



THE EFFECT OF INSTAGRAM EXPOSURE ON ADOLESCENTS' KNOWLEDGE AND ATTITUDES TOWARD HIV/AIDS

Winda Rahmadhani^{1*}, Arni Amir², Rozi Sastra Purna²

¹Magister Program on Midwifery, Faculty of Medicine, Universitas Andalas, Jl. Perintis Kemerdekaan No. 94, Padang, Sumatera Barat 25127, Indonesia

²Faculty of Medicine, Universitas Andalas, Jl. Perintis Kemerdekaan No. 94, Padang, Sumatera Barat 25127, Indonesia

*windarahmadhani134@gmail.com

ABSTRACT

Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS) remain major public health problems among adolescents, who are vulnerable due to limited knowledge, inappropriate attitudes, and exposure to risky behaviors. Social media, particularly Instagram, has potential as a health education medium because it is accessible, visually engaging, and closely integrated into adolescents' daily lives. This study aimed to analyze the effect of Instagram-based educational exposure on adolescents' knowledge and attitudes toward HIV/AIDS at SMA X Padang in 2025. A quasi-experimental study with a pretest–posttest control group design was conducted. A total of 58 students were selected using simple random sampling and divided into an intervention group and a control group. The intervention group received HIV/AIDS educational content through the Instagram account “stop_hiv_aids” for one week, while the control group received no intervention. Data were collected using questionnaires before and after the intervention then analyzed using paired t-test and independent t-test, as well as Wilcoxon signed-rank test and Mann–Whitney U test. The results showed a significant difference in posttest scores between the control and intervention groups after the intervention for knowledge ($p = 0.022$) and attitudes ($p = 0.000$). Within-group analysis of the intervention group also demonstrated significant differences between pretest and posttest scores for knowledge ($p = 0.000$) and attitudes ($p = 0.000$). In conclusion, Instagram-based health education has a significant effect on improving adolescents' knowledge and attitudes toward HIV/AIDS and can be utilized as an effective health promotion strategy for adolescents.

Keywords: adolescents; attitudes; HIV/AIDS; instagram; knowledge

How to cite (in APA style)

Rahmadhani, W., Amir, A., & Purna, R. S. (2026). The Effect of Instagram Exposure on Adolescents' Knowledge and Attitudes Toward HIV/AIDS. *Indonesian Journal of Global Health Research*, 8(5), 877–884. <https://doi.org/10.37287/ijghr.v8i5.2329>.

INTRODUCTION

Human Immunodeficiency Virus (HIV) is a virus that attacks the immune system by targeting cells that express CD4. The most advanced stage of HIV infection is called AIDS (Acquired Immune Deficiency Syndrome). HIV/AIDS has remained a global concern for decades. In 2023, the WHO reported that there were approximately 39.9 million people living with HIV worldwide, with a death toll reaching 630,000 (WHO, 2024). The cumulative number of people aged 15-19 living with HIV from 2010 to 2019 reached 36% (Putri, 2022). Adolescence is a time of identity discovery, a transition from childhood to adulthood that involves changes in physical, mental, psychological, emotional, and biological maturity, increasing the risk of contracting HIV/AIDS due to heightened curiosity. Therefore, accurate information about HIV/AIDS needs to be further developed to educate adolescents in understanding HIV/AIDS (Mahayati, 2023).

Advances in information technology have enabled teenagers to absorb any information more quickly. This situation can be a threat, but it can also be an opportunity if managed properly to increase proper knowledge regarding HIV and AIDS (Tianingrum, 2018). The social media platform with the most users is Instagram, with 85.3% of users using it and an average usage time of 16 hours and 10 minutes per month (We are social, 2024). Instagram is a social networking service for sharing photos and videos. Users can access the service through an app with limited

features and can edit content with various filters (Carpenter, 2020). The widespread use of Instagram can be used as a strategy to increase public knowledge, especially among teenagers, who are the largest users of social media (Maulana, 2024).

The level of knowledge and understanding of HIV/AIDS among Indonesian teenagers appears to vary. The impact on adolescent behavior also varies, with higher levels of knowledge tending to be associated with more responsible behavior regarding HIV/AIDS prevention. Attitudes can also be influenced by social media. Attitudes can be shaped by stimuli that come to a person, which can provide valuable experiences. During adolescence, attitudes must be well-prepared to prevent infectious diseases, including HIV/AIDS (Aisyah, 2020). The purpose of this study was to examine the influence of Instagram on adolescents' knowledge and attitudes about HIV/AIDS.

