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Peer pressure and social acceptability between hookah pipe users and non-users among a sample of South African adolescents

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Background. Hookah pipe smoking is a high-risk phenomenon which is widely seen as an acceptable social practice, but the extent of its acceptability is not very clear among South African youth, nor is the influence of peers very clear.

Objective. To establish a link between social acceptability and peer pressure and to compare this relationship among hookah pipe users and non-users in a sample of South African adolescents.

Methods. A cross-sectional comparative correlation study was conducted among Grade 9 adolescents attending secondary schools in the Metro East Education District in Cape Town. The final sample comprised 270 participants. A questionnaire was used to collect data which were analysed using SPSS.

Results. No relationship was found between peer pressure and social acceptability, but a relationship was found between parental rules and monitoring around tobacco use for hookah pipe users. A significant difference was also found in attitudes towards hookah use among users and non-users.

Conclusion. This descriptive study of hookah pipe users and non-users among Grade 9 adolescents is a further study in the quantitative research approach and may be helpful in gaining more insight into understanding how parental rules and monitoring are put in place and why users' and non-users' attitudes towards tobacco use differ significantly. The implications and significance of this study are further explained.

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Tobacco use is one of the most preventable causes of death worldwide and is responsible for the deaths of about half of its long-term users.^[1] In 2011, tobacco use killed more than six million people, with nearly 80% thereof in low- and middle-income countries.^[1] More recent studies indicated that, in 2016, tobacco use caused >7.1 million deaths worldwide.^[2] Locally, in 2018, Health24 reported that South Africa (SA) has a low prevalence of smoking compared with the USA, but a higher prevalence of smoking tobacco than neighbouring countries such as Zimbabwe and Malawi.^[3] There are an estimated 1.3 billion smokers worldwide and nearly 6 million deaths per year attributable to tobacco smoking.^[4] In 2012, estimates suggest that 928 million men and 207 million women were current smokers of any tobacco product globally.^[5] Recent studies indicate that more than one-third (35%) of tobacco users are men while just over 6% of tobacco use was found among women.^[6] In SA, 20.1% of adults reported current use of any tobacco product, while males had a higher prevalence of current tobacco use (31.0%) than females (10.3%).^[7] The remaining 59% may have indicated that they did not smoke any tobacco products. There is significant variation by income status for tobacco smoking. Smoking prevalence among males in middle-income countries (45%) is higher than that among males in high-income countries (32%), while the reverse is true for females, with 7% in middle-income countries and 18% in high-income countries.^[5,7]

In 2008, a study in SA established that 21% of school learners were found to be current smokers, with 6.8% having initiated smoking before the age of 10 years.^[8] Tobacco smoking in adolescents frequently leads to long-term nicotine addiction and consequent adverse health effects.^[9] Furthermore, adolescents who have been

exposed to smokers are more likely to smoke than those who have not (74.5% v. 44%, respectively).^[9]

The hookah, or waterpipe, is a form of tobacco smoking which comprises multiple connected hoses sharing a single mouthpiece among a number of individuals, to inhale smoke from the apparatus.^[10] Although many hookah smokers believe the use of a hookah pipe poses less of a risk than smoking cigarettes, the hookah pipe contains many of the same harmful toxins as cigarettes and other forms of tobacco.^[11] These toxins include tar, carcinogens, hydrocarbons and heavy metals.^[12] Other toxic compounds such as nicotine, carbon monoxide, formaldehyde, polyaromatics, arsenic and lead are also released when smoking a hookah pipe.^[13] Despite the many health risks from the hookah pipe, there is an increase in its use,^[14] also among adolescents,^[15] and it is seen as a highly acceptable social practice.^[16] The most common settings for smoking hookah pipes are social occasions,^[17] which include smoking on university campus, at parties, at friends' houses, in the family home and at restaurants that allow smoking hookah pipes.^[18] Hookah smoking is a more recent social phenomenon and has become very popular, pervading many countries, and is a social practice globally, particularly among young people.^[13,19] It may be that the hookah is also perceived as socially acceptable.

