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The Role Of Social Media And Literacy In Early Awareness Of Health Diabetes Complications

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Abstract

Advances in digital technology have made social media one of the main channels for disseminating health information to the public. This study aims to examine the influence of social media and health literacy levels on increasing early awareness of complications in people with diabetes mellitus. Social media acts as an interactive platform that facilitates the dissemination of knowledge, education, and the exchange of experiences between individuals in managing diabetes. However, the successful use of social media is highly dependent on the health literacy of users. This study uses a quantitative approach with a survey method, where data is collected through a 5-point Likert scale questionnaire (1 = strongly disagree to 5 = strongly agree). The study population consists of students aged 18–20 years from the 2024 and 2025 cohorts, with a sample size of 77 respondents selected using purposive sampling. The research instrument covered three main variables, namely social media use, health literacy, and early awareness of diabetes complications. The data were analyzed using descriptive statistics and multiple linear regression analysis to determine the influence between variables. The results of the study indicate that wise use of social media and a high level of health literacy have a positive and significant effect on increasing early awareness of diabetes mellitus complications. Individuals with good literacy are better able to select valid information, understand the risks of complications such as retinopathy, nephropathy, and diabetic neuropathy, and independently implement preventive measures. The overall Cronbach's alpha coefficient (0.773) is greater than 0.60, so with a significance level or α = 5%, the questionnaire is reliable (consistent). Therefore, synergy between health workers, educational institutions, and policymakers is needed to maximize the role of social media as a reliable and effective means of health education.

Keywords: Social Media, Health Literacy, Early Awareness, Diabetes Complications, Health Promotion.

INTRODUCTION

Diabetes mellitus is a chronic metabolic disease characterized by elevated blood glucose levels, which can lead to various serious health problems if not properly controlled. Recent data indicate that this disease has a broad global impact, with approximately 463 million adults diagnosed worldwide, a figure that is projected to increase to 700 million by 2045. Type 1 diabetes mellitus occurs as a result of an autoimmune reaction in which the body's immune system attacks pancreatic beta cells, thereby inhibiting insulin production. Meanwhile, type 2 diabetes mellitus is generally caused by insulin resistance. Both types of diabetes have the potential to cause severe microvascular and macrovascular complications if not managed appropriately (Yapislar & Gurler, 2024).

Microvascular complications, including diabetic retinopathy, nephropathy, and neuropathy, arise due to damage to small blood vessels, which disrupts the function of various organs and body tissues. Chronic hyperglycemia is a major contributing factor in the development of these complications, as prolonged elevated blood glucose levels can progressively damage the vascular system (Yapislar & Gurler, 2024).

In December 2019, the first cases of infection caused by a novel coronavirus responsible for severe respiratory illness (COVID-19) emerged and subsequently spread globally, leading the World Health Organization (WHO) to declare it a pandemic on March 11, 2020. Since then, physicians and healthcare professionals have faced a situation characterized by a rapidly evolving flow of information originating from various health authorities at regional, national, and international levels, as well as regulatory bodies and professional organizations. Although social media has played a crucial role in the rapid dissemination of information and has enabled active participation among medical professionals, conventional communication channels such as electronic mail (email) have continued

to be maintained as official means of communication. This paper reviews the various opportunities offered by social media platforms, including Facebook, Instagram, YouTube, and TikTok, as channels for disseminating medical information, both in the context of communication among healthcare professionals and in delivering important information to the general public (Eghtesadi, 2020).

Therefore, health literacy plays a vital role in determining the extent to which individuals are able to understand, evaluate, and appropriately use health-related information. Adequate health literacy enables individuals to recognize early symptoms of diabetes, understand the risks of complications, and take appropriate preventive measures. When health literacy is combined with the positive use of social media, the public can more easily access credible educational content and enhance early awareness of diabetes-related complications.

Diabetic retinopathy and nephropathy are examples of complications that arise from poorly controlled diabetes. We assume that the level of health literacy plays an important role in enhancing individuals' understanding of the urgency of undergoing routine examinations to detect diabetes complications at an early stage. Based on this assumption, this study aims to analyze the relationship between verbal health literacy (VHL) and written health literacy (WHL) and the adherence of individuals with diabetes to screening for specific complications of the disease (Jun, 2024).

The research problem in this study focuses on two main issues. First, how social media contributes to increasing literacy related to early health awareness of diabetes complications. Second, how health literacy influences early health awareness of diabetes complications. Based on these research problems, the objectives of this study are to determine the role of social media in enhancing literacy related to early health awareness of diabetes complications and to examine the role of health literacy in promoting early health awareness of diabetes complications.