METHOD

This research is an experimental study with a quasi-experimental design with a pretest-posttest with control group design. This research design conducted a pretest on two groups, then one group was given treatment while the other group was treated as a control group. After that, a posttest was conducted on both groups to evaluate the changes that occurred due to the treatment that had been given. This research was conducted in one of the high schools in Padang city, namely SMA A Padang. The time of the research was conducted in August 2025. The population in this study was all students of SMA A Padang, namely 1,070 students. The sample size in this study used a paired numerical analytical formula so that two groups were obtained, namely the exposed group of 29 students and the unexposed group of 29 students, so the sample in this study became 58 students.

The independent variable of this study was exposure to Instagram social media education and the dependent variable in this study was adolescents' knowledge and attitudes about HIV/AIDS. The research instrument used a questionnaire as a design in determining adolescents' knowledge and attitudes about HIV/AIDS which consisted of respondent characteristics, Instagram social media characteristics, knowledge about HIV/AIDS and attitudes about HIV/AIDS. The knowledge component includes the definition, signs and symptoms, transmission, prevention, and treatment of HIV/AIDS. Meanwhile, the attitude component includes cognitive (beliefs), affective (emotional life), and conative (tendency to act). The questionnaire in this study has gone through validity and reliability stages. The sample was divided into two groups: the intervention group and the control group. In the intervention group, students were asked to follow the Instagram account "stop_hiv_aids" which specifically posts educational content about HIV/AIDS for 1 week, while the control group was not given any treatment. The study was conducted for 1 week based on a systematic review conducted by Hou (2014) which found that online interventions can lead to attitude changes after being administered for one week.

RESULT

Table 1.
Respondent Characteristics

Characteris-tics	Mean ±SD	Control			Mean ±SD	Intervention			p-value
		Min- Max	f	%		Min- Max	f	%	
Age	15,90± 0,97	15-18	29	100%	16,31± 1,03	15-18	29	100%	0,120
Gender									
Male			10	34,5%			13	44,8%	0,421
Female			19	65,5%			16	55,2%	
Class									
X			14	48,3%			8	27,6%	0,222
XI			8	27,6%			9	31,0%	
XII			7	24,1%			12	41,4%	

Characteris-tics	Mean ±SD	Control			Mean ±SD	Intervention			p-value
		Min- Max	f	%		Min- Max	f	%	
Frequency of Social Media Use									
1 time a day			4	13,8%			4	13,8%	0,919
2-3 time a day			10	34,5%			11	37,9%	
4-6 time a day			9	31,0%			10	34,5%	
>6 time a day			6	20,7%			4	13,8%	
Duration of social media use									
Less than ½ Hour			7	24,1%			5	13,8%	0,781
1 Hour			5	17,2%			8	27,6%	
2-3 Hours			8	27,6%			8	27,6%	
More than 4 Hours			9	31,0%			8	27,6%	

Bivariate analysis consists of two parts, namely bivariate tests between control and intervention groups and bivariate tests within control and intervention groups.

Table 2.

Results of the Difference Test of Pretest Values of Knowledge and Attitudes Between Groups

Variable	Pretest Control Group (Mean ±SD)	Pretest Intervention Group (Mean ±SD)	p-value
Knowledge	69,17±13,49	64,91±13,56	0,197
Attitudes	69,00±13,49	63,48±12,30	0,109

The results of the nonparametric Mann–Whitney U test on the pretest knowledge scores of both groups showed a p value = 0.197 ($p > 0.05$), which indicates that there is no significant difference in the initial knowledge level between the control group and the intervention group. The results of the parametric independent t-test on the pretest attitude scores of both groups showed a p value = 0.109 ($p > 0.05$), which indicates that there is no significant difference in the initial attitude between the control group and the intervention group.

Table 3.

