The GAD-7 is a reliable and valid measure (Rodríguez-Reynaldo, Rivera-Orraca, Ramos Monserrate, & Martínez-González, 2025) and has a high specificity and sensitivity of 75.4.1% and 68.9%, respectively at the cut-off score of 5 and above (Vrublevska, Renemane, Kivite-Urtane, & Rancans, 2022). Cut-off points of 5, 10, 15 for mild, moderate and severe respectively were used to determine anxiety symptoms.

The GAD-7 has been found to have good psychometric properties and has been used globally and locally in community settings (Kebogile E Mokwena & Madiga, 2023; Stocker et al., 2021; Villarreal-Zegarra et al., 2024; Vinogradova, Kivite-Urtane, Vrublevska, & Rancans, 2021).

2.6. Data Analysis

The raw socio- demographic data as well as the data from the screening tool was captured in Microsoft Excel, cleaned and uploaded to STATA Stata-14 (Stata Corporation, College Station, TX, USA) for data analysis. The socio-demographic data was descriptively analysed and the means, medians, proportions and standard deviations were determined. The GAD-7 scores were categorized as mild for scores of 5-9, moderate for scores of 10-14 and severe for scores of 15 and higher. Pearson's chi-square tests were used to test the strength of the association of anxiety symptoms with socio-demographic variables ($p \leq 0.05$). Variables that remained significant at the bivariate level were used to build a logistic regression model to determine which variables would be retained ($p < 0.05$).

2.7. Ethical Considerations

The study obtained an ethical clearance certificate from the Ethics committee of Sefako Makgatho Health Sciences University in Pretoria, South Africa. The participants were provided with informed consent forms to complete in the preferred language, and confidentiality of the participants' information was maintained by the researcher assigning ID codes in place of names of participants in the research report.

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3. RESULTS

3.1. Socio-Demographic Factors of the Participants

The final sample size was 422, with the majority of participants from Mamelodi (n=108; 25.59%) and Soshanguve (n=97; 22.99%). Approximately 90.67 % of the participants lived with their families, with only a few who lived alone (n=39; 9.33%). Table 1 provides further information:

Table 1. Participants' place of residence and living arrangements.

Factor	Frequency	Percentage
Township (n=422)		
Atteridgeville	50	11.85
Ga-Rankuwa	49	11.61
Hammanskraal	64	15.17
Mabopane	54	12.80
Mamelodi	108	25.59
Soshanguve	97	22.99
Living arrangements (n=418)		
Alone	39	9.33
Family	379	90.67
People living with		
Partner	48	8.10
Wife/Husband	55	9.29
Step/Biological children	117	19.76
Mother	154	26.01
Siblings	99	16.72
Aunt/Uncle	28	4.72
Other	91	15.35

3.2. Socio-Demographic Variables of the Participants

The mean age of the participants was 34.14 % with a minimum age of 18 and maximum of 88. The majority were African (n=414; 98.57%), female (n=217; 51.54) and single (n=336; 80 %), with matric (n=224; 53.33%) as their highest level of education. A quarter of the participants were employed (n=108; 25.71%) and 44.34 % (n=184) used substances, with alcohol (n=132; 61.97%) as the predominant substance used. See Table 2 for more details:

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Table 2. Sociodemographic variables of participants.

Factor	Frequency	Percentage
Age (Mean 34.14; SD 13.54; Min 18; Max 88) (n=405)		
18-24 years	122	29.47
25-45 years	202	48.79
≥45 years	90	21.74
Gender (n=421)		
Female	217	51.54
Male	204	48.46
Race (n=420)		
Black	414	98.57
Colored	5	1.19
White	1	0.24
Marital status (n=420)		
Divorced	6	1.43
Married	67	15.95
Single	336	80.00
Widow	6	1.43
Religion (n=412)		
African traditional	44	10.68
Christian	326	79.13
Islam/Muslim	9	2.18
None	29	7.04
Other	4	0.97
Home language (n=416)		
IsiNdebele	22	5.29
IsiSwati	9	2.16
IsiZulu	40	9.62
Sepedi	111	26.68
Sesotho	41	9.86
Setswana	111	26.68
Tshivenda	12	2.86
Xhosa	6	1.44
Xitsonga	43	10.34
Other	2	0.48
The highest level of education (n=412)		
No formal education	77	18.69
Matric	228	55.34
Degree/Diploma	93	22.57
Honors	7	1.70
Masters	7	1.70
Employment status (n=420)		
Employed	108	25.71
Self-employed	88	20.95
Unemployed	224	53.33
Use of substances (n=415)		
No	231	55.66
Yes	184	44.34
Type of substances (n=213)		
Alcohol	132	61.97

