Oral cancer risk behaviours of Indian immigrants in Australia: a qualitative study

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Abstract

Objective: Oral cancer is widespread in South Asia, particularly India. In Australia, Indians are one of the fastest-growing communities. This study aimed to explore the oral cancer-related knowledge, attitudes and practices of Indian immigrants in Australia.

Methods: Fourteen semi-structured interviews were conducted with Indian immigrants residing across New South Wales and Victoria. Purposive and snowball sampling were used for recruitment. Data were analysed through a directed content analysis approach.

Results: All participants were knowledgeable of oral cancer risks associated with tobacco and alcohol, but few were familiar with the harmful effects of areca nut preparations. Varied attitudes were evident with most participants acknowledging the importance of oral cancer check-ups, yet very few followed this practice. All participants admitted engaging in oral cancer risk practices including areca nut use at least once or more in their lifetime.

Conclusion: Oral cancer risk practices are common among Indian immigrants in Australia who possess limited knowledge with varying attitudes in this area.

Implications for public health: Preventative strategies are needed to limit the use of oral cancer risk products among Indian immigrants. General practitioners and community organisations can play a key role in raising awareness in this area.

Key words: Oral cancer, Indian immigrants, risk behaviours.

Migration has been a key factor impacting social and economic transformations globally. In 2019, about 272 million international migrants were estimated worldwide, which is approximately 3.5% of the total population.[1] Although migration is a global phenomenon, a significant number of the immigrants reside in developed and high-income countries including the US, the UK, Australia, Canada, New Zealand and Switzerland.[2] Of all international immigrants, more than 40% come from Asia, primarily from South Asian countries such as India, Pakistan and Bangladesh.[1,3] Australia is a major 'immigration nation' with overseas immigration being the main driver of population growth.[4] More recently, India was reported as the largest source country of immigrants with 25,698 places (approximately 18.3%) in Australian immigration followed by China (18,587 places) and the UK (10,681 places).[5] Immigration at such a large scale has brought with it a unique blend of diverse cultures and beliefs from different parts of the world.

Migration generates great opportunities yet it can also be challenging for immigrants to integrate into new settlements with different norms and customs.[6] Almost all immigrants are believed to bring with them their native cultural behaviours, practices, and oral health beliefs, which modifies the patterns of oral diseases in destination countries.[7] Among such oral diseases, oral cancer has become a serious public health concern.[8] The prevalence of oral cancer is increasing worldwide[9] and the rise of cases in high-income countries over recent decades coincides with increased immigration from South Asia.[7] Oral cancer is widespread in South Asia[10] and is a leading cause of cancer-related mortality in India,[8,10] ranking among the top three cancers and accounting for over 30% of all cancers reported in India.[11] The seriousness of this health burden can be interpreted from a GLOBOCAN report which estimated approximately 119,992 new lip and oral cavity cancer cases in the year 2018.[12] This high prevalence of oral cancer among Indians is mostly attributed to the widespread use of tobacco products, especially smokeless tobacco and culturally embedded customs of areca (betel) nut preparations along with alcohol consumption and poor dietary habits.[13] The well-established practices of areca nut use and betel quid ('pan') chewing are so well-accepted in the Indian subcontinent as a custom that Indians are well known for sustaining this cultural practice long after emigrating to other countries.[14]

The continuation of cultural practices of South Asians after immigration has been speculated to be linked with the rise in oral cancer cases in destination countries.[7,10]

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Furthermore, a recent review has confirmed that South Asian immigrants lack adequate knowledge regarding oral cancer risk with a strong inclination towards negative oral cancer risk practices including the habit of areca nut chewing.[15] Given oral cancer is prevalent in India,[13] this elevated risk with associated habits is suspected to be carried by Indians to other countries[7] as it is the largest source country of immigrants.[1]