Results of the Difference Test of Posttest Scores of Knowledge and Attitudes Between Groups

Variable	Posttest Control Group (Mean ±SD)	Posttest Intervention Group (Mean ±SD)	p-value
Knowledge	72,41±16,72	82,76±11,86	0,022
Attitudes	70,52±5,99	76,10±3,51	0,000

The results of the non-parametric Mann Whitney U test obtained a p-value from the post-test knowledge value of the two groups, namely 0.022 ($p < 0.05$) which indicates that there is a significant difference in the knowledge of the control group and the intervention group at the time of the post-test after providing intervention in the form of educational exposure about HIV/AIDS via Instagram. The results of the parametric statistical test of the independent T test obtained a p-value of 0.000 ($p < 0.05$), so it can be interpreted that there is a significant difference in attitudes between the control group and the intervention group at the time of the post-test after being given educational exposure about HIV/AIDS.

Table 4.

Results of the Pretest and Posttest Difference Test of Knowledge and Attitude in the Control Group

Variable	Pretest Control Group (Mean ±SD)	Posttest Control Group (Mean ±SD)	p-value in group
Knowledge	69,17±13,49	72,41±16,72	0,136
Attitude	69,00±13,49	70,51±5,99	0,156

The results of the non-parametric Wilcoxon Signed Ranked Test showed a p-value of 0.136 ($p > 0.05$), meaning there was no significant change in knowledge in the control group. In the attitude control group, a p-value of 0.156 ($p > 0.05$) was obtained using a paired t-test. This indicates that there was no significant change between the pretest and posttest attitude scores in the control group.

Table 5.

Results of the Pretest and Posttest Difference Test of Knowledge and Attitude in the Intervention Group

Variable	Pretest Intervention Group (Mean ±SD)	Posttest Intervention Group (Mean ±SD)	p-value in group
Knowledge	64,91±13,56	82,76±11,86	0,000
Attitude	63,48±12,30	76,10±3,51	0,000

The results of the pretest and posttest scores obtained a p-value = 0.000 ($p < 0.05$) using the non-parametric Wilcoxon Signed Rank Test. These results indicate a significant change in the knowledge variable of the intervention group. The results of the attitude score using the Paired T Test obtained a p-value = 0.000 ($p < 0.05$). These results indicate a difference in the average attitude score before and after the intervention, with an increase in attitude scores after the intervention.

DISCUSSION

Respondents were in late adolescence. Adolescence is a time of identity discovery, a transition from childhood to adulthood marked by various changes in each individual, such as physical, mental, psychological, emotional, and biological maturity (Mahayati, 2023). The results showed that the frequency of social media use in the control group was mostly 2–3 times daily (10 individuals) (34.5%), while in the intervention group, the frequency of social media use was also mostly 2–3 times daily (11 individuals) (37.9%). The intensity of social media use is defined as a person's involvement in social media activities, including frequency of use. The higher the level of social media use, the more active Generation Z is in seeking and accessing health-related information (Yusfik, 2025).

In this study, the majority of social media users in the control group spent more than 4 hours (31.0%). In the intervention group, the duration of use was more evenly distributed, with respondents using social media for an average of 1 hour, 2–3 hours, and more than 4 hours, respectively, for 8 respondents (27.6%). The duration of social media use significantly influenced adolescents' knowledge of reproductive health. The longer adolescents use social media, the greater their opportunity to access accurate and relevant information, thereby improving their understanding. Adequate use allows adolescents to passively acquire information and actively interact with educational content, such as discussions and experience sharing, which deepens their understanding (Buenita, 2025). On the other hand, the duration of social media use does not necessarily increase actual knowledge but is more correlated with a feeling of greater knowledge (Grandearth, 2021).

Results from the pretest showed that both groups exhibited similar levels of adolescent knowledge about HIV/AIDS. There was no significant difference in adolescents' initial knowledge in the control and intervention groups. However, after receiving educational exposure about HIV/AIDS on Instagram, there was a significant increase in knowledge scores in the intervention group, while there was no increase in knowledge scores in the control group. The knowledge that increased the most was about how HIV/AIDS is transmitted and how to prevent it. The control group showed fluctuating changes, with some statements increasing and others decreasing. Conversely, the intervention group showed an increase in scores across all statements, indicating a consistent positive change after the intervention. This suggests that the intervention, in the form of educational exposure on Instagram, played a role in more consistent knowledge gains.

