ABSTRACT

**Background**: Health Risk behavior is a major concern in the society, especially among young people.

**Aims**: This study evaluated the influence of self-image; socio-demographic factors and low parental supervision on pornography consumption and substance use among Nigerian adolescents.

**Methods**: This was a cross-sectional observational study. Adolescents’ self-image was measured with Rosenberg Self-Esteem (RSE) scale. Multivariate analysis was used to explore the relationship among demographic variables, self-image, pornography consumption and substance use. A 2-sided p-value < 0.05 was considered significant.

**Results**: Altogether, 883 street youths participated in the study. The mean ages (years) were 17.6±2.5 and 16.8±2.3 for boys and girls respectively. The overall prevalence of pornography

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viewing and substance use were 54.5% and 21.5% respectively. Specific prevalence for substance use was highest for Cannabis (10.5%). Self-image significantly influenced both vices, $p<0.001$. Stepwise logistic regression identified predictors of substance use as follows: male gender, OR = 3.65 (2.44 – 5.47); secondary education: OR = 2.50 (1.51 – 4.13) and living with relatives, OR = 2.77 (1.17-6.52).

**Conclusion:** Self-image and modifiable demographic features influence pornography viewing and substance use among young people. Adolescent Preventive Services should be made readily available to this high risk group.

**Keywords:** Self-image; pornography viewing; substance use; adolescents.

1. **INTRODUCTION**

Health Risk behavior is a major concern in every society, especially among young people. It is often due to the imbalance between protective and negative influences on adolescents during this active phase of development [1]. Moreover, cognitive and psychosocial development typically lags behind physical maturation during adolescence [1,2]. This heightens adolescents’ risk-taking tendency without due consideration of the outcome of their actions. Incomplete myelination and sub-optimal gamma-aminobutyric acid neurotransmission might be responsible for immature and impulsive behavior and neurobiobehavioral excitement during adolescent life [3]. Such unhealthy behavior includes sexual experimentation, substance abuse, truancy and violence with potential dire consequences [2,4].

Pornography viewing is an uncensored source of sex information with negative impacts on children and adolescents. Earles et al. [5] reported that sexual information presented on modern media increase sexual activity, STI and unplanned pregnancy among adolescents. Pornography viewers are more likely to approve sexual violence including rapes. This is particularly notable considering that sex is often idealized on modern media [5-7]. The foregoing contributes to the high burden of sexually transmitted infection (STI’s), HIV infection, unwanted pregnancy, repeat pregnancy, unsafe abortion and disproportionately high maternal mortality rates among young people, especially in resource limited settings [8,9].

Furthermore, in the absence of adequate anticipatory guidance and protective influences, an adolescent can resort to substance use. This may be done out of curiosity, exuberance or peer imitation. Also, it may be a way of exacting his/her independence by embarking on perceived ‘adult behaviour’ [10]. Occasionally, it may be a means of dissipating some emotional issues or getting on the nerves of an over-protective parent. Whatever may be the underlying factor, both short and long term outcomes, are poor without prompt intervention [10,11]. Hence, substance use predisposes the youths to cultism, violence, risky sex, accidents and early death, as well as other systemic disorders including malignancies in adulthood [10,11].

Therefore, what are the main factors that influence pornography viewing and substance use among young people in resource-limited settings? We hypothesized that self-image; socio-demographic factors and low parental supervision are determinants of these vices. This paper reports an evaluation of the influence of these variables on pornography consumption and substance use among Nigerian adolescents.

2. **METHODS**

2.1 **Study Setting and Participant**

The study was carried out from October to December 2014 in four purposively selected busiest urban slums in Ondo Town, with an estimated adolescent population of 55,000[12]. A simple random technique was adopted in selecting the participants. They were school-going and out-of-school young people aged 11-24 years who were apprentices, traders, hawking or involved in other economic activities in the slums (Odojomu, Oja-Mofere, Sabo and Yaba). They were predominantly Christians and Yoruba. Ethical clearance was obtained from the Ethics and Research Committee of the Mother and Child Hospital, Akure. Verbal informed consent was received from each participant by explaining the purpose of the study, emphasizing that participation in it was voluntary, and that confidentiality would be ensured. A total of 904 young people were recruited in the survey; 21 of them were later excluded due to grossly incomplete data.
2.2 Variables

The dependent variables were pornography viewing and substance use, while the adolescent’s self-image and socio-demographic features were the independent variables. Rosenberg Self-Esteem (RSE) scale was used to measure self-image [13,14]. It is a ten-item Likert scale which items (e.g. ‘I feel I do not have much to be proud of’, ‘On the whole, I am satisfied with myself’) are answered on a four-point scale, from ‘strongly agree’ to ‘strongly disagree’. The score ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem. The RSE scale presented high ratings in reliability areas; Alpha coefficients ranged from 0.72 to 0.87 in studies including adolescents [13,14] In the current study, the correlation coefficient was 0.72.

