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The Editor-in-Chief will assess whether the article's subject matter and theme align with the Journal's stated objectives and format. Plagiarism and benefits relating to theory and business contributions will also be investigated. The investigation will focus on plagiarism and its implications for theoretical and business contributions. If the aforementioned criteria are not fulfilled, the submitted manuscript may be returned to the author for initial revisions or rejected.

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The Editor-in-Chief determines the publication of articles depending on the input provided by reviewers. If the reviews differ widely, the Editor-in-Chief may invite another reviewer to get a different opinion before deciding. The decision entails either accepting or rejecting the article for publication, which may resending to the author for additional elaboration and revision. The editorial team is tasked with making the final evaluation determination.

There are four possible outcomes that the authors can be notified of as follows:
4.1 Acceptance
4.2 Revisions Required
4.3 Resubmit for Review
4.4 Reject

Editorial Note

The Social Science Innovation and Applied Management (SIAM) is an academic journal prepared by Institute of Research and Development, Rajamangala University of Technology Thanyaburi (RMUTT). The SIAM aims to disseminate and share knowledge and ideas in the form of high-quality articles related Business, Economics, Education, Humanities, Human and Community Resource Development, Psychology, Sociology, Anthropology, Linguistics, Political Science and Arts Program in History to researchers, academics, faculty members and students both national and international.

This journal published two research articles. Each of the research articles presented interesting concepts such as Factors Associated with Dating Behaviour among University Students in Indonesia: Cross-sectional Study and The Effectiveness of Video Media and Leaflets in Breast Self-Examination Education: A Quasi Experimental Study on Indonesian Junior High School Students Therefore, this journal is a channel disseminating the knowledge areas of social sciences which related persons could apply it for further benefits.

Lastly, the editorial team would like to considerably thank you for supporting and pushing forward this journal to occur and well accomplish. We are hopeful of your good cooperation and continuing support in the future.

Editorial Team

Social Science Innovation and Applied Management

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SOCIAL SCIENCE INNOVATION AND APPLIED MANAGEMENT

INSTITUTE OF RESEARCH AND DEVELOPMENT RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI

Factors Associated with Dating Behaviour among University Students in Indonesia: Cross-sectional Study

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Abstract

Dating behaviour among university students has become increasingly complex with the advancement of social media and peer influence. This study aims to analyse the relationship between social media usage and peer influence on dati ng behaviour among university students. The study used a cross-sectional design. Data were collected from 388 respondents, selected using a purposive sampling technique through a self-administered questionnaire. Data were analysed using the Chi-square test. The study results indicate that most students were 21 years old, female, and originated from outside the province. Most students were categorised as heavy social media users, with a usage duration of more than five hours per day. Regarding social media literacy, most students had a moderate level of proficiency. Peer influence was nearly evenly distributed. Additionally, most students engaged in risky dating behaviour. Statistical analysis revealed a significant relationship between age, gender, social media literacy, and peer influence on dating behaviour. No significant correlation was found between place of origin and duration of social media usage with dating behaviour. This study recommends strengthening counselling services at the University level and establishing a peer educator program to provide accurate reproductive health information. Future research is encouraged to explore the influence of geographical and cultural factors on students' dating behaviour.

Keywords: Cross-sectional study, Dating behaviour, Peer influence, Social media usage, University student

Introduction

Globalization is a process of growth that accelerates and expands changes in various aspects of life, influencing human lifestyles, perspectives, and evolving desires. (Lestari 2018). This phenomenon represents a phase of modernization that reorganizes different dimensions of life, including culture and social norms. In this context, local culture is increasingly being displaced, posing particular challenges for young people. (Saputri and F 2022) According to the WHO, adolescents are unmarried individuals between 12 and 24 years old. In the era of globalization, adolescents have greater control over their dating behaviour and the choice of their partners. (Dwi and Nugroho 2015).

Dating is a form of social interaction that allows adolescents to enjoy companionship, gain social recognition, and explore emotional and sexual aspects. (Dwi and Nugroho 2015). However, cultural changes and modernization have also driven a shift in values regarding dating behaviour. Many adolescents engage in romantic relationships to pass the time, follow trends, or gain recognition from their surrounding environment. (Dwi and Nugroho 2015). Unfortunately, dating can also serve as a gateway to risky sexual behaviour. (Hayati Sibarani et al. 2022).

According to the 2017 Indonesian Demographic and Health Survey (SDKI), 81% of female adolescents and 84% of male adolescents in Indonesia have been in a romantic relationship, with most starting between the ages of 15 and 19 (BKKBN et al., 2017) These dating behaviours are diverse, ranging from mild activities such as holding hands to more intimate sexual behaviours like kissing, petting, and sexual intercourse (Cici, Notoatmojo, and Ulfa 2021)

Such risky sexual behaviours can lead to various negative consequences, including unintended pregnancy, sexually transmitted infections (STIs), and HIV/AIDS (Hayati Sibarani et al., 2022).

The 2017 SDKI results also revealed that 16.4% of adolescents aged 15–19 had experienced unintended pregnancy. (BKKBN et al. 2017). The National Population and Family Planning Board of Indonesia reported that out of a total of 5 million pregnancies per year in Indonesia, approximately 200,000 ended in abortion. (Ocviyanti and Dorothea 2018). Indonesia even ranks fifth in Asia for the highest risk of sexually transmitted infections (STIS). Data from UNFPA and WHO also estimate that 1 in 20 adolescents contracts an STI each year (Hairuddin, K., Passe, R., & Sudirman 2022).

In Central Java, the complexity of dating behaviour issues is reflected in the increasing cases of unintended pregnancies and abortions. Data from the Youth Information and Service Centre of Central Java, Indonesia, indicate that the number of unintended pregnancy cases in Semarang City has continued to rise each year. Additionally, the number of new STI cases in Central Java remains significantly high, with 8,671 cases recorded in 2012 (Noviany 2017)

Dating behaviour is an important issue to study, especially among university students, who are part of the adolescent and young adult population. Students, particularly migrant students, often face challenges in social, cultural, and mental adaptation in a new environment, away from parental supervision. This adaptation, combined with greater freedom, makes migrant students more vulnerable to exploring romantic relationships and engaging in risky sexual behaviour. (Yalew, Olayemi, and Yalew 2023).

According to data from the Indonesian Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) and the Ministry of Religious Affairs (Kemenag RI) in 2022, the number of university students in Indonesia reached 9.32 million, with approximately half of them being migrant students. (Handini et al. 2020). At Diponegoro University, one of the leading public universities in Semarang, migrant students form an integral part of the academic community. They face various social pressures, academic expectations, and the need to adapt to a heterogeneous environment.

Individual and social environmental factors significantly influence the dating behaviour of migrant students. One of the most influential factors is social media usage, which serves as the primary platform for students to access information, interact, and express themselves. (Nuraeni, Nainar, and Hikmah 2021) However, this ease of access also increases the likelihood of exposure to harmful content, including pornography, which can influence their dating behaviour. (Mooduto, Abdul, and Tompunuh 2021).

In addition to social media, peers play a crucial role in shaping university students' norms and dating behaviour. Peer influence often encourages students to conform to specific behavioural standards to gain recognition and social acceptance, even when those choices may be risky. (Andriyani and Al Muaudi 2018).

A preliminary study conducted at Diponegoro University revealed that 13 out of 20 migrant students had engaged in risky dating behaviours, such as touching, kissing, petting, and intercourse. These findings highlight the need for further research to understand the factors influencing risky dating behaviour among university students, particularly in the context of social media influence and peer influence.

This study aims to analyse the factors associated with dating behaviour among students at Diponegoro University. By understanding the contributing factors to such behaviour, the findings of this research are expected to serve as a foundation for designing effective interventions to prevent risky dating behaviour among university students.

Literature Review

Social Media Usage

Social media can be defined as an interactive digital platform that facilitates social interaction, information sharing, and the formation of virtual communities. (Puspitarini and Nuraeni 2019). Social media emphasizes user presence and enables individuals to interact and collaborate in various activities. According to Meike and Young, as cited in Nasrullah (2015), social media is a combination of personal communication, which involves direct exchanges between individuals (one-to-one), and public media, which allows for the widespread dissemination of information without restrictions to specific individuals. (Siregar 2022).

