

How Do Adolescents Assess and Rank the Risk of Areca Nut Use? Findings from a Study in Mumbai, India

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Abstract

Objective: Areca nut use, along with tobacco, is a contributor to India's high rates of oral cancer. Areca nut use is culturally accepted, often initiated early in adolescence, and said to lead to later tobacco use. Unlike tobacco prevention, there are scarce prevention or harm-reduction programmes or campaigns specifically targeted at areca nut. **Methods:** A participative ranking method was used to understand adolescents' assessment of risks of areca nut. Five focus group discussions were conducted with 31 adolescents, 19 female and 12 male, non-users and users of chewing tobacco, water-pipe (hookah) and areca nut. Participants categorized and ranked the risk of 16 activities, including the use of areca nut and various tobacco-products, and discussed reasons for these risk-rankings. **Results:** Despite differences between groups on the assessment of risks associated with the 16 different activities, all the groups, user and non-user, rated cigarette smoking as having the highest risk, chewing fennel and using mouth fresheners as no risk, and areca nut as low risk. The other activities were ranked differently by each group. Adolescents' perceptions of smoking or online games as risky was influenced by greater exposure to messaging on harmful consequences of the activity through multiple channels such as mass media, interpersonal networks including parents, and classroom health-education sessions. Inadequate knowledge about the harmful consequences of areca nut use, greater social and cultural acceptability, and the sweet taste of commercially packaged areca nut influenced low-risk perceptions. **Conclusion:** Perceptions of risk from an activity often determines preventive behaviors. Presently, adolescents do not perceive areca use as risky. In comparison to smoking they consider it less harmful. More research is required to better understand areca nut use and its cultural determinants. However, targeted health communication messages and prevention policies and programmes have to be initiated to reduce areca nut use and associated burden of oral cancer.

Keywords: Areca nut- supari- tobacco- risk-assessment- risk-perceptions- adolescents- India

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Introduction

Oral cancer is a major public health problem in India (Globocan, 2018; Sharma et al., 2018; World Cancer Research Fund, 2018). Tobacco and areca nut use are estimated to account for the vast majority of cancers in the oral cavity and premalignant conditions such as oral sub-mucous fibrosis (IARC, 2004; Petersen, 2005; Tilakaratne et al., 2005; Gupta and Ray, 2015; Travasso, 2013). Nearly one in four adults in India consumes areca nut, that is, almost 223.79 million users, making areca nut consumption a substance use problem that is larger than smokeless tobacco, which has an estimated 199 million users (TISS and MoHFW, 2018; Singh et al., 2021). India has a share of 59% of the world's areca nut production and is also the largest global consumer, followed by other South East Asian countries (Gupta and Warnakulasuriya, 2002; Arora and Squier, 2019; Tridge Intelligence, 2020).

While India has adopted a more systematic approach to tobacco prevention and control policies (Ruhil, 2018),

there is a lack of coherence in policy and programming for areca nut, which is often subsumed under smokeless tobacco (Gupta, 2018). This could be partly because Indians consume areca nut, colloquially known as 'supari,' in various forms: by itself; in the form of betel quid (a combination of piper betel leaf, slaked lime, catechu, areca, with or without tobacco); and as an ingredient in several smokeless tobacco products such as gutkha (crushed areca nut, tobacco, catechu, paraffin wax, slaked lime and sweet or savory flavoring) and mawa (areca nut, slaked lime and tobacco) (Gupta and Warnakulasuriya, 2002; Gupta et al., 2018).

There are no specific national programmes or campaigns addressing the harms of areca nut. The Cigarettes and Other Tobacco Products Act (COTPA), enacted in 2003, guides the regulation of trade and commerce, advertising, production, supply and distribution of cigarettes and other tobacco products. Two of the COTPA provisions focus exclusively on adolescents: ban on sale of tobacco products to and by persons below 18

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years, and prohibition on sale of tobacco products within 100 yards of all educational institutions (Ministry of Law and Justice, 2003); however, these provisions do not explicitly mention areca nut. There are policies such as the Food Safety and Standards Regulation, 2011, which have banned the manufacture and sale of products containing tobacco or nicotine, including areca nut (Ministry of Health and Family Welfare, 2011; Gupta et al., 2018). In some Indian states, such as Maharashtra, areca nut products were banned as unsafe food products under provisions of the original Food Safety and Standards Act, 2006. However, these bans are not enforced effectively (Gupta et al., 2018), with almost negligible studies examining the compliance with areca bans.