Historically, oral cancer has received little attention in Australia because of its relatively low prevalence and incidence.[16] However, an increase in registration of new cases over recent decades presents a serious health threat.[17] More than 4,000 new cases of head, neck and lip cancers are diagnosed each year in Australia with more than 600 of these cancers comprising oral cavity cancers.[18,19] Furthermore, the mortality rate has remained almost the same in the past decade even with fluctuations in the number of oral cancer reports,[17] which is more alarming. This increase in oral cancer cases could be explained by the rise in the population[20] in recent decades and can be connected with the increasing immigration from South Asia, particularly India.[21] In Australia, Indians are one of the fastest-growing communities forming about 2.6% of the total population.[22] Since tobacco consumption is linked to the development of oral cavity cancers,[20] an increase in such cases may be linked to Indians continuing to indulge in tobacco and areca nut use in Australia.[23,24]

The potential link between cultural risk practices of Indian immigrants and oral cancer cases has already been investigated in major developed countries including the UK,[25,26] the US,[27,28] Italy[29] and New Zealand[30] with a view to raising cancer awareness among these populations. Unfortunately, very little is known about oral cancer-related risk among Indians residing in Australia.[16,31-33] Gathering this information can help identify communities at risk for developing oral cancer in the country. The overall aim of this study was to explore the oral cancer risk-related knowledge, attitudes and practices of Indian immigrants in Australia.

Research questions

The following research questions guided this study:

- What are the oral cancer-related knowledge, attitudes and practices of Indian immigrants in Australia?
- What are the perceived barriers for Indian immigrants to access oral cancer information and related healthcare programs?
- What are Indian immigrants' suggestions to promote oral cancer awareness among Indians in Australia?

Methods

Approach

A qualitative approach[34] was chosen for this study to help explore the perceived knowledge, attitudes and practices[35] of the Indian immigrants regarding oral cancer risk. The data for this paper were collected through interviews with Indian immigrants from two large states in Australia: New South Wales and Victoria. This study was conducted as part of a broader mixed methods study.

Sampling and recruitment

The inclusion criteria for this study consisted of Indian immigrants over the age of 16 years residing in suburbs of New South Wales and Victoria. In Australia, the states of New South Wales and Victoria have been very popular places for Indian immigrants to settle, who often have a preference for the capital cities, Sydney and Melbourne, respectively.[36]

The minimum age to participate was 16 years, as previous literature has revealed that risk practices (e.g. betel quid chewing) are prevalent and popular among all age groups of Indians.[7,37] No exclusion criteria were set based on age, gender, residency status, place of origin in India or number of years living in Australia, as current evidence internationally has shown oral cancer risk-related behaviours to be prevalent across these variables.[15] All attempts were made to ensure the recruited participants had representation across all these variables. Both purposive and snowball sampling techniques[34] were used to recruit participants. Recruitment was also undertaken through flyers advertised at various grocery stores and restaurants in suburbs which were known to be densely populated with Indians.[36] A participant information sheet was provided to candidates who contacted the principal researcher (NS) directly or expressed an interest in this study through other participants by word of mouth.

Data collection

An interview topic guide (See Supplementary File 1) was developed based on our review of the literature[15] and refined by the multidisciplinary team involved in this research. This guide broadly included questions about oral cancer-related knowledge, attitudes and practices of Indian immigrants in Australia. A total of 25 participants were identified for recruitment and 14 were interviewed, giving a response rate of 56%. These 14 interviews were conducted face to face and over the telephone at a time/place convenient to participants. The principal researcher (NS) who was trained in qualitative research and had no prior relationship with any of the participants conducted all the individual interviews. Another researcher (RP) from the research team was present during the first interview (conducted face to face) for support. Data collection commenced in August 2019 and was completed in January 2020. Interviews were conducted in English and a semi-structured interview process was followed by the researcher to ensure that participants spoke freely on each question with the use of open-ended questions and follow-up probes. Each interview lasted 30–45 minutes. Participants were also given an opportunity at the end of the interview to add any further comments not addressed in the interview.

