Impact of Smokeless Tobacco and Betel Quid Related Video Contents in TikTok on Young People

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Abstract

Introduction: TikTok has gained increasing popularity over the past year. The social media may affect awareness and perceptions of betel quid (BQ) and smokeless tobacco (SLT) by utilizing content generated by TikTok users. The purpose of this study is to examine how BQ and SLT are portrayed on TikTok. Methods: The 28 most viewed hashtag-based keywords were used to identify popular BQ and SLT-related videos on TikTok (n=513) from June 2018 to September 2021. Two researchers independently coded the number of likes, shares, views, user category and themes. Results: A final sample of 513 videos containing BQ and SLT that met the study criteria were included. Collectively, these videos were viewed over 725 million times, with a median ‘view’ count of 17,300 (range 152–155,000,000) and a median ‘likes’ count of 831 (range 4–2,400,000) and a median ‘share’ count of 21 (range 0–48,400). Majority of the videos showed BQ and SLT use positively i.e promoting the product (390/513; 76%) and these had more than 686 million times views. Neutral depictions of BQ and SLT use were viewed 15 million times (72/513; 14%) and negative portrayals of BQ and SLT have been viewed 193 million times (105/808; 13%). The video themes included ‘life style’ (349/513; 68.0%), ‘marketing’ (62/513; 12.09%), ‘comedy’ (44/513; 8.6%), ‘warning’ (25/513; 4.87%), ‘awareness’ (12/513; 2.3%), ‘sports and other’ (12/513; 2.3%) and social events or culture (9/513; 1.75%). Conclusion: Our results demonstrated that video clips related to BQ and SLT on TikTok, a fast-growing, popular video-sharing platform among teens, which is available with no age restrictions has been viewed multiple times. Majority (76%) promoted these two products, that could be detrimental to oral health. Therefore, the age restrictions especially for the videos containing BQ and SLT is mandatory in order to reduce the potential exposure of adolescents/young adults.

Keywords: TikTok- smokeless tobacco- betel quid- social media- teens
both marketing and social transmission of these risky products and behaviours. Adolescents (aged 13 to 18 years) and young adults (aged 18 to 30 years) are particularly vulnerable to the influence of social media in particular and digital communications in general: at the same time, they are early adopters, almost ubiquitous users and highly vulnerable to peer influence (Lenhart, 2015). Cigarette smoking among teens has declined in recent years (Johnston et al., 2017). However, according to a recent survey, ~21% of teens ages 12 to 17 have tried a tobacco product, including traditional cigarette use (13%), electronic cigarettes (11%), cigars (8%), water pipes (7%) and SLT (4%) (Ambrose et al., 2015). An important source of information on these products are freely available and accessible online, especially on social media platforms such as Facebook, Twitter, TikTok and YouTube. Therefore, especially the youngest people get fascinated and become interested in experimenting these harmful substances. However, unlike previous generations, in the present context where modern young people having unrestricted access to a strong source of exposure and peer pressure the tendency to use these harmful substances is becoming an emerging threat. Even though social media can’t get teens to directly experiment alcohol or drugs, but has become a powerful motivator.

TikTok is a China-based social network that focuses on videos (Isaac, 2020) and is the fastest growing platform in the world with 800 million monthly users, and one-third of US users are 14 years old or younger. It hosts a variety of short-form user videos from genres such as dance, comedy, and education with a duration of 15 seconds to three minutes (Schwedel, 2018; Al-Heeti, 2020; Kastrenakes, 2021). The TikTok Community Guidelines restrict the uploading of videos that contain ‘the depiction, advertising, or trafficking of drugs or other controlled substances (Johnston, 2017). Advertising of tobacco and alcohol products is also prohibited on the platform (Tan and, Weinreich, 2020). The main aim of this study was to systematically evaluate the content of popular BQ and SLT videos on TikTok.