Moreover, the consumption of areca nut starts at a young age in India. Data from the nationally representative Global Adult Tobacco Survey 2016–2017 showed that areca nut use was 18.3% among 15–18 year olds and 21.5% among 19–23 year olds (Singh et al., 2021). Cross-sectional surveys in Indian schools have reported higher prevalence of use, between 23% to 32%, and low levels of awareness about harms of chewing areca nut among adolescents; with tobacco users reporting concomitant consumption of areca nut (Nitin et al., 2010; Khandelwal et al., 2012; Rose 2014; Tiwari et al., 2014; Chatterjee et al., 2016). Areca nut use among adolescents has been identified as a precursor to future tobacco use, making it a critical gateway behavior for prevention and cessation of substance use (Chandra and Mulla, 2007; Gupta et al., 2020). Therefore, it is vital that prevention efforts for oral cancers start early.

Adolescence is a period of high-risk in general, and areca nut is one among many high-risk behaviors during this life-stage. Adolescent risk-taking is influenced by young people's perceptions and attitudes concerning the riskiness involved in a certain activity (Bentlin et al., 1993). Risk perceptions refer to people's beliefs about their vulnerability to danger or harm. Typically, risk perceptions are assessed by participants' judgments of the likelihood of experiencing negative outcomes (Sheeran et al., 2014). A review of the literature on risk perceptions and health behavior, including research on the formation, types and accuracy of risk perceptions, and associations and interactions among the types of risk perceptions suggests that disease risk perceptions are a critical determinant of health behaviour (Ferrer and Klein, 2015). Findings from a meta-analysis of experimental evidence indicate that heightening risk appraisals changes intentions and health behaviors (Sheeran et al., 2014). Theories in social and health psychology, including the psychometric paradigm (Slovic, 1987), place risk perception and appraisal in a central role in determining behavior. Health education interventions, prevention and behavior change programmes are often based on understanding and changing risk perceptions (Sheeran et al., 2014; Ferrer and Klein, 2015). This study explored how adolescents appraised or assessed the risks associated with use of areca nut and how they ranked or compared it with the use of different tobacco products and other activities that adolescents are aware of or might engage in regularly.

Materials and Methods

Participants

Thirty-one adolescent students, both male and female, non-users and users of areca nut and tobacco, from grades 7 to 10, across five schools in Mumbai city, were purposively recruited for this study. The selected schools are affiliated to the city government, serve students from low-income communities, and have similarities in management processes, faculty, staff, curriculum, and academic performance indicators (Praja Foundation, 2017). The schools were selected conveniently based on the principal's agreement to allow the project to be conducted. An orientation session on tobacco prevention was conducted in each school and students were informed about the research study. Students interested in participating in the study were requested to meet the coordinator, and they were provided more information and the details of the project. Eight students declined because they were shy or felt incapable of contributing. None of the 31 participating students (19 female and 12 male) dropped out after the study started.

Data collection and analysis

The collection of data for this study was influenced by the participative ranking method (PRM) developed by Columbia University researchers (Ager et al., 2010). Participative ranking method, a mixed methods approach to data collection, combines key principles of focus group methodology and participatory rural appraisal (PRA) activities to elicit a local understanding of a particular phenomenon. A group of knowledgeable participants are guided in generating responses to a specific set of questions. It draws on both quantitative and qualitative methods to generate rich, contextualized data that can also be counted, ranked, and compared across or within groups. It promotes an engaged and participatory process, which rapidly highlights key findings while providing the opportunity for deeper analysis as resources permit (Stark et al., 2009; Ager et al., 2010).

Two trained facilitators, including one of the authors, conducted five focus group discussions (FGDs) - two with non-users; one with only areca-nut users; and one each with hookah (water-pipe) users and smokeless tobacco users. The hookah and smokeless tobacco users also chewed areca nut. FGDs were conducted in empty school classrooms during working hours; no teaching staff or non-participants were present. Facilitators began by explaining the study objectives in the local languages of Hindi or Marathi based on the students' requirements, and obtained consent before proceeding. Participants were informed that the research team was affiliated to an organization that conducted tobacco prevention activities. Each FGD, lasting about 30 to 45 minutes, was moderated by one lead facilitator; the assistant took copious notes and created written transcripts for each discussion. FGDs allowed participants to discuss the risks of each activity within the group before making an assessment because peer discussions and peer influence form an important part of how adolescents rate the risks of various activities and engage in them in their daily lives.