All participants provided either written informed consent for face-to-face interviews or verbal consent for the telephone interviews. Recruitment and data collection continued until data saturation where no new information emerged from the interviews.[34] Demographics of the participants including age, gender, occupation, and educational qualification were collected at the end of the interview (see Supplemenary information).

Data analysis

All interviews were audio-recorded by the principal researcher and then transcribed by a professional transcription service. Transcripts were checked against the audio for accuracy and imported into qualitative data management software (QSR NVivo 12). The transcripts were analysed for categories using directed qualitative content analysis (QCA).[38] This commenced with immersion in the data by reading and re-reading transcribed interviews to gain familiarity with the data and to record initial ideas. A formative categorisation matrix based on the findings from an integrative review of knowledge, attitudes and practices of South Asians regarding oral cancer[15] directed the

initial coding of the transcripts. All authors (PhD candidate [NS], two practising/academic dentists [AJ and NP] and two nurse academics [RP and BE]) undertook the initial coding by reading three transcripts each. Over the course of two meetings, a coding structure was developed by the researchers, and this was used to code the remaining transcripts. After the initial analysis was completed, the first author (NS) went back through the coded excerpts and identified sub-categories that were then discussed with the other researchers in the team until consensus was achieved.

Ethical considerations

The study received ethics approval from the Human Research Ethics Committee of Western Sydney University (H13203). All participants were given a gift voucher (AU$50) as reimbursement for their time. The audio recordings and transcripts were stored on a password-protected computer as per institutional and ethics committee requirements. All participants were de-identified throughout transcription to ensure the confidentiality and anonymity of the participants. Pseudonyms (*P1*, *P2*, *P3*, *P4*……*P12*, *P13*, *P14*) were used to present statements by participants.

Rigour

A number of methodological strategies were used in this study to address trustworthiness – the criteria for robust qualitative research (credibility, transferability, dependability and confirmability).[39] All interviews were conducted by a researcher trained in qualitative research to develop a relational focus with the interviewee for active engagement while also establishing trust and rapport. Debriefings were organised with another researcher (AG) to discuss the completeness of data and any new areas to explore in subsequent interviews. A professional transcription service was used to improve the accuracy of the verbatim transcriptions of the audio recordings as it allows reference to the exact words of participants during the analysis. Member checking of the transcripts was undertaken with five participants who indicated they wished to review their transcripts; however, no changes were requested. To promote credibility and reflexivity, individual coding was done by all researchers in the team confirming their active involvement and then consensus was achieved with numerous team meetings. Detailed information about the participants, study settings, and data collection process are provided to ensure transferability and findings are supported by direct quotes of the participants. Reporting of this qualitative research has been undertaken using the Consolidated Criteria for Reporting Qualitative Studies (COREQ): 32- item checklist (See Supplementary File 2).

Definition of terms

The terms 'knowledge', 'attitudes' and 'practices' have been used widely in this paper. For the purpose of this paper, the definition of 'knowledge' refers to one's awareness, level of information and understanding regarding oral cancer risk.[15] 'Attitudes', in this context, has been used to depict the inclinations, perceptions, and beliefs of the people associated with oral cancer risk.[15] The 'practices' of the participants relates to a person's oral cancer risk-related habits and the actions regarding initiation, continuation or quitting of these habits.[15] The reference to 'risk products' has been used to depict commonly consumed tobacco and areca nut preparations.[40] 'Immigrant', in this paper, refers to a person who moves into a country other than that of his/her nationality.[41]

Results

General characteristics

Fourteen Indian immigrants (10 males and 4 females) residing in different suburbs of New South Wales (*n*=12) and Victoria (*n*=2), were interviewed. Participants ranged in age from 25 to 59 years, with most (*n*=13) being Australian residents for more than five years. Most participants (n=10) were university graduates and were employed (n=11) at the time of interviews. Participants originated from all parts of India, but the majority (n=9) were from Northern and Western India. The main religion reported among participants was Hindu (n=10). Supplementary Table 1 displays detailed demographics of the participants.