Materials and Methods

Sampling strategy

TikTok (https://www.tiktok.com/) posts containing top-viewed BQ and SLT related videos were obtained from the inception of TikTok (earliest upload date June 2018) to September 2021. This study analyzed TikTok posts under the hashtags, #paan, #meetapaan, #bengalipaan, #firepaan, #paanlover, #sweetpaan, #firepan, #arecanut, #tobaccoconsumers, #betelchewing, #betelnut, #beeda, #sweetbeeda, #firepaanchallenge, #cooliphchallenge, #coolip, #gutka#, #snus#, #snusaddicts, #snuff#, #nicotinepouches#, #snusleppa#, #snusreview#, #snuschallenge#, #snus#, #nicopods#, #smokeless tobacco# and #oral cancer#. The search revealed a total of 513 posts containing these terms which were posted during this time period. The inclusion criteria for videos were (1) related to BQ and SLT (2) under the top BQ and SLT related hashtags. The final sample contained 513 videos out of 689, after removing duplicates and videos unrelated to betel quid/nut and smokeless tobacco-related, despite their hashtag (online supplemental Table 1). This study included non-English (n=316) and English language (n=197) videos.

The videos in this study were accessed by TikTok accounts created with an account holder’s age set at 25 years. The co-authors first coded this set to identify its relevance to BQ or SLT. We developed our code classification system and codebook based on a random sample of 513 TikTok videos. If a video contained an act or artefact of BQ or SLT consumption, then the video could be coded for content. We developed the codebook based upon this set of relevant videos. The codebook included categories for objective measures: (1) depiction type of the video (encourage, discourage or neutral), (2) Theme of the video (awareness, comedy, lifestyle, marketing, warning, social event or culture, sports and other (3) gender of the primary presenter of the video (male, female or not shown) (4) age of the primary presenter of the video (< 20, > 20 or not shown), (5) number of views (6) number of likes and (7) number of shares. Coding for non-English language videos was based on visual interpretation, or caption/audio, which was translated into English using Google Translator. Descriptive statistic was employed to summarize video themes, depiction type and other metrics.

Results

The eight themes from the final sample of 513 BQ and SLT related videos were: (i) lifestyle (ii) marketing (iii) comedy, (iv) warning, (v) awareness, (vi) social event or culture, (vii) sports and other. Videos categorized as ‘life style’ were most common (349/513; 68.0%), followed by ‘marketing’ (62/513; 12.09%), ‘comedy’ (44/513; 8.6%), ‘warning’ (25/513; 4.87%), ‘awareness’ (12/513; 2.3%), ‘sports and other’ (12/513; 2.3%) and social event or culture (9/513; 1.75%) (Table 1). Collectively, these videos were viewed over 725 million times, with a median ‘view’ count of 17300 (range 152–155,000,000) and a median ‘likes’ count of 831 (range 4–2,400,000) and a median ‘share’ count of 21(range 0–48400). Of 513 videos uploaded to TikTok under the most popular BQ and SLT-related hashtags between June 2018 and September 2021, over two-thirds (76%; 390/513) portrayed BQ and SLT use positively i.e., promotional. Such videos had been viewed collectively more than 686 million times. Among the positive videos, close to a quarter (21%) appeared to be under 25. Neutral depictions of BQ and SLT use have been viewed a total of 15 million times (72/513; 14%) and negative portrayals of BQ and SLT have been viewed a total of 193 million times (51/513; 9.9%). The primary presenter in the videos was perceived to be 49.90% male and 28.07% female. Among them, a maximum number of presenters appeared to be < 20 years (41.71%) followed by > 20 years (29.04%). In the majority of the video’s ingredients were shown (79.5%), however, the ingredients were not properly described in many (88.7%). In addition, many uses employed vocal or instrumental sounds (394/513; 76.8%) or narration (104/513; 20.3%) in videos. Videos related to ‘paan’ were presented by people who appeared to be Asians (258/513;
Table 1. Summary of Key Results and Definitions Used for Coding Depiction Type and Themes (n=513)