In spite of the negative health effects, use of the hookah pipe is becoming more common.^[20] Its popularity has spread throughout various countries, economic classes and age groups, and forms part of popular social activity among adolescents and young adults.^[10] This popularity among the youth could be due to the social acceptability of the hookah pipe.^[21]

Adolescents strive for individuation, while at the same time having

a need for acceptance^[22] which drives them to join with peers, which in turn may create strong pressure to participate in undesired or undesirable activities as the price of acceptance. Efforts to be more socially accepted or desired, or to be more 'grown-up', have been shown to contribute to experimentation with tobacco among adolescents, which includes the hookah pipe.^[23]

Generally, young people engage in risky behaviour, including tobacco smoking and substance use.^[24] This risky behaviour is often linked to peer pressure, with a high probability of starting smoking.^[25] Social factors such as friends and parents who smoke also influence smoking initiation; and, for many people, the use of tobacco and substances reduces stress, anxiety and depression.^[26] The family context could also be perceived as a platform for acceptance of hookah smoking, as it is within the family that the first process of socialisation occurs.^[27]

Research on the hookah pipe mainly focuses on prevalence studies, health risk behaviour, age of onset and the contribution of the family and addiction to the hookah pipe.^[18,27-29] Research shows there is a link between peer pressure, social acceptance and smoking cigarettes, but this is unknown for the hookah pipe.^[30] Therefore, this study sought to compare the relationship between peer pressure and social acceptability among hookah pipe users and non-users.

Methods

A cross-sectional study was conducted to compare peer pressure and social acceptability between hookah pipe users and non-users among a sample of SA adolescents.

Participants

This study focused on the Metro East District within the Western Cape Education Department, which comprises 58 secondary schools. The sampling frame for this research was Grade 9 learners. The focus on Grade 9 learners was due to the grade being an exit level, as well as the onset of risk behaviour.^[31] Risk behaviour such as tobacco use is a common phenomenon in adolescence as, during this period, adolescents enter the experimentation phase.^[31] The greatest proportion by race was coloured ($n=236$; 90.8%) and Afrikaans speaking ($n=184$; 86.0%).

Measures

A questionnaire was used to collect the data consisting of items from the 10-year in-depth survey, the health and lifestyle survey and peer pressure, as well as a National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development.^[32] There were different sections: Section A included demographic information where participants were asked to record their gender, age, sex, race, language and grade. Section B was a 22-item self-report section adapted from the National ASH Year 10 Snapshot Survey, the 10-year in-depth survey, the health and lifestyle survey and peer pressure survey.^[33] The questionnaire was adapted to the hookah pipe, by replacing the term 'cigarettes' with 'hookah pipe' and was measured on a four-point Likert scale, ranging from 'strongly agree' to 'strongly disagree,' including a selecting response scale.^[34] Examples of items include 'Hookah pipe smokers are more popular' and 'My parents or caregivers have set rules with me about not smoking cigarettes or tobacco'. The questionnaire contains three subscales designed to assess attitudes towards tobacco, parental rules and monitoring around smoking and smoking by family, friends and teachers. This questionnaire was also used to measure the prevalence of social acceptability and smoking tobacco using the hookah pipe

among adolescents. Section C was a nine-item self-report section adapted from the NICHD Study of Early Child Care and Youth Development.^[32] The questionnaire was adapted to the hookah pipe and measured on a three-point Likert scale ranging from 'agree' – one point, 'disagree' – two points, and 'maybe' – three points. This section was designed to assess self-acceptance as well as acceptance by peers. It also measured peer pressure which included questions such as 'I would do something that I know is wrong just to stay on my friend's good side'.

Ethic approval

Permission was granted by the Human Social Sciences Research Ethics Committee (HSSREC) of the University of the Western Cape and the Western Cape Education Department to conduct the study. Upon permission from principals, parents and learners, data were collected in group sittings, with 20 - 30 minutes per sitting, facilitated by the researcher and a teacher at each school.

Data analysis

The Statistical Package for the Social Science (IBM Corp., USA) software was used to analyse the information. An independent *t*-test was conducted to compare significant differences between the groups.

Results

The final sample was 270 (138 female and 129 male) participants. The average age of participants was 14.89 (standard deviation (SD) 0.945) years.