Three main categories and nine subcategories were identified from the interviews. These included:

1. Knowledge about oral cancer: *Signs/symptoms and related risk factors; Availability and accessibility of oral cancer risk products; Sources of oral cancer information.*

2. Attitudes towards oral cancer: *Perceptions of oral cancer in Australia; Reasons for engaging in oral cancer risk behaviours; Views about oral cancer prevention and early risk assessment.*

3. Oral cancer risk practices: *Frequency and types of oral cancer risk product use; Initiation and continuation of oral cancer risk practices; Preventative healthcare practices.*

Knowledge about oral cancer

Signs/symptoms and related risk factors

All 14 participants had heard about oral cancer, yet only four were aware of its signs and/or symptoms. As one young male participant stated: "I heard about the oral cancer, but I don't know how it happens". (P5, Male, 25-29 years)

There were varying levels of knowledge among participants regarding the causes of oral cancer. While the effects of tobacco and alcohol consumption and their relation to oral cancer were commonly known, less than half (*n*=5) were aware of the effects of areca (betel) nut preparations (supari/gutkha). This lack of knowledge was evident irrespective of the age, sex and education level of the participants. For example:

> *Betel nuts, I didn't have much idea that this must be causing cancer, because that's a common thing being used in India for occasions.* (P10, Female, 35–39 years)

> *I don't have much information about the betel nut, but I know about tobacco for sure.* (P14, Female, 25–29 years)

> *…Betel nuts, actually, I am hearing this word first time.* (P1, Male, 55–59 years)

> *…there is a chance of oral cancer, if it relates to the smoking. I don't know if it is related to the smoking only or related to the supari or gutka [referring to areca/betel nut preparations].* (P5, Male, 25–29 years)

Availability and accessibility of oral cancer risk products

Several participants (*n*=10) reported being familiar with the selling of commercial areca (betel) nut preparations in Asian/Indian grocery stores and restaurants in Australia. For instance:

> *They're [products] available if you look for it, you can find them.* (P7, Male, 45–49 years)

Many (*n*= 6) recalled that tobacco preparations were readily available while areca (betel) nut products were often acquired through relatives or friends travelling from India. As one middle-aged male interviewee stated, "They bring bulk

quantity from India and here also they purchase, local market". (P9, Male, 45–49 years)

Five participants were unaware of the legal requirements concerning procurement and selling of these products in Australia:

> *I'm not sure illegally or legally they are selling, but possibly yeah, you know, they're selling some items here…* (P11, Male, 30–34 years)

Four participants indicated that these products are expensive in Australia and most people tend to buy them from India for a lower price.

Sources of oral cancer information

The major source of information about oral cancer was through the media, either print (e.g. newspaper, posters) or multimedia (e.g. TV commercials, advertisements during movies) though it was largely obtained from India:

> *Usually when I watch the movies or when I watch the TV shows or something, I see the advertisements…sometimes by reading some magazines or something, I have seen what oral cancer is.* (P10, Female, 35–39 years)

Three participants mentioned receiving information about oral cancer from general practitioners (GPs) or dentists in Australia, but the rest of the participants expressed the contrary:

> *I never seen any, much awareness information available on normal GP or normal medical centre in Australia.* (P11, Male, 30–34 years)

Attitudes towards oral cancer

Perceptions of oral cancer in Australia

There was overall agreement that oral cancer could be an emerging health concern in Australia as more Indians have migrated in recent years, although participants felt currently it was not an issue when compared to India. Participants explained the potential seriousness of the situation as:

> *It is a problem but it's not a dominating one at this stage. But it could get to a level because there is too much immigration, there is too much import of everything…So it can spread.* (P6, Female, 25–29 years)

Reasons for engaging in oral cancer risk behaviours

There were diverse beliefs about why Indians continued to indulge in the use of tobacco or betel/areca nut products after migrating to Australia. Just over half the participants (*n*=8) commented that such habits were a result of addiction:

> *… But people who have addiction and they are migrating here, I think 90% or I think 80% they continued that.* (P1, Male, 55–59 years)

Lack of awareness about oral cancer and related health hazards was brought up by half the participants (*n*=7) as a major factor for persistent oral cancer-related risk habits of Indian immigrants.