In each FGD, after building rapport, the facilitator discussed the understanding of risk in terms of the possibility of ill-health, disease and death. A table kept in front of the students was divided into four zones using colored card paper. The left-most part, shaded green, was categorized as the None or Negligible risk zone. Next to it was the Low risk zone shaded light yellow; followed by the moderate risk zone colored amber or orange; and the last, right-most, or fourth zone, was high-risk zone and shaded red. The students were explained that they would be shown a series of labelled pictures; they could assess the risk for each item through group discussion; and then place it on the table in the assigned zone.

The facilitator then presented labelled pictures of 16 activities, in no particular order, with very brief descriptions (see Table 1). The risky activities used in the study are illustrative rather than exhaustive (Benthin et al., 1993); they have been shown to be of some concern or are activities that adolescents engage in on a regular basis such as speeding on a motor-bike, travelling on the footboard of local trains, playing video games, eating street food, texting while walking on the street (see Table 1). The facilitator presented one item, read the label aloud, ensured the participants understood the label, and then allowed the group to discuss, assess, and place the item in one of four risk zones based on the question: Thinking of young people such as those present in your group, how much risk of disease or death is associated with this activity or item? After discussion, the group representative directly placed each labelled item in one of the four categories. After all the 16 activities were presented, a debriefing discussion was conducted and participants explained in brief their underlying argument for the categorization of these items.

Given the mixed methods nature of the data collection process the analysis of data utilized both quantitative and qualitative approaches. First, the groups' ranking of the

16 activities was tabulated. Similarities and differences in assessment of the risk items between the five groups was noted. Second, the FGDs had asked participants to provide reasons underlying their ranking of these items. The associated field notes and written transcripts of these FGDs were independently read by two investigators, who followed a set of steps that included becoming well acquainted with transcript and notes for each FGD; noting impressions and deriving categories; reviewing and refining categories; developing themes and identifying patterns, including commonalities and differences. Themes were established both by frequency of occurrence and by importance. Trustworthiness of interpretation was also established by investigator triangulation (Ely et al., 1991). Data collection and analysis for this study was conducted over 8 weeks in January-February 2020.

Ethical considerations

The Institutional Ethical Review Board of Narotam Sekhsaria Foundation and Salaam Bom-bay Foundation approved this study. Permissions were obtained from school principals, followed by written consent from the participants' parents, who were informed about the purpose of the study, procedure, risks, and confidentiality. Students were informed about the study, assured about confidentiality, and their verbal assent was sought before the FGDs.

Results

While there were some differences in how the different risk activities were assessed between groups, there was unanimity across all groups, the different types of users and non-users, in the assessment of risk from four activities. Smoking (cigarettes) was unanimously rated as having the highest risk; consuming fennel seeds and mouth fresheners were stated to have no risk; and using areca nut was

Table 1. Ranking of the Risks of Various Activities, Including Areca and Tobacco-Use, by the Five Groups (in Ascending Order from No-Risk to High-Risk Rank)

Sr No	Items describing activity or areca/tobacco product	No risk	Low risk	Moderate risk	High risk
1	Chewing fennel seeds (saunf)	All 5 groups			
2	Chewing mouth fresheners (mukhwas)	All 5 groups			
3	Eating packaged chips	3	1	1 group	
4	Drinking sodas or cold beverages	3	1	1	
5	Eating street food	1	3	1	
6	Texting while walking on the street	1	2	2	
7	Using areca nut (supari)		All 5 groups		
8	Using Khaini		3	1	1
9	Using Zarda		2	2	1
10	Using Gutkha		2	2	1
11	Travelling in local trains in Mumbai		1	2	2
12	Smoking hookah (water-pipe)		1	1	3
13	Speeding on motor-cycle (motor-bike)			2	3
14	Playing Pub-G video game		1		4
15	Smoking bidis			1	4
16	Smoking cigarettes				5

Table 2. Similarities and Differences between the Five Groups on Assessment of Risks Associated with the 16 Activities / Products

