

## ORIGINAL ARTICLE

## Social Media Use among Dental Clinics in Malaysia

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## ABSTRACT

**Introduction:** Social media use has increased exponentially in the past decade. This study aims to investigate the ownership of social media accounts among Malaysian Dental Clinics and to analyse the engagement and content of their posts. **Methods:** A sample of 299 dental clinics was selected via stratified random sampling from a public domain website. An online search was conducted for all clinics' ownership of the website, Facebook, Instagram, and YouTube accounts. The number of likes, followers, posts, and comments was extracted and recorded. Chi-Square test and Mann Whitney U test were conducted using SPSS version 26 with significance set at  $p < 0.05$ . The content of posts from the five clinics most active on each social media platform was qualitatively analysed. **Results:** Facebook was the most popular platform (57%), while only 6.7% of clinics owned YouTube accounts. Private clinics were significantly more likely to own Facebook and Instagram accounts than public clinics ( $p < 0.001$ ). Engagement levels did not differ significantly between public and private clinics, except for YouTube, where public clinics had a higher mean rank for subscribers ( $U = 41$ ,  $p = 0.042$ ). Content analysis showed private clinics focused on marketing aesthetic treatments on Facebook and Instagram, while public clinics prioritized educational content on YouTube, highlighting dental care and treatment options. **Conclusion:** Private dental clinics in Malaysia are more active on social media than public clinics, with Facebook being the preferred platform.

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## INTRODUCTION

The current worldwide active users of two major social media platforms, Facebook and YouTube, have over 2 billion active users, respectively (1). Even though the number of active users of Instagram stands at just half of the number of Facebook users, it has significantly stronger engagements with 21.4 times more interactions than Facebook (2). In 2020, internet users in Malaysia stood at 88.7%, with text communication (98.1% users) and social media (93.3% users) being the top two activities conducted. The number one choice of social media platform of Malaysians is Facebook (91.7%) followed by YouTube (89.6%) and Instagram (63.1%) (3).

Studies have reported several uses of social media

by healthcare providers, for various purposes such as dissemination of health information, monitoring of disease pandemics, health promotion, recruitment of clinical study participants, and social media-based health interventions (4–10). Social media has been noted to play an increasingly important role in dentistry. Social media is reported to be an affordable option to advertise a dental practice (11), and some dental practices rely on social media networking to share their cases (12, 13).

Social media may have the benefits of accessing the masses in a very affordable way that helps healthcare providers to disseminate health-related information, conduct health promotion activity or recruit participants for research. As it is very accessible for anyone to use social media, often, social media is being used by irresponsible individuals to create and spread health misinformation. Misinformation on health tends to be written sensationally and spreads much quicker than reliable or verifiable facts. This resonates with the term “going viral” and justifies it being metaphorically described as an epidemic by Schillinger et al (14). The

World Health Organisation has also called for action to manage this “Infodemic” (14).

For registered healthcare practitioners, social media may present a different challenge as there is a lack of guidelines and policies related to social media use which may lead to legal or security concerns (15). In Malaysia, registered dental practitioners are bound to several acts (16, 17) and codes of professional conduct (18) to protect the public and the profession. However, it is left unclear. Searching through social media platforms reveals several dental practices creating posts specifically for marketing purposes, some of which contravene the professional code of conduct and in some cases, these posts include conflicting or non-evidence-based information, contributing to public confusion and triggering concern within the dental community regarding the spread of misinformation and ethical violations (19, 20). In the Malaysian context, the Malaysian Dental Association has expressed alarm over the growing prevalence of unethical advertising and illegal dental practices by private dental clinics, emphasizing that such practices not only breach ethical standards but also risk misleading the public (21,22). These trends reflect broader concerns identified in the literature, where commercial interests are seen to occasionally take precedence over professional integrity and patient-centered care, ultimately undermining public trust in the dental profession (19).