> *People are using it from ages. I'm pretty sure 90% of the people, they are affected by it. After they get affected, then is the time when they actually know that, oh, it was bad for health.* (P6, Female, 25–29 years)

Some believed lifestyle (*n*=4) and social network (*n*=2) coupled with easy access to tobacco as other reasons for Indian immigrants to continue indulging in these risk behaviours:

> *Maybe some may feel that, my friends are having [the products], so why can't I have it? So, that may be a reason.* (P10, Female, 35–39 years)

> *… so there are lots of people who are used to tobacco in India before they came here, so after they came here it might be easy to get those products, so it can happen.* (P11, Male, 30–34 years)

In contrast, few (*n*=4) remarked that Indian immigrants continue consuming tobacco and areca nut products despite being aware of the potentially fatal consequences:

> *Though they know it is going to kill them, yet they are consuming that. They know it is dangerous product, yet they consume.* (P9, Male, 45–49 years)

Views about oral cancer prevention and early risk assessment

A consistent viewpoint among participants was the need to raise oral cancer awareness among all Australians including immigrant communities.

> *I think the awareness is needed. I feel not just Indians, I feel it should be spread among Australians as well…* (P13, Female, 30–34 years)

All participants acknowledged routine oral cancer check-ups as a crucial measure for early detection and management, yet nine of the participants did not have check-ups at the time of the survey.

> *… definitely prevention is better than cure, so you should check it out, so … I never thought about it. So probably I will go this time for myself.* (P11, Male, 30–34 years)

Several participants reported barriers to oral cancer check-ups including financial constraints (*n*=4) and lack of time (*n*=5).

> *I think so because some people who are not permanent residents and they worry about the fees [for doctors consultation fees] and everything …* (P12, Male, 35–39 years)

> *Most of the migrants over here are super busy with settling down … So they don't have time [for oral health check-ups].* (P13, Female, 30–34 years)

Some participants (*n*=5) believed Indians would not prioritise preventive check-ups,

> *Indians will only approach you if they're actually sick. Otherwise they have a treatment for anything called Panadol".* (P6, Female, 25–29 years)

Nearly all (*n*=11) believed their GP was the best person to assist with further information and diagnosis and three participants suggested dentists could also play a role.

> *Because I think the initial stage if you are having any issues, you would firstly go to a GP in Australia … and then the GP would guide you to any specialist …* (P14, Female, 25–29 years)

Participants (*n*=7) also believed that Indians would be more receptive to receive an oral cancer risk assessment through a GP since they are comfortable talking to their GPs in Australia: "Now, in coming to this culture, Australian culture, they [Indians] are a little bit Australian as well. So, I don't think they are scared or they hide something. They are open to the GP". (P1, Male, 55–59 years)

However, some (*n*=5) indicated Indians might be shy or reluctant to consult a GP for oral cancer:

> *Indians have a mentality they think they are very superiorly intelligent. So, they will not go to the GP to ask that because they will think they are looking dumb doing that …* (P6, Female, 25–29 years)

Potential strategies to increase the awareness of oral cancer included GP counselling (*n*=11), advertising through pamphlets/brochures (*n*=7), and educational seminars (*n*=5) during social gatherings and public events. A belief reflected by a middle-aged female participant: "When we have such awareness programs, then we can pass to our generations, to our children and kids so that they might live in a healthy environment…". (P10, Female, 35–39 years)

A small number of participants (*n*=4) questioned the impact of oral cancer awareness campaigns and seminars:

Campaigns will only help the people that are already affected. Why do you want to spend 50 minutes on a seminar which has nothing to do with you?… (P6, Female, 25–29 years)

Oral cancer risk practices

Use of oral cancer risk products: frequency and type

All participants admitted being involved in oral cancer risk practices at least once or more in their lifetime with betel quid/'pan' chewing being reported as the most widely used product. The habit of consuming areca (betel) nut products was found to be more popular particularly among participants who belonged to the Western part of India (Gujarat state); (*n*=6).