Knowledge is acquired from curiosity; the stronger a person's curiosity, the greater their knowledge. Knowledge itself is derived from human experience with themselves and their environment. It is acquired through observable phenomena (Jalaludin, 2020). One medium for conveying news today is Instagram, which is widely used for promotion. This is because Instagram demonstrates the trend of storytelling through visuals rather than text (Krisdianto, 2020). Content about HIV/AIDS

includes audiovisual material, which makes teenagers more interested and absorbs what is conveyed. The results of this study align with the findings of Rinarto (2022), who concluded that education through Instagram has an impact on knowledge because the visuals presented on Instagram play a role in increasing knowledge, which in turn contributes to the formation of adolescent attitudes and behaviors. Similar results were also demonstrated by research by Tanjaya (2025), who found that educational videos can increase the average score of adolescent reproductive health knowledge. This study found that educational videos are effective because they include images and sound, and are not boring, allowing the senses of sight and hearing to convey knowledge and absorb information effectively.

Nowadays, teenagers are inseparable from smartphone use. They can use their phones wherever and whenever they want. Instagram, an application that can be installed on mobile phones, can be a medium for disseminating information about HIV/AIDS. As a medium that can be accessed anytime and anywhere, it is hoped that Instagram can increase adolescents' understanding of HIV/AIDS. This aligns with Aisyah's research [8], which showed a significant difference in knowledge between respondents in the intervention and control groups. One advantage of delivering educational materials through social media is high accessibility. Respondents can access information repeatedly, anytime and anywhere. These results are also supported by research by Gürkan et al. (2025), who stated that the results before and after administering the STDSKT (Sexually Transmitted Diseases Knowledge Test) in the control and intervention groups showed differences. This situation emphasizes the potential of social media-based education to improve participants' general knowledge. Platforms like Instagram are considered effective educational tools, especially for young people and individuals with high digital media usage.

Regarding attitudes, the results obtained during the pretest showed that both groups exhibited similar attitudes, and there were no significant differences between the control and intervention groups. Based on the research results, it was found that there was no significant increase in adolescent attitudes in the control group, but in the intervention group, there was a significant increase after being given treatment in the form of educational exposure on Instagram. Comparison between the control and intervention groups on the attitude variable showed a significant difference in attitudes between the control and intervention groups after being given treatment. This indicates the effect of intervention in the form of educational exposure via Instagram on changing adolescent attitudes about HIV/AIDS.

Attitude is the tendency to respond to environmental stimuli that can initiate or guide a person's behavior. Attitude is a form of evaluation or emotional reaction. One factor influencing attitudes is mass media. As a means of communication, various mass media such as television, radio, newspapers, and the internet are influential in conveying suggestive messages that can lead to opinions and then result in the formation of a knowledge base that can shape attitudes (Rachmawati, 2019). One important factor in attitude formation is mass media. Mass media plays a primary role in disseminating suggestive messages, which can influence opinions and shape individual attitudes. If the message conveyed is strong enough, the information will provide an affective basis for evaluating something, ultimately forming a specific attitude (Fauziah, 2016).

The emergence of the internet presents new challenges in society. Today, people can easily access information through increasingly personal devices, the size of a palm, and can be accessed anytime and anywhere. While in its early days, people used devices that could access the internet for specific needs, such as information and communication, now internet content in the form of entertainment is increasingly widespread, making it relevant when data shows that teenagers are one of the groups with the highest internet penetration. The personal nature of internet devices leads to on-demand access to information, leading teens to only access information that satisfies their curiosity. This can then trigger risky sexual behavior (Yusuf, 2021).

The intervention in this study focused on the affective domain. This can be seen from the content, which consisted of images that attempted to appeal to adolescents' feelings or emotions. Huseng (2025) stated that the affective domain encompasses feelings, values, appreciation, enthusiasm, motivation, and attitudes. This aligns with the S-O-R theory, which states that stimuli in the form of verbal words, nonverbal cues, and specific symbols can stimulate individuals to respond, either through closed responses (changes in knowledge and attitudes) or open responses (changes in behavior) (Notoatmodjo, 2014).

This research aligns with research conducted by Marisa (2024), which showed an improvement in attitudes after students received health education through the social media platform TikTok. This improvement occurred due to the use of language that is easily understood by adolescents and the ubiquitous format of educational videos, making information more easily understood by respondents. Sulistiani (2024) emphasized that social media use has both positive and negative impacts, especially on adolescents who are highly active online users. One positive impact is increased self-confidence and a more positive mindset, making social media a potential tool for education and health promotion for adolescents. Research by Abnas (2023) found contradictory results. This was demonstrated by a simple regression analysis, which showed a significant value, concluding that social media had no effect on students' attitudinal character. This is because the respondents were students who were already quite consistent in their attitudes and were not easily influenced by external factors such as social media.