Social media has eliminated geographical and temporal boundaries in social interactions, allowing users to communicate without being

constrained by space and time. A once unknown individual can become widely recognised through social media, and vice versa. Social media users can easily access these platforms via the internet without incurring significant costs, and the process can be carried out independently without extensive difficulty (Istiani & Islamy, 2020)

The use of social media has both positive and negative impacts. Its positive effects include the ease of interacting with many people, expanding relationships with individuals from diverse backgrounds, and eliminating distance and time constraints through interactive features. Additionally, social media facilitates authentic self-expression, enables the rapid dissemination of information, and offers a more affordable alternative compared to conventional media. (Banyumurti 2018).

On the other hand, social media use has a negative impact on adolescent behaviour. Excessive use can isolate individuals from real social environments and increase the risk of internet addiction. These platforms also make users more vulnerable to manipulation and negative influences, raise privacy concerns due to digital footprints that are difficult to erase, and have the potential to trigger conflicts due to unrestricted freedom of expression without corresponding responsibility. (Banyumurti 2018)

Peer Influence

According to *the Oxford English Dictionary, peers are* divided into two categories: individuals who hold the same status as the referenced individual and individuals who differ in age or social standing from the referenced individual. (Hoezein 2022)Peers typically serve as a source of information exchange that can influence their members' behaviour and beliefs. (Suhaida and Mardison 2019). Generally, individuals receive social support from their peers, which is the satisfaction gained from appreciation, care, and assistance in strengthening established relationships. (Budikuncoroningsih 2017; Suhaida and Mardison 2019).

Peer groups consist of individuals who share many similarities and a close bond that resembles a family, despite not being related by blood, and they tend to imitate one another. Within these relationships, individuals receive social support. Characteristics of peer groups include being informal and lacking a formal organizational structure, although informal leaders may emerge and be recognized for specific skills. These groups are also temporary due to the absence of a clear structure. Additionally, they provide opportunities to learn diverse cultures from members with different backgrounds and are composed of individuals of similar age. (Dr. Nufiar, M. Ag 2022).

Peers are important in the interaction process, providing information by exchanging insights due to their diverse backgrounds. They also provide feedback, helping individuals assess their abilities compared to their friends. Additionally, peers function as motivators, physical supporters, emotional supporters, sources of social comparison, and providers of closeness and attention, all of which reinforce an individual's positive self-perception (Dr. Nufiar, M. Ag 2022).

As individuals grow older, the role of peers becomes increasingly important in their development. Interactions with peers foster a sense of solidarity and togetherness and help individuals acquire new knowledge, develop skills, become more independent, and express emotions and opinions. However, peer influence can also have adverse effects, such as triggering feelings of envy and unhealthy competition when differences or disparities exist within the group. (Dr. Nufiar, M. Ag 2022).

Dating Behaviour

Dating behaviour refers to a series of activities carried out by a couple in love, aimed at seeking pleasure, fulfilling the need for companionship, testing love and sexual attraction, and getting to know each other. (Pransiska 2019). Dating behaviour is also described as a process of acquaintance between two individuals of the opposite sex with the expectation of progressing toward marriage. Additionally, dating is considered a way to assess compatibility with a partner in building a household and family life (Wisnuwardhani 2021).

Heterosexual behaviour during dating reflects how adolescents express love through physical interaction with an opposite-sex partner (Pransiska 2019). The initial stage typically involves touching, such as holding hands or hugging, which is still acceptable. This then progresses to kissing, starting with kisses on the forehead, cheeks, and lips. At the necking stage, intimacy increases with kissing in the neck and upper body area (Wisnuwardhani 2021). Next, petting

involves touching and stimulating sensitive areas, ranging from light caresses to heavy genital petting. The final stage is intercourse, which refers to sexual activity involving penetration (Basri et al. 2022).

Factors influencing dating behaviour among adolescents consist of internal and external factors. Internal factors include age, where physical development and reproductive hormones trigger curiosity about relationships with the opposite sex; exposure to pornographic media, which introduces sexual messages; sexual attraction, which drives the desire for physical closeness; expression of freedom, as a form of self-identity exploration; and limited knowledge of reproductive health (Hafida, 2019; Pransiska, 2019). Meanwhile, external factors include the ease of access to global information, which allows adolescents to imitate dating behaviours portrayed in the media; peer influence, which increase the likelihood of adopting specific lifestyle patterns; and social status, where having a partner is often perceived as enhancing recognition within their social circles (Pransiska, 2019; Suparyanto dan Rosad 2020).
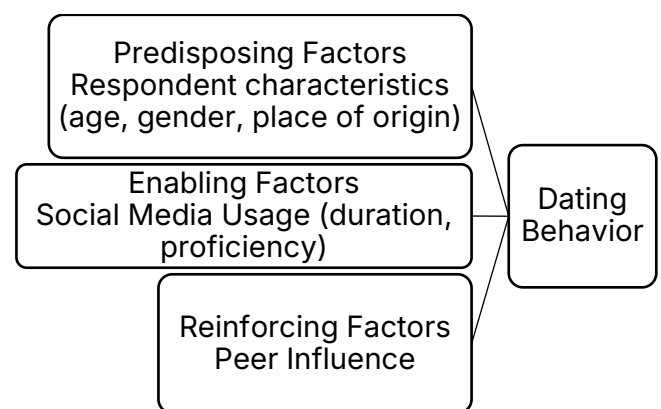
University students

University students are individuals pursuing higher education. They are those who have completed their secondary education and are currently engaged in learning and socialization at a university (Wulandari 2022). Migration for education is a temporary relocation from one's place of origin to gain new experiences and knowledge, with the expectation of eventually returning to their hometown (Opier 2022) Migrant students are individuals who leave their hometowns to pursue education in a different region to prepare themselves to obtain a diploma or bachelor's degree while undergoing the socialization process (Wulandari 2022) They are recognized as students who come from outside the area or from a different region than where they are studying (Agustina and Deastuti 2023).

While living away from home, they are required to be independent in facing various challenges with limited support from others (Fauzia, Asmaran, and Komalasari 2021) This independence encompasses psychosocial aspects, such as emotional independence, which refers to the ability to manage emotional correlations with others; behavioural independence, which involves the ability to make decisions

and take responsibility for their consequences; and cognitive independence, which signifies the freedom to establish personal principles and values (Fauzia et al. 2021; Hadawiah 2019). Additionally, students possess a high level of adaptability in adjusting to new environments and cultures and building social networks with their peers. This adaptation process plays a crucial role in helping them cope with homesickness and navigate the challenges they face during their academic journey (Hadawiah 2019).

Based on the theoretical analysis above, this study constructs a conceptual model, as shown in Figure 1.

Figure 1 Conceptual Model.

Methodology

This study used a quantitative research method with a cross-sectional design. The research was conducted at Diponegoro University, with the study population of actively enrolled students. The minimum sample size was calculated using the Lemeshow formula, and a minimum sample of 384 was obtained. The sampling technique used was purposive sampling with the criteria: Diponegoro University students who are actively registered, have dating experience, and are willing to become respondents. A total of 388 respondents were obtained who contributed to this study.

Data were collected through an online survey using Google Forms and subsequently analyzed using the chi-square test to determine the correlation between the independent and dependent variables. The Survey Link is shared with representatives of student organizations in each faculty and then shared with all students in their faculty.

The instrument has been tested on students from other universities in the same city.

The test results showed that all question items were valid with Cronbach's alpha >0.839. The questionnaire comprised three main sections: respondent characteristics, social media usage, and peer influence on dating behaviour.

This study's data analysis adopted a quantitative approach using statistical models. The analysis included univariate analysis, which described the frequency distribution of each research variable, including age, gender, place of origin, social media usage intensity, purpose of social media usage, social media proficiency, peer influence, and dating behaviour. Bivariate analysis was conducted to examine the relationship between independent and dependent variables, using the chi-squared test to determine whether these variables had a significant correlation.