This study is expected to provide both theoretical and practical benefits. From a theoretical (academic) perspective, this research is expected to contribute to the field of health communication by examining the effectiveness of social media in educating the public about chronic diseases such as diabetes, enriching health literacy studies regarding the relationship between information comprehension and preventive behaviors (early awareness), and serving as a scientific reference for future research on digital interventions, student health, or diabetes management.

From a practical (applied) perspective, this study is expected to benefit various stakeholders. For universities, the findings may serve as input for designing more effective health campaigns within campus environments. For healthcare practitioners and government institutions, the results may provide a basis for developing public health promotion strategies through digital platforms to reach younger populations. For students and the general public, this study is expected to increase awareness of the importance of early detection and the utilization of personal health literacy. Additionally, for content developers, this research is expected to offer insights into creating more impactful health education materials on social media platforms.

RESEARCH METHODS

This study employed a quantitative approach. Based on the data analysis conducted (validity and reliability testing), the method used was observational research (survey). This approach was selected to measure the variables through a questionnaire.

The population of this study consisted of all students from the 2024 and 2025 cohorts aged 18–20 years. The total population comprised 77 individuals. Data from all 77 respondents were used to conduct the instrument testing.

Respondents in this study were determined based on inclusion and exclusion criteria. The inclusion criteria included active students from the 2024 or 2025 cohorts, aged between 18–20 years, possessing active social media accounts, and being willing to complete the questionnaire in full.

Meanwhile, the exclusion criteria were students who were outside the 18–20 year age range and respondents who did not complete the questionnaire fully.

Instrument validity and reliability testing were conducted prior to the main study. The questionnaire was first tested on 77 respondents. Validity testing was performed using Pearson's correlation, with the decision rule that an item was considered valid if the calculated r-value exceeded the r-table value. At a significance level of α = 5% and a sample size of N = 77 (df = n − 2), the r-table value was 0.2242. Reliability testing was conducted using Cronbach's Alpha, with the criterion that the instrument was considered reliable if the Cronbach's Alpha value exceeded 0.60.

Data collection was carried out in several stages. The preparation stage involved developing the questionnaire as the research instrument. Subsequently, the questionnaire was distributed to respondents via Google Forms. Completion of the questionnaire was conducted voluntarily by the respondents. Data collection and verification were then performed, during which questionnaires that were not completed in full were excluded from the analysis.

Data analysis was conducted in two stages, namely instrument testing analysis. This analysis included Pearson's validity testing and Cronbach's Alpha reliability testing, as previously described.

This study adhered to social research ethical principles, including informed consent, voluntary participation, and the confidentiality of respondents' identities.

Instrument Test Results

Instrument testing was conducted on 77 respondents. The purpose of this testing was to ensure that the questionnaire used in the study met the criteria for validity and reliability.

MEDSOS Variable Instrument Test (X1)

MEDSOS Validity Test (X1)

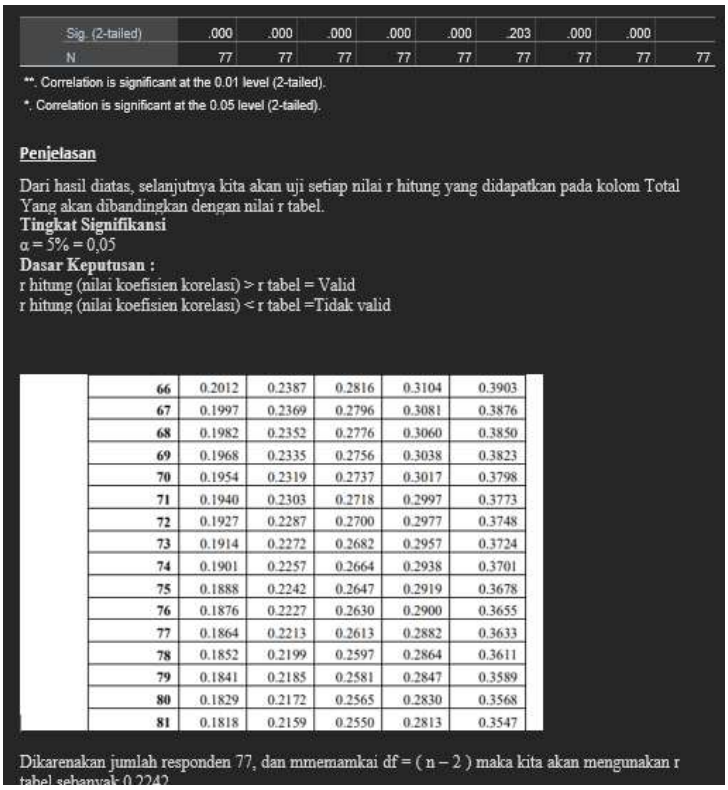
Validity testing was conducted using Pearson's correlation. Items were deemed valid if the calculated r value was greater than the table r value. With N=77 and $\alpha = 5\%$, the table r value used was 0.2242.