| Depiction type          | Definition                                                                 | Number of videos (%) | The collective number of ‘views’ | The collective number of ‘likes’ | The collective number of ‘shares’ |
|-------------------------|----------------------------------------------------------------------------|----------------------|----------------------------------|----------------------------------|----------------------------------|
| Positive                | Promoting/encouraging BQ and SLT use                                      | 390 (76%)           | 686,748,541                     | 12,086,010                       | 284,935                          |
| Negative                | Discouraging/deterring the BQ and SLT use                                 | 51 (10%)            | 23,904,531                      | 1,109,559                        | 71,091                           |
| Neutral                 | Ambiguous/no clear position towards BQ and SLT use                       | 72 (14%)            | 15,235,866                      | 1,217,825                        | 59,959                           |
|                         | **Themes**                                                                |                     |                                  |                                  |                                  |
|                         | **Awareness**                                                             |                     |                                  |                                  |                                  |
|                         | Awareness of oral cancer and harmful effects caused by BQ and SLT consumption | 12 (2.3%)           | 11,455,716                      | 143,709                          | 3,294                            |
|                         | **Comedy**                                                               |                     |                                  |                                  |                                  |
|                         | Employs humor and joke when depicting the use of BQ and SLT               | 44 (8.6%)           | 17,142,819                      | 1,517,816                        | 96,662                           |
|                         | **Life style**                                                            |                     |                                  |                                  |                                  |
|                         | Consumption of BQ and SLT associated with a desirable lifestyle           | 349 (68.0%)         | 498,224,653                     | 908,982                         | 197,227                          |
|                         | **Social event or culture**                                              |                     |                                  |                                  |                                  |
|                         | Use of BQ and SLT in events, shows, social functions and parties          | 9 (1.75%)           | 280,313                         | 126,02                           | 950                              |
|                         | **Marketing**                                                            |                     |                                  |                                  |                                  |
|                         | The action or business of promoting and selling BQ and SLT                | 62 (12.09%)         | 181,589,251                     | 239,300                          | 38,873                           |
|                         | **Warning**                                                              |                     |                                  |                                  |                                  |
|                         | Cautionary advice regarding the use of BQ and SLT                        | 25 (4.87%)          | 8,882,986                       | 662,565                          | 53,883                           |
|                         | **Sports & other**                                                       |                     |                                  |                                  |                                  |
|                         | Association of the use of SLT and sports and other                       | 12 (2.33%)          | 8,313,200                       | 599,717                          | 25,096                           |
|                         | **Gender of the primary presenter in the video**                         |                     |                                  |                                  |                                  |
|                         | Male                                                                     | -                    | 256 (49.90%)                    | 334,684,540                      | 6,363,988                        | 189,043                          |
|                         | Female                                                                   | -                    | 144 (28.07%)                    | 377,287,349                      | 7,108,240                        | 142,288                          |
|                         | Not shown                                                                | -                    | 113 (22%)                       | 13,917,049                       | 941,166                          | 84,654                           |
|                         | **Age of the primary presenter in the video**                            |                     |                                  |                                  |                                  |                                  |
|                         | < 20                                                                     | -                    | 214 (41.71%)                    | 614,917,236                      | 6,174,221                        | 147,823                          |
|                         | > 20                                                                     | -                    | 149 (29.04%)                    | 75,251,987                       | 6,237,599                        | 154,925                          |
|                         | Not shown                                                                | -                    | 150 (29.24%)                    | 35,719,715                       | 2,001,574                        | 113,237                          |
|                         | **How to use/step by step illustration**                                 |                     |                                  |                                  |                                  |                                  |
|                         | Present                                                                  | -                    | 41 (8%)                         | 148,057,116                      | 1,120,105                        | 11,808                           |
|                         | Not present                                                              | -                    | 191 (37%)                       | 363,062,995                      | 7,191,985                        | 87,191                           |
|                         | Partial                                                                  | -                    | 14 (3%)                         | 133,766,635                      | 606,602                          | 18,067                           |
|                         | Not applicable                                                           | -                    | 267 (52%)                       | 81,002,192                       | 5,494,702                        | 298,919                          |
|                         | **Ingredients included**                                                 |                     |                                  |                                  |                                  |                                  |
|                         | Yes                                                                      | -                    | 408 (79.5%)                     | 382,159,749                      | 7,577,185                        | 251,174                          |
|                         | No                                                                       | -                    | 105 (20.5%)                     | 343,729,189                      | 6,836,209                        | 164,811                          |
|                         | **Ingredients described**                                                |                     |                                  |                                  |                                  |                                  |
|                         | Yes                                                                      | -                    | 58 (11.3%)                      | 20,914,099                       | 1,583,600                        | 101,199                          |
|                         | No                                                                       | -                    | 455 (88.7%)                     | 704,974,839                      | 12,829,794                       | 314,786                          |
|                         | **Preparation/use**                                                      |                     |                                  |                                  |                                  |                                  |
|                         | Preparation                                                              | -                    | 43 (8.4%)                       | 152,350,904                      | 1,158,149                        | 13,797                           |
|                         | Preparation & use                                                        | -                    | 9 (1.8%)                        | 133,739,174                      | 641,612                          | 19,703                           |
|                         | Use                                                                      | -                    | 261 (50.9%)                     | 386,650,393                      | 9,246,560                        | 183,229                          |
|                         | Neither use/preparation                                                  | -                    | 188 (36.6%)                     | 41,692,751                       | 3,223,364                        | 195,962                          |
|                         | Not applicable                                                           | -                    | 12 (2.3%)                       | 11,455,716                       | 143,709                          | 3,294                            |
|                         | **Homemade/ Freshly prepared for commercial purposes/commercially available** |                     |                                  |                                  |                                  |                                  |
|                         | Homemade                                                                 | -                    | 13 (2.5%)                       | 764,780                          | 50,246                           | 2,037                            |
|                         | Freshly prepared for commercial purposes                                 | -                    | 233 (45.4%)                     | 644,121,966                      | 8,868,446                        | 115,029                          |
|                         | Commercially available                                                   | -                    | 255 (49.7%)                     | 69,546,476                       | 5,350,993                        | 295,625                          |
|                         | Not applicable                                                           | -                    | 12 (2.3%)                       | 11,455,716                       | 143,709                          | 3,294                            |
|                         | **Music/narration**                                                      |                     |                                  |                                  |                                  |                                  |
|                         | Vocal or instrumental sounds                                             | -                    | 394 (76.8%)                     | 687,975,538                      | 11,430,733                       | 271,066                          |
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Table 1. Continued