Group 1	Group 2	Group 3	Group 4	Group 5
Areca-nut only	Hookah + areca	Smokeless tobacco + areca	Non users	Non users
None or Negligible Risk				
Fennel (Saunf)	Fennel (Saunf)	Fennel (Saunf)	Fennel (Saunf)	Fennel (Saunf)
Mouth freshener	Mouth freshener	Mouth freshener	Mouth freshener	Mouth freshener
Packaged chips	Packaged chips	Packaged chips		
Sodas/Cold drink	Sodas/Cold drink	Sodas/Cold drink		
		Eating street-food		
		Text while walk		
Low Risk				
Areca nut	Areca nut	Areca nut	Areca nut	Areca nut
Eating street-food	Hookah	Zarda	Text while walk	Cold drink
Khaini	Text while walk		Khaini	Packaged chips
Pub-G	Eating street-food		Gutkha	Eating street-food
	Zarda			
	Train travel			
	Khaini			
Moderate Risk Zone				
Text while walk	Gutkha	Gutka	Packaged chips	Text while walk
Hookah	Beedi	Hookah	Eating street-food	Khaini
Motor-Bike			Sodas/Cold drink	Zarda
Train travel			Zarda	Gutkha
			Motor-Bike	
			Train travel	
High Risk Zone				
Gutkha	Cigarette	Khaini	Pub-G	Cigarette
Zarda	Pub-G	Cigarettes	Beedi	Motor-Bike
Beedi	Motor-Bike	Beedi	Cigarette	Pub-G
Cigarettes		Pub-G	Hookah	Hookah
		Train travel		Train travel
		Motorbike		Beedi

ranked as low-risk by all the groups. All participants had been exposed to knowledge about the harms of cigarette smoking through various channels – school health education sessions, mass media, warning labels on packets, and reactions of community members or adults to children smoking. Participants associated cigarettes with cancer, organ damage, and addiction; therefore, they ranked it as having the highest risk.

Adolescents said fennel and mouth fresheners were commonly used by most families after meals and since parents freely offered them to children, they reasoned there could not be any risk. Furthermore, the participants had not heard or read of any risk from fennel or mouth-fresheners either through the mass media or health education sessions in the school. When questioned why they did not place areca nut in the ‘no-risk’ category, just like they had done with fennel seeds, adolescents replied they knew that areca nut did cause some harms but did not have adequate knowledge. However, they were quite certain that fennel or mouth fresh-eners did not pose

any risk and could be considered a food item. After all fennel or mouth fresheners were offered by adults and consumed freely by everyone in the house, people of all ages and sexes.

With respect to areca nut, one noteworthy observation was that all the five groups, irrespec-tive of use-status, ranked it as low risk, citing various reasons. Adolescents did not have enough knowledge of the harms caused by areca nut. They gave the low risk rating to areca nut in comparison to the higher risks of smoking or chewing tobacco. The harms to health caused by cigarettes were perceived as very serious as compared to the milder effects of are-ca. Participants perceived areca nut to be not as addictive as cigarettes, and thought areca nut addiction was easier to treat than cigarettes. The sweetened areca nut sold in commercially packaged products, which were popular among students, also led to the reasoning that anything sweet could not be harmful. Adolescents also picked up cues from adults and the gen-eral culture. Parents or community members reacted very angrily if they caught

the adolescent smoking a cigarette. In contrast, the reaction to seeing a child chewing areca was much milder.

With respect to tobacco products, there was a pattern in which adolescents rated risks of the different types of products. Any smoked tobacco products such as cigarettes, bidis (Indian hand-made cigarettes) and hookahs (water pipes) were consistently rated as high-risk compared to chewed (smokeless) tobacco products such as gutkha (areca nut, slaked lime, catechu and sun-dried, roasted, finely chopped tobacco with flavorings and sweeteners), zarda (flavoured chewing tobacco flakes mixed with aromatic spices, menthol, herbs, fragrances, raw kiwam, silver flakes, sandalwood oil), and khaini (sun-dried or fermented coarsely cut tobacco leaves mixed with slaked lime) which were consistently assessed as moderate to low-risk. Consuming gutkha and zarda were divided between low risk and moderate risk; while the majority placed chewing khaini in the low risk category. Interestingly, the group that used hookah and the one that used smokeless or chewing tobacco rated hookah and smokeless tobacco products respectively as lower risk. When questioned, participants once again referred to the intense exposure about the harms of smoking through various channels and also seeing many people, especially adults, around them use chewing tobacco products such as gutkha. For items such as gutkha, zarda and khaini, the reason put forth was that these products contained a mixture of various ingredients, including some tobacco. However, participants argued that the amount of tobacco used in these mixed products was lesser than that used in cigarettes, bidis or hookahs (water pipes). As the amount of tobacco in these smokeless products was less the reasoning was that the concomitant risk of organ damage, disease or death was also less as compared to smoking.