Table 1. Medsos Validity Test

1. UJI VALIDITAS MEDSOS (X1)

Correlations

		P1	P2	P3	P4	P5	P6	P7	P8	Total
P1	Pearson Correlation	1	.516**	.432**	.445**	.153	.130	.164	.219	.636**
	Sig. (2-tailed)		.000	.000	.000	.185	.258	.155	.056	.000
	N	77	77	77	77	77	77	77	77	77
P2	Pearson Correlation	.516**	1	.299**	.462**	.285*	-.033	.324**	.369**	.679**
	Sig. (2-tailed)	.000		.008	.000	.012	.770	.004	.001	.000
	N	77	77	77	77	77	77	77	77	77
P3	Pearson Correlation	.432**	.299**	1	.453**	.381**	-.068	.483**	.588**	.712**
	Sig. (2-tailed)	.000	.008		.000	.001	.557	.000	.000	.000
	N	77	77	77	77	77	77	77	77	77
P4	Pearson Correlation	.445**	.462**	.453**	1	.350**	.080	.440**	.510**	.758**
	Sig. (2-tailed)	.000	.000	.000		.002	.488	.000	.000	.000
	N	77	77	77	77	77	77	77	77	77
P5	Pearson Correlation	.153	.285*	.381**	.350**	1	-.159	.518**	.621**	.613**
	Sig. (2-tailed)	.185	.012	.001	.002		.168	.000	.000	.000
	N	77	77	77	77	77	77	77	77	77
P6	Pearson Correlation	.130	-.033	-.068	.080	-.159	1	-.142	-.002	.147
	Sig. (2-tailed)	.258	.775	.557	.488	.168		.218	.987	.203
	N	77	77	77	77	77	77	77	77	77
P7	Pearson Correlation	.164	.324**	.483**	.440**	.518**	-.142	1	.735**	.674**
	Sig. (2-tailed)	.155	.004	.000	.000	.000	.218		.000	.000
	N	77	77	77	77	77	77	77	77	77
P8	Pearson Correlation	.219	.369**	.588**	.510**	.621**	-.002	.735**	1	.770**
	Sig. (2-tailed)	.056	.001	.000	.000	.000	.987	.000		.000
	N	77	77	77	77	77	77	77	77	77
Total	Pearson Correlation	.636**	.679**	.712**	.758**	.613**	.147	.674**	.770**	1



Sig. (2-tailed)	.000	.000	.000	.000	.000	.203	.000	.000	
N	77	77	77	77	77	77	77	77	77

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Penjelasan

Dari hasil diatas, selanjutnya kita akan uji setiap nilai r hitung yang didapatkan pada kolom Total Yang akan dibandingkan dengan nilai r tabel.

Tingkat Signifikansi

α = 5% = 0,05

Dasar Keputusan :

r hitung (nilai koefisien korelasi) > r tabel = Valid

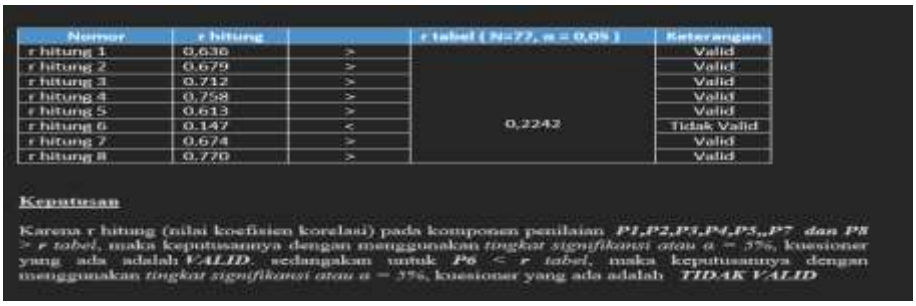
r hitung (nilai koefisien korelasi) < r tabel =Tidak valid