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Tobacco/Cigarette	57	26.76
Snuff	4	1.88
Cannabis	18	8.45
Other	2	0.94

3.3. Prevalence of Anxiety

The prevalence of anxiety symptoms was 53.62 % (n=222), with the majority presenting mild symptoms (n=112; 27.05%), followed by moderate (n=78; 18.84%) and severe (n=32; 7.73%).

Figure 1 illustrates the Prevalence of Anxiety symptoms.

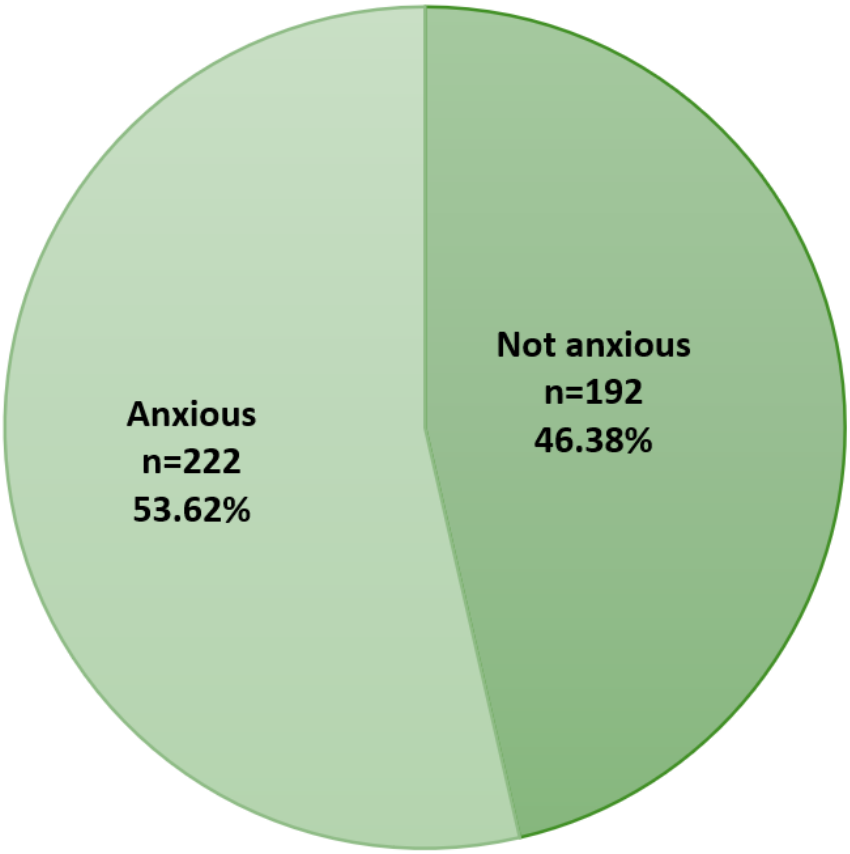

Figure 1. Prevalence of Anxiety symptoms.