Hindu participants (*n*=7) also appeared to be more inclined towards occasional/frequent use of areca (betel) nut preparations especially during their festivals and social gatherings. As one Hindu female participant mentioned:

So they [pan] are usually available on celebrations … Could be a wedding. Could be a birthday party. They've got specific stalls for it and people who want to take it, take it. (P6, Female, 25–29 years)

Some practised frequent smoking (*n*=5) and use of smokeless tobacco preparations (*n*=4) e.g. *gutkha, khaini*. The dependence on these products was evident in the following quotes:

Every day. Not only every day, I think 10 times a day. It's a very small quantity I am keeping inside between my teeth and chin [referring to tobacco chewing]. (P1, Male, 55–59 years)

How many a day? It's like how many glasses of water did you drink, you know! [referring to smoking] (P4, Male, 30–34 years)

Two participants discussed their addiction to tobacco chewing and expressed difficulty in quitting the habit: "So from college I think I started taking tobacco. So until now it's continued. In between these 35, 40 years, a lot of time I tried to leave that addiction…. After coming Australia as well I have tried a lot for time". (P1, Male, 55–59 years)

Furthermore, a handful (*n*=6) acknowledged being involved in occasional smoking, alcohol consumption and betel quid chewing:

Smoking I can do alone, alcohol mostly I go with the friends like that, and pan also if there is someone there that wants to eat, then I eat. (P3, Male, 30–34 years)

Five Indians reported transitioning to occasional use after moving to Australia because of costs and lack of easy access to the products. This was reflected in the following statement:

Here I am taking less because it's not easily available … Because it's I think 10 rupees to 500 rupees [Currency in India]. So, it's 50 times costlier here … (P1, Male, 55–59 years)

Initiation and continuation of oral cancer risk practices

Most frequently reported reasons (*n*=8) for initiation and continuation of risk practices for this behaviour were associated with social and family gatherings:

Yeah, whenever we go for marriage parties, or something … we do get a chance to have those [betel quid/pan, supari] because they are being served, so we just have it. (P10, Female, 35–39 years)

Other factors identified were cultural norms (*n*=5), pleasant smell and/or taste (*n*=4) of the risk products. Few participants felt a connection to their country of birth (*n*=3) while consuming tobacco or betel quid/'pan'.

Preventative healthcare practices

There was a wide variation reported in the preventative healthcare practices of participants with some (*n*=6) visiting their GP regularly while others (*n*=8) accessing this service only when they were unwell. The older participants (*n*=3) seemed to be more irregular in routine visits to health professionals:

I never have to go GP or dentist because I am very healthy person. I don't think in five years, except one, this ulcer, I went to the GP. (P1, Male, 55–59 years)

No, I'm very irregular. It's more than a year I've been to the GP now. (P7, Male 45–49 years)

Three participants preferred consulting a GP from a similar cultural background to help in better understanding some of their diseases:

… some of the Indian diseases or maybe sickness is not popular in Australian GPs or Australian-born GPs or they've studied here … (P3, Male, 30–34 years)

Dental visits were less frequent among participants, with some interviewees (*n*=5) reporting their last dental visit several years ago: "Not once a year. In 13, 14 years here in Australia, just once." (P4, Male, 30–34 years)

Discussion

This is the first study to explore oral cancer-related knowledge, attitudes and practices of Indian immigrants in Australia. The majority of study participants were recruited from New South Wales and had diverse characteristics in terms of age, sex, religion, place of origin in India, educational backgrounds and number of years residing in Australia. Having this diversity was important in this exploratory study as oral cancer risk-related behaviours have been previously linked to these characteristics among Indian immigrants.[15] Further, since a greater proportion of Indian immigrants settle in New South Wales,[22,42] the sample recruited did represent the population of interest.