Social media platforms offer valuable opportunities for healthcare providers to connect with patients, share information, and promote their services. However, dental clinics in Malaysia face challenges in navigating ethical, professional, and regulatory boundaries due to the absence of clear guidelines for social media use. Additionally, there is a lack of studies examining how dental clinics utilize social media in Malaysia, leaving their practices and impacts largely unexplored. This cross-sectional study aims to address this gap by investigating social media ownership among Malaysian dental clinics and analysing the engagement and content of their posts.

## MATERIALS AND METHODS

This was a cross-sectional study employing a quantitative and qualitative analysis of social media accounts belonging to dental clinics in Malaysia. The study protocol has been approved by the UKM Research Ethics Committee (UKM PPI/111/8/JEP-2021-426).

For quantitative analysis, our sample size was calculated using the formula where with population size which refers to the number of dental clinics in the whole country at extraction time was at 3313, the expected true proportion at 0.3, desired precision at 0.05 and confidence level at 0.95, the estimated sample size was 297 dental clinics.

The list of dental clinics was mined from a public domain of the Dental Practitioners’ Information Management System (DPIMS) in December 2020 using an automated data collection tool called Web Scraper. The Web Scraper is a tool that can extract data from sites with multiple levels of navigation. It begins with building scrapers, scraping sites, and exporting data in CSV format directly from the browser. Stratified random sampling was employed in choosing the dental clinics from the list mined by the Web Scraper.

The list was stratified by states and further subdivided into public and private practices in each state. The numbers of clinics to be chosen were decided based on the national percentage of the total number of clinics by state, and public and private distribution within each state to apportion representation. The clinics were then chosen using a computerised randomiser based on the sample size calculated.

Two additional dental clinics were randomly chosen from the list of clinics in Labuan to ensure both public and private sectors in the state are represented, making the total number of clinics sampled, 299. The final list of dental clinics sampled is presented in Table I.

An online search was conducted on the dental clinics that were randomly selected to see if they have websites, Facebook, Instagram, or YouTube accounts. The engagement of social media by dental clinics is determined by the number of likes, comments, followers, or subscribers as discussed in the paper by Perreault, M.C. and Mosconi, E., 2018 (23). Thus, the number of Facebook likes, Instagram followers and YouTube subscribers, number of posts, number of highest likes and number of highest comments in one month from the extraction date was extracted and recorded. Chi-Square test and Mann Whitney U test were conducted using SPSS version 26 where p-values of <0.05 were considered statistically significant, with a 95% confidence interval.

For the qualitative analysis, five dental clinics with the highest number of posts within the past month of the data collection date were selected from each platform which are Facebook, Instagram, and YouTube. The selected clinics represented the most active users of these platforms.

The posts were reviewed to identify and categorize their content into two pre-determined categories, which are marketing content and educational content. Marketing content was defined as posts promoting dental services, showcasing patient testimonials, or advertising special offers. Examples included promotional posters, “before-and-after” treatment photos, and testimonials shared by patients.

Educational content was defined as posts aimed at increasing public awareness or knowledge of oral

**Table I: Dental clinics sampled by state**

State	Total		Public		Private	
	n	(%)	n	(%)	n	(%)
Kedah	21	(7.0)	11	(52.4)	10	(47.6)
Kelantan	14	(4.7)	8	(57.1)	6	(42.9)
Kuala Lumpur	68	(22.7)	8	(11.8)	60	(88.2)
Labuan	2	(0.7)	1	(50.0)	1	(50.0)
Melaka	10	(3.3)	4	(40.0)	6	(60.0)
Negeri Sembilan	14	(4.7)	7	(50.0)	7	(50.0)
Pahang	15	(5.0)	9	(60.0)	6	(40.0)
Penang	19	(6.4)	5	(26.3)	14	(73.7)
Perak	21	(7.0)	10	(47.6)	11	(52.4)
Perlis	3	(1.0)	2	(66.7)	1	(33.3)
Putrajaya	2	(0.7)	1	(50.0)	1	(50.0)
Sabah	19	(6.4)	6	(31.6)	13	(68.4)
Sarawak	17	(5.7)	7	(41.2)	10	(58.8)
Selangor	63	(21.1)	10	(15.9)	53	(84.1)
Terengganu	11	(3.7)	7	(63.6)	4	(36.4)
Grand Total	299	(100.0)	96	(32.2)	203	(67.8)

health. Examples included videos or infographics on preventive care, explanations of treatment options, and general oral health tips.