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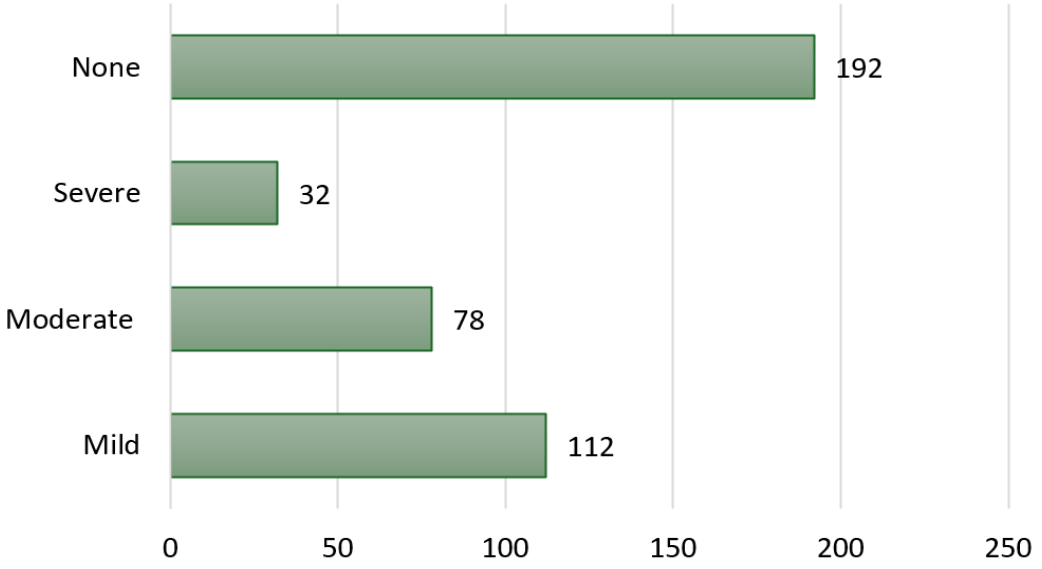

Figure 2. Categories of Anxiety symptoms.

Figure 2 illustrates the Categories of Anxiety symptoms.

3.4. Factors Associated with Anxiety Symptoms

Four factors which were significantly associated with anxiety symptoms were age, gender, religion, gender as well as the people the participants lived with. Further details are provided in the Table 3:

Table 3. Factors associated with Anxiety symptoms.

Factor	Frequency (%)	Anxiety symptoms		Chi2	P-value
		Yes	No		
Age				7.3343	0.026
18-24 years	122 (29.47)	71 (31.98)	51 (26.56)		
25-44 years	202 (48.79)	114 (51.35)	88 (45.83)		
≥45 years	90 (21.74)	37 (16.67)	53 (27.60)		
Gender				18.0375	0.000
Female	217 (51.54)	136 (61.26)	77 (40.31)		
Male	204 (48.46)	86 (38.74)	114 (59.69)		
Religion				9.4457	0.051
African traditional	44 (10.68)	17 (7.80)	25 (13.44)		
Christian	326 (79.13)	186 (85.32)	136 (73.12)		
Islam/Muslim	9 (2.18)	3 (1.38)	5 (2.69)		
None	29 (7.04)	11 (5.05)	19 (10.22)		
Other	4 (0.97)	1 (0.46)	1 (0.54)		
People residing with					
People residing with: Wife				3.6825	0.055
Yes	29 (7.44)	11 (5.42)	18 (10.47)		
No	361 (92.56)	199 (94.76)	154 (89.53)		
People residing with: Uncle/Aunt				6.6033	0.010
Yes	26 (6.81)	8 (3.81)	18 (10.47)		
No	356 (93.19)	202 (96.19)	154 (89.53)		

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3.5. Logistic Regression Model

Age, gender, religion and people living with remained significant after binary logistic regression. Female participants were twice more likely to exhibit symptoms of anxiety, whereas those under 45 were 1.3 times more likely to present with anxiety symptoms. Further details are provided below:

Table 4 illustrates Logistic Regression Model.

Table 4. Logistic regression model.

Factor	Odds ratio	Standard error	P-value	Confidence interval
Age	1.313	0.184	0.052*	0.997 1.729
Gender	2.067	0.468	0.001*	1.326 3.222
Religion	1.496	0.249	0.015*	1.079 2.075
People living with: Wife	0.676	0.291	0.365	0.290 1.575
People living with: Aunt/Uncle	0.369	0.169	0.030*	0.150 0.908

Note: p-value <0.05 *; Confidence interval=95 %.

4. DISCUSSION

The socio-demographic characteristics of the present sample were representative of the social ills faced by people residing in townships often characterised by high levels of low socio-economic conditions. For example, this sample mainly consisted of participants with low levels of education and high levels of unemployment, which is synonymous with the findings obtained in another study conducted in the same townships (Mokwena & Madiga, 2023). The current study demonstrated a prevalence of 53.62 % for anxiety symptoms, with higher rates observed among participants residing in Mamelodi, Soshanguve and Hammanskraal. These townships are infamously known for their high usage rates of nyaope (Mokwena, Shandukani, & Fernandes, 2021; Mokwena, Magabe, & Ntuli, 2023). Although the township of residence and the symptoms of anxiety were not significant in the current study, this result indicates the potential link between one's residential setting and their mental well-being.