Overall, there was adequate knowledge among participants around oral cancer and associated common risk factors like tobacco and alcohol. However, there was limited understanding of the signs/symptoms of oral cancer and the harmful health effects of areca nut use. A clear agreement on oral cancer as an emerging health concern was apparent with diverse views about oral cancer risk behaviours and conflicting attitudes towards preventative oral cancer risk assessments. Furthermore, oral cancer risk practices were evident among participants along with limited preventative healthcare practices.

The lack of knowledge around regular consumption of areca nut products and oral cancer is consistent with previous studies which show high-risk communities are generally less aware of this causal relationship.[43,44] These findings mirror past studies from the US,[27,28,45] the UK,[46] Italy[29] and New Zealand,[30] where more than half the Indians assessed were unaware of oral cancer risk associated with the use of areca nut. Similar to previous literature,[15] the age, sex and education level of the participants did not appear to contribute to the poor knowledge relating to the role of areca (betel) nut as an oral cancer risk product. Although this finding needs to be further explored, it could stem from the fact that areca nut use has always been deeply rooted in cultural and social customs of Indian communities.[7] It has also been suggested that this lack of understanding around areca nut may be contributing to delays in the presentation and diagnosis of oral cancer cases.[45] An added factor that may be exacerbating the situation is the limited information on oral cancer being provided by general practitioners as cited by participants. This finding is in line with recent studies investigating oral cancer-related diagnostic practices of GPs in other developed countries,[47,48] which has highlighted their limited knowledge in the

context of emerging oral cancer causes and its early identification.

Similar to previous qualitative research,[27,30] our study participants had good knowledge about the easy availability and accessibility of the risk products through many Asian/Indian grocery stores in Australia. Similar findings were reported in a recent study in the US,[49] which found areca nut products were readily available and easily purchased without appropriate health warnings from South Asian retailers in Texas. Another notable finding in our study was the confusion among participants over the legality of obtaining areca nut preparations in Australia despite the standard prohibitions on its sale and use.[50,51] These issues raise concerns as to whether proper monitoring is occurring at points of importation and distribution.

Despite concerns that oral cancer could be an emerging health issue in Australia and the importance of raising oral cancer awareness in the community, it is clear that the varying risk behaviours perceived by participants pose additional challenges. Like past studies,[7,52] participants cited the health benefits of deeply rooted cultural customs of areca nut chewing and social influence played a key role in engaging immigrants in these risk behaviours. Adding to this is the psychotropic nature of areca nut which leads to addiction following frequent consumption.[53] These varied attitudes coupled with limited knowledge and misconceptions seem to have influenced the practices of immigrants with all participants reporting to have engaged in at least one or more oral cancer risk practices (for instance, betel quid/'pan' chewing and tobacco use) in their lifetime. These findings highlight the popularity of such products among Indians and echo the results of a recent review which found such risk practices were popular across almost all age groups and generations of South Asians including Indians.[15] Similar to an older study conducted in the UK,[46] there appeared to be more inclination among the Hindu participants to engage in areca (betel) nut use, although there was more representation of this religion in our study sample. A possible explanation behind this could be the areca nut-related religious connotations and health beliefs that prevail among the followers of the Hindu religion.[7] Another interesting trend in the findings was the popularity of areca nut preparations among participants who originated from the western part of India. This finding complements earlier literature which found Indians from particular regions[54] of India such as Gujarat are more involved in areca nut use and likely to continue these habits after migration to other countries.[52] Further, as documented previously,[7,14] the initiation and continuation of these risk habits were found to be linked to social networks which can increase the tendency of Indians to continue these practices even after emigration.