Table 1 indicates that the greatest proportion of participants had a mean_{Age} of 14.89 years (SD 0.95), were female (138; 51.7%), coloured (236; 90.8%) in Grade 9 and living with both parents (43%). In addition, almost one-third of the participants (85; 31.5%) indicated that they lived with their mother.

Table 2 indicates the participants' behaviour regarding tobacco use.

The results in Table 2 show frequency of tobacco use among participants. More participants used the hookah pipe (84; 31.1%) than those smoking cigarettes (69; 25.6%). The average age of onset for hookah smoking was 12.36 years (SD 2.95), while the age of onset for cigarette smoking was 13.26 years. The majority of participants did not use the hookah as a replacement for cigarettes (191; 70.7%).

A very light user would smoke a hookah pipe once a week, while a heavy hookah user would smoke more than once every day. Although the number of responses for very light users to very heavy users totals 96, which is greater than the 84 who reported smoking a hookah pipe, it may be that the specific questions had been skipped by participants who smoked neither cigarettes nor the hookah pipe.

The number of responses of participants who did not smoke a hookah pipe was less than the 146 participants who reported that they did not smoke the hookah pipe. This discrepancy may be due to questions not being understood by the participants.

Table 3 shows the attitudes towards tobacco use of hookah pipe users and non-users. The results show, within the total group of participants, that the majority of participants responded mainly to 'Smoking hookah makes people look sexy'. (mean (M) 2.84; SD 0.773) and 'Smokers are tough people'. (M 2.86; SD 0.670). This finding was similar for users and non-users in terms of the majority of responses to the items, with non-users having a higher mean score than users. Least responses were found for 'Non-hookah smokers should be proud to be smoke free'.

Table 4 shows the peer pressure and acceptance of hookah pipe users and non-users, indicating that, within the total group of

Table 1. Demographic information of participants

Variables	<i>n</i> (%), <i>N</i> =270*
Gender	
Male	129 (48.3)
Female	138 (51.7)
Race	
White	3 (1.2)
Black African	19 (7.3)
Coloured	236 (90.8)
Indian	2 (0.8)
Living arrangements	
Mother	85 (31.5)
Father	10 (3.7)
Grandmother	22 (8.1)
Grandfather	1 (0.4)
Other family member	2 (0.7)
Both parents	116 (43.0)
Foster parents	5 (1.9)
Caregivers	3 (1.1)
Both grandparents	9 (3.3)
Other family members	5 (1.9)
Age, years (14 - 18), mean (SD)	14.89 (0.95)

*Missing data for variables which do not total to 270.

SD = standard deviation.

Table 2. Behaviour regarding tobacco use

Variables	<i>n</i> (%), <i>N</i> =270
Do you smoke cigarettes?	
Yes	69 (25.6)
No	183 (67.8)
Did not respond	18 (6.6)
Do you smoke hookah pipe?	
Yes	84 (31.1)
No	139 (51.5)
Did not respond	41 (17.4)
Frequency of hookah use	
Non-user	146 (54.1)
Very light user	52 (19.3)
Light user	31 (11.5)
Moderate user	9 (3.3)
Heavy user	2 (0.7)
Very heavy user	2 (0.7)
Did not respond	28 (10.4)
Hookah use in last 6 months	
Yes	88 (34.0)
No	169 (65.3)
Did not respond	13 (0.7)
Did you use hookah as a replacement for cigarettes	
Yes	39 (14.4)
No	191 (70.7)
Did not respond	30 (14.9)
Age of onset for hookah smoking, years (9 - 16), mean (SD)	13.00 (1.42)
Age of onset for cigarette smoking, years (9 - 17), mean (SD)	13.46 (1.58)

SD = standard deviation.