Playing PubG (Player Unknown's Battlegrounds), an online multiplayer battle and weapons game, was rated as high risk by four groups. This was due to the news-channels coverage of the issue; deaths, accidents and killings associated with PUBG were sensational news items. Participants cited stories about young players who were so addicted to the game that they killed their parents when they objected to it. Also, parents blamed it for being extremely addictive and causing mental health issues because players were simply glued to their smartphone screens all the time. With respect to the risk of traveling in local trains in Mumbai, participants, who were residents of Mumbai, were very aware of these congested trains. Students had heard or read of accidents and deaths due to falls from train compartments or on railway tracks, which are often covered in local news media.

The activities where there were greater differences among groups were activities such as: mobile-texting while walking on the road; eating packaged foods such as chips; eating street food and consuming sodas or aerated drinks, with most groups placing these in none to low risk but one or two groups classifying them as moderate risk. These differences were based on the exposure of the participants to news items, to what their friends and parents thought about it, or personal experiences in some cases. For instance, some cited the dangers of obesity and chronic disease from sodas or packaged food because

they had read about it while others had some personal experiences of falling ill after eating street food.

Discussion

While expert assessments of the risks of tobacco and areca nut to Indian adolescents is well documented (Gupta et al., 2018), very little literature exists on adolescents' risk assessment of areca nut, smokeless tobacco, and smoked tobacco products in the Indian context. This study contributes to our understanding of adolescent assessment and perceptions of risks of areca nut and tobacco and their relative risk-ranking for a list of sixteen activities. Findings have implications for health policy, health communication, and programmes for prevention and cessation of areca nut use among adolescents and oral cancer prevention in general.

Participants across all groups, non-users and different types of users, unanimously ranked cigarettes as the highest risk activity (Table 1). However, all the groups, users and non-users, unanimously ranked areca nut use as a low risk activity, only slightly higher than fennel seeds and mouth fresheners. Experts, on the other hand, assess areca-use as a serious public health issue in India given its widespread availability and consumption, especially among adolescents, and the growing epidemic of oral cancer (Gupta et al., 2018; Singh et al., 2021). Thus, this study highlights the divergence in risk assessment of areca nut between experts and adolescents.

In ranking cigarettes as high risk, participants said they considered the perceived severity of the consequences of using cigarettes such as cancers, organ damage and lung disease. A meta-analysis of existing research has found that although interventions that successfully heightened risk appraisals led to changes in subsequent intentions and behavior, the effects were larger when heightened risk perception was supported by significant increases in perceived severity or anticipatory emotions such as fear or worry (Sheeran et al., 2014). Participants attributed the perceptions of severity of consequences of cigarette-use to school-based health education sessions, mass media, and angry reactions of parents or adults when they caught a child in the act of smoking. Thus, this study underlines the effectiveness of past health communication campaigns in changing risk perceptions about smoking. However, the findings also point to the failure of health education with respect to areca nut. Other studies have tried to answer why adolescents perceive areca nut as harmless. Certain features such as flavor and sweet taste of commercially packaged areca nut along with a constant comparison of areca nut with tobacco products leads adolescents to conclude that while tobacco is dangerous and causes life threatening diseases such as cancer, areca nut has only minor health effects, which are overcome easily (Chatterjee et al., 2021). We also need a better understanding of the role of culture and the messaging that adolescents receive from the larger community, from parents and adults within their interpersonal network, about the harms of engaging in certain activities. The cultural acceptability of areca nut is high in the South Asian region. In a study of oral cancer awareness

among adults in Sri Lanka, despite 70% of respondents acknowledging the receipt of some information about such harmful risk habits, only 27% reported that use of areca use could have unhealthy effects (Wickramasinghe et al., 2021). The role of cultural acceptability in shaping perceptions of the severity of consequences of using areca nut needs further examination.