Each post was reviewed manually, and its primary purpose was classified into one of the two categories based on the predefined definitions. This categorization was conducted independently by two researchers to ensure accuracy and consistency. Any disagreements were resolved through discussion.

## RESULTS

### Quantitative Analysis

Only 20.8% of the clinics sampled owned a website. Facebook was found to be the most popular social media platform where more than half (57%) of the clinics owned a Facebook account. (Table II)

Table III looks at the comparison of website and social media account ownership between public and private dental clinics sampled. Significantly more private dental clinics own Facebook accounts (68.5%) compared to public dental clinics (32.3%) ( $p < 0.001$ ). Similar findings were noted for Instagram account ownership where the ownership of Instagram accounts among private dental clinics (34.5%) was significantly higher than public dental clinics (12.5%) ( $p < 0.001$ ). Further analysis of the social media engagement showed no statistically significant relationships present between the private and public dental clinics in Malaysia except for the number of subscribers on YouTube ( $U = 41$ ,  $p = 0.042$ ).

**Table II: Ownership of websites and social media accounts by state**

State	Website		Facebook		Instagram		YouTube	
	n	(%)	n	(%)	n	(%)	n	(%)
Kedah	0	(0.0)	11	(52.4)	5	(23.8)	0	(0.0)
Kelantan	0	(0.0)	6	(42.9)	2	(14.3)	0	(0.0)
Kuala Lumpur	31	(45.6)	50	(73.5)	28	(41.2)	8	(11.8)
Labuan	1	(50.0)	2	(100.0)	1	(50.0)	0	(0.0)
Melaka	2	(20.0)	5	(50.0)	5	(50.0)	1	(10.0)
Negeri Sembilan	2	(14.3)	5	(35.7)	1	(7.1)	0	(0.0)
Pahang	3	(20.0)	9	(60.0)	9	(60.0)	4	(26.7)
Penang	1	(5.3)	13	(68.4)	3	(15.8)	5	(26.3)
Perak	0	(0.0)	7	(33.3)	4	(19.0)	0	(0.0)
Perlis	1	(33.3)	2	(66.7)	0	(0.0)	0	(0.0)
Putrajaya	1	(50.0)	1	(50.0)	0	(0.0)	0	(0.0)
Sabah	1	(5.3)	11	(57.9)	7	(36.8)	0	(0.0)
Sarawak	0	(0.0)	9	(52.9)	2	(11.8)	0	(0.0)
Selangor	19	(30.6)	34	(54.8)	15	(24.2)	2	(3.2)
Terengganu	0	(0.0)	5	(45.5)	0	(0.0)	0	(0.0)
TOTAL	62	(20.8)	170	(57.0)	82	(27.5)	20	(6.7)

### Qualitative analysis

A total of five dental clinics were selected from Facebook, Instagram and YouTube for qualitative analysis based on the highest number of posts within one month of the data extraction date. Qualitative analysis was done by focusing on understanding the marketing and educational content of the most active dental clinics on social media platforms. Comparatively, private dental clinics are more active on Facebook and Instagram as compared to public dental clinics. The same dental clinics were found on both Instagram and Facebook with the same content.

On Facebook and Instagram, the posts were more towards marketing as most of the post were about patient testimonies, patient pictures post-treatment and promotional posters. The marketing posts were mostly promoting aesthetic treatments such as orthodontic treatment and composite veneer treatment. One of the private dental clinics which was active on both Facebook and Instagram took the initiative to post educational videos and posters intermittently which contained topics such as "Tips to prevent caries in primary dentition", "Benefits of dental bridge" and "Importance of doing restoration for cavitated lesions on the tooth". Similarly, another dental clinic which was active on Facebook broadcasted videos educating people on the risks and complications of dental extractions and the reasons for delaying the extraction of a tooth with infection. Encouragingly, one of the most active public dental clinic posts on Instagram was about topics that most people aren't aware of nowadays such as "Know your dentist, fake vs original".