Table 3. Attitudes towards tobacco use of hookah pipe users and non-users

Variables	N=270	M (SD)	Users (non-users in parentheses)		SD
			M	SD	
Hookah pipe users are more popular	259	2.39 (0.862)	80 (135)	2.30 (2.44)	0.833 (0.912)
Smoking helps people forget about their worries	266	2.47 (0.820)	83 (137)	2.45 (2.42)	0.830 (0.828)
Non-hookah smokers dislike being around hookah smokers	263	2.20 (0.882)	82 (136)	2.22 (2.16)	0.817 (0.929)
Smokers find it hard to find dates	255	2.46 (0.812)	81 (134)	2.52 (2.45)	0.776 (0.837)
Smokers are tough people	262	2.86 (0.670)	83 (136)	2.80 (2.93)	0.676 (0.663)
Hookah smoking is something you need to try before deciding to use it	265	2.25 (0.866)	83 (137)	2.02 (2.36)	0.826 (0.889)
Smoking hookah makes people look more mature	268	2.62 (0.811)	83 (138)	2.51 (2.71)	0.817 (0.803)
There is no harm in smoking hookah once in a while	265	2.54 (0.857)	83 (137)	2.27 (2.72)	0.842 (0.802)
Smoking helps people relax	257	2.43 (0.873)	83 (129)	2.29 (2.45)	0.891 (0.901)
Seeing someone smoke hookah turns me off	258	2.40 (0.869)	81 (133)	2.52 (2.30)	0.838 (0.896)
Hookah smokers are often stressed	255	2.31 (0.862)	79 (130)	2.09 (2.37)	0.788 (0.882)
Smoking hookah is attractive	261	2.64 (0.859)	82 (133)	2.17 (2.94)	0.843 (0.726)
Smoking hookah makes people look sexy	264	2.84 (0.773)	83 (135)	2.71 (2.93)	0.725 (0.803)
Non-hookah smokers should be proud to be smoke free	263	1.71 (0.921)	81 (135)	1.74 (1.63)	0.877 (0.896)

M = mean; SD = standard deviation.

Table 4. Peer pressure and acceptance of hookah pipe users and non-users

Variables	N=270	M (SD)	Users (non-users in parentheses)		SD
			M	SD	
I think it is more important to be myself than to fit in with the crowd	262	1.26 (0.603)	80 (136)	1.25 (1.23)	0.540 (0.583)
I would do something that I know is wrong just to stay on my friends' good side	265	1.93 (0.472)	83 (136)	1.81 (2.02)	0.505 (0.412)
I sometimes go along with my friends just to keep them happy	260	1.91 (0.612)	83 (131)	1.84 (1.96)	0.671 (0.546)
It is pretty hard for my friends to get me to change my mind	259	1.60 (0.716)	80 (134)	1.79 (1.45)	0.724 (0.667)
I would break the law if my friends said they would	257	1.93 (0.518)	81 (133)	1.86 (2.01)	0.542 (0.469)
I always give my true opinion in front of my friends, even if I think they might make fun of me	260	1.52 (0.700)	82 (134)	1.61 (1.44)	0.681 (0.699)
I take more risks when I am with my friends than I do when I am alone	263	1.72 (0.638)	83 (135)	1.61 (1.77)	0.659 (0.610)
I act the same way when I am alone as I do when I am with friends	263	1.59 (0.703)	83 (136)	1.41 (1.72)	0.625 (0.737)
I sometimes say things I do not really believe, because I think it will make my friends respect me more	261	1.84 (0.636)	81 (135)	1.77 (1.90)	0.694 (0.584)

M = mean; SD = standard deviation.

participants, most participants responded mainly to 'I would do something that I know is wrong just to stay on my friends' good side'. (M=1.93; SD=0.472); 'I sometimes go along with my friends just to keep them happy'. (M=1.91; SD=0.612); and 'I would break the law if my friends said they would'. (M=1.93; SD=0.518). This finding was similar for users and non-users in terms of the majority of responses to the items with non-users having higher mean scores than users. Least responses were found for 'I think it is more important to be myself than to fit in with the crowd'.

Table 5 shows the attitudes towards hookah use, peer pressure, parental rules and monitoring and social acceptability between hookah pipe users and non-users. Non-user results are in parentheses.

In comparing users and non-users, participants who used the hookah pipe scored less peer pressure (1.22), had higher parental rules and monitoring (1) and, in terms of social acceptability, had an average score (10.38) which suggests that they showed an average degree of concern for being socially acceptable and that their behaviour in general conformed to social rules and conventions. The only significant difference between the two groups was on attitudes, where participants who used the hookah pipe had an average score (2.32) which suggests that lower responses indicate a positive attitude towards smoking.