CONCLUSION

Based on the results of the study "The Effect of Exposure to Instagram Social Media Education on Adolescents' Knowledge and Attitudes about HIV/AIDS," it can be concluded that exposure to Instagram social media education has been proven to have a significant effect on increasing adolescents' knowledge and attitudes about HIV/AIDS in SMA A Padang students. Adolescents are advised to use social media wisely, not only for entertainment but also as a source of health information, especially regarding HIV/AIDS. The community needs to provide a more open discussion space about HIV/AIDS so that it does not become a taboo topic, as well as foster empathy and avoid stigma against HIV sufferers, one of which is using Instagram. Health promotion needs to be made more varied. HIV/AIDS education should not only discuss transmission and prevention, but also emphasize treatment and the importance of examinations for individuals at risk. Further research is recommended to use a longitudinal design to evaluate the consistency of attitude changes in the long term and can enrich the form of intervention through comparisons across social media platforms. In addition, it can also add other factors that can influence adolescents' knowledge and attitudes to obtain a more comprehensive picture of the determinants of knowledge and attitudes.

REFERENCES

- WHO. (2024). HIV and AIDS. Diakses pada 02 Desember 2024. <<https://www.who.int/news-room/fact-sheets/detail/hiv-aids>>
- Putri, EP. Madani, JF. Dewi, KR & Miolda PR. (2022). Pengaruh Penggunaan Media Sosial Terhadap Pencegahan HIV/AIDS pada Remaja di Indonesia. Seminar Nasional Kesehatan Masyarakat UPNVJ 2022 ISBN 978-623-92728-8-3. pp. 202-217.
- Mahayaty, L. Darmawan, T.C & Santiasari, R.N. (2023). Sikap Remaja Dalam Perilaku Pencegahan HIV/AIDS. Jurnal Keperawatan Sekolah Tinggi Ilmu Kesehatan William Booth Vol.12 No.1 . DOI: <https://doi.org/10.47560/kep.v12i1.485>. pp. 34-38.
- Tianingrum, N.A. (2018). Pengaruh Keterpaparan Informasi Terhadap Stigma HIV/AIDS Pada Pelajar SMA. Jurnal Ilmu Kesehatan Vol.6 No.1. pp. 51-59.
- We are social. (2024). Digital 2024. Diakses pada 06 Desember 2024. <<https://wearesocial-com.translate.goog/id/blog/2024/01/digital-2024/>>