| Definition | Number of videos (%) | The collective number of ‘views’ | The collective number of ‘likes’ | The collective number of ‘shares’ |
|------------|----------------------|---------------------------------|---------------------------------|---------------------------------|
| Music/narration |                      |                                 |                                 |                                 |
| Music & narration | A commentary delivered together with a vocal or instrumental sound | 4 (0.8%) | 508,074 | 35,060 | 585 |
| Narration | A commentary delivered regarding the product (BQ and SLT) | 104 (20.3%) | 32,144,192 | 2,834,273 | 143,414 |
| Neither music/narration | - | 11 (2.1%) | 5,261,134 | 113,328 | 920 |
| Country |                      |                                 |                                 |                                 |
| Asia pacific | Whole of Asia as well as the countries of the Pacific Rim | 258 (50.3%) | 647,575,630 | 9,157,006 | 126,014 |
| Western country | Majority of Europe and America | 255 (49.7%) | 78,313,308 | 5,256,388 | 289,971 |
| Language |                      |                                 |                                 |                                 |
| English | English language | 197 (38.4%) | 60,587,211 | 3,852,115 | 214,344 |
| Non-English | Regional languages in Asian Pacific region | 316 (61.6%) | 665,301,727 | 10,561,279 | 201,641 |
| Year posted |                      |                                 |                                 |                                 |
| 2021 | - | 390 (76%) | 88,584,649 | 5,503,267 | 243,509 |
| 2020 | - | 98 (19.1%) | 450,859,170 | 5,178,027 | 100,305 |
| 2018 and 2019 | - | 25 (4.9%) | 186,445,119 | 3,732,100 | 72,171 |