**Table III: Comparison of Website and Social Media Accounts Owned by Public and Private Dental Clinics**

	Total (n=299)										Public (n=96)				Private (n=203)				U	Z	P value		
	n		Min		Max		Median		Mean		(S.D)		n		%		Median					Mean rank	
		(%)																					
<b>Website</b>	62	(20.7)										14	(14.6)	48	(23.6)								
Has Website (n=299)																							
has feedback (n=62)	2	(3.2)										0	(0.0)	2	(4.2)								
has organisation info (n=62)	37	(59.7)										10	(71.4)	27	(56.3)								
has health education info (n=62)	21	(33.9)										7	(50.0)	14	(29.2)								
	168	(56.2)										31	(32.3)	139	(68.5)								
Has FB page (n=299)																							
<b>Facebook</b>			2	60000	811.5	2594	(6960.3)																
Page likes (n=168)																							
Number of Posts within one month (n=168)	0	149	1.5	6.4	(15.5)							2	92.2	1	84	2362	88.4	1756.5	-1.606	0.108 <sup>c</sup>			
Highest like for a post (n=168)	0	542	1	17.7	(67.2)							8	99.2	1	82.5	2579	82.5	2579	1.815	0.07 <sup>c</sup>			
Highest comment for a post (n=168)	0	143	0	2.9	(13.1)							0	94.5	0	83.5	2433.5	83.5	2433.5	1.529	0.126 <sup>c</sup>			
	82	(27.4)										12	(12.5)	70	(34.5)								
Has IG account (n=299)																							
No of followers (n=82)			0	24200	292.5	1395.2	(3574.2)																
Number of Posts within one month (n=82)	0	117	2	8.4	(16.6)							3.5	45.4	2	40.8	467	43.3	297	-1.614	0.107 <sup>c</sup>			
Highest like for a post (n=82)	0	715	8	22.6	(81.3)							7.5	43.4	8	41.2	442.5	41.2	442.5	0.299	0.765 <sup>c</sup>			
Highest comment for a post (n=82)	0	27	0	0.9	(3.9)							0	41.9	0	41.4	424.5	41.4	424.5	0.093	0.926 <sup>c</sup>			

<sup>a</sup>Chi-square; <sup>b</sup>Fisher Exact; <sup>c</sup>Mann Whitney U

On YouTube, public dental clinics were more active in posting videos as compared to private dental clinics. The contents were mainly live videos or videos for educational purposes which concentrated on paediatric dental care, preventive dental treatment, and restorative treatment options. One of the most active private clinics on YouTube posted videos that also had marketing content at the beginning or end of the video explaining the treatment options available, the operating time of the dental clinic and the promotions available.

## DISCUSSION

In line with Facebook having the highest number of users, amounting to 2.9 billion (1) monthly active users in October 2021, Facebook (56.2%) is the most commonly used social media platform by dental clinics in Malaysia. This result aligns with a survey of the US dental practices on the use of social media which reported Facebook as the most popular social media platform (11). Malaysian healthcare comprises the public healthcare system which is accessible to everyone and financially supported by the government whereas private health care services provide a paid service (24). The findings from our research reveal that private dental clinics have more Facebook and Instagram accounts as compared to public dental clinics. This could be due to private dental clinics exhibiting a more positive attitude in engaging social media as a tool to reach new consumers which provides a higher return on investment than traditional marketing efforts (25). According to the Malaysian Communications and Multimedia Commission Internet User Survey 2020, Facebook has the highest percentage of users with 91.7% users and YouTube with second highest percentage of users with 80.6%, followed by Instagram with 63.1%. YouTube particularly has increased from 48.3% users in 2018 to 80.6% users in 2020 (26). However, this is contrary to the present study with only 6.7% of YouTube users among dental clinics in Malaysia. This could be due to the fact that the present study samples represent dental clinics and not individuals.