Social media used by college students include Instagram, Facebook, X, and TikTok. Social media usage was assessed based on usage duration and proficiency in using social media. Peer influence was assessed through the level of peer involvement in decision-making and the extent of influence exerted in various aspects of life. Meanwhile, dating behaviour was assessed based on actions that lead to sexual activity.

The independent variables in this study include respondent characteristics (age, gender, and place of origin), social media usage (duration and proficiency), and peer influence. Meanwhile, the dependent variable is dating behaviour. This study has been approved by the Health Research Ethics Committee of the Faculty of Public Health, Diponegoro University, with ethical approval number 318/EA/KEPK-FKM/2024.

Results and Discussion

Age refers to the time calculated from birth until their most recent birthday. As age increases, an individual's level of maturity and ability to think and act tend to develop further (Kamelia and Pratiwi 2022). Age is a predisposing factor that makes a person more likely to engage in certain behaviours.

Based on the Chi-Square test results, a p-value of 0.013 was obtained (p-value < 0.05), indicating a significant correlation between respondents' age and their dating behaviour. These findings are consistent with a study by Nababan (2020), which also showed a correlation between age and dating behaviour. Individuals who engage in dating at a younger age tend to show riskier dating behaviours compared to those who start dating at a more mature age(Nababan 2020). This study also aligns with research by Shulam (2019), which states that age influences dating behaviour patterns, where individuals aged ≤ 20 years tend to seek social validation in their romantic relationships, while young adults place greater emphasis on intimacy and commitment (Shulman and Connolly 2019).

Age can influence an individual's ability to comprehend and think. As a person grows older, cognitive abilities and thought patterns tend to improve, leading to better knowledge acquisition (Bahdad et al. 2023). These findings indicate that age is crucial in predicting risky dating behaviour, with younger students (≤ 20 years old) being more vulnerable to such behaviour. This result aligns with the Precede-Proceed Theory, which identifies age as a predisposing factor influencing an individual's tendency toward dating behaviour. As students grow older, they become more independent in decision-making and gain broader access to sexual information through social media and social interactions, which can ultimately increase the tendency to engage in risky dating behaviour.

Table 1: Statistical Analysis of the Correlation Between Independent and Dependent Variables.

No	Variables	Dating Behaviour Category				df	p-value
		At Risk		Not at Risk			
		f	%	f	%		
1	**Age**						
	≤ 20 Years	144	37,1	94	24,2	1	0,00
	> 20 Years	63	16,2	87	22,4		
2	**Gender**						
	Female	77	19,8	144	37,1	1	0,00
	Male	130	33,5	37	9,5		
3	**Regional Origin**						

No	Variables	Dating Behaviour Category				df	p-value
		At Risk		Not at Risk			
		f	%	f	%		
	Outside Central Java & Jogjakarta	133	34,3	130	33,5	1	0,11
	Central Java & Jogjakarta	74	19,1	51	13,1		
4	**Duration of Social Media Usage**						
	Heavy User (≥ 6 hours per day)	204	52,6	177	45,6	1	0,57
	Medium User (< 6 hours per day)	3	0,8	4	1,0		
5	**Social Media Proficiency**						
	Medium	88	22,7	135	34,8	1	0,00
	High	119	30,7	46	11,9		
6	**Peer Influence**						
	Low	80	20,6	69	17,8	1	0,00
	High	127	32,7	112	28,9		

The majority of college students are migrants. They may face unique challenges in dating due to cultural differences and the need to adapt to a new environment. These challenges can manifest in various ways, including communication styles, expectations about relationships, and family involvement. However, by understanding these differences and actively seeking to bridge the gap, migrant students can navigate their dating experiences more successfully. Migrant students may come from cultures with different communication styles, such as direct vs. indirect, or emphasis on verbal vs. nonverbal cues. This can lead to misunderstandings or misinterpretations in dating interactions. Cultural values and expectations regarding dating and relationships can vary significantly. For example, some cultures may emphasize arranged marriages or place more emphasis on family involvement in dating (Adriyati and Hatiningsih 2019; Henriksson et al. 2023).

Family members play a more active role in their children's romantic lives, offering guidance or deciding about dating partners. Cultural beliefs about gender roles can influence expectations about who initiates dates, who pays, and the roles of men and women in relationships. Some cultures value respecting elders and family members, which may influence dating behaviours and choices. Migrant students may come from cultures with different dress codes and social customs related to dating, such as public displays of affection (Widjanarko et al. 2022).

When cultural traits are a convention of social coordination, the fact that a person has been exposed to them and the right situation to use them should make them a better predictor of their behaviour than other cultural traits. Parents in good condition will like their sons, while parents in bad condition will like their daughters. The idea is that if there is a correlation between the parents' condition during the parental investment period and the offspring's reproductive success, the daughters are a safer bet for the parents in poor conditions because almost all females reproduce, but the low-quality males often do not. Parents tend to be more careful caring for their daughters than their sons. In adolescent relationships, women are considered to experience more of the impact of a risky dating relationship (Indraswari et al. 2022).

According to the Precede-Proceed Theory by Lawrence Green, age is a predisposing factor that shapes an individual's mindset, attitudes, and decisions regarding dating behaviour. Younger students (≤ 20 years old) tend to have lower self-control, are more easily influenced by social norms, and have less awareness of the long-term risks of risky dating behaviour. In contrast, older students are more capable of considering risks before taking action. The findings of this study confirm that predisposing factors within the Precede-Proceed model play a crucial role in explaining age-related tendencies in dating behaviour.

According to Lawrence Green's theory, gender is one of the predisposing factors related to an individual's motivation to shape behaviour. Gender refers to the biological differences between males and females, which are inherent and determined at birth by God, encompassing biological aspects such as reproductive functions, body organs, and specific physical characteristics (Jannah and Sefta Bramastia 2021). These biological differences also influence dating behaviour,

where male individuals tend to engage in riskier dating behaviours compared to female individuals (Yulianto, Putri, and Moningka 2022).

In the Precede-Proceed model developed by Green, gender is categorized as a predisposing factor influencing an individual's decision-making regarding health behaviours, including dating behaviour. This factor shapes an individual's attitudes, motivations, and behavioural tendencies, based on biological and social aspects inherent to their gender. In the context of this study, gender differences contribute to variations in dating behaviour, where male individuals show riskier dating behaviours more frequently than female individuals.

The results of this study show a p-value of 0.00 (p < 0.05), indicating a significant correlation between gender and dating behaviour among students. The proportion of male students engaging in risky dating behaviour is higher than that of female students, at 62.8%. This finding aligns with the Theory of Planned Behaviour, which states that gender can influence attitudes that ultimately shape an individual's behaviour, in this case, dating behaviour. Biologically, males have higher levels of the hormone testosterone compared to females. This hormone plays a crucial role in increasing sexual drive, making males more likely to engage in risky dating behaviour compared to females (Bahdad et al. 2023).

The findings of this study are consistent with a similar study by Fadillah (2023), which states that females have higher self-efficacy in avoiding risky sexual behaviour than males (Fadillah, Anitasari, and Kusumaningrum 2023). Male adolescents are also three times more likely to engage in risky dating behaviour compared to female adolescents (Herwandar & Nirmawati). This is due to the greater leniency of social norms for males, which grants them more freedom, thereby increasing their opportunities to engage in risky dating behaviour (Nashrullah, 2023). This indicates that gender is one of the factors influencing the tendency toward risky dating behaviour among adolescents (Elvira, Hastono, and Maisyatah 2019).

Thus, it can be concluded that male adolescents tend to have a higher motivation to engage in risky dating behaviour compared to female adolescents. This is due to the more permissive nature of male adolescents, as well as their biologically more potent sexual drive compared to females (Elvira et al. 2019; Herwandar and Nirmawati 2019)These factors contribute to

differences in dating behaviour between genders. Consequently, this study's findings align with the Precede-Proceed Theory, which identifies gender as a predisposing factor shaping social norms and self-control in decision-making related to dating behaviour.