66	0.2012	0.2387	0.2816	0.3104	0.3903
67	0.1997	0.2369	0.2796	0.3081	0.3876
68	0.1982	0.2352	0.2776	0.3060	0.3850
69	0.1968	0.2335	0.2756	0.3038	0.3823
70	0.1954	0.2319	0.2737	0.3017	0.3798
71	0.1940	0.2303	0.2718	0.2997	0.3773
72	0.1927	0.2287	0.2700	0.2977	0.3748
73	0.1914	0.2272	0.2682	0.2957	0.3724
74	0.1901	0.2257	0.2664	0.2938	0.3701
75	0.1888	0.2242	0.2647	0.2919	0.3678
76	0.1876	0.2227	0.2630	0.2900	0.3655
77	0.1864	0.2213	0.2613	0.2882	0.3633
78	0.1852	0.2199	0.2597	0.2864	0.3611
79	0.1841	0.2185	0.2581	0.2847	0.3589
80	0.1829	0.2172	0.2565	0.2830	0.3568
81	0.1818	0.2159	0.2550	0.2813	0.3547

Dikarenakan jumlah responden 77, dan mmemamkai df = (n – 2) maka kita akan mengunakan r tabel sebanyak 0.2242

Decision: Based on the table above, 7 of the 8 statement items are valid. Item P6 is invalid because the calculated r value (0.147) is smaller than the table r value (0.2242).

Table 2. R Value Statement



Nomor	r hitung		r tabel (N=77, α = 0,05)	Keterangan
r hitung 1	0,636	>	0,2242	Valid
r hitung 2	0.679	>		Valid
r hitung 3	0.712	>		Valid
r hitung 4	0.758	>		Valid
r hitung 5	0.613	>		Valid
r hitung 6	0.147	<		Tidak Valid
r hitung 7	0.674	>		Valid
r hitung 8	0.770	>		Valid

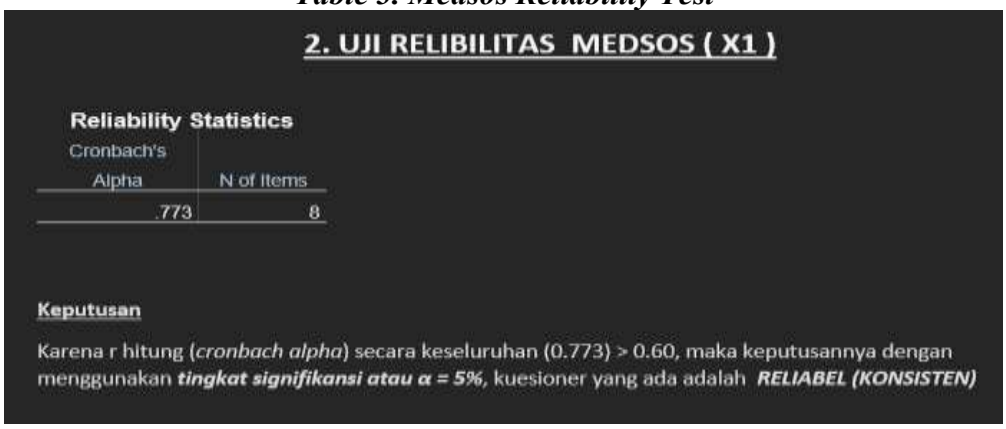
Keputusan

Karena r hitung (nilai koefisien korelasi) pada komponen penilaian ***P1,P2,P3,P4,P5,,P7 dan P8*** *> r tabel*, maka keputusannya dengan menggunakan *tingkat signifikansi atau α = 5%*, kuesioner yang ada adalah ***VALID***. sedangakan untuk ***P6*** *< r tabel*, maka keputusannya dengan menggunakan *tingkat signifikansi atau α = 5%*, kuesioner yang ada adalah ***TIDAK VALID***

MEDSOS Reliability Test (X1)

Reliability testing uses Cronbach's Alpha. The instrument is considered reliable if the Cronbach's Alpha value is greater than 0.60.

