

The influence of TikTok educational content about malocclusion on the knowledge of adolescents in Purwokerto

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ABSTRACT

Background: Among adolescents, malocclusion affects roughly 56% worldwide and is regarded as the third most common dental and oral health problem globally. Malocclusion can be treated through orthodontic treatment. Adolescents' interest in undergoing orthodontic treatment can be influenced by their knowledge of malocclusion. TikTok is a popular social media platforms that can be used to disseminate information in order to increase adolescents' knowledge. This study sought to evaluate how educational TikTok content regarding malocclusion affects the knowledge of adolescents in Purwokerto

Method: A quasi-experimental method with a pretest-posttest control group design was applied in this study. Sampling was carried out using proportional sampling and simple random sampling to determine the school sites participating in the research. Respondents from each school were selected using stratified random sampling. A total of 241 respondents from five high schools in Purwokerto participated in this study. Data were obtained through a questionnaire and analyzed with the Wilcoxon Signed Rank Test for within-group pretest-posttest comparisons and the Kruskal-Wallis test for between-group intervention-control comparisons.

Results: The findings revealed a significant difference between pre-test and post-test scores in the intervention group exposed to educational TikTok content ($p < 0.05$). In addition, the increase in knowledge differed significantly between the intervention group and control group ($p < 0.05$).

Conclusion: This study concludes that educational content about malocclusion on TikTok significantly increased malocclusion knowledge among adolescents in Purwokerto.

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INTRODUCTION

Malocclusion is a condition of deviation from normal occlusion¹. With a prevalence of 80% in Indonesia, malocclusion is considered a common dental and oral condition affecting many individuals and is ranked after caries and periodontal disease as one of the most prevalent oral health problems in the world^{2,3}. The prevalence of malocclusion in adolescents in the world is as much as 56% or about more than half of adolescents in the world experience malocclusion⁴.

Adolescence is a time when people often feel confused about their physical changes. In this phase, adolescents tend to make physical appearance as their main concern⁵. One of the things that can interfere with adolescent's appearance is malocclusion⁶.

Malocclusion can give negative impacts on adolescents both functionally and psychologically⁷. Malocclusion can trigger caries, gingivitis, and periodontal tissue damage⁸. It can also disturb speech ability, face appearance, chewing movement, and swallowing⁹. Malocclusion can affect daily psychological and social activities such as smiling and speaking⁶. Individuals who experience malocclusion can be treated through orthodontic treatment¹. The aim of this treatment is to achieve proper occlusion in order to regain good masticatory function, facial aesthetics, and long-term stability of the treatment result¹⁰. The 2018 Basic-Health Research Report (Riskesdas) showed that orthodontic treatment was most frequently undertaken by individuals aged 15-24 years, accounting for 1,1%. The biggest factors that can influence adolescent' interest in orthodontic treatment are concern for their own appearance and their knowledge¹¹.

Knowledge is influenced by education, occupation, interest, age, experience and access to information¹². Social media is an internet-based media that is often used to exchange information from afar and can be used to facilitate public access to health information (13–15). One of the social media that is often used nowadays is TikTok with the number of users in the world in 2023 is reaching 1.092 users¹⁶. The short duration videos on TikTok are able to provide information that is light and easy to receive, making it suitable for use as a platform to attract school-age children¹⁷. The TikTok accounts @drgnikenm_sp.ort and @drg.joce are some examples of dentist utilizing TikTok as a platform to provide educational on oral health, including topics regarding malocclusion with the method of delivering health education through lectures to reach the mass target population¹³.

The capital city of Banyumas Regency is Purwokerto, which is administratively made up of four sub-districts namely Purwokerto Selatan, Purwokerto Utara, Purwokerto Timur and Purwokerto Barat. Banyumas is one of the district in Central Java with the third largest population in 2023 with 136.516 people aged 15-19 years¹⁸. Based on this background, it is necessary to conduct research to determine whether there is an effect of educational content about malocclusion on TikTok on adolescent' knowledge about malocclusion in Purwokerto.