To the best knowledge of the authors, this is the first study to quantify anxiety symptoms of anxiety among neighbours of nyaope users. The prevalence rate of 53.63 % is lower than the 73 % reported among family members of nyaope users conducted in similar settings (Mokwena & Madiga, 2023). On the other hand, this prevalence is much higher than the 23.6 % prevalence among the general population of South Africa (Craig et al., 2022). This high prevalence provides evidence that the consequences of substance abuse, specifically the use of nyaope, transcends far beyond just the user and their immediate families but extends into the community. For example, crime has been identified as a major consequence of substance abuse (Varshney, Browning, Debnath, Shet, & Shet, 2023). The involvement in criminal activities such as stealing household items, robbery and other crimes are frequent among nyaope users, which is often fuelled by the strong desire to buy quick fix to satisfy the craving of nyaope when resources are unavailable (Nene, Mkhonto, & Mokwena, 2024). It is estimated that 49.5 % of nyaope users have been involved in criminal activities, Mokwena et al. (2023) which may explain the high rates of anxiety among the current sample, as they may be fearful and anxious about living in a neighbourhood where this is a frequent occurrence. A study by Eshrati and colleagues (Eshrati et al., 2023) reported that community members living in close proximity to drug users had a fear of being attacked and also feared for the lives of their children. Similar results were observed in an Irian study, Saberi Zafarghandi et al. (2019) which shows the correlation between areas with high levels of crime and an increased risk of poor mental health outcomes (Baranyi, Di Marco, Russ, Dibben, & Pearce, 2021; Baranyi et al., 2019; Cuartas & Leventhal, 2020).

The present research study also revealed that gender was significantly associated with anxiety symptoms. It was found that women were twice more likely to present with anxiety symptoms compared to their male counterparts, with similar results replicated in other studies (Hou, Mao, Dong, Cai, & Deng, 2020; Van der Walt, Mabaso, Davids, & De Vries, 2020). In a systematic review of anxiety according to gender, it was demonstrated that femininity is a risk factor for anxiety whereas masculinity was found to be a protective factor (Farhane-Medina et al., 2022). The experiences of men and women differ, especially in disadvantaged communities where there are high levels of violence and crime. Logan and Walker highlighted that when it comes to crime and safety issues, women tend to worry more about their personal safety than men, which may explain why they have higher levels of anxiety when living in areas with high crime rates (Logan & Walker, 2021). Additionally, other violence-related issues such as

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fighting, noise as well as mob justice, are common occurrences in neighbourhoods where drug abuse is rife, thus making the environment unpleasant (Eshrati et al., 2023; Saberi Zafarghandi et al., 2019).

The current study also showed how living conditions mediated levels of anxiety. To illustrate, it was found that anxiety symptoms were less likely to occur among participants who resided with their wives as well as those who resided with their aunts and uncles. It is explained that companionship alleviates symptoms of anxiety due to the provision of social support (Grundström, Konttinen, Berg, & Kiviruusu, 2021). Social support plays an integral role in mental health status. An American study exemplified that family support reduces stress (Bostean, Andrade, & Viruell-Fuentes, 2019). Therefore, living with family members may provide a sense of safety and comfort, which is not awarded to those living alone, thus heightening risk of anxiety. Interestingly, participants who were Christian had a higher frequency of anxiety, which remained significant even during multivariate analysis. It is unclear why this is the case, thus more studies are needed to examine the relationship between religion, area of residence and substance abuse. This result may also be explained by the high participation level of Christian participants with more than 79 % of the participants affiliated with the faith.