As an educated group, university students often represent a certain social status reflected in their lifestyle. Additionally, the differences between the campus environment and their place of origin, combined with the freedom to act that is often experienced in temporary residences, also influence changes in students' behaviour and habits during their education (Yulianti, Dewi, and Febrilia 2020) The Chi-Square test results showed a p-value of 0.11 (p > 0.05), indicating no significant correlation between place of origin and student dating behaviour. These findings do not align with the Precede-Proceed Theory developed by Lawrence Green, which emphasizes that social, cultural, and environmental factors influence individual behaviour, including dating behaviour.

Although students come from various regions, campus life creates a relatively homogeneous social environment. They are exposed to the same values, lifestyles, and social interactions, which can gradually reduce differences in regional norms over time (Putra, R. A. 2022). However, the social and environmental factors that influence students are no longer their place of origin, but rather the new environment they enter, namely the campus and its social interactions.

Thus, although the Precede-Proceed Model highlights the role of social factors in shaping individual behaviour, the broader and more homogeneous social environment in campus life may become a more dominant factor compared to the cultural background of a student's place of origin. This suggests that a new social environment can reshape individual norms, particularly in the context of migrant students adapting to campus life. They must build new social correlations and adjust to a more heterogeneous environment. This adaptation process often leads to a shift in personal values and norms, making regional differences less influential in decision-making related to dating behaviour (Santoso, I. 2019).

Additionally, the globalization of information, particularly through social media and the internet, has led to the widespread dissemination of more uniform social values and norms across different regions. Migrant students, regardless of their

place of origin, have equal access to global information, lifestyle trends, and broader social norms, compared to previous generations. As a result, traditional values and norms from their hometowns may gradually fade or merge with more modern and permissive values acquired from the internet.

The globalization of information has created a uniformity of social values and norms among university students, regardless of their place of origin. This may explain why no significant correlation was found between the place of origin and dating behaviour, as broader social environmental factors such as campus life, social media, and the internet have a greater influence on their decision-making. In this context, university students who actively access social media and the internet may adopt new, more modern values, which may differ from the norms of their place of origin. Therefore, the findings of this study indicate that in the case of students, broader social factors such as campus interactions and digital media play a more significant role in shaping their behaviour than cultural norms from their place of origin.

Lawrence Green's theory states that three factors, including the enabling factor, contribute to behaviour formation. The enabling factor refers to the abilities and resources necessary to facilitate an individual's behaviour. One of the enabling factors in this study is the advancement of technology and information.

Social media has an important role in human life, especially in today's digital era. Its use enables quick and accurate access to information, fulfilling various needs. However, the satisfaction gained from social media often causes users to lose track of their time accessing it (Rahmawati, Iqomh, and Hermanto 2019). The massive use of social media has increased its frequency among adolescents, as social media has become a popular trend today (Pratiwi, Adam, and Nurlinda 2024). Although it provides positive benefits, social media also negatively impacts adolescent development.

The study results show a p-value of 0.574, indicating no significant correlation between social media usage duration and dating behaviour among university students. This reflects the advancements in information and communication technology, which have permeated various aspects of life, including education. Social media serves as a platform that facilitates information exchange

without being constrained by space and time (Rahmawati et al. 2019).

The findings of this study do not align with research conducted by Febriyanti (2018), which indicated that adolescents with high social media usage durations are more vulnerable to exposure to content that can influence their attitudes and behaviour in dating (Febriyanti A 2018). Similarly, a study by Pratiwi (2024) found a significant correlation between social media usage frequency and deviant dating behaviour among high school students at Al-Ihsan Private School, Lekopancing, Maros Regency, South Sulawesi Province. The higher the intensity of social media usage among adolescents, the greater the tendency for sexual harassment behaviour to occur. Conversely, the lower the intensity of social media usage, the lower the likelihood of such behaviour (Pratiwi et al. 2024).

The duration of social media usage does not have a significant correlation due to the evolving functions of social media within the university environment (campus). Social media is now widely used as a platform for submitting assignments to lecturers, showcasing academic activities, sharing information with peers from other universities, and organizing protest movements (Madjid and Subuh 2019). University students often use social media to communicate with their families, relatives, and friends. These factors contribute to the high duration of social media usage among university students, making them more likely to be classified as Heavy Users.

Social media serves as a platform for accessing information from various sources. It contains a wide range of information, including positive and educational content, which can expand users' knowledge, understanding, and insights on various topics (Pratiwi et al. 2024). The use of social media has shaped a new social structure, enabling users to interact and collaborate virtually (Zuniananta 2021). Social media proficiency refers to an individual's ability to utilize technology for communication, interaction, and participation in various aspects of life. This includes skills in using social media platforms to access information, share content, and effectively build social networks (Budiman et al. 2024).

The Chi-Square test results show a p-value of 0.00 (p < 0.05), indicating a significant correlation between social media proficiency and dating behaviour among university students. This study aligns with similar research by Lestari

(2021), which found a correlation between social media usage and risky dating behaviour, with Chi-Square test results showing a p-value of 0.005 (p < 0.05). Unfiltered social media usage, such as accessing pornographic content, can encourage individuals to imitate and engage in the behaviours they observe (Lestari Nurul Aulia 2021).

This study also aligns with research conducted by Prihatin (2023), which states that there is a correlation between social media usage and high-risk dating behaviour. Adolescents tend to imitate what they see or read, often drawing their conclusions and deciding to follow trending behaviours (Prihatin Idris et al. 2023). Social media also allows individuals to conceal their identity or engage in other deviant behaviours (Putri, Hafid, and Haryati 2021). This can encourage the emergence of new cultural norms among adolescents (Prihatin Idris et al. 2023).

The analysis results indicate that students with moderate social media proficiency are more likely to engage in risky dating behaviour than those with high proficiency. The more frequently an individual is exposed to experiences of hearing, seeing, or experiencing risky dating behaviour, the greater the likelihood of developing the urge to imitate such behaviour. Exposure to scenes of hugging or kissing on social media, for instance, can encourage individuals to replicate and apply similar behaviours with their partners (Lestari Nurul Aulia 2021).

These findings align with the Precede-Proceed Theory, where proficiency in managing social media functions as an enabling factor that influences the extent to which individuals are exposed to and engage in dating behaviour. Students with moderate proficiency in using social media tend to be more active in accessing sexual content, interacting with peers on topics of sexuality, and being more open in discussing their sexual preferences through social media. This reinforces the argument that social media is not merely a communication tool but also a factor that shapes and reinforces dating behaviour among university students.

Peer groups are social groups consisting of individuals within a similar age range, from children and adults to the elderly. Members of these groups share similar ways of thinking, acting, and imagining. Peer groups are believed to play a crucial role in the socialization process among their members (Arifianingsih, Muhaimin,

and Permatasari 2021). Social support from peers is significant for an individual's well-being (Febriyola, Ikhsan, and Kosasih 2023).

As university students, they need to adjust to a new environment in their place of residence and adapt to different cultures (Anggraeni and Hidayati 2024). Peers have a significant influence on adolescents, shaping their attitudes, self-identity, and behaviour, which ultimately contributes to the formation of their character (Kurniawan and Sudrajat 2018). One of the primary functions of peer groups is to provide various forms of information about the world beyond the family.

The Chi-Square test results show a p-value of 0.00 (p < 0.05), indicating a significant correlation between peer influence and dating behaviour among university students. This study aligns with research by Fahdilla (2022), which states that peer interactions have the potential to influence an individual's dating behaviour patterns (Noviyanti Fahdilla, Dr. Drs. Abdul Wahab 2022). Harmful or unhealthy friendships among peers can increase the risk of engaging in risky dating behaviours, which may lead to casual sexual relationships. Conversely, positive friendships can serve as a protective factor (Fariana, Novita, and Nina 2024). Thus, peer influence has a significant impact on the dating behaviour of university students.

Another study by Paudel (2023) also found similar results, indicating that peer influence is a contributing factor to the increased tendency among students to engage in dating behaviours leading to casual sex. Students who have close friends with prior experience in casual sex are 5.2 times more likely to engage in such behaviour compared to those who do not have friends with similar experiences (Paudel et al. 2023).