RESEARCH METHOD

The study was conducted using a quantitative method and a quasi-experimental design through a cross-sectional approach. A pretest-posttest control group design was applied in the research. The research instruments included informed consent form, respondent characteristics sheet, validated malocclusion knowledge questionnaire, and educational video content on TikTok that had undergone instrument validation by expert validators. The questionnaire underwent validity and reliability test involving 30 students from SMA Muhammadiyah 1 Purwokerto who had similar characteristics to the study population. The validity test was

performed using the Pearson Product Moment correlation to identify valid questionnaire items. The valid items were further analyzed for reliability using Cronbach's Alpha. The analysis revealed that 19 out of 24 items were both valid and reliable.

In this study, the sample size was calculated using the Slovin formula, and an extra 10% was added to anticipate potential data collection errors. The calculation showed that each group required 106 respondents, resulting in a total sample of 212 respondents. The study took place in public and private senior high schools (SMA) in Purwokerto. The selection of schools was carried out using proportional sampling techniques. The allocation of schools into the control and intervention groups was determined using simple random sampling. The intervention group consisted of SMA Negeri 1 Purwokerto, SMA Diponegoro 1 Purwokerto, and SMA Jenderal Soedirman Purwokerto. Meanwhile, the control group included SMA Negeri 4 Purwokerto and SMA Nasional 3 Bahasa Putera Harapan. Stratified random sampling was used to determine the number of respondents from each school, and simple random sampling was then employed to choose the respondents, ensuring equal selection opportunities for all students.

This research was undertaken after obtaining ethical approval from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Jenderal Soedirman, with reference number 051/KEPK/PE/III/2025. The study began with respondents completing the pre-test. The intervention group was then provided with a link to the TikTok educational video via a WhatsApp group, while the control group received no intervention. The study concluded with respondents completing the post-test. The respondents' knowledge scores were analyzed using the Wilcoxon Signed Rank Test to evaluate the improvement between pre-test and post-test scores in the intervention group, while the Mann-Whitney test was used to compare the differences in knowledge scores between the intervention and control groups.

RESULTS

The distribution of respondent characteristics in Purwokerto according to age, sex and school origin is presented in Table 1. The categories of respondents' knowledge levels based on the pre-test and post-test results using the malocclusion knowledge questionnaire are shown in Tabel 2.

Table 1. Distribution of Respondent Characteristics

No.	Characteristics	Intervention Group (n=126)		Control Group (n=115)	
		n	%	n	%
1.	Age				
	a. 15 Years	28	22,20	21	18,30
	b. 16 Years	68	54,00	61	53,00
	c. 17 Years	21	16,70	33	28,70
	d. 18 Years	9	7,10	0	0,00
2.	Sex				
	a. Female	69	54,80	63	54,80
	b. Male	57	45,20	52	45,20
3.	School				
	a. SMA Negeri 1 Purwokerto	101	80,20	0	0,00
	b. SMA Diponegoro 1 Purwokerto	14	11,10	0	0,00
	c. SMA Jenderal Soedirman	11	8,70	0	0,00
	d. SMA Negeri 4 Purwokerto	0	0,00	98	85,20
	e. SMA Nasional 3 Bahasa Putera Harapan	0	0,00	17	14,80

Table 2. Categories of Respondents' Knowledge Level

No.	Characteristics	Knowledge Level					
		High (Scores 13-19)		Medium (Scores 7-12)		Low (Scores 0-6)	
		n	%	n	%	n	%
1.	Intervention Group with Educational content on TikTok						
	a. Pre-test	8	6,30	114	90,50	4	3,20
	b. Post-test	119	94,40	7	5,60	0	0,00
2.	Control Group Without Intervention						
	a. Pre-test	7	6,10	98	85,20	10	8,70
	b. Post-test	7	6,10	98	85,20	10	8,70

The Kolmogorov-Smirnov test was used to examine the normality of the pre-test and post-test scores, resulting in a p value of 0,00 ($p < 0,05$), which indicated that the data were not normally distributed. For this reason, the data were analyzed using non-parametric tests. To assess whether the pre-test and post-test scores showed a significant increase in both the intervention and control groups, the Wilcoxon Signed Rank Test was applied. The analysis results are presented in Table 3.