Table 2. Non-Parametric Correlation Results

| No. | Possible correlations | Spearman’s rho Correlation Coefficient | Sig. (2-tailed) |
|-----|-----------------------|----------------------------------------|-----------------|
| 1   | Depiction type * theme | -0.151                                 | 0               |
| 2   | Depiction type * age   | 0.036                                  | 0.422           |
| 3   | Depiction type * gender| -0.017                                 | 0.709           |
| 4   | Depiction type * views | 0.063                                  | 0.777           |
| 5   | Depiction type * likes | 0.044                                  | 0.159           |
| 6   | Depiction type * shares| 0.077                                  | 0.042           |
| 7   | Theme * age            | 0.079                                  | 0.076           |
| 8   | Theme * gender         | 0.041                                  | 0.35            |
| 9   | Theme * view           | 0.059                                  | 0.091           |
| 10  | Theme * likes          | 0.052                                  | 0.121           |
| 11  | Theme * shares         | 0.085                                  | 0.027           |
| 12  | Age * gender           | 0.52                                   | 0               |
| 13  | Age * views            | -0.062                                 | 0.079           |
| 14  | Age * likes            | -0.102                                 | 0.01            |
| 15  | Age * shares           | 0.025                                  | 0.283           |
| 16  | Gender * views         | -0.203                                 | 0               |
| 17  | Gender * likes         | -0.25                                  | 0               |
| 18  | Gender * shares        | -0.176                                 | 0               |

Table 3. Chi-Square Test Results

| No. | Possible associations | Chi-square test Pearson Chi-Square | Asymp. Sig. (2-sided) |
|-----|-----------------------|-----------------------------------|----------------------|
| 1   | Depiction type * theme| 408.129                            | 0                    |
| 2   | Depiction type * age  | 4.025                              | 0.403                |
| 3   | Depiction type * gender| 10.475                             | 0.033                |
| 4   | Depiction type * views| 930.453                            | 0.635                |
| 5   | Depiction type * likes| 876.184                            | 0.275                |
| 6   | Depiction type * shares| 538.472                            | 0.044                |
| 7   | Theme * age           | 65.699                             | 0                    |
| 8   | Theme * gender        | 59.662                             | 0                    |
| 9   | Theme * view          | 2664.601                           | 0.09                 |
| 10  | Theme * likes         | 2627.096                           | 0.16                 |
| 11  | Theme * shares        | 1824.898                           | 0                    |
| 12  | Age * gender          | 352.284                            | 0                    |
| 13  | Age * views           | 953.175                            | 0.429                |
| 14  | Age * likes           | 878.135                            | 0.026                |
| 15  | Age * shares          | 501.143                            | 0.286                |
| 16  | Gender * views        | 957.786                            | 0.388                |
| 17  | Gender * likes        | 849.762                            | 0.515                |
| 18  | Gender * shares       | 453.484                            | 0.837                |

50.3%), while videos of snus were majorly posted from western countries (255/513; 49.7%).

Categories for objective measures: (1) depiction type of the video (encourage, discourage or neutral), (2) Theme of the video (awareness, comedy, lifestyle, marketing, warning, social event or culture, sports and other (3) gender of the primary presenter of the video (male, female or not shown) (4) age of the primary presenter of the video (< 20, > 20 or not shown), (5) number of views (6) number of likes and (7) number

The correlation coefficient is an indicator of the strength of the linear relationship between two different variables. A linear correlation coefficient greater than zero indicates a positive relationship, while a value smaller than zero indicates a negative relationship. In these results, the spearman’s correlation coefficient between depiction type * age, depiction type * views, depiction type * views, depiction type * likes, depiction type * shares, theme * age, theme * gender, theme * view, theme * likes, theme * shares and age * gender have positive values close to zero which indicates that there is a moderate/weak positive relationship between these variables. However,
spearman’s correlation coefficient between other variables has negative values. Hence, the relationship between those variables is negative (Table 2).

