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Title: YouTube as a source of quit smoking information for people living with mental illness

Corresponding Author Details:

Full name: Ratika Sharma
Address:
School of Public Health, The University of Queensland
Public Health Building, Cnr Wyndham St and Herston Rd
Herston Qld 4006
Australia
Email: r.ratika@uq.edu.au
Telephone Number: +61-0478516339

Co-Authors:
2. Maya Lucas
School Of Medicine
The University of Queensland
Brisbane, Queensland, Australia
3. Dr Pauline Ford
School of Dentistry
The University of Queensland
Brisbane, Queensland, Australia
4. Dr Carla Meurk
School of Public health, Centre for Youth Substance Abuse Research and Queensland Centre for Mental Health Research
The University of Queensland
Brisbane, Queensland, Australia
5. Dr Coral E Gartner
School of Public health and University of Queensland Centre for Clinical Research
The University of Queensland
Background YouTube is the most popular video sharing website, and is increasingly used to broadcast health information including smoking cessation advice. This study examines the quality and quantity of YouTube quit smoking videos targeted at people living with mental illness (MI).

Methods We systematically searched YouTube using selected relevant search terms. The first fifty videos obtained for each search term were screened for relevance and further videos screened through snowball sampling. Forty unique, English language videos focussing on people with MI were included in the assessment and evaluated for general video characteristics, themes, format, targeted smoking cessation and harm reduction information.

Results Most videos either discussed the problem of high smoking rates among people with MI (n=12) or smoking cessation programs and policies at an institutional level (n=13). Only nine videos were aimed at providing quit smoking advice to this population. One video recommended higher doses of nicotine replacement therapy (NRT) for people with MI while six videos referred to possible changes in medication dosage on quitting smoking. Four videos suggested cutting down smoking for harm reduction.

Conclusion Very few YouTube videos specifically focus on the problem of high smoking rates among people with MI and even fewer provide targeted smoking cessation and harm reduction
advice for this priority population. There is a need to develop comprehensive, evidence based, quit smoking video resources for smokers with a MI.

INTRODUCTION

The prevalence of smoking among people with mental illness (MI), especially those with psychotic, depressive and bipolar disorders, is two to five times higher than among the general population, resulting in a much lower life expectancy. The higher smoking prevalence in this population may be attributed to the practices of the tobacco industry, misconceptions among health professionals about the ability and willingness of people with MI to quit, the pro-smoking culture in mental health settings and perception of smoking as a form of self-medication. Multiple approaches are needed to address the systemic issues that perpetuate smoking in this population and to support smokers with MI to quit. Research suggests that smoking cessation interventions are effective for people with MI but they are often not offered during routine healthcare visits. Smoking cessation advice that is targeted to people with MI may improve their utilization of these interventions.

The Internet has been successfully used to deliver web based mental health interventions. YouTube is a free, video sharing, social media platform which allows users to view, interact and upload user generated contents. It is increasingly used to disseminate health information. Due to the social isolation that many people with MI experience, they may be more likely to use internet sites such as YouTube for seeking health information. Given the evidence that people with MI are motivated to quit smoking and less likely to receive smoking
cessation advice from health professionals\textsuperscript{20} many may turn to alternate sources of information such YouTube, to access quit smoking information.

Previous studies have found many videos with smoking related content and imagery on YouTube.\textsuperscript{21,22} However, there are no published studies that examine the quantity, content and quality of YouTube videos that provide quit smoking information specifically targeting people with MI. The aim of this study was to assess quit smoking videos on YouTube which specifically cater to people with MI.\textsuperscript{9}

**METHODS**

The lead researcher (RS) searched YouTube systematically for relevant videos using the search terms shown in supplemental Figure 1. The key search phrase “Quit smoking Stop smoking” was used alone and in conjunction with the terms “mental illness”, “schizophrenia”, “depression”, “psychosis” and “bipolar” as these diagnoses are associated with higher rates of smoking.\textsuperscript{23} We sorted videos with the default “relevance” setting to obtain the most relevant videos. The first 50 videos obtained from each search were watched fully to identify relevant videos that fulfilled the inclusion criteria. All the videos which dealt with the subject of smoking cessation or reduction in people with MI were considered relevant and included in the analysis. Videos intended for smokers from the general population, in languages other than English and duplicates were excluded. The search term, “Quit smoking Stop smoking mental illness” yielded the maximum number of relevant videos. For this term we snowballed (captured the videos which appeared in the “up next” list) the relevant results. A total of 626 unique videos (from initial searches and snowballing) were screened for inclusion criteria to yield 40 videos that were included in the final analysis (see online supplementary table S1 for a list of the website links for
these videos). Two researchers (RS and ML) independently watched and evaluated each included video according to the assessment criteria which included general characteristics, format, target audience, quality of sound and video, central theme, quit smoking recommendations, targeted messages for people with MI and harm reduction messages as listed in supplemental Table S2. We compared the evaluations and resolved any disagreement by discussion.

Descriptive statistics (frequencies and percentages) were calculated for categorical data. We calculated means and standard deviations for continuous data where appropriate or medians and ranges when the data were not normally distributed.