Table 3. Wilcoxon Test Analysis Results

No.	Group	Median (Min-Max)	p
1.	Intervention Group with Educational content on TikTok		
	a. Pre-test	11 (4-16)	0,00*
	b. Post-test	18 (10-19)	
2.	Control Group Without Intervention		
	a. Pre-test	11 (3-17)	0,32
	b. Post-test	11 3-17	

*correlation is significant at the 0,05 level

According to the analysis in Table 3, the p-value for the pre-test and post-test scores in the intervention group was 0,00 ($p < 0,05$), showing that the intervention with educational video content on TikTok resulted in a significant difference in scores. The findings from the control group analysis demonstrated a p-value of 0,32 ($p > 0,05$), which indicates that the pre-test and post-test scores did not differ significantly.

Analysis to see the difference in knowledge levels between the treatment group using educational content about malocclusion on TikTok and the control group without intervention was carried out using the *Mann-Whitney* test. The results of the *Mann-Whitney* test analysis can be seen in Table 4.

Table 4. Mann-Whitney Test Analysis Results

No.	Group	Median (Min-Max)	p
1.	Intervention Group with Educational content on TikTok	7 (2-9)	0,00*
2.	Control Group Without Intervention	0 (0-2)	

*correlation is significant at the 0,05 level

According to the results displayed in Table 4, the Mann-Whitney test generated a p-value of 0,00 ($p < 0,05$), revealing a significant difference in the group that was given the educational content intervention about malocclusion on TikTok and the control group without intervention.

DISCUSSION

This study involved 241 respondents, consisting of 126 respondents in the intervention group who were exposed to TikTok educational videos about malocclusion, and 115 respondents in the control group who

received no intervention. The results demonstrated an increase in respondents' knowledge. This is reflected in the pre-test scores of the intervention group, where the majority (90.5%) were in the moderate knowledge category, which increased to 94.4% in the high knowledge category in the post-test.

Some respondents were already in the high knowledge category before the intervention, likely due to prior exposure to information about malocclusion—a confounding variable that could not be controlled in this study. This finding is consistent with research by Fitria *et al.* (2023), which reported a significant relationship between access to information and individual knowledge¹⁹. Other contributing factors may include social interactions and prior exposure to malocclusion education before the study²⁰.

The findings indicate that TikTok-based educational content on malocclusion had a positive effect on the knowledge of middle adolescents. This aligns with the study by Pamilasari *et al.* (2022), which demonstrated the effectiveness of TikTok videos in increasing knowledge about balanced nutrition²¹.

TikTok, as an audiovisual educational medium, offers several advantages, especially for conveying concepts related to malocclusion. Its format provides clear, visual representations of physical malocclusion features, making it easier for adolescents to grasp and retain the information presented²².

With the emergence of the new media era, information-seeking behaviour in society has shifted, including in the field of oral health. The role of orthodontists in developing accurate and accessible educational content on malocclusion for adolescents is essential in providing trustworthy sources of information^{13,23}.

The audiovisual nature of TikTok content engages both visual and auditory senses, facilitating better absorption of information. This is consistent with Notoatmodjo's (2012) theory that most human knowledge is processed through the eyes and ears²⁴.

Additionally, TikTok's short video format—typically under 10 minutes—helps maintain adolescents' attention, providing concise information and reducing cognitive load, thus improving information processing. Given the generally short attention span of adolescents, shorter videos are more effective in sustaining engagement compared to longer ones²⁵.

TikTok features such as engaging visuals, animations, background music, and interactive elements may stimulate dopamine release in the brain, enhancing focus and engagement throughout the video. Conversely, longer videos may cause mental fatigue and reduce the ability to maintain attention²⁶.

Moreover, TikTok's widespread reach, with an estimated 1.59 billion users by 2025, increase the likelihood of educational content being widely disseminated and repeatedly viewed by adolescents, which can positively influence knowledge retention^{27,28}.

This study had several limitations. The statistical analytic used non-parametric tests, therefore the findings cannot be extended to represent the whole population. In addition, the study did not screen respondents who had previously been exposed to information about malocclusion. Some variables that may influence the results, such as respondents' socioeconomic status, were also not controlled.

CONCLUSION

Based on the results of this study, it can be concluded that educational content on malocclusion delivered through TikTok has a significant influence on malocclusion knowledge among adolescents in Purwokerto, Banyumas Regency.

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