Table 6 shows the relationship found between the variables. It suggests that a significant positive relationship was found between attitudes towards hookah use and parental rules and

Table 5. Attitudes, peer pressure, parental rules and monitoring and social acceptability of users and non-users (non-users in parentheses)

Variables	Minimum	Maximum	M	SD	t	p
Attitude towards hookah use	1.29 (1)	2.86 (3.43)	2.32 (2.52)	0.32 (0.37)	-3.48	0.00
Peer pressure	1.22 (1.11)	2.56 (2.44)	1.66 (1.72)	0.26 (0.25)	-1.68	0.10
Parental rules and monitoring	1 (1)	3.29 (3.00)	1.88 (1.80)	0.48 (0.46)	1.03	0.30
Social acceptability	3 (3)	17 (17)	10.38 (10.75)	2.73 (2.91)	-0.82	0.41

M = mean; SD = standard deviation.

Table 6. Relationships between the variables for users and non-users (non-users in parentheses)

No.	Variables	1	2	3
1	Attitudes towards hookah use	-	-	-
2	Peer pressure	0.15 (0.02)	-	-
3	Social acceptability	-0.04 (0.01)	-0.07 (0.01)	-
4	Parental rules and monitoring	0.39* (0.07)	0.12 (0.12)	0.21 (-0.06)

*Correlation is significant at the 0.01 level (two-tailed).

monitoring (0.39*; $r=0.07$; $p<0.05$), only for users but not for non-users.

Discussion

The aim of this study was to compare the relationship between peer pressure and social acceptability among adolescent hookah pipe users and non-users. Despite the negative health effects, use of the hookah pipe has become more prevalent and, even though it has existed for hundreds of years, it is not a safer alternative to smoking cigarettes.^[35,36]

In terms of prevalence of use and age of onset, the results of the present study show that more participants used the hookah pipe than those smoking cigarettes. This may be due to perceptions that hookah-pipe smoking is less harmful than smoking cigarettes, as the former is available in various flavours. The age of onset for hookah smoking in the current study was 12.36 years, while the age of onset for cigarette smoking was 13.26 years. These findings are consistent with previous findings locally and internationally. An SA study conducted by Roman *et al.*^[37] indicated that one-third (34%) of the participants indicated that they smoked the hookah pipe, for which the general age of onset was 16.5 years. The majority of the participants in the study by Roman *et al.*^[37] started smoking the hookah pipe between the ages of 13 and 15 years. Internationally, the age of onset for hookah use was reported as 13 years, in a study by Perez *et al.*^[38]

Regarding the attitudes towards tobacco use of hookah pipe users and non-users, both groups considered that smoking the hookah makes 'people look sexy and tough'. This perception could be due to the impressionable developmental phase of adolescents. In this phase, everything is about image and having to conform to the group. The American Lung Association^[39] stated that adolescents start smoking tobacco because of peer pressure, and seeing their friends smoke gives them the urge to smoke as well. Smoking tobacco is also seen as a way of rebelling and showing independence.^[39] Significant differences were found between users and non-users in relation to attitudes towards hookah use, with non-users having higher scores than users. The reason could be that the non-smoking participants deemed smoking to be unattractive and also an expensive activity. This finding is in line with a qualitative study of adolescents between the ages 12 and 15 in Sweden, where participants' attitudes towards tobacco use varied.^[40] Adolescents in the study indicated physical

damage and the cost of tobacco as strong arguments for not using tobacco, as well as emotional factors, the bad smell and the fact that it is unhygienic to use tobacco. Non-smokers are more sensitive to a tobacco-perfused atmosphere and, given the many current anti-smoking campaigns, children today have more negative attitudes regarding smoking.^[41] Another reason contributing to users' attitudes towards smoking could be that they believe that smoking makes them feel more comfortable and possibly 'cool' at celebrations or parties. This view is supported by an SA study of a decade of tobacco control^[42] which reported that the percentage of participants who said that smoking was 'cool' and 'comfortable' increased over the four survey years from 35.1% to 46.2%, with significantly more learners reporting such in 2008 and 2011 than in 1999 and 2002. This trend was noted among male and female participants.