2.3 Data Collection

Two trained research assistants (a male and a female) conducted face-to-face interviews with the adolescents using a structured questionnaire with open-ended and closed-ended questions focused on the above variables. Their training lasted about six hours and the contents consisted of data collection procedures, interview techniques and interpersonal skills with special focus on adolescent sexuality. During the training, the researchers reviewed each item on the questionnaire to ensure clarity. At the end of the training, skills of the research assistants were verified to be adequate through role-play and simulations. The interviews were conducted in English or Yoruba languages to ensure good comprehension. In order to avoid gender bias in responses, the interviewers were of the same sex with the respondents when feasible.

2.4 Statistical Analysis

The data were analysed using the Software package for Social Science (SPSS) version 20.0 (Windows Inc; Chicago, IL, USA). Categorized data such as ethnicity, living arrangement, occupation and socioeconomic status were presented as proportions. Participants’ RSE scores were presented on a linear graph.

Fisher’s exact test or Pearson’s Chi-square was used to assess for any association between self-esteem and adolescent health risk behaviour. Multivariate analysis was used to explore demographic variables associated with pornography consumption and substance use. A 2-sided p-value < 0.05 was considered significant.

3. RESULTS

3.1 Socio-demographic Variables of Participants

A total of 883 adolescents took part in the survey, 49.0% of them were females while 51.0% were males, with their mean ages being 16.8±2.3 and 17.6±2.5 years respectively. Altogether, 6.2%, 33.9% and 45.1% of the participants were in early, middle and late adolescent age groups, the rest (14.8%) were twenty years old and above. A majority of them were single (78.4%), Yoruba (85.9%) and in lower socioeconomic class (67.8%).

Fig. 1 shows the living arrangement of these young people. About 16.0% lived with mother only, 14.8% with father only, 53.3% with both parents, 8.1% with relatives while 7.6% lived alone. When compared by gender, higher proportion of females than males lived with both parents (61.4% vs. 44.7%) while fewer females lived with relatives (5.8% vs. 10.6%); otherwise living arrangements were fairly similar between both sexes.

3.2 Pornographic Viewing and Substance Use

The prevalence of pornographic viewing among the participants in this survey was 57.6% while the overall prevalence of substance abuse was 21.6%. Basically, both social vices increase with adolescent age, (Table 1). The specific prevalence of substance use was highest for Cannabis (10.5%), while 6.5% and 6.6% of the participants indulge in cigarette smoking and alcohol respectively. There is male preponderance in Cannabis (Marijuana) use (Fig. 2). Also, multiple substance use occurs in 2.1% of the participants. Use of other illicit substances like crystal methamphetamine, ecstasy, solvents and cocaine was not reported by these youths. Concerning pornography viewing in early and middle adolescence, both sexes were almost equally affected, but from late adolescence, significantly more males embraced pornography.
Fig. 1. People living with the study respondents

Fig. 2. Gender comparison of substance abuse among the adolescents

*This is for only those who are involved in substance abuse*

Table 1. Prevalence of pornographic viewing and substance use among the adolescents

| Age group (years) | Pornography viewing | Substance use |
|-------------------|----------------------|---------------|
|                   | Yes, n (%) | No, n (%) | Yes, n (%) | No, n (%) |
| 11-13             | 28 (53.8)   | 24 (46.2)   | 6 (11.3)   | 47 (88.7) |
| 14-16             | 135 (49.3)  | 139 (50.7)  | 37 (12.9)  | 249 (87.1) |
| 17-19             | 239 (59.9)  | 160 (40.1)  | 112 (26.7) | 308 (73.3) |
| ≥20               | 85 (70.8)   | 35 (29.2)   | 36 (28.6)  | 90 (71.4%) |
| Total             | 487 (57.6)  | 358 (42.4)  | 191 (21.6) | 694 (78.4) |
3.3 Multivariate Analysis

Table 2 reports a multiple logistic regression of factors associated with pornography consumption and substance use. Gender, high self-esteem and having at least secondary level of education were significantly associated with pornography viewing after regression. The above variables as well as living with either parents or relatives were associated with substance use as follows: male gender, OR = 3.65 (2.44 – 5.47); secondary education: OR = 2.50 (1.51 – 4.13) and living with relatives, OR = 2.77 (1.17-6.52).