**RESULTS**

The median duration of videos was four minutes (range 29 seconds to 1 hour 8 minutes 28 seconds). For details on general video characteristics see Supplemental Table S3. Table 1 shows the video content characteristics. The most common quit smoking recommendation was NRT use (n=18) followed by counselling and group therapy (n=13). Many videos (n=15) did not offer any quit smoking advice. Only nine videos discussed methods and aspects of stopping smoking for people with MI.

<table>
<thead>
<tr>
<th>Table 1: Video Content Characteristics</th>
</tr>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>Views</th>
<th>N (%)</th>
<th>Total N</th>
<th>Median (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quit smoking recommendations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Turkey*</td>
<td>2 (5.0)</td>
<td>344</td>
<td>172(4-340)</td>
</tr>
<tr>
<td>Nicotine replacement therapy*</td>
<td>18 (45.0)</td>
<td>12951</td>
<td>391(8-2621)</td>
</tr>
<tr>
<td>Intervention</td>
<td>Frequency</td>
<td>Duration</td>
<td>Confidence Interval</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-----------</td>
<td>----------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Counselling and group therapy*</td>
<td>13 (32.5)</td>
<td>7170</td>
<td>419(25-2621)</td>
</tr>
<tr>
<td>Prescription medications*</td>
<td>8 (20.0)</td>
<td>10681</td>
<td>564.5(4-5015)</td>
</tr>
<tr>
<td>Quit smoking helpline*</td>
<td>7 (17.5)</td>
<td>5769</td>
<td>340(12-2470)</td>
</tr>
<tr>
<td>Exercise *</td>
<td>3 (7.5)</td>
<td>2356</td>
<td>628(618-1110)</td>
</tr>
<tr>
<td>Seek assistance from health care provider*</td>
<td>4 (10.0)</td>
<td>6966</td>
<td>1893(252-2928)</td>
</tr>
<tr>
<td>No advice</td>
<td>15 (37.5)</td>
<td>13382</td>
<td>546(2-2928)</td>
</tr>
</tbody>
</table>

**Recommendations specific to people with MI**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Frequency</th>
<th>Duration</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher doses of NRT</td>
<td>1 (2.5)</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>Adjustment to mental health medication</td>
<td>6 (15.0)</td>
<td>9335</td>
<td>566(8-5015)</td>
</tr>
</tbody>
</table>

**Harm reduction recommendations**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Frequency</th>
<th>Duration</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting down</td>
<td>4 (10.0)</td>
<td>394</td>
<td>67(4-256)</td>
</tr>
<tr>
<td>Long-term use of NRT</td>
<td>0 (0.0)</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td>Using electronic cigarettes</td>
<td>0 (0.0)</td>
<td>N.A</td>
<td>N.A</td>
</tr>
</tbody>
</table>

**Themes of videos**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
<th>Duration</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussing the problem</td>
<td>12 (30.0)</td>
<td>9855</td>
<td>592(34-2621)</td>
</tr>
<tr>
<td>Institutional programs and policies</td>
<td>13 (32.5)</td>
<td>9936</td>
<td>256(8-5015)</td>
</tr>
<tr>
<td>Quit smoking advice and its aspects</td>
<td>9 (22.5)</td>
<td>8317</td>
<td>476(2-2928)</td>
</tr>
<tr>
<td>Discussing new research</td>
<td>6 (15.0)</td>
<td>3462</td>
<td>55.5(3-2873)</td>
</tr>
</tbody>
</table>

**Format**

<table>
<thead>
<tr>
<th>Form</th>
<th>Frequency</th>
<th>Duration</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk by professional</td>
<td>17 (42.5)</td>
<td>15276</td>
<td>473 (3-2928)</td>
</tr>
<tr>
<td>Documentary</td>
<td>13 (32.5)</td>
<td>11393</td>
<td>256 (8-5015)</td>
</tr>
<tr>
<td>Personal experiences</td>
<td>4 (10.0)</td>
<td>1075</td>
<td>226 (4-618)</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>------------------------</td>
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<td>--------------------</td>
</tr>
<tr>
<td>Quit diary</td>
<td>2 (5.0)</td>
<td>3273</td>
<td>1636.5 (1110-2163)</td>
</tr>
<tr>
<td>Informative presentation</td>
<td>2 (5.0)</td>
<td>34</td>
<td>17 (2-32)</td>
</tr>
<tr>
<td>News clip</td>
<td>1 (2.5)</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Animation</td>
<td>1 (2.5)</td>
<td>476</td>
<td>476</td>
</tr>
<tr>
<td><strong>Featured people with MI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15 (37.5)</td>
<td>11318</td>
<td>256 (4-5015)</td>
</tr>
<tr>
<td>No</td>
<td>25 (62.5)</td>
<td>20252</td>
<td>473 (2-2928)</td>
</tr>
<tr>
<td><strong>Target audience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with MI</td>
<td>17 (42.5)</td>
<td>18271</td>
<td>476(2-5015)</td>
</tr>
<tr>
<td>Health professionals</td>
<td>17 (42.5)</td>
<td>10256</td>
<td>340(3-2873)</td>
</tr>
<tr>
<td>Both</td>
<td>6 (15.0)</td>
<td>3043</td>
<td>456(12-1316)</td>
</tr>
</tbody>
</table>

* Videos could include multiple recommendations*

Six videos mentioned that people on psychiatric medications may need to change their dose after quitting smoking and one video recommended higher doses of NRT for people with MI. None of the videos suggested long term use of NRT or electronic cigarettes as a substitute for tobacco cigarettes.