Since YouTube videos have 1 billion hours of daily views (27), the World Health Organization (WHO) has recognised and recommended the use of this platform as a strategic communications framework (28). Thus, it is important for dental clinics to consider helping people by creating more videos with reliable sources of information on YouTube to raise awareness and increase knowledge among the public. Even the State Health Department (SHDs) in the US use social media to promote health whereas in 2011, 60% of SHDs had at least 1 social media account: 86.7% Twitter, 56% Facebook and 43% YouTube (29).

There were no significant differences between public and private dental clinics in Malaysia in terms of number of posts within a month of extraction date, highest like

for a post and highest number of comments for either Facebook, Instagram, or YouTube. This could be due to the people's perception of private and public dental clinics. In terms of treatment satisfaction, access, and availability both are perceived to be same. However, a longitudinal survey from Sweden showed that there were some differences in perception towards public and private dental clinics. The study showed public dental clinic patients visited the dental clinic less frequently than the private dental clinic patients and they were less satisfied with the care they received (30). Selangor state which has the highest number of dental clinics was surprisingly not recorded as having the highest number of users either Facebook, YouTube, Instagram, and websites even though four out of nine districts in Selangor has more than 50 clinics (31).

From the analysis, social media is a platform used by dental clinics for marketing especially private dental clinics. This corresponds with the study from Saudi Arabia where most dentists said that social media is an important element advertising to attract patients (12). Social media marketing is a cost-effective means to reach hundreds of potential new patients, and this was proven in a study where social media use gained the most (76%) new patients per year compared to other means of marketing practice such as brochures, business cards, newspapers and tv advertisements (32). Studies have shown that the use of social media can greatly enhance the image and visibility of a medical centre or hospital (15). In contrast to a study by Snyman and Visser and Haas and Park there were some dental practitioners not using social media for marketing and there are reasons behind this (33). The reasons are time constraints, security concerns, no potential for social media, lack of knowledge and no belief in advertising and promotion. The same study also revealed that there is a lack of clear direction for developing a successful social media presence (34). There should be clear guidelines for the conduct of practitioners regarding social media marketing, to eliminate the uncertainty amongst practitioners on what is allowed and what is not.

It can be challenging to manage social media accounts because it takes time to think through and produce high-quality as well as relevant content for users. Social media interactions and communication can occur at any time, around the clock, and require prompt responses to keep the audience interested (35). As a result, several businesses and organizations are establishing new positions for social media handles (36). Private clinics are more active on social media because entrepreneurs believe they would miss out on many opportunities if they do not use social media due to digital marketing trends, increased social media usage, and low-cost promotion and content customization (37).

Although there was more content posted related to

marketing, both private and public dental clinics do create content for educational purposes. This is because there is a relatively increased tendency of patient to search for online sources to learn about their condition and the treatment options available (27). Besides, information obtained from websites may have an impact on patient-dentist relationships (38) and treatment decisions as patients have a better understanding of their disease in terms of its prevention, diagnosis, and management (39). Based on our analysis, more content should be created related to education as the study in China reports that subjects prefer internet search engines or direct emailing their dentists as these methods provide more extensive information (40). Along with creating educational content, dental practitioners of dental clinics should ensure that the content contains quality information. This can be done by some form of peer review and referring to journals or articles before uploading the information for patients to access (41).

There are several limitations in our study. Most notably, data from other common social media such as Twitter use among dental clinics was not collected and reported in this survey. An internet users survey conducted by the Malaysian Communications and Multimedia Commission states that 37.1% of Malaysians used Twitter in 2020 which is the fourth most common social media.

Future research can be done by assessing the quality of information shared by dental clinics in Malaysia on social media. Besides that, further study can be focused on creating a clear guide for dentist on social media usage.

## CONCLUSION

This study reveals that Malaysian private dental clinics are more active on social media, particularly Facebook and Instagram than public clinics. While marketing remains the dominant use, educational contents are also being shared, especially by public dental clinics on platforms like YouTube. To uphold ethical standards and prevent misinformation, clearer guidelines are needed for dental professionals using social media. Future research should evaluate content quality and explore underused platforms to support responsible digital communication in dental care.

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