Table 3. Medsos Reliability Test



2. UJI RELIBILITAS MEDSOS (X1)

Reliability Statistics

Cronbach's Alpha	N of Items
.773	8

Keputusan

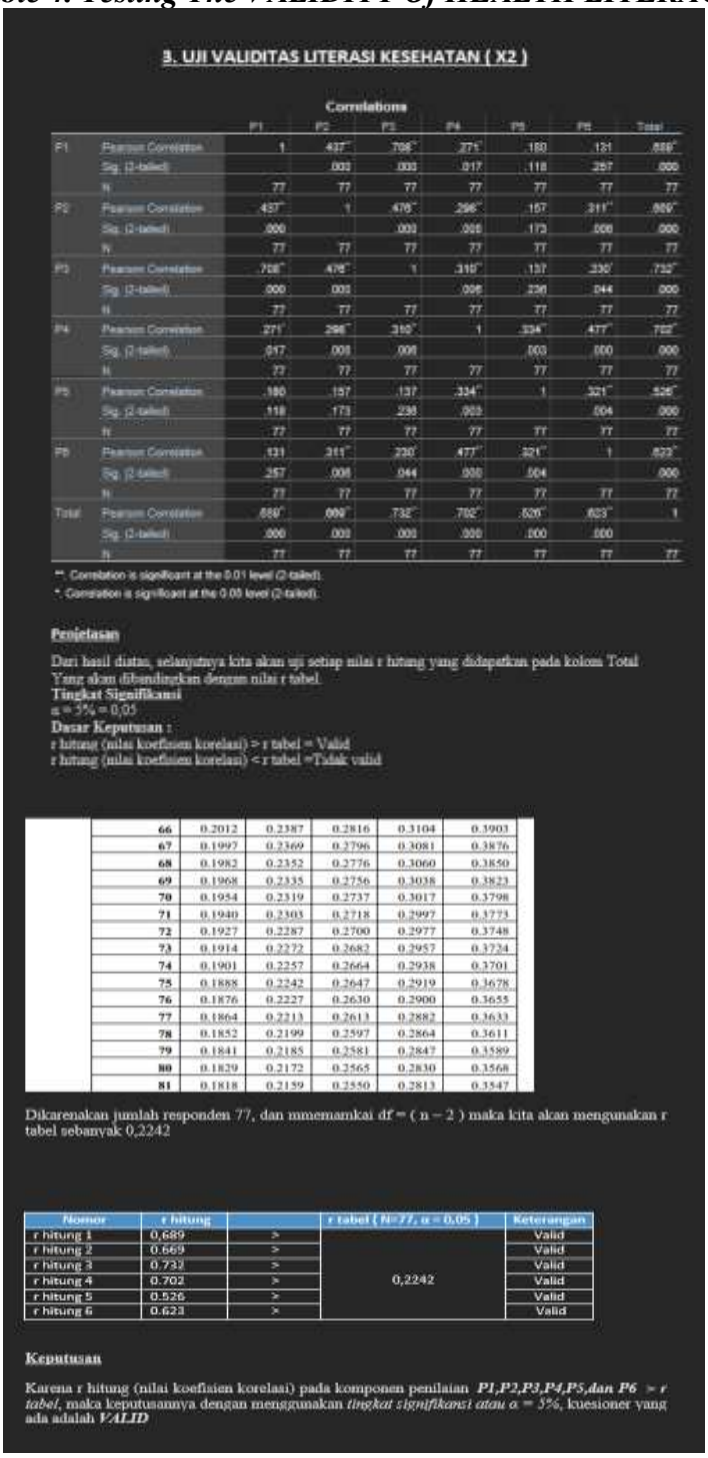
Karena r hitung (*cronbach alpha*) secara keseluruhan (0.773) > 0.60, maka keputusannya dengan menggunakan ***tingkat signifikansi atau α = 5%***, kuesioner yang ada adalah ***RELIABEL (KONSISTEN)***

Testing the HEALTH LITERACY Variable Instrument (X2)

Testing the VALIDITY of HEALTH LITERACY (X2)

The validity of variable X2 was tested using the table r criterion of 0.2242.

Table 4. Testing The VALIDITY Of HEALTH LITERACY



3. UJI VALIDITAS LITERASI KESEHATAN (X2)

Correlations

		P1	P2	P3	P4	P5	P6	Total
P1	Pearson Correlation	1	.437**	.708**	.271*	.180	.131	.689**
	Sig. (2-tailed)		.000	.000	.017	.118	.257	.000
	N	77	77	77	77	77	77	77
P2	Pearson Correlation	.437**	1	.476**	.296**	.157	.311**	.669**
	Sig. (2-tailed)	.000		.000	.009	.173	.006	.000
	N	77	77	77	77	77	77	77
P3	Pearson Correlation	.708**	.476**	1	.310**	.137	.330**	.732**
	Sig. (2-tailed)	.000	.000		.006	.236	.044	.000
	N	77	77	77	77	77	77	77
P4	Pearson Correlation	.271*	.296**	.310**	1	.334**	.477**	.702**
	Sig. (2-tailed)	.017	.009	.006		.003	.000	.000
	N	77	77	77	77	77	77	77
P5	Pearson Correlation	.180	.157	.137	.334**	1	.321**	.526**
	Sig. (2-tailed)	.118	.173	.236	.003		.004	.000
	N	77	77	77	77	77	77	77
P6	Pearson Correlation	.131	.311**	.330**	.477**	.321**	1	.623**
	Sig. (2-tailed)	.257	.006	.044	.000	.004		.000
	N	77	77	77	77	77	77	77
Total	Pearson Correlation	.689**	.669**	.732**	.702**	.526**	.623**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	77	77	77	77	77	77	77