3.4 Relationship between Participants’ Self-esteem and Health Risk Behavior

The self-esteem trends of these street youths are shown on Fig. 3. In early adolescence, the females’ self-image was much higher than that of males. Subsequently, the trend was fairly similar in both sexes. Both pornography viewing and illicit drug use were significantly associated with the level of self-esteem of the participants, p < 0.001.

4. DISCUSSION

Pornography viewing and substance use are unhealthy habits in childhood and adolescence leading to perversion of psychosocial and sexual developments as well as poor outcomes. Our findings confirmed that increasing age was more frequently associated with these social ill especially among male adolescents. This is consistent with the theory that the evolving cognitive and psychosocial development of adolescents predisposes them to sexual curiosity and experimentations [2,10]. In addition, we found that in our setting, living with non-parents, and educational level were all predictors of these risky behaviors.

Table 2. Estimated odd ratios for pornography consumption and substance abuse by selected demographic characteristics

| Variables               | Pornography viewing | Substance abuse |
|-------------------------|----------------------|-----------------|
| Age group (years)       | OR 95%CI             | OR 95%CI        |
| 11-13                   | 1.00 1.00            | 1.00 1.00       |
| 14 - 16                 | 1.39 0.71-2.72       | 0.99 0.36-2.71  |
| 17 - 19                 | 1.31 0.67-2.55       | 0.71 0.27-1.89  |
| ≥20                     | 0.95 0.44-2.04       | 0.78 0.27-2.23  |
| Gender                  |                      |                 |
| Female                  | 1.00 1.00            | 1.00 1.00       |
| Male                    | 3.80 2.76-5.22       | 3.65 2.44-5.47  |
| Socioeconomic status    |                      |                 |
| Upper class             | 1.00 1.00            | 1.00 1.00       |
| Middle Class            | 1.44 0.83-2.48       | 1.28 0.50-3.30  |
| Lower class             | 0.88 0.55-1.42       | 0.36 0.17-0.78  |
| Living situation        |                      |                 |
| Mother only             | 1.00 1.00            | 1.00 1.00       |
| Father only             | 1.36 0.78-2.39       | 1.03 0.58-1.86  |
| Both Parents            | 1.53 0.97-2.42       | 1.72 1.02-2.88  |
| Relatives               | 0.56 0.26-1.20       | 2.77 1.17-6.52  |
| Living alone            | 0.60 0.28-1.26       | 1.54 0.71-3.34  |
| Self esteem             |                      |                 |
| Normal                  | 1.00 1.00            | 1.00 1.00       |
| Low                     | 0.74 0.50-1.10       | 0.51 0.33-0.77  |
| High                    | 2.95 1.13-7.69       | 3.56 0.46-27.42 |
| Educational level       |                      |                 |
| None                    | 1.00 1.00            | 1.00 1.00       |
| Primary                 | 1.11 0.62-1.98       | 0.93 0.54-1.60  |
| Secondary               | 1.69 1.02-2.80       | 2.50 1.51-4.13  |
| Tertiary                | 4.68 1.02-21.42      | - 0.00         |
Salawu et al. [15] and Hamdulay et al. [16] reported that increasing age was significantly associated with substance use among adolescents in Northeast Nigeria and South Africa respectively. Also, Odimegwu et al. [17] confirmed that adolescents from parents who were not living together were more likely to be sexually active in Bida, northern Nigeria. They noted that adolescents who reported low parental income were more sexually active than those who reported high or medium parental income [17]. Likewise in 2007, the National Strategic Framework (NSF) for adolescent development identified peer pressure, defects in personality such as low self-esteem, parental deprivation and street living as risk factors for unhealthy lifestyles among Nigerian adolescents [10].