The findings relating to peer pressure and acceptance of the hookah pipe indicate that the participants may find it difficult to resist peer pressure concerning smoking the hookah pipe. This finding may be due to their attitudes regarding hookah smoking. Lyness^[43] states that adolescents find it difficult to resist peer pressure because they are afraid of losing their friends or being left alone. Individuals under peer pressure can also struggle because they do not know how to get out of the situation gracefully.^[43] This is evident in responses to the statement, 'I sometimes go along with my friends just to keep them happy'.

A significant relationship was found between parental rules and monitoring around tobacco use for hookah pipe users. Participants in this study indicated that their parents may have set rules around the use of tobacco with the hookah pipe and may also have a monitoring system in place. These parenting approaches could reflect the patterns of parental values, practices and behaviours, as well as a distinct balance of responsiveness and sternness presenting different outcomes for children.^[44] It could be that parents allow the use of tobacco but under control. Parents who smoke may also differ from non-smoking parents in the ways they try to prevent their children from smoking.^[45] Some smoking parents may believe that smoking in the presence of their children is inevitable and therefore may make fewer efforts to prevent their children from doing so.^[46]

The popularity of the hookah pipe has spread throughout different countries, economic classes and age groups, and forms part of a popular social activity among adolescents and young adults.^[10] Adolescents especially are increasingly using it.^[15] This popularity

among youth could be due to the social acceptability of the hookah pipe.^[21] Although the age of onset in the current study is similar to previous research, of current concern is the possibility that smoking the hookah pipe may be linked to being socially accepted by peer groups.^[24] As tested in the current study, those participants who indicated that they do smoke the hookah pipe may have been influenced, as identified by Crowne and Marlowe's social desirability scale,^[47] where participants' general behaviour for being socially accepted within their peer groups is pinned at an average degree of conforming to social rules and conventions.^[48]

Although smoking poses many health risks, between 82 000 and 99 000 young people start smoking every day globally.^[49] In relation to the current study, 51.5% of participants indicated that they did not smoke the hookah pipe, whereas 31.1% of participants indicated that they did. Contrary to the knowledge of the health risks of smoking and non-users' views, the users in the present study had different attitudes towards tobacco use. This may be because they felt it was safe to smoke as one or both of their parents smoked. In the light of international research, data from the 1994 - 2002 waves of the British Household Panel Survey, exploring the influence of parental smoking habits on their children's smoking decisions, show clear evidence that, for two-parent families, mothers' and fathers' smoking habits play a statistically significant role for girls and boys, respectively.^[50] Single-parent households indicated that single parents' smoking choices significantly affected the smoking behaviour of their female teenagers, while this was no longer the case for male teenagers.^[50]

Study limitations

There were limitations to the present research. The study sample was quite small, focusing on: (i) no- to low-income schools, (ii) Grade 9 learners who were 14 - 16 years of age; and (iii) an accessible sample in Cape Town. This means that the findings cannot be generalised to a larger sample, but the results of the study provide insight into an important part of adolescent development regarding risk behaviour and the important role of parents in reducing risk behaviour. As a very focused quantitative study, a qualitative perspective of parental rules and monitoring regarding tobacco use could provide further insight into reductionist interventions for risk behaviour in early adolescence. Another limitation of the study is that there were discrepancies in the responses owing to missing data. De Leeuw *et al.*,^[51] West and Blom,^[52] and Schöppler^[53] state that the main sources of an item's non-response are the type of research, the structure of the questionnaire or the instrument, the interviewer, and the background characteristics of respondents. For the present study, it could be that respondents did not understand or did not want to share information because the use of the hookah pipe and the related substances is something that young people might not declare. This could have implications for the validity of responses.

Conclusion

The focus of the study was to determine the relationship between hookah pipe users and non-users based on peer pressure and social acceptability. The results show no significant relationship between peer pressure and social acceptability, but a significant relationship was found between parental rules and monitoring around tobacco use for hookah pipe users. A significant difference was also found between users and non-users regarding their attitudes towards the use of the hookah pipe. This is the first known study to establish if there is a relationship between peer pressure and social acceptability among adolescent hookah pipe users and non-users in SA.

Declaration. None.

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Conflicts of interest. None.

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