The probability of engaging in risky dating behaviour is higher among students influenced by their peers compared to those who are not affected (Damtie et al. 2022). Peer influence plays a decisive role in shaping an individual's attitudes, behaviour, and personality. The study concludes that the stronger the peer influence, the higher the tendency for students to engage in risky dating behaviour. These findings support the Precede-Proceed Theory, where peers are a reinforcing factor that strengthens dating behaviour among university students.

A high level of peer influence among university students is associated with increased

risky dating behaviour, indicating that peers can provide strong social support and reinforce risky norms or behaviours. In this context, peers serve not only as a source of information sharing but also as a reinforcing factor that influences and strengthens an individual's decisions regarding dating behaviour.

This study has limitations, including the possibility of self-report bias and the social desirability effect. Respondents might be less likely to admit to engaging in risky behaviours due to social desirability. This can be avoided if the data is collected using interview techniques, which can build rapport first. However, this study still uses questionnaires because of the limited human resources and budget required to reach all respondents.

Conclusions and Recommendations

There is a significant correlation between age, gender, social media proficiency, and peer influence on dating behaviour among university students. Conversely, no significant correlation was found between place of origin and duration of social media usage with dating behaviour. Therefore, it is recommended that Diponegoro University strengthen counselling services to help students cope with social pressures and peer influence. Additionally, the Public Health Centre and the Semarang City Health Office are encouraged to provide adolescent reproductive health counselling clinics, implement peer educator mentoring programs, and conduct educational initiatives on the psychosocial impacts of risky dating behaviour. For future research, a comparative study between migrant and local students' dating behaviour is recommended to better understand the influence of geographical and cultural factors on dating patterns.

Acknowledgment

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SOCIAL SCIENCE INNOVATION AND APPLIED MANAGEMENT

INSTITUTE OF RESEARCH AND DEVELOPMENT RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI

The Effectiveness of Video Media and Leaflets in Breast Self-Examination Education: A Quasi Experimental Study on Indonesian Junior High School Students

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Abstract

Breast cancer is a leading cause of death among women, and early detection plays a critical role in improving outcomes. Breast Self-Examination (BSE) is a simple method to help detect early symptoms. Promoting BSE among young women is essential, and choosing appropriate educational media-uch as videos and leaflets-can enhance knowledge and awareness. This study aimed to compare the effectiveness of video and leaflet media in increasing BSE knowledge among junior high school students. A quasi-experimental design with a pretest-posttest approach was used due to limited control over external variables. A total of 102 students were divided into two intervention groups: video (n=51) and leaflet (n=51). Knowledge was assessed using questionnaires administered before and after the interventions. The Mann-Whitney test was used to analyze the data. Results showed that the video group's average score increased from 8.27 to 16.80, while the leaflet group increased from 8.37 to 16.84. Both groups demonstrated a significant improvement in knowledge (p=0.000). However, there was no significant difference between the two groups in terms of knowledge gain (p>0.05). This indicates that both video and leaflet media are equally effective in enhancing students' understanding of BSE. The choice of educational media should therefore consider the context, accessibility, and preferences of the target audience. It is recommended that content developers tailor the language and format of materials to ensure they are engaging and understandable for the intended recipients, especially when promoting preventive health behaviors among adolescents.

Keywords: Breast self-examination, Health education, Video, Leaflet, Knowledge

Introduction

Indonesia is experiencing a shift in disease patterns, from infectious diseases to non-communicable diseases, where one of the deadliest is cancer. Cancer is characterized by the growth of abnormal, malignant, and rapidly and uncontrollably growing body tissue cells, which can eventually turn into cancer cells. This process results in lesions or lumps that can spread to surrounding tissues, disrupting the normal functioning of the body and potentially leading to death (Agustina et al., 2023). Based on data from GLOBOCAN (Global Burden of Cancer Study) issued by the International Agency for Research on Cancer (IARC) under the auspices of WHO, in 2022 there were 19,976,499 cancer cases and 9,743,832 deaths due to cancer worldwide. Breast cancer ranks second with a percentage of 11.5%, after lung cancer which reaches 12.4% (Ferlay et al., 2021).

Breast cancer is also the fourth leading cause of death in the world, making it one of the top health problems for women, including in Indonesia. In Indonesia, in 2022, there were 66,271 new cases of breast cancer, making it the leading cause of death among women with 22,598 deaths. WHO estimates that the number of breast cancer cases in Indonesia will continue to increase, estimated to reach 89,512 cases by 2040 (Scharlier, 2020).

Based on data from the Central Java Health Profile in 2024, data shows that Semarang City has the highest incidence, with 46 suspected cases. The Semarang City Health Office reported 912 cases of breast cancer in 2023, which

decreased to 775 in 2024, although several sub-districts experienced an increase. The uneven distribution of the population is key to understanding the prevalence of breast cancer in Semarang. Candisari District has always ranked second highest in prevalence, with rates of 0.57% in 2023 and 0.39% in 2024, indicating around 39 cases per 1,000 women at risk, underscoring the ongoing public health challenges (Semarang City Health Office, 2024).

The factors that contribute to the risk of breast cancer are diverse and complex. Among these factors, age is one of the most significant. As a woman ages, a woman's risk of developing breast cancer also increases. In the context of prevention, the earlier age of menarche which usually occurs in the early adolescent phase is an important moment to provide education about breast health (Sofa et al., 2024). At adolescence in junior high school age, it is a good time to provide health promotion about breast self examination. Because at the time of junior high school age, young women are experiencing a period of development and growth, one of which is the body of the breast. With a good understanding and the ability to self-examine breast from an early age, women can contribute to breast cancer early detection (Cici & Ulfiana, 2019).

The breast examination itself is one way to detect symptoms or signs of breast cancer that can be done independently. The earlier a woman understands and is able to do a breast examination on her own, the earlier breast cancer can be detected so that the earlier the treatment process can be carried out so that it can achieve a better cure rate and survival ability of breast cancer. In fact, in Indonesia, the level of self-examination practice in the community is still low, and about 70% of breast cancer patients are detected in the late stages. Therefore, it is very important to prevent the risk of breast cancer by being aware of it as early as possible (Dewi et al., 2022).

According to Leavel and Clark's theory, there are five stages of disease prevention and the first stage is health promotion, which is important to improve public understanding of health, including the practice of breast self-examination for breast cancer prevention among adolescents (Sari, 2020). The implementation of health promotion involves various factors, such as delivery methods and media used.

Noviaria's (2019) research shows that self-examination of breasts through video is effective in increasing the knowledge of adolescent girls, in line with the findings of Kusila (2020) and supports the use of video media according to Edgar Dale's learning model, which states that 50% of the learning process is more effective through visual media (Rahayu et al., 2020).

Meanwhile, according to a study conducted by Eka in 2019 on the effectiveness of health education on knowledge about breast self-examination, it was found that the use of Leaflet media was significantly more effective in increasing respondents' knowledge about breast self-examination. This finding is in line with research conducted by Diana in 2021 which showed an increase in respondents' knowledge before and after receiving information through leaflet media (Wulandari, 2019).

Video combines elements of image and sound, has the advantage of involving several five senses simultaneously, namely hearing and sight. On the other hand, the leaflet, which consists of health messages in the form of pictures and writing on folded sheets, was chosen in this study because of its ability to convey information in a way that is easy for readers to understand, and practical to carry out health workers when conducting health education. In this study, the videos and leaflets used in the experiment are media that have been published by the official institution of the Indonesian Ministry of Health.

The health promotion media used in this study was accessed from the Indonesian Ministry of Health's YouTube account. In addition, as a comparative media, this study also uses Leaflet media accessed from the official website of the Ministry of Health of the Republic of Indonesia. The media is used because it is a publication media from an official institution of the Ministry of Health, especially in the field of Prevention and Control of Non-Communicable Diseases with accurate and reliable sources of information to be conveyed to the public related to the prevention of breast cancer through breast self-examination. The use of media such as videos and leaflets is also one of the factors in the success of delivering health messages for self-examinations.

This study aims to compare the effectiveness of video media and leaflet media on knowledge about breast self-examination

in female students in Candisari District, Semarang City.