Moreover, in this survey, adolescents’ self-image is independently associated with both vices following logistic regression. Respondents who expressed a low self-image were more likely to indulge in substance use than those with normal self-image, confirming the NSF report [10]. The depressive effects of substance use may contribute to the low adolescent self-esteem observed but serial measurements were not done in this study. Sharma et al. [18] noted that cigarette smoking, binge alcohol drinking, illicit drug abuse involves crossing of chemical substances through the blood brain barrier (BBB). These substances may induce neuroadaptation by altering brain regional neuro-circuitry involving learning, intelligence, memory, and behavior impairments [18]. Other recent researches have shown that Cannabis use is associated with significant shrinking of the striatum, globus pallidium and thalamus, compromising working memory [19,20]. This can undermine adolescent self-esteem. Again, high self-image predicts pornography viewing. However, the temporal relationship between self-esteem and pornography is complex. Adolescents sometimes resort to pornography or sex to assert their maleness or social class. Likewise, indulging in such an adult behavior may lead to an apparent perception of a high self-esteem by adolescents. Nevertheless, an experimental study design is required to fully elucidate the nature of interaction between these variables.

The high prevalence of pornography consumption (57.6%) among our participants was comparable with prior reports of 53.1% by Longe et al. [21] among 232 internet-friendly children and adolescents in South western Nigeria in 2007 but lower than the 17.6% by Shek et al. [22] in Hong Kong among early adolescents, apparently due to the age restriction in the latter study. Despite the limited access to cyberspace in our study setting, the level of pornography viewing remains high among these young people. Significantly more boys than girls consume pornography in the older age groups, possibly due to varied gender perceptions of the
behavior, differential parental supervision or parent-child sexual communication strategies [23,24].

Moreover, the overall prevalence of substance use as well as specific rates found in this study is comparable with the trends reported in the Nigerian NSF and the South African Youth Risk Behavior Survey 2008 [10,25]. Cannabis was the most frequently used substance (10.5%) by our study participants, possibly being cultivated in the adjoining rural settlements. Also, alcohol use and cigarette smoking were very common. These are gate-way drugs leading to further substance abuse and major damage in young people [26]. Cocaine and other illicit drugs use were not found, perhaps due to its high cost and non-availability in the setting. The peak age group (≥20 years) for substance use corresponds with that of pornography viewing in this study, consistent with earlier reports that illicit drug use predispose to sexual risk behavior especially among youths [10,27]. Moreover the average age of onset of substance abuse has declined in recent years and multiple drug use has become more common [10]. In line with the social norm in our setting, remarkably higher proportions of males were involved in substance use compared to females. However, this does not preclude the possibility of under-reporting among females in order to avoid stigmatization.

5. CONCLUSION

Substance use and pornography viewing are common vices, influenced by societal, parental and personal risk factors including self-esteem among young people in Nigeria. Adolescent Preventive Services should be made readily available to this high risk group, as well as detoxification of those already addicted.

5.1 Strengths and Limitations

This work did not explore the nature of interpersonal relationships that may be youth-protective in their living arrangements. Nonetheless, the associations found are useful in generating hypotheses for future research. Our sample was taken from street-youths; hence, it is representative of the at-risk adolescents in Nigeria.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Nwokocha ARC. Adolescence and associated problems. In: Azubike JC, Nkanginieme KEO, editors. Paediatrics and Child Health in a Tropical Region. 2nd ed. Owerri: African Educational Services; 2007.
2. Jenkins RR. Delivery of health care to adolescents. In: Kliegman RM, Behrman RE, Jenson HB, editors. Nelson Textbook of Pediatrics. 18th ed. Philadelphia, PA: Saunders Elsevier; 2007.
3. Aarin M, Haque M, Johal L, Mathur P, Nel W, Rais A, et al. Maturation of the adolescent brain. Neuropsychiatric disease and treatment. 2013;9:449-461. Available: http://dx.doi.org/10.2147/NDT.S39776
4. Eaton DK, Kann L, Kinchen S, Shanklin S, Ross J, Hawkins J, Harris WA, et al. Youth risk behavior surveillance—United States, 2007. Surveillance Summaries MMWR. 2008;57(SS-4):1-136.
5. Earles KA, Alexander R, Johnson M, Liverpool J, McGhee M. Media influences on children and adolescents: Violence and sex. J Natl Med Assoc. 2002;94(9):797-801.
6. Brown J. (Ed.) Managing the media monster: The influence of media (from television to text messages) on teen sexual behavior and attitudes. Washington, DC: National Campaign to Prevent Teen and Unplanned Pregnancy; 2008.
7. Brown JD, L’Engle KL, Pardun CJ, Guo G, Keneaevy K, Jackson C. Sexy media matter: Exposure to sexual content in music, movies, television, and magazines predicts black and white adolescents’ sexual behavior Pediatrics. 2006;117(4):1018–27.
8. Pardun CJ, L’Engle KL, Brown JD. Linking exposure to outcomes: Early adolescents’ consumption of sexual content in six media. Mass Comm Soc. 2005;8(2):75–91.
9. Nwobodo EI, Panti A. Adolescent Maternal Mortality in North-west Nigeria. West Afr J Med. 2012;31(4):224-6.
10. National Strategic Framework on the Health & Development of Adolescents & Young People in Nigeria (2007-2011)
Federal Ministry of Health, Abuja, Nigeria. 1-128. Available:http://nigeria.unfpa.org/ayhdfFramework.pdf Accessed June 22, 2013.