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Penjelasan

Dari hasil diatas, selanjutnya kita akan uji setiap nilai r hitung yang didapatkan pada kolom Total Yang akan dibandingkan dengan nilai r tabel.
Tingkat Signifikansi
α = 5% = 0,05
Dasar Keputusan :
r hitung (nilai koefisien korelasi) > r tabel = Valid
r hitung (nilai koefisien korelasi) < r tabel =Tidak valid

66	0.2012	0.2387	0.2816	0.3104	0.3903
67	0.1997	0.2369	0.2796	0.3081	0.3876
68	0.1982	0.2352	0.2776	0.3060	0.3850
69	0.1968	0.2335	0.2756	0.3038	0.3823
70	0.1954	0.2319	0.2737	0.3017	0.3798
71	0.1940	0.2303	0.2718	0.2997	0.3773
72	0.1927	0.2287	0.2700	0.2977	0.3748
73	0.1914	0.2272	0.2682	0.2957	0.3724
74	0.1901	0.2257	0.2664	0.2938	0.3701
75	0.1888	0.2242	0.2647	0.2919	0.3678
76	0.1876	0.2227	0.2630	0.2900	0.3655
77	0.1864	0.2213	0.2613	0.2882	0.3633
78	0.1852	0.2199	0.2597	0.2864	0.3611
79	0.1841	0.2185	0.2581	0.2847	0.3589
80	0.1829	0.2172	0.2565	0.2830	0.3568
81	0.1818	0.2159	0.2550	0.2813	0.3547

Dikarenakan jumlah responden 77, dan menemamkai df = (n – 2) maka kita akan menggunakan r tabel sebanyak 0,2242

Nomor	r hitung		r tabel (N=77, α = 0,05)	Keterangan
r hitung 1	0,689	>	0,2242	Valid
r hitung 2	0.669	>		Valid
r hitung 3	0.732	>		Valid
r hitung 4	0.702	>		Valid
r hitung 5	0.526	>		Valid
r hitung 6	0.623	>		Valid

Keputusan

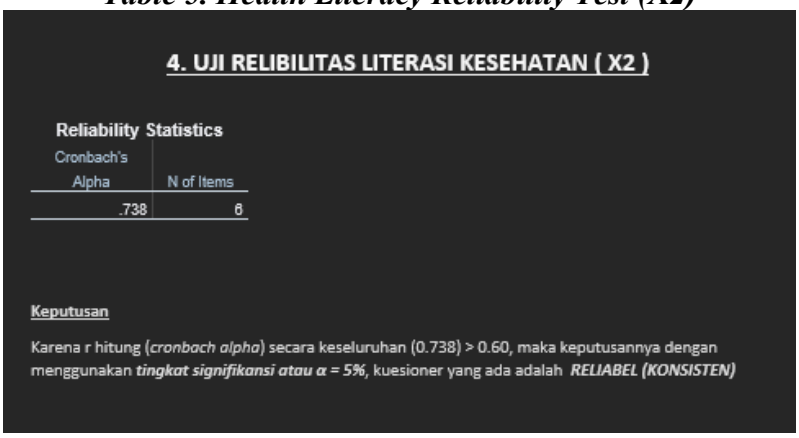
Karena r hitung (nilai koefisien korelasi) pada komponen penilaian ***P1,P2,P3,P4,P5,dan P6*** > *r tabel*, maka keputusannya dengan menggunakan *tingkat signifikansi atau α = 5%*, kuesioner yang ada adalah ***VALID***

Decision: All 6 items of the Health Literacy (X2) variable were declared valid, because the calculated r value for each item was greater than the table r (0.2242).

HEALTH LITERACY Reliability Test (X2)

An instrument is considered reliable if its Cronbach's Alpha value is greater than 0.60.

Table 5. Health Literacy Reliability Test (X2)