The findings from this study are of concern and suggest the need for actions at the community, organizational and policy levels to curtail the use of oral cancer risk products among Indian immigrants.[55] One of the key areas is to increase awareness may be through culturally sensitive programs with various community groups. Considering Indian immigrants from certain parts of India may be more inclined in following oral cancer risk habits like areca nut/betel quid chewing, specifically tailored awareness programs for this population group might be useful.[26] Other strategies such as the use of posters raising awareness of oral cancer risks associated with betel quid/'pan' use could be displayed in Asian/Indian grocery stores, restaurants, places of worship, and at cultural events where high numbers of Indians usually gather. Social media like Facebook, Instagram and WhatsApp could provide an effective platform to spread relevant public health messages in addition to local Indian radio and television channels. Since different population subgroups with various ethnic origins and religious backgrounds present differences in the level of knowledge and health-related behaviours,[56] a clear understanding of their cultural practices might help to improve oral cancer awareness strategies and inform the development of effective preventative educational material. To our knowledge, no national resource is currently available in Australia for raising awareness of immigrants about areca nut use.

Additionally, it is vital for GPs, especially those serving large Indian populations, to play an active role in providing oral cancer information around emerging risk behaviours like areca nut chewing. This is particularly important as they are the first point of contact in primary health care in Australia and participants in this study were also receptive to the idea. Further, as seen in our study and confirmed by a previous study in the UK,[25] Indian immigrants were reluctant to see a dentist regularly which could stem from the fact that the concept of screening an otherwise healthy individual for an asymptomatic disease is not well understood by Indian immigrants.[7] Adding to this, older immigrants in our study appeared to be more irregular in visiting health professionals possibly because of prior dissatisfaction with health services or inconvenience in accessing services.[57] GPs thus have a narrow window of opportunity to raise awareness about oral cancer risk behaviours and the importance of early dental interventions among older Indian immigrants. For GPs to take up this role, it is important that additional training around emerging oral cancer risk factors and changing oral cancer trends is provided via continuing professional development programs and in undergraduate medical curriculum. Alongside this clinical practice, guidelines in this area need to be developed by health departments and professional organisations to ensure consistent practices.

Government agencies need to strengthen legislation around illegal buying and sale of areca nut products. Apart from this, the increased oral cancer burden highlights a growing need for opportunistic oral cancer screening[17] and effective monitoring systems to assess the oral cancer cases in immigrants in Australia. Finally, this study demonstrates the significance and need for continued research to understand more in-depth the behaviours of Indian immigrants regarding oral cancer. Targeted research with Indian immigrants based on the frequency of risk practices must be developed after examining existing beliefs and perceptions relating to the use of smokeless tobacco products so that appropriate counselling strategies can be established.

Limitations

This study is not without limitations. The participants were mainly from New South Wales; therefore, the findings may not be representative of all Indian immigrants in Victoria and other parts of Australia. Although all attempts were made to ensure variety in the sample, future research should include second-generation Indian immigrants to understand their perspectives on oral cancer risk. As this study was limited to Indian immigrants it is also important to research other immigrant groups in Australia that may be engaging in similar oral cancer risk practices. Another potential limitation could be the researchers' influence on the participants' responses. Finally, the reported results are subject to information bias due

to the self-reported data as well as social desirability bias, since the respondents may have under-reported their oral cancer risk behaviours and practices. Therefore, other methodological approaches for observational data like examining oral cancer risk behaviours at large scale community events (festivals, weddings etc) could minimise bias.

Conclusion

This study has highlighted that oral cancer risk practices are common among Indian immigrants in Australia, and they have limited knowledge with varying attitudes in this area particularly around the adverse effects of areca nut preparations. There is limited information available in primary and community health care settings about the emerging oral cancer risk in Australia. Further research is warranted to confirm these findings and inform the development of culturally appropriate interventions involving general practitioners to raise awareness of oral cancer risk among Indian immigrants. Oral cancer is a global concern and is potentially a ticking timebomb in Australia due to immigration, and this research is a valuable first step in shedding some light on this topic.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary Table 1: Demographics of participants.