Literature Review

Breast Self-Examination

The presence of tumors/lumps around the breast can be detected precisely by conducting early detection, namely conducting a breast self-examination. The examination is an initial level examination to find out and ensure that the breasts are still in a normal state. Signs of abnormalities that need to be watched out for such as infections, tumors or cancer can be detected early. Breast cancer that has been treated at this stage has a nearly 95% chance of being cured. In Indonesia, 80% of breast cancer cases are found after an advanced or advanced stage, even treatment efforts and treatment are difficult (Departemen Kesehatan Direktorat P2PTM, 2019). Therefore, it is very important to disseminate information about prevention and early screening efforts in the community, especially women, so that they can handle it quickly and optimally.

Early screening for breast cancer is referred to as breast self-examination. The breast examination method itself is a method that is considered cheap and easy to do in detecting the risk of breast cancer early. Breast exams are done independently by each woman by learning to see and check for changes in her own breasts. This examination should be carried out routinely every month on the 7th – 10th day which is calculated from the first day of menstruation. At that time, the breasts no longer harden or hurt (Sari et al., 2022).

Health Promotion Media

Health promotion media is media in the form of educational aids used in conveying materials or messages about health. Assistive devices must be designed based on the idea that messages or information are received or captured through the five senses that humans have. The more the five senses are used to receive messages or information, the clearer the understanding or knowledge is obtained. In this study, the health promotion media used are videos and leaflets. Video is an electronic media that has advantages such as being more attractive because the image is moving. A leaflet is a form of leaflet that contains a message or health information (Jatmika et al., 2019).

Effective health promotion is very important to do because it can help people become more understanding and have a positive attitude in disease prevention efforts. Information can be obtained from various sources, ranging from health workers, family, friends, to the mass media. Exposure to information media through hearing, sight or reading is able to increase knowledge and be able to influence the decision-making actions taken. The information in the video media and leaflets includes early detection of breast cancer, breast examination time, changes in the breast that need to be watched out, breast self-examination steps, breast cancer symptoms, and breast cancer risk factors (Sari et al., 2022).

Knowledge

Knowledge is the result of knowing based on the sensing that a person has done. Knowledge is obtained from the results of understanding and occurs after sensing a certain object obtained through the senses of the eyes and ears. In making decisions and determining actions in a problem, knowledge is needed. Knowledge that covers the cognitive side has 6 levels including know, comprehension, application, analysis, synthesis, and evaluation. Behavior when based on good knowledge will be more inherent than behavior without knowledge (Cholifah, 2019). The existence of knowledge is the initial initial capital to shape a person's actions. Knowledge can be obtained from anywhere and in any way so that it can be applied in life (Jatmika et al., 2019).

Video and leaflets are educational media that are often used in health promotion, each with different characteristics and effectiveness in increasing knowledge. Video, as an audiovisual media, is able to present information dynamically through a combination of images, sound, and text, making it more attractive and easier to understand, especially for visual and auditory learners. Meanwhile, printed leaflets allow repeated access to information, making them more effective in long-term knowledge retention. Although videos can increase understanding in a short time, leaflets provide flexibility for individuals to re-read information as needed. Thus, the selection of educational media must consider the characteristics of the

target so that the message delivered can be received optimally and contribute to increasing knowledge.

Behavior that is carried out based on a person's knowledge will last longer than actions that are not based on knowledge. Good knowledge of the importance of early detection of abnormal lumps in the breast will elicit a positive response to the practice of breast self-examination. Adolescents who have less knowledge may not respond to the practice of breast self-examination optimally. This is in line with the results of research conducted by Windy Yovita (2021) that there is a meaningful relationship between knowledge of breast self-examination practices, and adolescents who have good knowledge of breast self-examination are 6.4 times more likely to do breast self-examination practices (Sari et al., 2022).

Methodology

The research design used in this study is a quasi-experimental design, specifically using a non-equivalent group design that combines two experimental groups. This approach was intended to compare the effects of different health promotion media on changes in knowledge levels among sample participants.

Secondary schools in Candisari District consist of 9 schools, with 2 schools with public school status and 7 other schools with private school status, which are dominated by religious schools. In this study, the schools chosen as the research location are SMP (Junior High School) Negeri 5 Semarang and SMP (Junior High School) Negeri 8 Semarang, considering that these two schools are the schools with the highest number of students in Candisari District. In addition, SMP Negeri 5 Semarang and SMP Negeri 8 Semarang are public schools with the characteristics of a heterogeneous student population in terms of social and economic background compared to private schools, so they are more representative to the general public.

The population of this study is 907 students, which is a total of female students in SMP Negeri 5 Semarang and SMP Negeri 8 Semarang. The sampling technique in this study is a random sampling technique with a total sample of 102 female students with 51 respondents in each experimental group. The size of the 102

female smapel is based on the calculation of the minimum sample added to the sample reserve to anticipate any samples that drop out of the study. The independent variable in this study or that affects the dependent variable is the implementation of health promotion regarding breast self-examination through the use of promotional media, especially videos and leaflets. On the contrary, the dependent variable in this study was the increase in knowledge about breast self-examination in the respondents.

Data collection and experiments took place at SMP Negeri 5 Semarang and SMP Negeri 8 Semarang on the same day. The intervention was carried out face-to-face in a designated room, arranged into three phases: pre-test, media intervention, and post-test. The pre-test questionnaire contained knowledge variable questions and several characteristic questions of respondents related to the history of access to information about breast self-examination before receiving the intervention. This initial measurement was carried out to determine the level of knowledge of the sample before the experiment. The treatment of video media intervention was carried out by showing 1 time 5-minute video. Meanwhile, the leaflet media intervention treatment was carried out by giving respondents 10 minutes to read the leaflet and then collect the leaflet again before taking measurements after the experiment.

Data analysis was carried out through univariate analysis to examine the characteristics of respondents by assessing age distribution and access to information regarding breast self-examination before the intervention. In addition, bivariate analysis was used to evaluate changes in knowledge before and after the implementation of health promotion regarding breast self-examination in the video media and leaflet media groups, utilizing the Wilcoxon test due to the abnormal distribution of data in both groups. Furthermore, the bivariate analysis included a comparison of the effectiveness between video media and leaflet media in improving knowledge about breast self-examination, which was assessed using the Mann-Whitney test, also due to abnormal data distribution. Data analysis was carried out using the SPSS data processing application. This research has passed the health research ethics test approved by the Faculty of Public Health, Diponegoro University with

an ethical approval statement No. 444/EA/KEPK-FKM/2024.

Result and Discussion

Univariate Analysis

1. Age

Table 1 Age Frequency Distribution.

Age (Years)	Video Groups f	Video Groups %	Leaflet Group f	Leaflet Group %	p-value
13	18	35.3	12	23.5	
14	29	56.9	34	66.7	0.220
15	4	7.8	5	9.8	

Based on the table 1, age frequency distribution, the majority of respondents were at the age of 14 years, there were 29 (56.9%) respondents in the video group and 34 (66.7) respondents in the leaflet group. Overall, the respondents were classified as early adolescents, namely 13-15 years old. After conducting a test different from the Man Whitney test, it was found that the p-value of 0.220 or (p> 0.05) concluded that there was no significant difference in the age of the respondents in the video media group or the age of the respondents in the leaflet media group.

2. Access to Breast Self-Examination Information.

Based on the table 2, the distribution of information access, the majority of respondents had never accessed breast examination information on their own before the experiment. After the Man Whitney test, it was found that the p value was 0.156 (p > 0.05), it was concluded that there was no difference in the history of access to breast self-examination information in the respondents in the video and leaflet groups.

Table 2 Access Breast Self-Examination Information.

Access Information	Video Groups f	Video Groups %	Leaflet Group f	Leaflet Group %	ở!! úaišḅ
Yes	23	45.1	16	31.4	0.156
Not	28	54.9	35	68.6	

From access to information, it was found that most respondents trusted their mothers or parents in discussing or asking questions about breasts and breast examinations themselves. Respondents felt comfortable when asking or discussing health information about breasts and breast exams themselves. Respondents who have accessed breast examination information on their own. In the video group, the majority have accessed information about breast cancer symptoms.