4. UJI RELIBILITAS LITERASI KESEHATAN (X2)

Reliability Statistics

Cronbach's Alpha	N of Items
.738	6

Keputusan

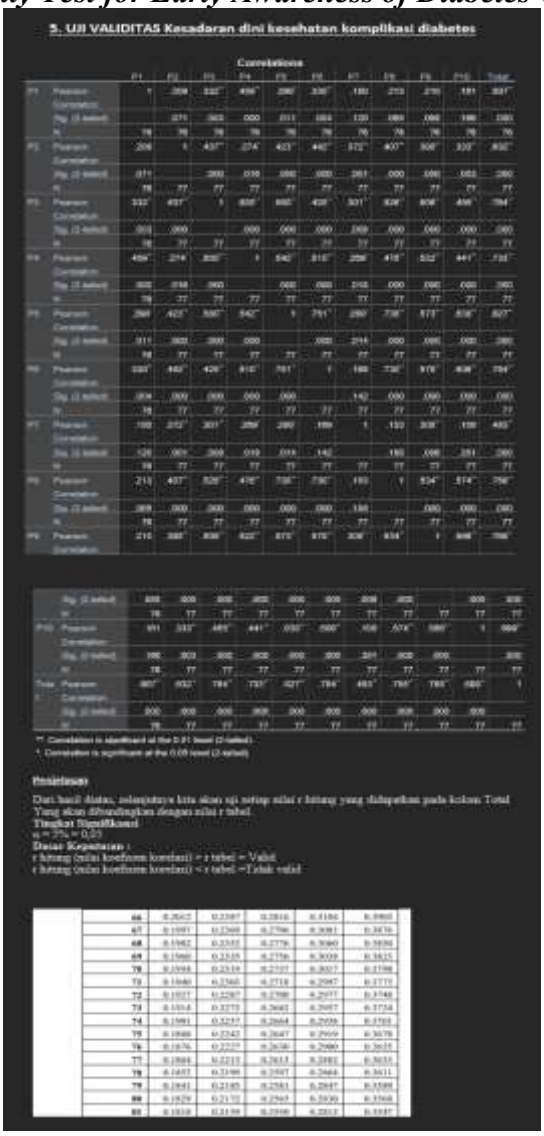
Karena r hitung (*cronbach alpha*) secara keseluruhan (0.738) > 0.60, maka keputusannya dengan menggunakan ***tingkat signifikansi atau α = 5%***, kuesioner yang ada adalah ***RELIABEL (KONSISTEN)***

Instrument Test for Early Awareness of Diabetes Complications (Y)

Validity Test for Early Awareness of Diabetes Complications (Y)

The validity of variable Y was tested using the table r criterion of 0.2242.

Table 6. Validity Test for Early Awareness of Diabetes Complications



5. UJI VALIDITAS Kesadaran dini kesehatan komplikasi diabetes

Correlations

Dikarenakan jumlah responden 77, dan menemukan nilai df = (n – 2) maka kita akan menggunakan r tabel sebanyak 0,2242

Nomor	r hitung		r tabel (N=77, α = 0,05)	Keterangan
r hitung 1	0,507	>	0,2242	Valid
r hitung 2	0.632	>		Valid
r hitung 3	0.764	>		Valid
r hitung 4	0.733	>		Valid
r hitung 5	0.827	>		Valid
r hitung 6	0.784	>		Valid
r hitung 7	0.483	>		Valid
r hitung 8	0.758	>		Valid
r hitung 9	0.768	>		Valid
r hitung 10	0.699	>		Valid

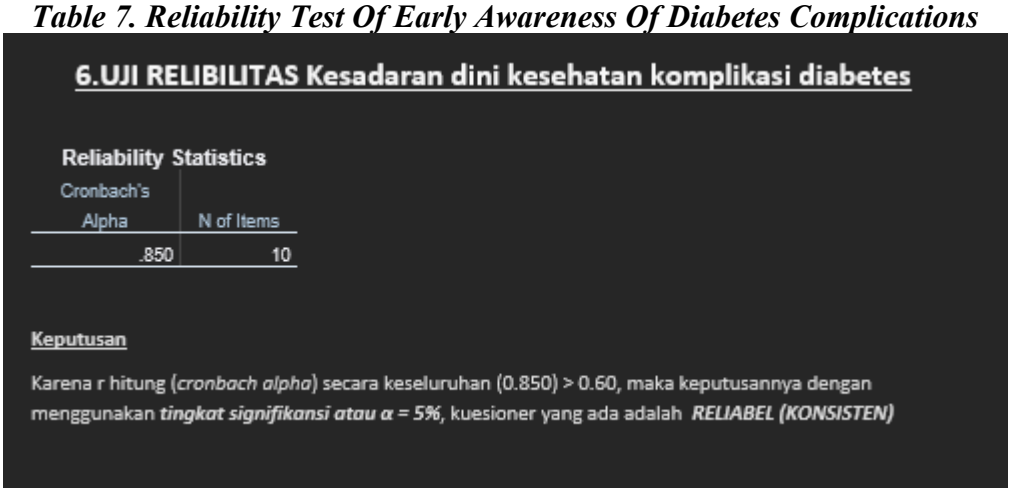
Keputusan

Karena r hitung (nilai koefisien korelasi) pada komponen penilaian *P1,P2,P3,P4,P5, P6,,P7,P8,P9 dan P10* > *r tabel*, maka keputusannya dengan menggunakan *tingkat signifikansi atau α = 5%*, kuesioner yang ada adalah *VALID*.