Adolescents feel that the areca nut user, unlike a tobacco-user, is not actually engaging in a very harmful health practice. Areca nut is less harmful and less addictive and therefore the user seems to be signaling something positive (Jordan and Rand, 2020). Is areca nut use a form of signaling by the adolescent that she or he is more responsible than the tobacco user? This needs to be examined in future research. Researchers have argued that programmes designed to deter adolescents from engaging in risky behaviors have to acknowledge that risk behaviors fulfil important functions for adolescents; and these programmes have to offer less hazardous means to meet adolescent needs (Benthin et al., 1995). In this particular case, if adolescents, engaging in risky behaviors, have made the decision that areca nut is less risky as compared to tobacco, then what is the replacement for areca nut? Future research in this area has to examine the decision-making processes used by adolescents for engaging in risk behaviors.

Consistent with previous research (Benthin et al., 1993), this study also found that adolescents who participated in a particular risk activity, especially hookah and chewing tobacco users, perceived the risks to be smaller and more controllable than did non-participants of that activity (Table 2). The present study raises questions about smokeless tobacco products that have to be assessed in future research. Although participants knew that products like gutkha and khaini contain tobacco, they were perceived and ranked as a low to moderate risk behavior. These very same groups classified cigarettes and beedis as high risk. Participants perceived the amount of tobacco in these smokeless tobacco products to be lesser than cigarettes; and reasoned that less tobacco meant the consequences would be of lesser magnitude. For a country that has twice the number of smokeless tobacco users as compared to smokers (TISS and MoHFW, 2018), this risk perception issue should be studied further. Health education and communication for areca nut and smokeless tobacco have to be designed appropriately and the frequency of messaging increased further.

This study has limitations. It used a mixed methods approach, including group discussion, to understand risk perceptions and ranking. Previous studies have employed the psychometric paradigm, a quantitative approach which uses psychophysical scaling and multivariate analysis to produce “cognitive maps” of risk perceptions (Slovic, 1987). Within the psychometric paradigm, individuals make quantitative judgments about the riskiness of various hazardous activities and technologies. The present study examined how a small group rather than individuals assessed risks. The individual differences between members of the same group were not studied nor was the exact decision-making process by which the group arrived at a consensus, as this was not the focus on of

the study. This was a rapid, participatory assessment to check how adolescents ranked risks of areca nut vis-à-vis other activities. Furthermore, adolescents’ assessments were based on criteria such as the risk of addiction or absolute and relative mortality and morbidity if they engaged in the activity or used a particular product; other characteristics of the hazard were not considered. More long-term studies with larger samples that relate risk judgments to risk characteristics of various hazardous behaviors, are required to understand the phenomenon better. Furthermore, future research has to provide a better understanding of the affective and experiential components of risk perception. Classic health behavior theories have largely treated risk perceptions as deliberately-derived judgments, which are systematic and logical, in that the individual relies on reason-based strategies to derive an estimate of the likelihood that the negative outcome will occur. However, recent studies on decision-making point to the importance of targeting affective risk perceptions, such as worry and anxiety about a threat, and experiential or intuitive risk perceptions or gut-level assessments of vulnerability, such as how vulnerable a person feels with respect to a threat, as these components are found to be more predictive of intentions or behavior than deliberative risk perceptions (Ferrer and Klein, 2015).

In conclusion, this study draws attention to the low-risk perceptions of areca nut among adolescents. This could easily lead to greater use of areca nut, subsequent long-term addiction, risk of oral cancer, and an increased risk of future tobacco use. While there are lessons to be learned from the approaches against smoking, there are some unique risk-perception and cultural issues in areca nut use. Health communication is urgently required. Areca nut is also a regional problem for countries in South-East Asia. Given the somewhat regional nature of the problem, national governments and regional South-East Asian Regional Office (SEARO) of the World Health Organization have to prioritize the problem of areca nut use. There is a long battle ahead for oral cancer prevention in India and researchers, policy-makers, activists, communicators, and school-health educators have to work together.

Author Contribution Statement

NC and HAG conceptualized the study design. NC and HAG worked on the methods. HAG secured funding for the project and was responsible for implementation. HAG and GM were responsible for participant recruitment. GM conducted the focus groups. NC and GM performed data analysis and data interpretation. NC wrote the first draft of the manuscript. All authors took an active role in critical revision of the manuscript for important intellectual content.

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Ethical committee that approved the research

The Institutional Review Board of Narotam Sekhsaria Foundation and Salaam Bombay Foundation has approved the research.

Conflict of interest

The authors have no conflict of interest to declare.

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