11. UNFPA Fact Sheet: Advancing the Health and Development of Young People in Nigeria. Available: http://nigeria.unfpa.org Accessed June 22, 2013.

12. National Population Commission. Report of Nigeria's National Population Commission on the 2006 Census. Population and Development Review. 2007;33(1):206-210. Available:http://www.jstor.org/stable/25434601

13. Rosenberg M. Society and the adolescent self-image. Princeton, NJ: Princeton University Press; 1965. Available:www.yorku.ca/rokada/psychtest/rosenberg-Doc Accessed June 22, 2013.

14. Wylie RC. The self-concept. Revised edition. Lincoln, Nebraska: University of Nebraska Press; 1974. Available:www.yorku.ca/rokada/psychtest/rosenberg-Doc Accessed June 22, 2013.

15. Salawu, Danburam A, Isa B, Agbo J. Cigarette smoking habits among adolescents in northeast Nigeria. The Internet Journal of Epidemiology. 2010; 8(1). DOI: 10.5580/6e2.

16. Hamdulay AK, Mash R. The prevalence of substance use and its associations amongst students attending high school in Mitchells Plain, Cape Town. S Afr Fam Pract. 2011;53(1):83-90.

17. Odimegwu CO, Solanke LB, Adedokun A. Parental characteristics and adolescent sexual behaviour in Bida Local Government Area of Niger State, Nigeria. African Journal of Reproductive Health. 2002;6(1):95-106.

18. Sharma S, Nepal B, Moon CS, Chabenne A, Khogali A, Ojo C, et al. Psychology of Craving. Open Journal of Medical Psychology. 2014;3(2):120-25.

19. Smith MJ, Cobia DJ, Wang L, Alpert KI, Cronenwett WJ, Goldman MB, et al. Cannabis-related working memory deficits and associated subcortical morphological differences in healthy individuals and schizophrenia subjects. Schizophr Bull. 2014;40(2):287-299. DOI:10.1093/schbul/sbt176

20. 'No Legal Marijuana,' Pediatricians Say. Medscape. Jan 26; 2015.

21. Longe OB, Chiemeke SC, Onifade OFW, Balogun FM, Longe FA, Otti VU. Exposure of Children and Teenagers to Internet Pornography in South Western Nigeria: Concerns, Trends & Implications. Journal of Information Technology Impact. 2007; 7(3):195-212.

22. Shek DTL, Ma CMS. Consumption of Pornographic Materials among Hong Kong Early Adolescents: A Replication. The Scientific World Journal. 2012(2012). Article ID 406063. DOI:10.1100/2012/406063.

23. Baumgartner SE, Valkenburg PM, Peter J. Assessing causality in the relationship between adolescents risky sexual online behavior and their perceptions of this behavior. J Youth Adolescence. 2010; 39(10):1226–39. DOI 10.1007/s10964-010-9512-y.

24. Evans WD, Davis KC, Umanzor C, Patel K, Khan M. Evaluation of Sexual Communication Message Strategies. Reproductive Health. 2011;8:15. DOI: 10.1186/1742-4755-8-15. Available:http://www.Reproductive-healthjournal.com/content/8/1/15

25. Reddy SP, James S, Sewpaul R, Koopman F, Funani N, Sifunda S, et al. Umthente Uhlaba Usamila –The 2nd South African youth risk behavior survey 2008. Tygerberg: Medical Research Council; 2010.

26. Brook JS, Morojele NK, Brook DW, Rosen Z. Predictors of cigarette use among South African adolescents. International Journal of Behavioural Medicine. 2005;12(4):207-17.

27. Rudatsikira E, Maposa D, Mukandavire Z, Muula AS, Siziyi S. Prevalence and predictors of illicit drug use among school-going adolescents in Harare, Zimbabwe. Annals of African Medicine. 2009;8(4): 215-20.