Reliability Test of Early Awareness of Diabetes Complications (Y)

An instrument is considered reliable if its Cronbach's Alpha value is greater than 0.60.

Table 7. Reliability Test Of Early Awareness Of Diabetes Complications



6.UJI RELIBILITAS Kesadaran dini kesehatan komplikasi diabetes

Reliability Statistics

Cronbach's Alpha	N of Items
.850	10

Keputusan

Karena r hitung (*cronbach alpha*) secara keseluruhan (0.850) > 0.60, maka keputusannya dengan menggunakan ***tingkat signifikansi atau α = 5%***, kuesioner yang ada adalah ***RELIABEL (KONSISTEN)***

Discussion

Based on the results of the instrument testing conducted on 77 respondents, several conclusions can be drawn regarding the suitability of the research instruments.

The instruments for the Health Literacy variable (X2) and the Early Health Awareness of Diabetes Complications variable (Y) demonstrated very good results. All statement items for both variables were declared valid, indicating that each item was able to measure what it was intended to measure. Both instruments were also found to be reliable, with Cronbach's Alpha values of 0.738 for X2 and 0.850 for Y, indicating consistency in respondents' answers to the instruments.

For the Social Media variable (X1), one item (P6) was found to be invalid (r calculated = 0.147 < r table = 0.2242). This indicates that the item did not accurately measure the construct of the Social Media variable and therefore should be removed from subsequent analyses. Nevertheless, overall, the X1 instrument was still considered reliable, with a Cronbach's Alpha value of 0.773.

Accordingly, subsequent data analyses will be conducted using 7 valid items for variable X1, 6 items for variable X2, and 10 items for variable Y.

CONCLUSIONS

This study concludes that social media use and health literacy play a significant and complementary role in increasing early awareness of diabetes mellitus complications among young adults. The findings indicate that the wise and purposeful use of social media, supported by adequate health literacy, positively influences individuals' ability to recognize the risks of diabetes-related complications such as retinopathy, nephropathy, and neuropathy. Students with higher levels of health literacy are better equipped to evaluate the credibility of health information obtained from social media, understand the importance of early detection, and adopt preventive health behaviors. The results of the instrument testing further confirm that the research instruments used in this study are valid and reliable, particularly for the health literacy and early awareness variables. Although one item in the social media variable was found to be invalid, the overall reliability of the instrument remained acceptable. These findings strengthen the evidence that health literacy functions as a critical mediating factor in maximizing the educational potential of social media for health promotion. Therefore, this study highlights the importance of strengthening health literacy alongside optimizing social media as a strategic tool for health education. Collaboration among educational institutions, healthcare professionals, and policymakers is essential to ensure the dissemination of accurate, accessible, and reliable health information through digital platforms, particularly to enhance early awareness and prevention of diabetes complications among younger populations.

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Association , 2 beban keuangan untuk perawatan pasien DM diperkirakan mencapai $ 327 miliar pada tahun 2017 dan telah meningkat sebesar 26 % selama lima tahun . Di Indonesia , komplikasi yang terjadi pada pasien DM adalah hipoglikemia , nefropati , dan ulkus kaki diabetik . Pasien DM dengan komplikasi menanggung beban biaya perawatan dua kali lipat dibandingkan DM tanpa komplikasi . 3 Manajemen DM yang tepat membutuhkan peran pasien , kerabat , dan perawatan kesehatan untuk mencapai outcome DM yang optimal dan mencegah komplikasi . 4 Selain itu , strategi manajemen DM sangat penting untuk mencapai hasil DM yang optimal . Banyak strategi telah dikembangkan menggunakan teknologi dan salah satunya adalah internet . 5 Saat ini , pengguna internet di Indonesia mengalami peningkatan dari tahun 2018 hingga 2022 . Sebanyak 39 , 1 % penduduk Indonesia mengakses internet untuk mencari isu dan produk kesehatan . 6 Media sosial menjadi salah satu modalitas bagi masyarakat untuk mencari informasi yang dibutuhkan tentang masalah kesehatan dan Facebook merupakan salah satu platform media sosial yang paling banyak diakses di kalangan masyarakat Indonesia dengan angka 1 , 3 % setelah WhatsApp dan Instagram . 7 Meningkatnya pengguna internet berdampak pada munculnya komunitas online yang diciptakan oleh platform media sosial . Online Health Community (OHC) di Indonesia telah diciptakan untuk memaksimalkan strategi pencegahan dan intervensi untuk mencapai kesehatan . 8 Salah satu bentuk OHC adalah Diabetes Online Community (DOC). DOC adalah komunitas online tentang diabetes dan dikembangkan untuk mendukun…. 12, 41–50.

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