Since, the p-value of the Chi-square test is less than the significance level $\alpha = 0.05$, based on the results, we can state the following: that there was a significant association between depiction type $\ast$ theme ($X^2(1) = 408.129$, $p < 0.001$), depiction type $\ast$ gender ($X^2(1) = 10.475$, $p < 0.05$), depiction type $\ast$ shares ($X^2(1) = 538.472$, $p < 0.05$), theme $\ast$ age ($X^2(1) = 65.699$, $p < 0.001$), theme $\ast$ gender ($X^2(1) = 59.662$, $p < 0.001$), theme $\ast$ shares ($X^2(1) = 1824.898$, $p < 0.001$) and age $\ast$ gender ($X^2(1) = 352.284$, $p < 0.001$). However, no association was found between other variables (Table 3). Further, the $p$ value of the $t$ test is less than the significance level $\alpha = 0.05$, from this data, it appears that the views and the shares in the videos that discourage BQ and SLT use were statistically significantly higher than the videos encouraging BQ and SLT use ($U = 9643$, $p = 0.033$) ($U = 9702.5$, $p = 0.038$).

**Discussion**

In order to gain a better understanding of how BQ & SLT related video contents affect people are being exposed to TikTok, this study assessed what types of these videos are present on TikTok and how they are portrayed. We have found that videos promoting BQ & SLT are the most common genres of these videos on TikTok and they are largely portraying the use of these substances as positive or socially acceptable. These Pro-BQ or SLT TikTok videos were also viewed more frequently and rated (liked and shared) much more favorably than anti-BQ & SLT videos, suggesting that viewers enjoy and prefer to watch these types of videos.

There are shreds of evidence that tobacco, SLT or other substance use is widely presented and discussed on social media, often in a positive light, and that these posts are easily accessible and attractive to younger people (Egan and Moreno, 2011; Morgan et al., 2010). This finding is alarming when considering the harm caused by substances like tobacco, SLT and betel quid/areca nut, since, according to social cognitive theory, parts of a person’s acquisition of knowledge can be directly related to the observation of others in the context of social interactions, experiences and influences of external media (Bandura, 2001). The actual or perceived behaviours of peers and/or other famous or celebrated persons has been established as the main risk factors for tobacco and other substance use in adolescents and young adults (Bandura, 1971; Bandura, 2001). Repeated exposure to videos that model SLT / BQ use by members of the social media network itself can increase the perceived prevalence of tobacco use among peers, and potentially lead to imitation (Stefanone et al., 2010).

TikTok app introduced video making and sharing to the next level by simplifying and automating the process. The users only have to record everything related to their daily lifestyle and upload it immediately. Due to the short format, neither producing nor viewing videos requires a lot of time or effort. Also, this short video will automatically play when a user launches the app. The videos start to play one after another and the viewer is hugely interested, excited and influenced by these video materials. Due to the addictive nature of their content, it is easy for people to spend hours watching random videos. This app hosts a variety of niche audiences such as music, dance, beauty, sports, fitness, fashion, art, food, and comedy, etc. Studies have shown that people use social media primarily for entertainment purposes other than posting updates related to their personal life. It would be a perfect platform for everyone to freely share their creativity. Further, the hashtags inspire users to enter various contests and give the smallest account a chance to become a viral star (Cialdini and Trost, 1998). In the present study, we have identified the following challengers among the users such as #firepaanchallenge, #coollipchallenge, #smuschallenge in related to BQ and SLT.