In the leaflet group, the majority have accessed information about the meaning of breast self-examination. In video groups and leaflet groups, respondents who had accessed information about breast exams on their own mostly got information from social media. The information obtained by respondents, both video groups and leaflets, is mostly sourced from online media with the most platforms, namely Tiktok.

3. Distribution of Correct Answer Frequency in Knowledge Questionnaires

Table 3 Correct Answer Frequency Distribution.

Knowledge Indicators	Video Groups Pre Test	Video Groups Post Test	Δ	Leaflet Group Pre Test	Leaflet Group Post Test	Δ
Breast self-examination is a technique for examining a woman's breasts to feel if there is an abnormal lump in the breast	34	51	+17	31	51	+20
Breast self-examination is done on the 7th – 10th day after menstruation every month	10	50	+40	15te	48	+33
Breast self-examination is done to prevent breast diseases*	0	6	+6	1	1	0
Breast self-examination can tell if there is a lump on the breast	35	50	+15	35	50	+15

Knowledge Indicators	Video Groups		Δ	Leaflet Group		Δ
	Pre Test	Post Test		Pre Test	Post Test	
Breast self-examination can only be done by women over 20 years old*	19	43	+24	17	42	+25
Breast self-examination is done on the first day of menstruation*	5	47	+42	4	27	+23
Breast self-examination should only be done by health workers*	19	49	+30	13	43	+30
Breast self-examination if there are complaints in the breasts and armpits*	1	15	+14	5	9	+4
Mammography or clinical examination of the breast, can detect breast cancer	32	49	+17	32	44	+12
If there is an abnormal lump, you should immediately carry out a further examination	50	51	+1	48	51	+3
Breast cancer can be known through Breast self-examination	25	46	+21	34	45	+11
In every movement of Breast self - examination it is necessary to pay attention to changes in the shape, size of the breasts, surface and nipples.	38	51	+13	32	50	+18
Breast cancer can only affect women aged 30 years and above*	21	40	+19	15	36	+21
One of the breasts hanging lower than usual are signs to watch out for when Breast self-examination	18	29	+11	16	29	+13
Doing a circular movement from the nipple area to the entire breast surface is one of the steps Breast self-examination can take	19	49	+30	14	50	+36
The inward putting position is a complaint that does not require further consultation*	9	27	+18	12	29	+17
History of first menstruation less than 12 years old at risk of breast cancer	1	35	+34	3	43	+40
Breast skin wrinkles like an orange texture is normal*	7	28	+21	7	41	+34
When doing Breast self-examination no need to press on the breasts*	13	28	+15	10	30	+20
Exposure to secondhand smoke (secondhand smoke) is not a risk of breast cancer*	21	23	+2	14	30	+16
Poor diets such as containing dyes or preservatives can increase the risk of breast cancer.	28	41	+13	29	48	+19
One of the steps to REALIZE is to massage your breasts counterclockwise*	1	2	+1	1	5	+4
Wounds in the breast that do not heal are symptoms of breast cancer	14	16	+2	13	46	+33
During the Breast self-examination practice, a pillow is placed under the head for comfort*	2	31	+29	2	11	+9

*Unfavorable Question
*Note: There was no set passing threshold; the number of correct responses before and after intervention was used to assess knowledge improvement.

Based on table 3, the correct answer frequency distribution table above, it is known that all respondents in the video media group experienced an increase in all question items. In the question item " Breast self-examination is carried out on the first day of menstruation" there was a significant increase, namely an increase of 42 respondents answering correctly from 5 respondents (pre-test) to 47 respondents (post test). Meanwhile, in the leaflet media group, most of them increased but there was one question item that did not increase, namely the item "Breast self-examination is done to prevent breast diseases" and one question item that decreased, namely the item "Breast ultrasound is one of the early detection of breast cancer".

Bivariate Analysis

Bivariate analysis was carried out to see the difference in knowledge before and after receiving media intervention and to test the comparison of knowledge changes in the video media experiment group and the leaflet media experiment group.

1. Differences in Knowledge Before and After the Intervention (Pre-Post Test).

Table 4 Knowledge before and after media intervention.

Variable	Video Groups Mean±SD	Leaflet Group Mean±SD	*ò!! úaĭšḃ*
Knowledge PreTest	8.27± 3.4	8.37±4.0	0.895
Post Test Knowledge	16.80±2.4	16.84±2.5	0.890

Based on the table 4, it is known that the average result of the level of knowledge before receiving media intervention in the video media group is higher at 8.27 compared to the leaflet media group which is 8.37. To see the difference in knowledge before receiving media intervention, a differential test was carried out using the Unpaired T Test and a p-value of 0.895 (p>0.05) was obtained, which means that there was no significant difference in knowledge in the video media group and the leaflet media group. So it was concluded that the level of knowledge in both groups was the same and a comparative test or difference test was carried out.

Based on the table 4, it is known that the average result of the level of knowledge after receiving media intervention in the video media group is higher at 17.69 compared to the leaflet media group which is 17.24. To see the difference in knowledge after receiving media intervention, a differential test was carried out using the Mann Whitney test and a p value of 0.890 (p>0.05) was obtained, meaning that there was no significant difference in the level of knowledge in the video media group and the leaflet media group after receiving media intervention.

2. Knowledge Enhancement (Pre-Post Test).

Table 5 Increased knowledge of Video and Leaflet groups.

Group	Pre Test Mean±SD	Post Test Mean±SD	*p-value*
Video	8.27± 3.4	16.80±2.4	0.000
Leaflets	8.37± 4.0	16.84±2.5	0.000

Based on table 5 above, it is known that the average level of knowledge in the video media intervention group increased by 8.53 points. To see the difference in the level of knowledge before and after receiving the video media intervention, a difference test was carried out using the *Wilcoxon* statistical test and a *p-value* of 0.000 (p< 0.05) was obtained, which means that there was a significant difference in the level of knowledge before and after receiving the video media intervention.

Based on the table 5, it can be seen that the average level of knowledge in the leaflet media group has increased by 8.47. To see the difference in the level of knowledge before and after receiving the leaflet media intervention, a difference test was carried out using *the Wilcoxon* statistical test and a *p-value* of 0.000 (p<0.05) was obtained, which means that there was a significant difference in knowledge before and after the leaflet media intervention. It can be concluded that video media and leaflets are effective in increasing the knowledge of research respondents.

3. The Difference in the Effectiveness of Videos and Leaflets in Increasing Knowledge.

Based on Table 6, the differential test of the effectiveness of video media and leaflets, the data on the change in knowledge value from pre-test knowledge score to post-test was calculated by calculating the post test

score minus the pre-test score. It can be seen that the average change in knowledge score in the video group is 8.53 points higher than the average change in knowledge score in the leaflet group, which is 8.47. From the results of the Mann-Whitney test, a p value of 0.780 (p > 0.05) was obtained, which means that there was no significant difference in the change in knowledge in the video group and the leaflet group or it can be concluded that video media and leaflet media have the same effectiveness in increasing knowledge about breast self-examination.

Table 6 Differences in the effectiveness of Videos and Leaflets.

Variable	Video Groups	Leaflet Group	p-value
	Mean±SD	Mean±SD	
Increased Knowledge	8.53± 3.2	8.47±3.8	0.869

4. Effect Size Media Intervention

Effect size is a statistical measure used to determine how much of an intervention is affected. In this study, the effect size was calculated to see the increase in the knowledge of participants in each group (videos and leaflets) after being educated using different media. Calculation of effect size using Cohen's formula.

$$d= \frac{M_{post}- M_{pre}}{SD_{spooled}} \text{ and SD} = \frac{SD^2_{post}-SD^2_{pre}}{2}$$

The effect size in the group was calculated by subtracting the average knowledge of post test and pre test then divided by the results of the calculation of elementary or standard deviation. So that the efeect size of the media is obtained.

$$SD_{Video}= \frac{2.4^2+ 3.4^2}{2} = 2.942 \text{ so that ,}$$

$$d_{video} = \frac{16.80-8.53}{2.942} = 2.89 \text{ and}$$

$$SD_{Leaflet} = \frac{2.5^2-4.0^2}{2} = 3.335 \text{ so that,}$$

$$d_{leaflet} = \frac{16.84-8.37}{3.335} = 2.54$$

Cohen's values d = 2.89 (video) and 2.54 (leaflet) fall into the large category. This shows that both educational mediums are very effective in improving students' knowledge, although

statistical tests between groups did not show significant differences.