- Carpenter, Jeffrey P. Morrison, Scott A. Craft, Madeline & Lee, Michalene. (2020). How and why educators using Instagram. *Teaching and Teacher Education* 96 (2020)103149. DOI: <https://doi.org/10.1016/j.tate.2020.103149>. pp. 1-14.
- Maulana, M.F.Z. Hasibuan, A & Mauliah Sitriatul. (2024). Melonjaknya Kasus HIV Dikalangan Remaja Indonesia. *ACS Journal*. DOI: <https://doi.org/10.62861/acsj.v2i1.392>. pp. 1-7.
- Aisyah, S & Syafar, M & Amiruddin, R. (2020). Pengaruh Media Sosial Untuk Meningkatkan Pengetahuan Dan Sikap Remaja Tentang HIV & AIDS Di Kota Parepare. *Jurnal Kesehatan Masyarakat Maritim* Vol. 3 No. 1. DOI: 10.30597/jkmm.v3i1.10299. pp. 109-122
- Yusfik, Y. Nawangwulan, K. Zulaika & Susilo, L.H. (2025). Pengaruh Media Sosial terhadap Pola Pencarian Informasi Kesehatan pada Generasi Z. *Jurnal Sintesis, Penelitian Sains Terapan dan Analisisnya* Vol 6 No 2. pp. 188-198.
- Buenita, S. Silalahi, M. & Boangmanalu, D. (2025). Pengaruh Media Sosial terhadap Pengetahuan dan Sikap Remaja tentang Kesehatan Reproduksi: Studi Cross-Sectional di Indonesia. *Jurnal Promotif Preventif* Vol. 8 No. 4. <https://doi.org/10.47650/jpp.v8i4.2135>. pp. 935-944.
- Granderath, J.S. Sondermann, C. Martin, A & Merkt, M. (2021). Actual and Perceived Knowledge About Covid-19: The Role of Information Behavior in Media. *Frontiers in Psychology* Vol 12. Doi : 10.3389/fpsyg.2021.778886. pp. 1-14
- Jalaluddin. (2020). *Filsafat Ilmu Pengetahuan*. Depok: Rajawali Press. [13]
- Krisdianto, B.F. Merdawati, L. Roberto, M & Sihombing, P.R. (2020). *Monograf Pengaruh Sosial Media Terhadap Pengetahuan dan Perilaku Masyarakat Tentang Pencegahan Penyebaran Covid 19*. Padang: Percetakan Syamza
- Rinarto, D. Ilmi, I & Imrar, I. (2022). Pengaruh Edukasi dengan Media Sosial Instagram dan YouTube terhadap Pengetahuan Gizi Seimbang. *Jurnal Ilmu Kesehatan Masyarakat* Vol. 11 No. 3. DOI: 10.33221/jikm.v11i03.1056. pp. 287-292
- Tanjaya, N. Hakim, R.I & Rusliani, D.M. (2025). Pengaruh Media Edukasi Berbasis Video terhadap Tingkat Pengetahuan Remaja Mengenai Kesehatan Reproduksi di SMA Muhammadiyah Pontianak. *Protein : Jurnal Ilmu Keperawatan Dan Kebidanan*. Vol. 3 No. 2. DOI: <https://doi.org/10.61132/protein.v3i2.1097>. pp.09–20
- Gürkan, Özlem. Kırık, Begüm. Eş, Yusuf. Modanlar, Necmedin. Atakan, Enes & Demir, Furkan. (2025). The effect of sexually transmitted disease education via instagram on the knowledge and attitudes of university students: a pilot study. *Revista da Associação Médica Brasileira* Vol 71 No. 3. DOI: 10.1590/1806-9282.20241602. pp. 1-6.
- Rachmawati, W.C. (2019). *Promosi Kesehatan dan Ilmu Perilaku*. Malang: Wineka Media.
- Fauziah, M & Rumaf, M.W. (2016). Intervention Using Social Media Facebook As Health Education Media in Increasing Adolescent's Knowledge and Attitude on HIV AIDS. *Proceedings of The 2th International Multidisciplinary Confrence 2016* Vol. 1 No. 1
- Yusuf, R.I & Andini, H. (2021). Efek Interaksi Penggunaan Media Sosial dan Pengetahuan Kesehatan Reproduksi terhadap Perilaku Seksual Beresiko Remaja. *Pekommas* Vol. 6. Doi:10.30818/jpkm.2021.2060304. pp. 35-45
- Huseng, A.M. Auliyauddin, S & Nursalam. (2025). Taxonomi Pendidikan Dimensi Pengetahuan, Sikap dan Keterampilan. *Socius: Jurnal Penelitian Ilmu-ilmu Sosial* Vol 2 No. 9. DOI: <https://doi.org/10.5281/zenodo.15301124>. Pp. 107-116.
- Marisa, Rifda. (2024). Pengaruh Media Sosial Tiktok Terhadap Pengetahuan dan Sikap Remaja tentang HIV/AIDS di SMAN 13 Kota Samarinda. *Repository Poltekes Kaltim*. pp. 44-55
- Sulistiani, I. Putri, K.Y. Sutjipto, V. Putri, M. Sary, M. & Prananingrum, E. (2024). Pengaruh Media Sosial Terhadap Sikap Remaja Pada Era Digitalisasi. *SOSFILKOM : Jurnal Sosial, Filsafat Dan Komunikasi* Vol. 18 No.2. DOI: <https://doi.org/10.32534/jsfk.v18i2.6911>. pp. 138–146

Abnas, A. Anastasia, W. Hakim, D. Yani, A & Maldi, N. (2023). Pengaruh Sosial Media Terhadap Karakter Sikap Mahasiswa Pendidikan Matematika Universitas Tanjungpura. PHI: Jurnal Pendidikan Matematika Vol. 7 No. 2. DOI: 10.33087/phi.v7i2.277. pp. 100-106