**DISCUSSION**

Evidence shows that smokers with MI want to quit smoking as much as smokers without MI, however they find quitting more difficult and may require more assistance. Smoking cessation medications and behavioural interventions are effective for people with MI and clinical guidelines recommend their use in this population. Making informational videos freely
accessible on the internet is a potentially useful health education strategy to reach people with MI who want to quit smoking.

Of the 626 videos identified via our search strategy, only 40 (6.39%) addressed the problem of smoking in people with MI. Another study that used similar methods to identify general smoking cessation videos on YouTube found 68.3% of the videos obtained via their searches contained relevant content. This suggests that while it is easy to find general quit smoking videos on YouTube, it is difficult to find quit smoking content that specifically addresses the needs of people with MI, even when MI-specific search terms are used.

Many videos captured by our search either discussed new research (n= 6) or scope of the problem of smoking among people with MI (n=12). These videos contained scientific language and were intended for professionals. While it is useful to raise awareness among health professionals about this problem, it is equally important to provide easy to understand quit smoking information to people with MI. Several videos (n= 13) centred around quit smoking programs started by mental health or tobacco control organizations. Although most of these videos contained implicit quit messages, very few videos (n=9) gave explicit quit smoking advice. Only one video provided quit smoking information which was succinct and comprehensive.

In some of the videos (n=15), smokers and ex-smokers with MI narrated their own experiences with smoking and quitting. Such narratives are credible, easy to remember and more likely to influence beliefs and attitudes. This emotionally evocative format was recently used by CDC in their “Tips from Former Smokers” campaign which increased population level quit attempts, but at the time of our data collection, did not feature former smokers with MI.
Several videos (n=13) were about successful peer group therapy based programs. One video mentioned using higher doses of NRT. There is some support for this recommendation as smokers with MI are more likely to have high nicotine dependence than smokers without MI, and may, therefore, benefit from higher doses and longer duration of NRT. However, more research among this population is needed. Although evidence shows that prescription medications for smoking cessation can be safely and effectively used for people with MI, only eight videos mentioned it as a treatment option.

Quitting smoking increases plasma levels of certain psychotropic drugs such as Clozapine, Olanzapine and Fluvoxamine which may lead to an increase in drug side effects if the dose is not adjusted by the physician. Smokers on these medications need to be warned against quitting smoking abruptly without informing their physician. One of the videos discussed this aspect in detail but did not provide any advice on how to quit or resources available.

Some smokers with MI find it difficult to quit or may not want to quit smoking. Harm reduction advice, in addition to standard abstinence-based quit advice, may be particularly relevant for this population. The only harm reduction advice included in this sample of videos (n=4) was reducing the number of cigarettes smoked per day. Reduction in smoking is beneficial as it is associated with increased probability of quitting. However, smoking reduction as a long-term outcome does not decrease mortality rates from tobacco-related diseases. No videos recommended switching to alternate sources of clean nicotine for long-term substitution. However, comments on three videos discussed electronic cigarettes as a smoking cessation and harm reduction tool.

We believe that we were able to capture a fairly representative sample of quit smoking videos available for people with MI by doing a systematic search of YouTube. However, it is
still possible that we missed some relevant videos. The results of this study point to a lack of comprehensive and targeted, evidence based video resources available online for smokers with MI. Evidence suggests that social media have the potential to promote smoking cessation and tailored quit smoking messages delivered through electronic media are effective. Owing to the immense benefits of quitting smoking, both in terms of physical and mental health, social media might be an effective and innovative way to test and deliver targeted smoking cessation and harm reduction messages for this population. Our findings suggest YouTube is currently an underutilized medium for distributing cessation support to smokers with MI.

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**Contributors:** All authors contributed to the idea and design of the study. RS and ML screened and evaluated the videos. RS did the data analysis and wrote the initial draft of the paper. All authors contributed to revising and finalizing the manuscript. RS is the guarantor of the paper.

**Competing interests:** None declared

**What this paper adds**

- People with MI have a disproportionately high smoking prevalence throughout the world.
- YouTube has been used for disseminating smoking cessation information and anti-tobacco health promotion campaigns. However, we know little about the quality and content of quit smoking information in YouTube videos which are directed at specific
priority populations, such as people with MI, who face unique challenges while quitting smoking.

- This study provides evidence that there are very few easily accessible videos which provide targeted quit smoking advice for people with MI.
- This study also provides data which might be useful in designing the format and content of such videos in future.

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