Discussion

Age of Respondents

All respondents came from the same class, namely class VIII (eight), but the respondents had different ages. The age range of respondents was 13 to 15 years old, 13 years old as many as 30 (29.4%) respondents, 14 years old as many as 63 (61.7%) respondents, and 15 years old as many as 9 (8.9%) respondents. Based on the results of Mann-Whitney's statistical test on the age of respondents in the video media group and the leaflet media group with a value of p 0.220 (p >0.05), it was concluded that there was no significant difference in the age of the respondents in the video group and the age of the respondents in the leaflet group.

Age is a unit of time used to measure the time of the existence of an object or living thing in the world. In the age range of respondents, namely the age of 13 -15 years is the age range in adolescents where a person's knowledge is very easily influenced by other people and the surrounding environment. As a person ages, the person can be considered wiser in making decisions and have more experience so they are considered more technically capable. In addition, age can affect a person both in the way of thinking and acting. The older a person is, the more information can be gleaned from everyday experience (Yuatati & Afriani, 2024).

Access Information

Lack of knowledge about breast self-examination can be caused by a lack of information obtained. Of all the research respondents, as many as 63 (61.7%) respondents had never accessed health information about breast self-examination. Respondents who have accessed health information about breast self-examination are 39 (38.2%).

The existence of information about breast self-examination and breast cancer is a motivation for women to increase their knowledge about the breast area. This is the main basis for increasing knowledge about breast self-examination. The increasing level of knowledge about breast self-examination will influence women's behavior to realize the importance of breast self-examination to prevent breast

cancer risk. This increases women's awareness, especially in early adulthood, to motivate themselves to practice in-person breast exams (Ajeng, 2018).

Video Effectiveness

In the experimental group that received video media intervention, the average group knowledge before receiving the intervention was 8.27 and experienced an increase in the average group knowledge after receiving media intervention to 16.80. The results of this study showed that there was a significant difference in the level of knowledge before and after the breast self-examination of respondents who received the video media intervention about the breast self-examination. This is evidenced by the p-value value in the Wilcoxon test of 0.000 ($p< 0.05$) and seen from the change in the average knowledge score before and after the intervention (post test - pre test) of 8.53 points. It can be concluded that video media is effective in increasing knowledge about breast self-examination in respondents or junior high school students. The results of this study are in line with research conducted by Siti (2023) on the effectiveness of video media in increasing knowledge about bra selection and about breast examination behavior in Ma'arif Kebunrejo Genteng Junior High School students who concluded that video media has a fairly high effectiveness in increasing respondents' knowledge.

Video media is a media that displays moving images, writing and audio or sound that explains the displayed image. The use of video media about breast self-examination can clarify the importance of breast self-examination that must be done, and clearly see practical steps about breast self-examination. One of the reasons for this increase in knowledge is the use of video media in conveying information clearly and interestingly because respondents not only see but also hear (Devi & Warsiti, 2023).

Leaflet Effectiveness

The knowledge of the leaflet media experiment group before receiving the intervention had an average of 8.37 and increased after receiving the leaflet media intervention to 16.84. The results of the knowledge level test before and after receiving the leaflet media intervention, using the Wilcoxon test with a value of p 0.000 ($p<0.05$) showed that there was a significant difference in the level of knowledge of respondents about breast self-examination before and after receiving the leaflet media intervention. This result can also be seen from the increase in the average knowledge score about breast self-examination before and after the leaflet media intervention by 8.47 points. It can be concluded that leaflet media is effective in increasing knowledge about breast self-examination in respondents or junior high school students.

The results of this study are in line with research conducted by Leli Safitri (2024) on the effectiveness of health education through leaflet media for the level of anemia knowledge of adolescent girls at SMPN 8 Satap Mantewe which concluded that leaflet media is effective in increasing adolescent girls' knowledge about anemia. The results of this study also conclude that the advantage of leaflet media is the compact form of media(Yuatati & Afriani, 2024).

Leaflet media is one of the print media that is simple and concise in containing information so that it is effective to carry everywhere and can be read anytime when needed. This increase in knowledge is influenced by the use of leaflet media because it makes respondents more active in reading so that the information obtained is easier to remember (Lestari et al., 2021).

The results of this study show that there is an increase in knowledge through health promotion with video media and leaflet media. In accordance with Lawrence Green's theory which states that health promotion will have an effect on the level of knowledge. Knowledge is the result of human sensing or the result of a person's knowledge of information through the five senses that he has. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. The more the five senses are used, the more knowledge is gained (Puspitasari et al., 2023).

Knowledge that covers the cognitive side has 6 levels, namely knowing, understanding, applying, analyzing, synthesizing, and evaluating. The level of cognitive knowledge that has been achieved by the respondents of this study is the level of knowledge and understanding. In this study, respondents' knowledge was channeled through their sense of sight and

hearing in the video media group, while in the leaflet group only used their sense of sight. According to Edgar Dale, the senses that transmit the most knowledge to the brain are the eyes at 75%-87% while the other 13% to 25% is transmitted through other senses. It can be concluded that visual media facilitates the delivery and receipt of health information (Baswedan & Listiowati, 2019).

The Difference in the Effectiveness of Video Media and Leaflets in Increasing Knowledge

From the data analysis, it was found that the average change in knowledge score in the video group was 8.53 higher than the average change in knowledge score in the leaflet group which was 8.47. In Mann-Whitney's statistical test on the change in knowledge between the video group and the leaflet group, a value of p 0.869 (p > 0.05) was obtained, which means that there was no significant difference in the increase in knowledge between the video group and the leaflet group. It can be concluded that video media and leaflet media have the same effectiveness in increasing knowledge about self-breast examination in junior high school students with the largest average increase in knowledge in the video group. The lack of significant difference may be attributed to both media being sourced from the Ministry of Health and containing similar content, making them equally impactful in delivering educational messages.

The video media group had the largest average rating, with a difference of 0.06 points between the average rating of the video group and the leaflet. It can be concluded that the increase in knowledge about breast self-examination in the video group is higher than the leaflet group in junior high school students in Semarang City.

The results of this study are in line with Greiny's (2022) research on the effectiveness of video media and leaflets at the level of knowledge about menstrual hygiene at MA Darul Ulum Palangkaraya, which proves that video media is slightly higher in increasing knowledge about menstrual hygiene in young women compared to leaflet media. However the results of statistical tests show that there is no difference in the two media because videos and leaflets are both good at increasing knowledge (Arisani, 2017).

In line with Edgar Dale's theory which explains a person learns more than 50% is from what he sees and hears. In health promotion, it is very closely related to the selection of media aids with the aim of helping the use of the senses as much as possible. This reflects that in increasing knowledge and information absorption in a person, it will be more effective if they use the senses as possible. The selection of media in conveying information about breast examination itself is expected to increase understanding and change knowledge among adolescent girls (Maulidia et al., 2022).

Conclusion and Recommendations

There was a difference in knowledge about breast self-examination before and after the intervention of video media and leaflets, so it can be concluded that video media and leaflets are effective in increasing respondents' knowledge about breast self-examination. Video media gets a higher average increase in knowledge compared to leaflet media. However, from the test results, it was concluded that there was no difference in effectiveness between videos and leaflets in increasing respondents' knowledge. Videos and leaflets can be equally effective in increasing knowledge about self-examination in adolescents.

It is hoped that this study can be developed by adding bound variables in the form of attitudes and practices of breast examination itself or by combining other health promotion methods such as lectures and demonstrations. Schools are encouraged to utilize either video or leaflet media in health education classes. Integrating these materials into the curriculum may improve breast health awareness among adolescents. For the Indonesian Ministry of Health and the creators of health education media, it is hoped that they can compile information material that is interesting and relevant to the target and can determine the type of media that is effective in conveying messages to the target.

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