Oral squamous cell carcinoma (OSCC) is a particular type of cancer classically known as a tobacco and alcohol-related disease that mainly affects older male patients. However, epidemiological studies have shown an increasing incidence of oral cancer (OC) in younger people (Bhandari, 2021). The relative frequency of OC in patients younger than 40 years varies between 0.4% and 3.6% but can reach 6.7% in studies considering 45 years as the cutoff point (Schmidt et al., 2015). The most common oral subsite of SCC on younger patients is the tongue, accounting for 39-77% of cases (Llewellyn et al., 2001; O’Regan et al., 2006). A study based in Taiwan found a higher incidence of OSCC in the buccal mucosa (53.6%) compared to the tongue (42.8%), but betel chewing was common in these patients (Shiboski et al., 2005). The use of BQ has proven to be associate with OC and potentially malignant lesions such as oral submucous fibrosis (OSF) and leukoplaikia (Ho et al., 2008). BQ has been classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC) (Zaw et al., 2016; IARC; 2004). The use of SLT also has many oral effects such as OSCC, erythroplakia, leukoplaikia, OSF (if mixed with areca nut), periodontitis (or gum diseases) and staining of teeth (Lin et al., 2006). However, the prevalence of cigarette smoking in the US has decreased in the past few years (22.2% in 2005 vs. 19.1% in 2010), and SLT use has increased slightly, but not significantly (prevalence of 2.7% in 2005 compared to 3.0% in 2010) (Muthukrishnan and Warnakulasuriya, 2018). Like other smoking tobacco products, SLT products also possess various carcinogens, such as tobacco-specific nitrosamines (Mazurek et al., 2014; IARC, 2007). IARC has concluded that there is sufficient evidence of carcinogenicity for SLT (IARC, 2012). The risk of OSCC resulted due to SLT use largely depend on the type of tobacco used and the geographical regions (Asthana et al., 2019).

However, there is no age restriction for these publicly available videos containing harmful substances. And the TikTok Community Guidelines state that “the display, promotion or trafficking of drugs or other controlled substances is not allowed” and users are encouraged not to post or share any “content that involves the purchase, sale, marketing or drug advertising”, or other controlled substances, alcohol or tobacco products” (https://www. tiktok.com/community-guidelines). A statement from
TikTok once stated: “We strictly prohibit content that depicts or promotes the possession or use of tobacco and drugs by minors. We will remove content and accounts dedicated to promoting these substances and will not allow the promotion of such products including tobacco products or nicotine bags” (https://www.theguardian.com/society/2021/jul/27/urgent-need-for-age-restrictions-on-tiktok-vaping-videos-Australian-study-finds). However, in the present study we have come across with 2 videos with children less than 5 years chewing BQ (or ‘meetapaan’), which collectively had over 139,000 views. According to the terms and conditions of TikTok’s, 13 is the minimum age for a TikTok user. However, TikTok does not use age verification tools when new users sign up for the app. This means that even a child can sign up for a new account without their parents/guardian knowledge, they will have access to explicit and inappropriate content. Therefore, age restrictions should be implemented for videos containing such harmful substances. The countries in high-risk regions for these substances should formulate and implement policies stringently for the regulation of such content available on social media. In the limitation of the study due to cosmetics such as lipstick or powder applied to the face (used to enhance or alter the appearance), hair extensions, filters (beauty filters) and other effects in TikTok we were unable to determine the real age of the primary presenter in few instances.

In conclusion, BQ or SLT-related video content available on TikTok reaches millions of viewers “Lifestyle” and ‘marketing’ themes videos dominated these user-generated TikTok videos related to BQ and SLT. TikTok has become the most popular app among young people globally and downloaded on devices more than 2 billion times. Due to the unique features of TikTok, especially the users can record themselves dancing or goofing around with a music clip or spoken word and then can alter the videos using a wide range of effects, young people have flocked to it. With the lack of age restrictions and regulations of posting such harmful substances, there is a potential threat on children/adolescents to get affected by such content. Hence, age restrictions are largely needed to prevent the younger generation get exposed to these harmful substances.

Author Contribution Statement
Kalpani Senevirathna: Data curation, Methodology, Formal analysis, Writing – original draft; Kalani Hettiaraechchi: Data curation, Methodology, Writing – original draft, review & editing; Saman Warnakulasuriya: Conceptualization, Writing – review & editing; Ruwan Jayasinghe: Methodology, Writing – review & editing

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Declarations
Ethics Approval and Consent to participate – Not Applicable.

Conflict of interests
The authors declare that they have no conflict of interests.

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