Age in the current study, synonymous with other sources of literature was also significantly associated and participants younger than 45 had 1.3 increased odds of anxiety symptoms (Fitouri, Souissi, Racil, Ben Jomaa Ben Hsouna, & Chamari, 2024; Varma, Junge, Meaklim, & Jackson, 2021). Fitouri and colleagues describe various stressful life events, transitioning societal roles, as well as the burden of meeting societal expectations as some of the challenges faced by young people that negatively affects their mental well-being, increasing their risk of anxiety (Fitouri et al., 2024). The aforementioned authors that over time, maturity affords one better coping mechanisms and increased resilience, decreasing the odds of poor mental health. However, there were also high levels of unemployment in the current sample, which may also explain why anxiety symptoms were so prevalent among the participants in the 25 to 45-year age group. Unemployment, although not significant in the current study, has been significantly correlated with an increased risk of adverse outcomes such as anxiety, depression and suicide (Coronado-Vázquez et al., 2024; Mokona, Yohannes, & Ayano, 2020; Phiri & Mukuku, 2020; Skinner, Osgood, Occhipinti, Song, & Hickie, 2023; Virgolino et al., 2022) and is a major pain point for a majority of young adults in the country (De Lannoy, Graham, Patel, & Leibbrandt, 2020). Specifically related to the current sample, the presence of these external stressors may be further worsened by living in close proximity to a drug addict. The home is supposed to be a place of refuge and safety, however, when faced with challenges, it can become a risk factor for ill mental health (Lkhagvasuren et al., 2024).

Although higher levels of anxiety were observed among participants with lower levels of education as well as those who were single, these results were not significant, contrary to what other authors have reported (Craig et al., 2022; Mokwena et al., 2023). It is inferred that there may be a different subset of factors that are unique to neighbours of nyaope users as their experiences may be different from other community members who are not exposed to issues of substance abuse. For example, other issues faced by community members living in neighbourhoods where substance abuse is rife include exposure to second-hand smoke due to being in close proximity with users, constant exposure to drug use, as well as unsafe disposal of drug equipment that serves as an environmental health hazard (Eshrati et al., 2023; Saberi Zafarghandi et al., 2019). The unsafe disposal of needles has potential harmful effects, such as the spread of infectious diseases (Eshrati et al., 2023) that place the health of community members at risk. The aforementioned factors may all contribute towards an elevated risk of anxiety among this sample, thus making it essential to conduct more studies as well as the associated risk-factors to inform tailored health interventions.

The neglect and lack of interventions may have adverse consequences on the health of community members as mental health disorders such as anxiety may go undetected hence increasing risk of maladaptive coping mechanisms (Mokwena et al., 2023). Maladaptive coping mechanisms have the potential to cause more harm and further perpetuate the cycle of substance abuse, as it was observed that 44.34 % of the study participants used substances. It may be inferred that participants may be using substances as a way to cope with their anxiety symptoms, which has been reported in other studies (Koob, Powell, & White, 2020; Walukevich-Dienst et al., 2023). However, it is important to acknowledge the complex role between substance use and anxiety as the direction of the relationship has yet to be determined (Garey et al., 2020). Among those who used substances, the use of alcohol was the most frequent, occurring in more than 61.97% of the participants. High levels of alcohol consumption are not unique only to this study, as other studies within South Africa have observed high levels of

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alcohol consumption, as well as the use of other substances (Mngoma, Ayonrinde, Fergus, Jeeves, & Jolly, 2021; Mohale & Mokwena, 2020). This result exemplifies the urgent need to address the issues of substance abuse and mental health disorders in the country, given their correlation.

5. CONCLUSION

This study concludes that neighbours of people who use nyaope have anxiety symptoms that are higher than the general public. There is therefore a need to address the mental health challenges of people who live in neighbourhoods with a high prevalence of nyaope use.

FUNDING

This study received no specific financial support.

INSTITUTIONAL REVIEW BOARD STATEMENT

The Ethical Committee of the Sefako Makgatho Health Sciences University, South Africa has granted approval for this study on 16 November 2023. (Ref. No. SMUREC/H/174/2023:IR).

TRANSPARENCY

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors on request.

COMPETING INTERESTS

The authors have no competing interests.

AUTHORS' CONTRIBUTIONS

Conceptualization, V.M. Ngema and K.E. Mokwena; Methodology, M.M. Ravhengani; Formal analysis, K.C. Maaga; writing—original draft preparation, M.O. Ramatsui, M.M. Ravhengani and K.C. Maaga writing—review and editing, M.O. Ramatsui and K.E. Mokwena; supervision, K.E. Mokwena Project administration, V.M. Ngema; Funding acquisition, K.E. Mokwena. All authors have read and agreed to the published version of the manuscript.

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